MAJITEKNO

engineering for water

FIRE

BAR

ECO


MAJITEKNO

engineering for water


MULTEKNO

# **Majitekno**
# engineering for water

WHO WE ARE

**Majitekno** opened its doors in 2014 as an innovative start-up, founded by four partners who have been operating for years in the field of water pumping systems and plumbing installation management at civil and industrial levels.
It was a Dalmine POINT (technological innovation hub) guest.
The name **Majitekno**, in African Swahili, means technology (Tekno) of water (Maji).
The goal we have set ourselves is the creation of integrated water management systems in synergy: all our systems work to provide savings and enhance water resource for all uses.

**Majitekno** integrated systems operate in 3 main sectors:
- **safety** > Maji Fire - Fire fighting
- **energy savings** > Maji Bar - Pressurisation
- **environment** > Maji Eco - Recovery

When it first opened its doors, **Majitekno** identified partners to work with in the plumbing, electrical and construction sectors, and specialised in the design of tailor-made systems for the customer's needs.
The **Majitekno** brand was registered in 2016. That same year the first design patent was filed for our Maji Fire range flagship product: the MF CO-TBI system.
In 2018, bolstered by 4 years of strong growth, **Majitekno** stands shoulder to shoulder with the market leaders on the national level, thanks to its widespread sales network.
The company begins to organise itself and rapidly expands: it needs more space and an independent building.
For this reason, in December 2018 **Majitekno** moved to the new headquarters in Barzana, alongside the production reality with which we have worked for years.
That same year, a joint venture with DAB Pumps launches the company on the market in a more competitive position, ready to face the challenges of tomorrow.


## WHAT WE DO

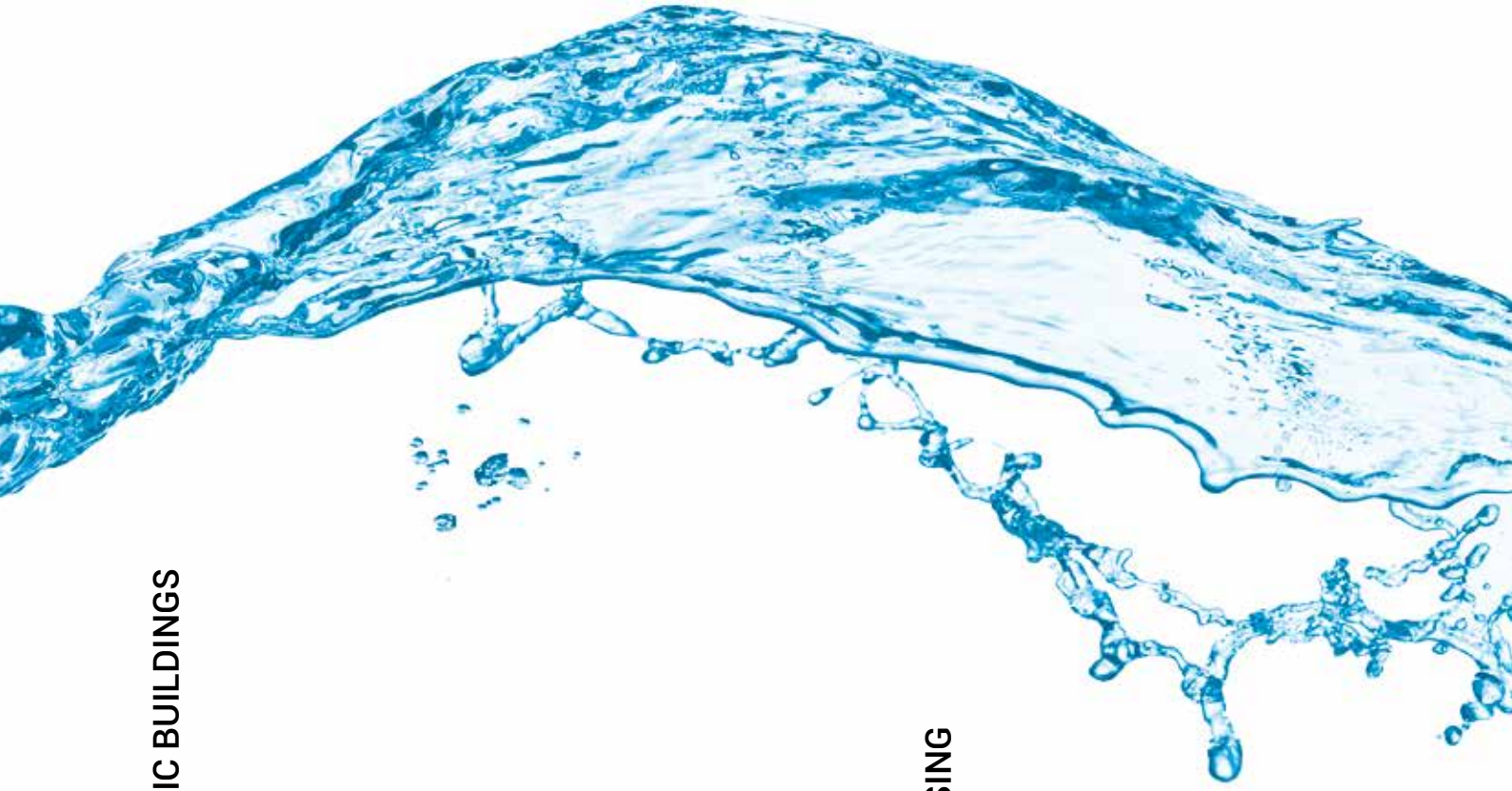
Water is a precious source of energy and life. With **Majitekno** we express our expertise in the creation of integrated systems for the management of water resources in residential, commercial, agricultural and industrial buildings. **Majitekno** offers the design, production, commissioning and assistance of eco-sustainable systems that integrate advanced technologies applied to water monitoring, management, storage, distribution and recovery.

**Majitekno** technologies are divided into 3 main segments:
**Maji Fire** > integrated systems for water supply in fire-fighting systems
**Maji Bar** > integrated systems for pressure increase and water distribution
**Maji Eco** > integrated rainwater collection and distribution systems and waste water recovery

**Majitekno**'s goal is to create systems with a high technological content, with integrated electronic components, alternative energies where possible, in order to guarantee:
- construction of original equipment infrastructures at low price;
- energy and maintenance savings, with a consequent reduction in overall costs;
- minimum environmental impact;
- compliance with current regulations and international standards.

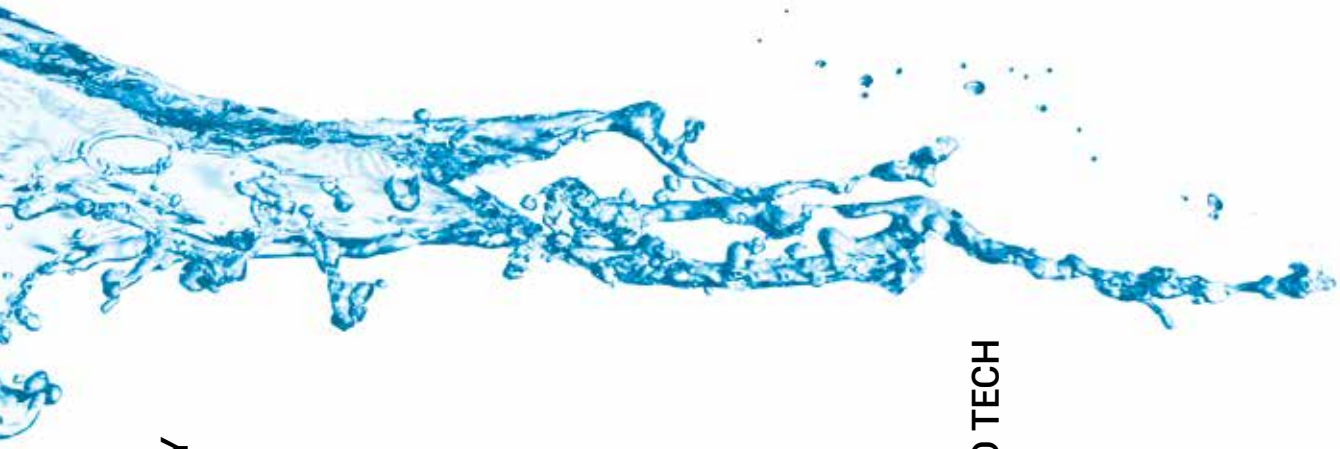
System construction with integrated and compact solutions allows the user to adapt the **Majitekno** systems to existing structures, and to plants built from scratch, reducing installation times and costs and related investments.
All **Majitekno** products are entirely designed by our technical staff and manufactured in partnership with qualified suppliers. They are verified and tested by external engineering firms.
The company also deals with the definition of construction techniques, the choice of materials and components, ensuring the integration of the most advanced technologies.

# Applications



PUBLIC BUILDINGS

HOUSING



## INDUSTRY

## AGRO-BIO TECH

# Contents

## FIRE



## BAR



## ECO

MAJIfire

# INTEGRATED FIRE FIGHTING SYSTEMS

# MF TBOX

External fire pump room for fire-fighting systems with horizontal centrifugal pumps (END-SUCTION) in the negative suction head version according to UNI EN 12845:2020 - UNI 11292: 2019 standards.

## FIRE PUMP ROOM

- Material: horizontal and vertical steel structure R60; infill elements made with EI60 insulated panels with A2-s1, d0 fire reaction performance class. Roof covering, also made with insulated panels and covered with corrugated sheet, inclined and complete with collection channel for rainwater.
- Components and accessories according to UNI EN 12845: 2020 and UNI 11292: 2019 fire regulations (see specific section on p. 80). Various optional accessories also available.
- Fire pump room dimensions as per the following tables, in compliance with UNI 11292: 2019 standard point 5.2.2. Also available to measure and/or made directly on site.
- Access: Single or double front door, made of A1 fire reaction class steel.
- Floor: non-slip chequered plate.
- Flanged connection outside the box.

## PUMPING GROUP

Pumping system electrically and hydraulically installed inside the fire pump room. UNI EN 12845: 2020 standard compliant negative suction head installation in set-ups with electric pumps and/or motor pumps.


Fire pump room interior

Fire pump room under construction

# MF TBOX

External fire pump room for fire-fighting systems with horizontal centrifugal pumps (END-SUCTION), in the positive suction head version according to UNI EN 12845:2020 - UNI 11292: 2019 standards.

## FIRE PUMP ROOM

- Material: horizontal and vertical steel structure R60; infill elements made with EI60 insulated panels with A2-s1, d0 fire reaction performance class. Roof covering, also made with insulated panels and covered with corrugated sheet, inclined and complete with rainwater collection.
- Components and accessories according to UNI EN 12845: 2020 and UNI 11292: 2019 fire regulations (see specific section on p. 80). Various optional accessories also available.
- Fire pump room dimensions as per the following tables, in compliance with UNI 11292: 2019 standard point 5.2.2. Also available to measure and/or made directly on site.
- Access: Single or double front door, made of A1 fire reaction class steel.
- Floor: non-slip chequered plate.
- Internal box connections, insulation not required.

## PUMPING GROUP

Pumping system electrically and hydraulically installed inside the fire pump room. UNI EN 12845: 2020 standard compliant positive suction head installation in set-ups with electric pumps and/or motor pumps.

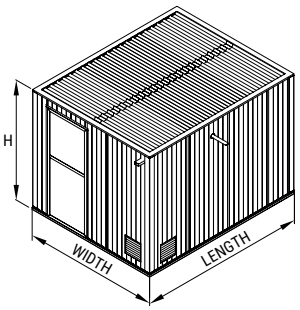

Fire pump room interior

## MajiFire MF TBOX* DIMENSION TABLE

| Class | Fire pump room dimensions (WIDTH x LENGTH - mm) | H (mm) | Weight (kg) | Layout |
|---|---|---|---|---|
| A1 | 1800x2800 | 2650 | 1510 | 1 |
| A2 | 1800x3000 | | 1570 | |
| A3 | 1800x3400 | | 1620 | |
| A4 | 1800x3500 | | 1640 | |
| A5 | 1800x3700 | | 1680 | |
| B1 | 2000x3200 | 2650 | 1660 | 1 |
| B2 | 2000x3400 | | 1720 | |
| B3 | 2000x3600 | | 1750 | |
| B4 | 2000x3800 | | 1780 | |
| B5 | 2000x4000 | | 1790 | |
| B6 | 2000x4250 | | 1840 | |
| C1 | 2250x2800 | 2650 | 1640 | 1 |
| C2 | 2250x3000 | | 1720 | |
| C3 | 2250x3200 | | 1750 | |
| C4 | 2250x3400 | | 1780 | |
| C5 | 2250x3500 | | 1790 | |
| C6 | 2250x3650 | | 1800 | |
| C7 | 2250x3800 | | 1840 | |
| C8 | 2250x4000 | | 1940 | |
| C9 | 2250x4250 | | 1900 | |
| C10 | 2250x4400 | | 1935 | |
| D1 | 2450x3200 | 2650 | 1790 | 1 |
| D2 | 2450x3400 | | 1790 | |
| D3 | 2450x3700 | | 1840 | |
| D4 | 2450x3800 | | 1860 | |
| D5 | 2450x4000 | | 1920 | |
| D6 | 2450x5100 | 2650 | 2070 | 2 |
| D7 | 2450x5500 | | 2300 | |

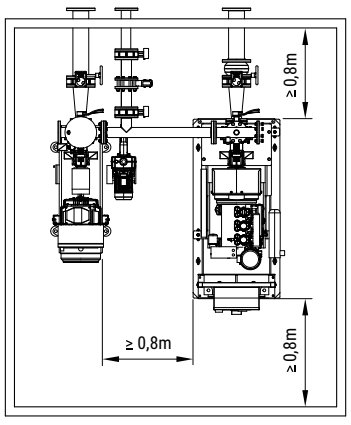
| Class | Fire pump room dimensions (WIDTH x LENGTH - mm) | H (mm) | Weight (kg) | Layout |
|---|---|---|---|---|
| E1 | 2700x3400 | 2650 | 1860 | 1 |
| E2 | 2700x3600 | | 1900 | |
| E3 | 2700x3700 | | 1920 | |
| E4 | 2700x3850 | | 1930 | |
| E5 | 2700x4000 | | 1950 | |
| E6 | 2700x4250 | | 1980 | |
| E7 | 2700x4350 | | 2010 | |
| E8 | 2700x4600 | | 2070 | |
| E9 | 2700x4850 | | 2270 | |
| F1 | 2850x3700 | 2650 | 1860 | 1 |
| F2 | 2850x3850 | | 1935 | |
| F3 | 2850x4000 | | 1985 | |
| F4 | 2850x4250 | | 2070 | |
| F5 | 2850x4350 | | 2100 | |
| F6 | 2850x4850 | | 2370 | |
| G1 | 3000x3700 | 2650 | 1920 | 1 |
| G2 | 3000x3800 | | 1960 | |
| G3 | 3000x4000 | | 2030 | |
| G4 | 3000x4250 | | 2120 | |
| G5 | 3000x4350 | | 2155 | |
| G6 | 3000x4600 | | 2245 | |
| G7 | 3000x4850 | | 2330 | |

* Approximate dimensions to be confirmed upon order

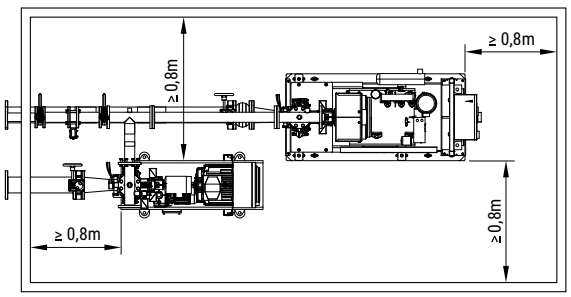



### Layout

1




2



## FIRE PUMP ROOM CLASS SELECTION TABLE ACCORDING TO PUMP UNIT

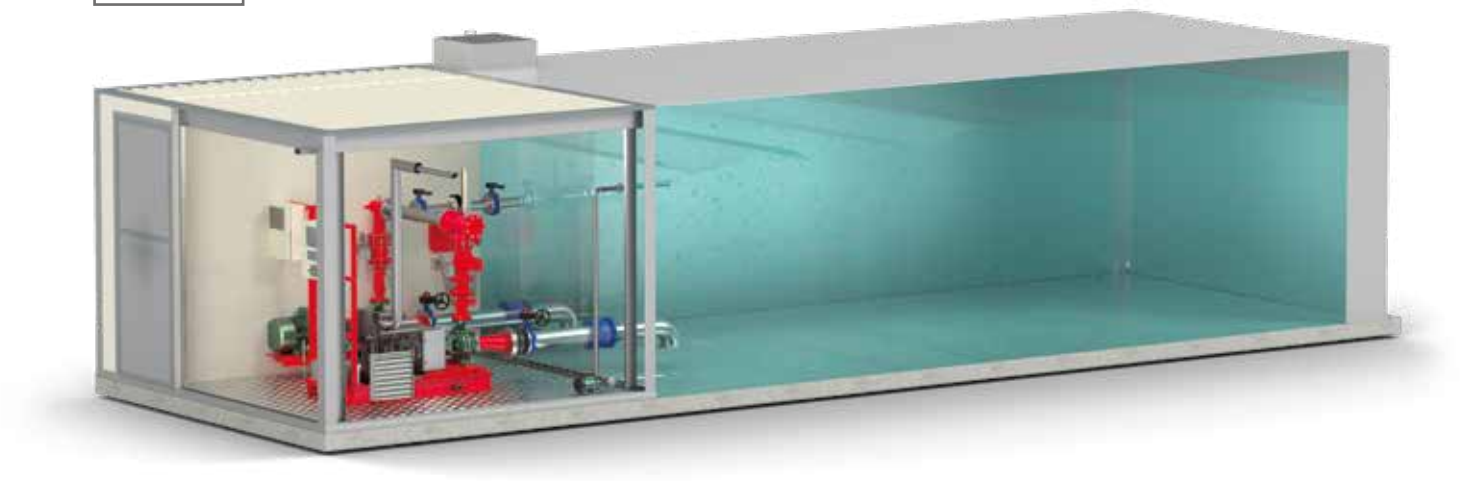
| GROUP MODEL | CLASS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | negative suction head | | | | | positive suction head | | | | |
| | 1 EP + PP | 1 MP + PP | 2 EP + PP | 2 MP + PP | 1 EP + PP + MP | 1 EP + PP | 1 MP + PP | 2 EP + PP | 2 MP + PP | 1 EP + PP + MP |
| KDN 32-160,1/161 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 32-160,1/169 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 32-160,1/177 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 32-160/177 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 32-200.1/190 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 32-200.1/200 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 32-200.1/207 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 32-200/180 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 32-200/190 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 32-200/200 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 32-200/210 | A2 | C3 | C2 | E1 | D2 | A3 | C7 | C5 | E5 | D5 |
| KDN 32-200/219 | A2 | C3 | C2 | E1 | D2 | A3 | C7 | C5 | E5 | D5 |
| KDN 32-250/257 | A2 | C5 | C2 | G1 | E3 | A4 | C8 | C6 | G5 | E7 |
| KDN 40-160/161 | A1 | C3 | C1 | E1 | D2 | A3 | C7 | C4 | E5 | D5 |
| KDN 40-160/177 | A2 | C3 | C2 | E1 | D2 | A3 | C7 | C5 | E5 | D5 |
| KDN 40-200/200 | A2 | C5 | C2 | G1 | E2 | A3 | C8 | C5 | G4 | E6 |
| KDN 40-200/219 | A2 | C5 | C2 | G1 | E3 | A3 | C8 | C5 | G5 | E7 |
| KDN 40-250/230 | A2 | D2 | C2 | D6 | F1 | A4 | D5 | C6 | D7 | F5 |
| KDN 40-250/240 | A2 | D2 | C2 | D6 | F1 | A4 | D5 | C6 | D7 | F5 |
| KDN 40-250/260 | B1 | D2 | D1 | D6 | G1 | B4 | D5 | D4 | D7 | G5 |
| KDN 50 160/161 | A2 | C3 | C2 | E1 | D2 | A3 | C7 | C5 | E5 | D5 |
| KDN 50 160/177 | A2 | C5 | C2 | G1 | E3 | A3 | C8 | C5 | G5 | E7 |
| KDN 50-200/190 | A2 | C5 | C2 | G1 | E3 | A3 | C8 | C5 | G5 | E7 |
| KDN 50-200/210 | A2 | C5 | C2 | G1 | E3 | A3 | C8 | C5 | G5 | E7 |
| KDN 50 200/219 | A2 | C5 | C2 | G1 | E3 | A3 | C8 | C5 | G5 | E7 |
| KDN 50-250- 230 | A2 | C5 | C2 | G1 | E3 | A4 | C8 | C6 | G5 | E7 |
| KDN 50-250/250 | B1 | C8 | D1 | G4 | E6 | B4 | C9 | D3 | G7 | E9 |
| KDN 50-250/250 SC | - | C8 | - | G3 | E6 | - | C9 | - | G6 | E8 |
| KDN 50-250/263 | B1 | C8 | D1 | G4 | E6 | B4 | C9 | D3 | G7 | E9 |
| KDN 50-250/263 SC | - | C8 | - | G3 | E6 | - | C9 | - | G6 | E8 |
| KDN 65-160/153 | A2 | C3 | C2 | E1 | D2 | A3 | C7 | C5 | E5 | D5 |
| KDN 65-200/190 | A2 | C5 | C2 | G1 | E3 | A4 | C8 | C6 | G5 | E7 |
| KDN 65-200/200 | A2 | C5 | C2 | G1 | E3 | A4 | C8 | C6 | G5 | E7 |
| KDN 65-250/230 | B1 | C7 | D1 | G3 | E5 | B4 | C9 | D4 | G6 | E9 |
| KDN 65-250/250 | B1 | C8 | D1 | G4 | E6 | B4 | C9 | D3 | G7 | E8 |
| KDN 65-250/250 SC | - | C8 | - | G3 | E6 | - | C9 | - | G6 | E8 |
| KDN 65-250/263 | B2 | C8 | D2 | G4 | E6 | B5 | C9 | D5 | G7 | E9 |
| KDN 65-250/263 SC | - | C8 | - | G3 | E6 | - | C9 | - | G6 | E8 |
| KDN 65-315/275 | B2 | C8 | D2 | G4 | F4 | B5 | C9 | D5 | G7 | F6 |
| KDN 65-315/290-305-320 | C7 | B5 | G2 | E6 | F4 | C10 | B6 | G5 | E9 | F6 |
| KDN 80-160/177 | B1 | C5 | D1 | G1 | E3 | B4 | C8 | D4 | G5 | E7 |
| KDN 80-200/200 | B1 | C8 | D1 | G4 | E6 | B4 | C9 | D4 | G7 | E9 |
| KDN 80-250/240 | B2 | B4 | D2 | E5 | E5 | B5 | B5 | D5 | E8 | E8 |
| KDN 80-250/260 | B3 | B5 | E2 | E6 | E6 | B6 | B6 | E6 | E9 | E9 |
| KDN 80-250/270 | B3 | B5 | E2 | E6 | E6 | B6 | B6 | E6 | E9 | E9 |

**EP:** Electric pump **PP:** Jockey pump **MP:** Motor Pump

# MF CO-TBI

Negative suction head fire-fighting system for outdoor installation with horizontal centrifugal pumps (END-SUCTION), according to UNI EN 12845: 2020 - UNI 11292: 2019 standards. The system includes: parallelepiped-shaped water storage tank, complete with internal tie rods to avoid deformations and integral fire pump room. Compact solution and aesthetically suitable for any environmental context, both industrial and commercial.

**PATENTED**



## TANK AND FIRE PUMP ROOM

- Tank material: S235JR carbon steel according to UNI 10025.
- Fire pump room material: horizontal and vertical steel structure R60; infill elements made with EI60 insulated panels with A2-s1, d0 fire reaction performance class. Roof covering, also made with insulated panels and covered with corrugated sheet, inclined and complete with rainwater collection.
- Components and accessories according to UNI EN 12845:2020 and UNI 11292:2019 fire regulations, see specific section on p. 80, various optional accessories also available.
- System dimensions as per the following tables, fire pump room dimensions compliant with UNI 11292:2019 point 5.2.2, also available to measure, and/or modular for dimensions over 100m$^3$.
- Access: Single or double front door made of A1 fire reaction class steel.
- Painting: internal epoxy bitumen paint, external epoxy cycle and industrial enamel RAL 7030, thickness 120 microns.
- Fire pump room floor: non-slip chequered plate.
- Internal input and output box connections, insulation not required.
- Inspection well included on water reservoir.

## PUMPING GROUP

Pumping system electrically and hydraulically installed inside the fire pump room in positive suction head installation compliant with the UNI EN 12845:2020 standard in the set-ups with electric and/or motor pumps.

MF CO-TBI systems interior

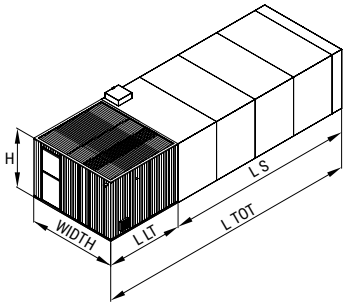
MF CO-TBI systems interior

**MajiFire MF CO-TBI* DIMENSION TABLE**

| Working capacity ($m^3$) | H (mm) | WIDTH (mm) | L LT from-to (mm) | L S (mm) | L TOT from-to (mm) | Reservoir thickness (mm) | Weight from-to ** (q) |
|---|---|---|---|---|---|---|---|
| 5 | 2650 | 2450 | 2200 - 5100 | 1000 | 3200 - 6100 | 4 | 20 - 27 |
| 10 | 2650 | 2450 | 2200 - 5100 | 2000 | 4200 - 7100 | 4 | 24 - 30 |
| 15 | 2650 | 2450 | 2200 - 5100 | 3000 | 5200 - 8100 | 4 | 27 - 34 |
| 20 | 2650 | 2450 | 2200 - 5100 | 3500 | 5700 - 8600 | 4 | 29 - 36 |
| 25 | 2650 | 2450 | 2200 - 5100 | 4500 | 6700 - 9600 | 4 | 32 - 40 |
| 30 | 2650 | 2450 | 2200 - 5100 | 5500 | 7700 - 10600 | 4 | 36 - 43 |
| 40 | 2650 | 2450 | 2200 - 5100 | 7000 | 9200 - 12100 | 4 | 41 - 48 |
| 50 | 2650 | 2450 | 2200 - 5100 | 9000 | 11200 - 14100 | 4 | 48 - 55 |
| 60 | 2650 | 3000 | 2350 - 4450 | 8500 | 10850 - 12950 | 4 | 52 - 60 |
| 70 | 2650 | 3000 | 2350 - 4450 | 10000 | 12350 - 14450 | 4 | 58 - 65 |
| 80 | 2650 | 3000 | 2350 - 4450 | 11500 | 13850 - 15950 | 4 | 64 - 71 |
| 90 | 2650 | 3000 | 2350 - 4450 | 13000 | 13000 - 17450 | 4 | 70 - 77 |
| 100 | 2650 | 3000 | 2350 - 4450 | 14500 | 16850 - 18950 | 4 | 75 - 83 |

* Approximate dimensions to be confirmed upon order

** Empty weight and without pump booster set



# MF TSUB

Outdoor manifold room for fire prevention systems with submersible pumps in the negative suction head version according to UNI EN 12845:2020 standards.

## MANIFOLD ROOM

- Material: horizontal and vertical steel structure and infill elements made with polyurethane insulated panels. Roof covering, also made with insulated panels and covered with corrugated sheet, inclined and complete with rainwater collection.
- Components and accessories selected from those available in the appropriate section on page 80. Various optional accessories also available.
- Manifold room dimensions as per the following tables, also available to measure, and/or made directly on site.
- Opening: Single or double front door made of A1 fire reaction class material.
- Flooring: not included.
- Flanged connection inside the box.


## PUMPING GROUP

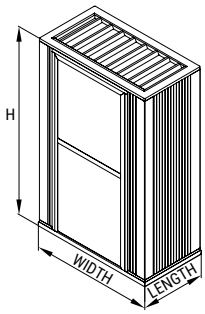
Pumping system supplied separately to the manifold room, which must be secured inside the water tank. Hydraulic and electrical part, secured inside the manifold room, with negative suction head installation, in compliance with UNI EN 12845: 2020 standards, in the set-up with electric pumps only.

### MajiFire MF TSUB* DIMENSION TABLE

| H (mm) | WIDTH (mm) | LENGTH (mm) | Weight (Kg) ** |
|---|---|---|---|
| 1500 | 800 | 1500 | 300 |
| 1500 | 800 | 2000 | 350 |

* Approximate dimensions to be confirmed upon order

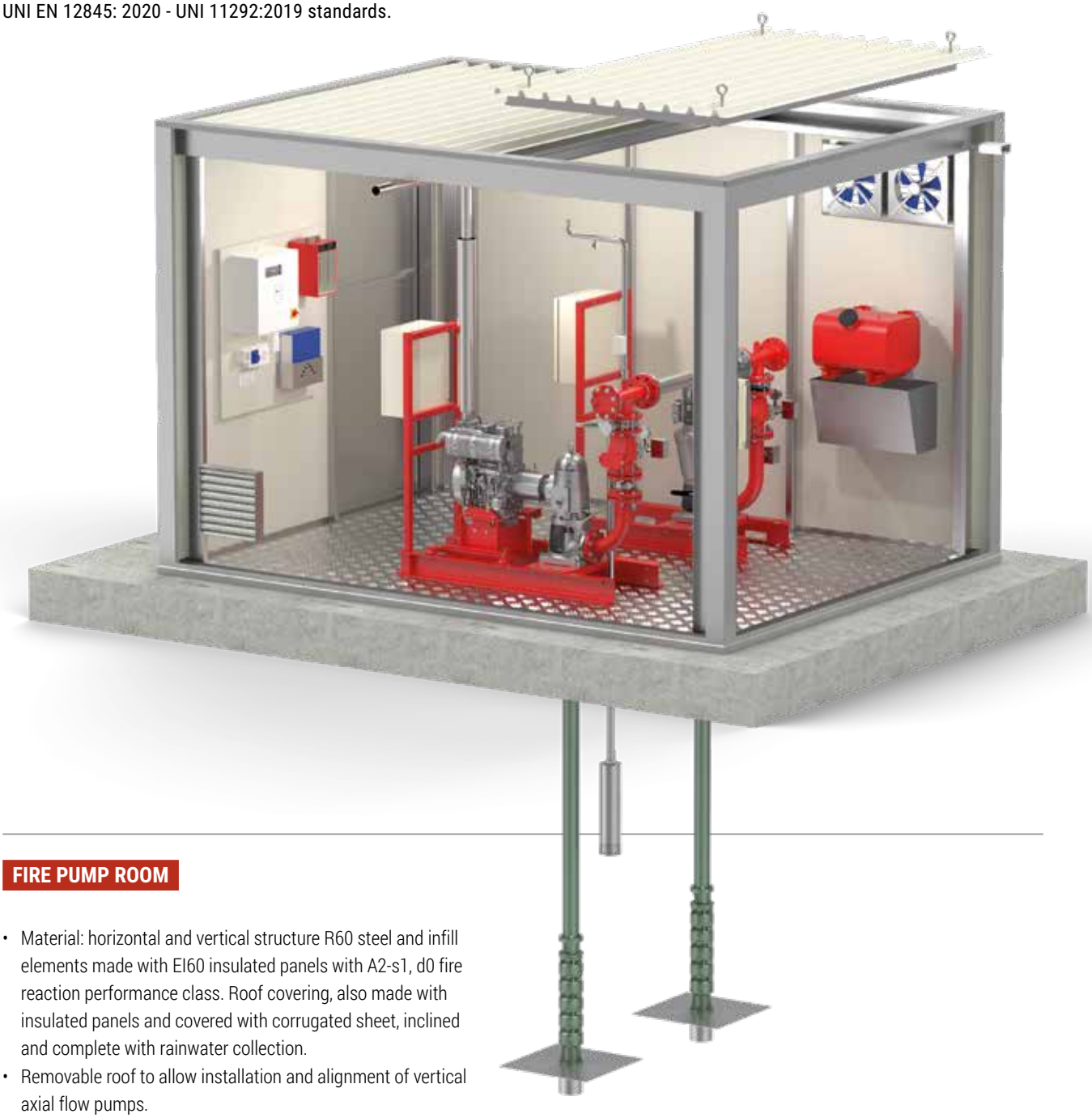
** Excluding pump set weight




MF TSUB interior

# MF TBOX VERT

External fire pump room for fire-fighting systems with vertical axial flow submersible pumps (VERTICAL TURBINE PUMPS), in the negative suction head version according to UNI EN 12845: 2020 - UNI 11292:2019 standards.



## FIRE PUMP ROOM

- Material: horizontal and vertical structure R60 steel and infill elements made with EI60 insulated panels with A2-s1, d0 fire reaction performance class. Roof covering, also made with insulated panels and covered with corrugated sheet, inclined and complete with rainwater collection.
- Removable roof to allow installation and alignment of vertical axial flow pumps.
- Components and accessories according to UNI EN 12845: 2020 and UNI 11292: 2019 fire regulations (see specific section on p. 80). Various optional accessories also available.
- Fire pump room dimensions as per the following tables, in compliance with UNI 11292:2019 standard point 5.2.2, also available to measure and/or made directly on site.
- Access: Single or double front door, made of A1 fire reaction class material.
- Floor: non-slip chequered plate.

## PUMPING GROUP

Pumping system supplied separately and to be installed in the water reservoir on site. Electrical and hydraulic part installed inside the fire pump room in negative suction head installation according to UNI EN 12845:2020 standard in the set-ups with electric and/or motor pumps.

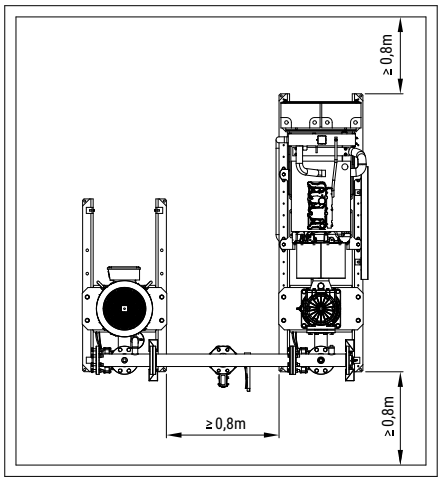
## MajiFire MF TBOX* DIMENSION TABLE

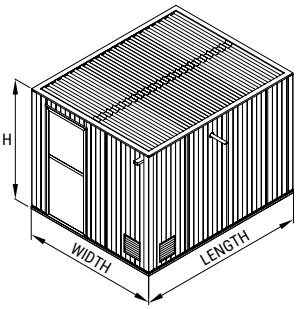
| Class | Fire pump room dimensions (WIDTH x LENGTH - mm) | H (mm) | Weight (Kg) | Layout |
|---|---|---|---|---|
| A1 | 1700x3000 | 2650 | 1010 | 1 |
| A2 | 1700x3200 | | 1070 | |
| B1 | 1850x3200 | 2650 | 1100 | |
| B2 | 1850x3400 | | 1140 | |
| B3 | 1850x3550 | | 1170 | |
| B4 | 1850x4000 | | 1270 | |
| B5 | 1850x4350 | | 1290 | |
| C1 | 2000x4300 | 2650 | 1340 | |
| D1 | 2450x3000 | 2650 | 1260 | |
| D2 | 2450x3200 | | 1290 | |
| E1 | 2600x3550 | 2650 | 1360 | |
| E2 | 2600x4000 | | 1430 | |
| E3 | 2600x4350 | | 1470 | |
| F1 | 2750x3400 | 2650 | 1360 | |
| F2 | 2750x3550 | | 1400 | |
| F3 | 2750x4000 | | 1435 | |
| F4 | 2750x4350 | | 1520 | |
| G1 | 2850x4300 | 2650 | 1550 | |
| H1 | 3000x4300 | | 1640 | |

* Approximate dimensions to be confirmed upon order

### Layout

1




## FIRE PUMP ROOM CLASS SELECTION TABLE ACCORDING TO PUMPING GROUP

| GROUP MODEL | CLASS | | | | |
|---|---|---|---|---|---|
| | 1 EP + PP | 1 MP + PP | 2 EP + PP | 2 MP + PP | 1 EP + 1 MP + PP |
| KVT6 03/4 | A1 | B4 | D1 | F3 | E2 |
| KVT6 03/5 | A1 | B4 | D1 | F3 | E2 |
| KVT6 03/6 | A1 | B4 | D1 | F3 | E2 |
| KVT6 03/7 | A1 | B4 | D1 | F3 | E2 |
| KVT6 03/8 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/4 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/5 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/6 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/7 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/8 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/9 | A1 | B4 | D1 | F3 | E2 |
| KVT6 23/4 | A1 | B3 | D1 | F2 | E1 |
| KVT6 23/5 | A1 | B3 | D1 | F2 | E1 |
| KVT6 23/6 | A1 | B3 | D1 | F2 | E1 |
| KVT6 23/7 | A1 | B3 | D1 | F2 | E1 |
| KVT8 13N/4 | A1 | B4 | D1 | F3 | E2 |
| KVT8 13N/5 | A1 | B4 | D1 | F3 | E2 |
| KVT8 13N/6 | A1 | B5 | D1 | F4 | E3 |
| KVT8 24N/5 | A1 | B5 | D1 | F4 | E3 |
| KVT8 35N/5 | A2 | B5 | D2 | F4 | E3 |
| KVT8 45N/2 | A2 | B5 | D2 | F3 | E2 |
| KVT8 45N/4 | A2 | B5 | D2 | F4 | E3 |
| KVT10 15N/2A | B2 | B5 | F1 | F4 | E3 |
| KVT10 15N/3CD | B1 | C1 | F1 | H1 | G1 |
| KVT10 26N/3A | B2 | C1 | F1 | H1 | G1 |

**EP:** Electric pump **PP:** Pilot Pump **MP:** Motor Pump

Fire pump room interior

KVT group detail


MAJITEKNO
LOCALE
ANTINCENDIO

# MF CO-HSUB

Negative suction head fire-fighting system for outdoor installation with submersible pumps according to UNI EN 12845:2020 standards. The system includes: 1500 and 3000 L parallelepiped water storage tank, with submersible pumps installed inside the tank and hydraulic and electrical parts of the fire-fighting unit installed externally on the system. Compact solution with reduced dimensions and easy installation, suitable for tourist - hotel and school contexts, able to guarantee fire protection for structures with at most 100 beds.

## TANK

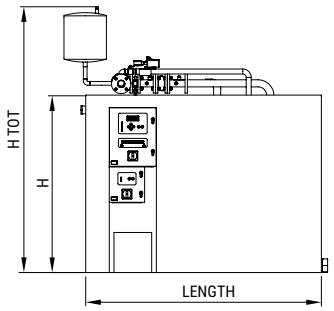
- Material: Galvanised steel/ S235JR carbon steel according to UNI 10025.
- Components and accessories according to UNI EN 12845:2020 and UNI 11292:2019 fire regulations, see specific section on p. 80, various optional accessories also available.
- System dimensions as per the following tables, available also made to measure.
- Painting: internal and external: 120 micron thick epoxy bitumen paint or galvanised coat.

## PUMPING GROUP

Pumping system hydraulically installed inside the tank in negative suction head installation according to UNI EN 12845:2020 standard in the set-ups with electric pumps, DAB produced and certified.

Render of MF CO-HSUB system with application example

MF CO-HSUB system

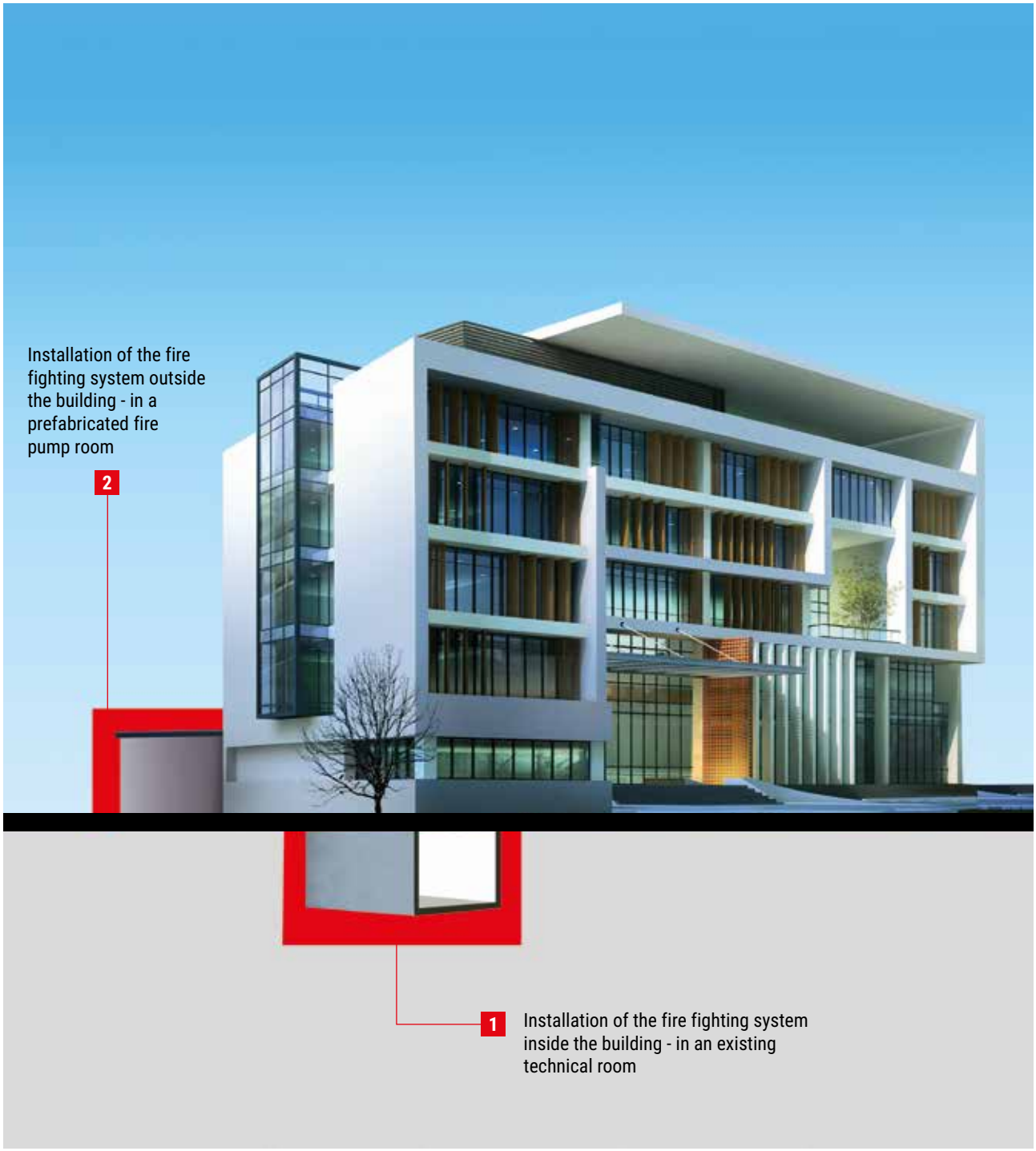



## MajiFire MF H-SUB* DIMENSION TABLE

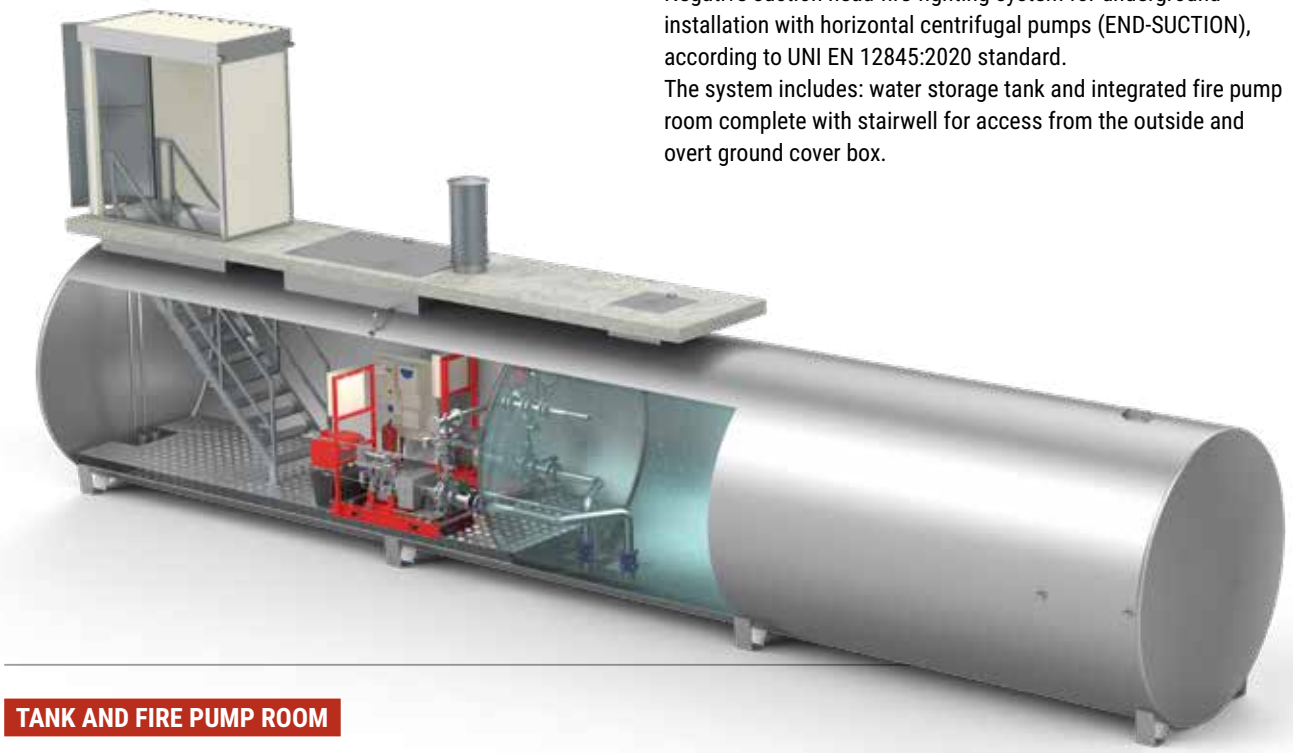
| Capacity (L) | H (mm) | H TOT (mm) | WIDTH (mm) | LENGTH (mm) | Weight (Kg) ** |
|---|---|---|---|---|---|
| 1500 | 1400 | 2200 | 800 | 1400 | 900 |
| 3000 | 1600 | 2400 | 1200 | 1600 | 1100 |

* Approximate dimensions to be confirmed upon order
** Excluding group weight

## Example installation



# MF CI-TIC



Negative suction head fire-fighting system for underground installation with horizontal centrifugal pumps (END-SUCTION), according to UNI EN 12845:2020 standard.
The system includes: water storage tank and integrated fire pump room complete with stairwell for access from the outside and overt ground cover box.

## TANK AND FIRE PUMP ROOM

- Fire pump room and stairwell located inside the tank
- Tank material: S235JR carbon steel according to UNI 10025.
- Fire pump room material: horizontal and vertical bearing structure made of R60 steel and infill elements made with EI60 insulated panels with A2-s1, d0 fire reaction performance class. Roof covering, also made with insulated panels and covered with corrugated sheet, inclined and complete with rainwater collection.
- Components and accessories according to UNI EN 12845: 2020 and UNI 11292: 2019 fire regulations (see specific section on p. 80). Various options are also available, such as reinforcements to make the system suitable for vehicles and anti-floating devices in the event of groundwater.
- System dimensions as per the following tables.
  Also available made to measure, and/or modular in dimensions over 100 $m^3$.
- Access: Single front door made with A1 class fire reaction material, accessible via a straight staircase complete with handrail compliant with UNI 10803 and UNI 10804 standards.
- Tank painting: internal and external: 120 micron thick epoxy bitumen paint.
- Fire pump room floor: non-slip chequered plate.
- There is an inspection pit on the tank for the water side and a pit on the pump side, to extract the pumping units in case of maintenance.

MF CI-TIC system access box

MF CI-TBI system interior

Anti-flooding system detail

**MajiFire MF CI-TIC* DIMENSION TABLE**

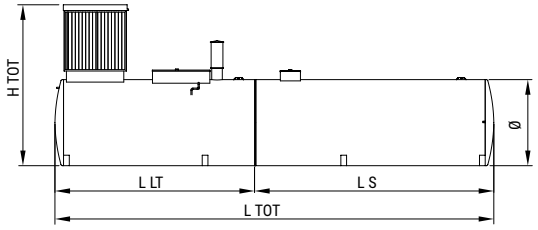
| Working capacity ($m^3$) | Ø (mm) | L LT from-to (mm) | L S (mm) | L TOT from-to (mm) | Thickness (mm) | Weight from-to ** (q) |
|---|---|---|---|---|---|---|
| 10 | 3000 | 5000 - 6600 | 2000 | 7000 - 8600 | 6 | 61 - 65 |
| 15 | 3000 | 5000 - 6600 | 2500 | 7500 - 9100 | 6 | 63 - 67 |
| 20 | 3000 | 5000 - 6600 | 3500 | 8500 - 10100 | 6 | 68 - 72 |
| 25 | 3000 | 5000 - 6600 | 4000 | 9000 - 10600 | 6 | 70 - 74 |
| 30 | 3000 | 5000 - 6600 | 5000 | 10000 - 11600 | 6 | 74 - 78 |
| 40 | 3000 | 5000 - 6600 | 6500 | 11500 - 13100 | 6 | 80 - 85 |
| 50 | 3000 | 5000 - 6600 | 8000 | 13000 - 14600 | 6 | 88 - 92 |
| 60 | 3000 | 5000 - 6600 | 9000 | 14000 - 15600 | 6 | 92 - 96 |
| 70 | 3000 | 5000 - 6600 | 10500 | 15500 - 17100 | 6 | 98 - 103 |
| 72 | 3000 | 5000 - 6600 | 11000 | 16000 - 17600 | 6 | 100 - 105 |
| 80 | 3000 | 5000 - 6600 | 12000 | 17000 - 18600 | 6 | 105 - 109 |
| 90 | 3000 | 5000 - 6600 | 13500 | 18500 - 20100 | 6 | 111 - 116 |
| 100 | 3000 | 5000 - 6600 | 15000 | 20000 - 21600 | 6 | 118 - 122 |

* Approximate dimensions to be confirmed upon order

** Empty weight and without pumping group

## PUMPING GROUP

Pumping system electrically and hydraulically installed inside the fire pump room in negative suction head installation, the UNI EN 12845:2020 standard in the set-ups with electric and/or motor pumps.




MF CI-TIC system with anchoring system

# MF CI-TIU

Negative suction head fire-fighting system for underground installation with horizontal centrifugal pumps (END-SUCTION), according to UNI EN 12845:2020 standard. The system includes: water storage tank and integrated fire pump room complete with uncovered stairwell with safety rail for access from the outside and pump compartment separation wall.

## TANK AND FIRE PUMP ROOM

- Fire pump room and stairwell located inside the tank.
- Tank material: S235JR carbon steel according to UNI 10025.
- Components and accessories according to UNI EN 12845: 2020 and UNI 11292: 2019 fire regulations (see specific section on p. 80). Various options are also available, such as reinforcements to make the system suitable for vehicles and anti-floating devices in the event of groundwater.
- System dimensions as per the following tables. Also available made to measure, and/or modular in dimensions over 100 $m^3$.
- Access: safety parapet leading to a straight staircase with handrail, compliant with UNI 10803 and UNI 10804 standards and to a single front door made with A1 fire reaction class material.
- Tank painting: internal and external: 120 micron thick epoxy bitumen paint.
- Fire pump room floor: non-slip chequered plate.
- There is an inspection pit on the tank for the water side and a pit on the pump side, to extract the pumping units in case of maintenance.

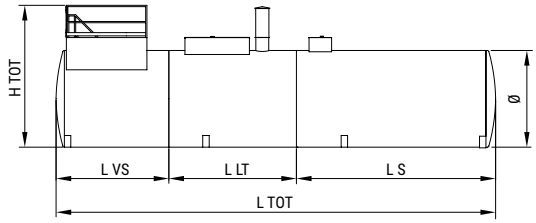

MF CI-TIU fire pump room access door detail

MF CI-TIU interior

MF CI-TIU access stairs detail


## PUMPING GROUP

Pumping system electrically and hydraulically installed inside the tank in positive suction head installation compliant with the UNI EN 12845:2020 standard in the set-ups with electric and/or motor pumps.




### MajiFire MF CI-TIU* DIMENSION TABLE

| Working capacity ($m^3$) | Ø (mm) | L VS (mm) | L LT from-to (mm) | L S (mm) | L TOT from-to (mm) | Thickness (mm) | Weight from-to ** (q) |
|---|---|---|---|---|---|---|---|
| 10 | 3000 | 3500 | 2500 - 4100 | 2000 | 8000 - 9600 | 6 | 82 - 90 |
| 15 | 3000 | 3500 | 2500 - 4100 | 2500 | 8500 - 10100 | 6 | 83 - 92 |
| 20 | 3000 | 3500 | 2500 - 4100 | 3500 | 9500 - 11100 | 6 | 88 - 96 |
| 25 | 3000 | 3500 | 2500 - 4100 | 4000 | 10000 - 11600 | 6 | 90 - 98 |
| 30 | 3000 | 3500 | 2500 - 4100 | 5000 | 11000 - 12600 | 6 | 94 - 102 |
| 40 | 3000 | 3500 | 2500 - 4100 | 6500 | 12500 - 14100 | 6 | 100 - 109 |
| 50 | 3000 | 3500 | 2500 - 4100 | 8000 | 14000 - 15600 | 6 | 108 - 115 |
| 60 | 3000 | 3500 | 2500 - 4100 | 9000 | 15000 - 16600 | 6 | 112 - 120 |
| 70 | 3000 | 3500 | 2500 - 4100 | 10500 | 16500 - 18100 | 6 | 119 - 127 |
| 72 | 3000 | 3500 | 2500 - 4100 | 11000 | 17000 - 18600 | 6 | 120 - 129 |
| 80 | 3000 | 3500 | 2500 - 4100 | 12000 | 18000 - 19600 | 6 | 125 - 133 |
| 90 | 3000 | 3500 | 2500 - 4100 | 13500 | 19500 - 21100 | 6 | 131 - 140 |
| 100 | 3000 | 3500 | 2500 - 4100 | 15000 | 21000 - 22600 | 6 | 139 - 147 |

* Approximate dimensions to be confirmed upon order

** Empty weight and without pumping group

# MF CI-VERT

Fire-fighting system with vertical axial flow submersible pumps (VERTICAL TURBINE PUMPS), in the negative suction head version according to UNI EN 12845:2020 - UNI 11292:2019 standards. The system includes: underground water storage tank and outdoor fire pump room, over the tank.

## TANK AND FIRE PUMP ROOM

- Tank material: S235JR carbon steel according to UNI 10025.
- Material: horizontal and vertical bearing structure made of R60 steel and infill elements made with EI60 insulated panels with A2-s1, d0 fire reaction performance class.
  Roof covering, also made with insulated panels and covered with corrugated sheet, inclined and complete with rainwater collection.
- Removable roof to allow installation and alignment of vertical axial flow submersible pumps.
- Components and accessories according to UNI EN 12845: 2020 and UNI 11292: 2019 fire regulations (see specific section on p. 80). Various options are also available, such as reinforcements to make the system suitable for vehicles and anti-floating devices in the event of groundwater.
- System dimensions as per the following tables.
  Fire pump room dimensions in compliance with UNI 11292:2019 standard point 5.2.2. Also available to measure and/or made directly on site.
- Access: Single or double front door made of A1 fire reaction class material.
- Floor: non-slip chequered plate.
- Tank painting: internal and external: 120 micron thick epoxy bitumen paint.
- An inspection pit and one for the passage of the pumping group shaft lines are provided on the water reservoir.

Shaft line installation detail


Underground water reservoir with additional hatch for shaft line passage

## PUMPING GROUP

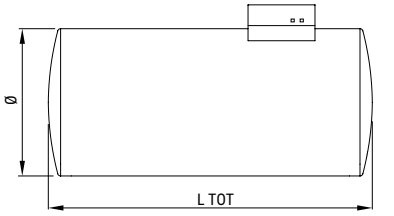
Pumping system supplied separately and to be installed in the water reservoir on site. Electrical and hydraulic part installed inside the fire pump room in negative suction head installation according to UNI EN 12845:2020 standard in the set-ups with electric and/or motor pumps.

Fire pump room interior

KVT group head detail

## MajiFire MF CI-VERT DIMENSION TABLE (tank only)*

| Working capacity ($m^3$) | Ø (mm) | L TOT (mm) | Thickness (mm) | Weight (q) ** |
|---|---|---|---|---|
| 10 | 2000 | 4000 | 4 | 15 |
| 20 | 2500 | 5000 | 5 | 25 |
| 30 | 2500 | 7000 | 5 | 30 |
| 40 | 2500 | 9000 | 5 | 36 |
| 50 | 2500 | 11000 | 5 | 43 |
| 60 | 3000 | 9000 | 6 | 53 |
| 70 | 3000 | 10500 | 6 | 59 |
| 72 | 3000 | 11000 | 6 | 61 |
| 80 | 3000 | 12000 | 6 | 68 |
| 90 | 3000 | 13500 | 6 | 74 |
| 100 | 3000 | 15000 | 6 | 81 |

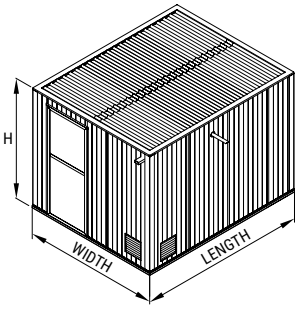



* Approximate dimensions to be confirmed upon order

** Empty weight and without pumping group

## MajiFire MF CI-VERT DIMENSION TABLE (TBOX VERT only)*

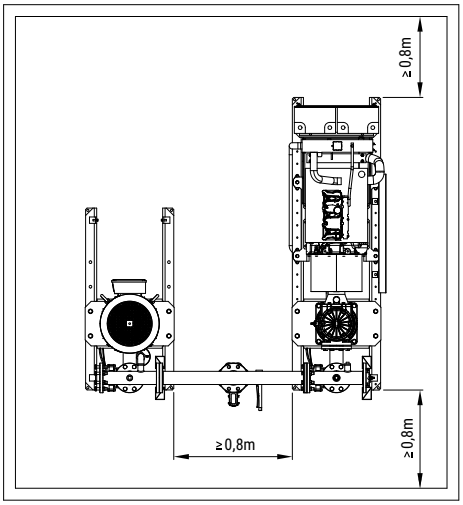
| Class | Fire pump room dimensions (WIDTH x LENGTH - mm) | H (mm) | Weight (kg) | Layout |
|---|---|---|---|---|
| A1 | 1700x3000 | 2650 | 1010 | 1 |
| A2 | 1700x3200 | | 1070 | |
| B1 | 1850x3200 | 2650 | 1100 | |
| B2 | 1850x3400 | | 1140 | |
| B3 | 1850x3550 | | 1170 | |
| B4 | 1850x4000 | | 1270 | |
| B5 | 1850x4350 | | 1290 | |
| C1 | 2000x4300 | 2650 | 1340 | |
| D1 | 2450x3000 | 2650 | 1260 | |
| D2 | 2450x3200 | | 1290 | |
| E1 | 2600x3550 | 2650 | 1360 | |
| E2 | 2600x4000 | | 1430 | |
| E3 | 2600x4350 | | 1470 | |
| F1 | 2750x3400 | 2650 | 1360 | |
| F2 | 2750x3550 | | 1400 | |
| F3 | 2750x4000 | | 1435 | |
| F4 | 2750x4350 | | 1520 | |
| G1 | 2850x4300 | 2650 | 1550 | |
| H1 | 3000x4300 | | 1640 | |




* Approximate dimensions to be confirmed upon order

## Layout

1



## FIRE PUMP ROOM CLASS SELECTION TABLE ACCORDING TO PUMPING GROUP

| GROUP MODEL | CLASS | | | | |
|---|---|---|---|---|---|
| | 1 EP + PP | 1 MP + PP | 2 EP + PP | 2 MP + PP | 1 EP + 1 MP + PP |
| KVT6 03/4 | A1 | B4 | D1 | F3 | E2 |
| KVT6 03/5 | A1 | B4 | D1 | F3 | E2 |
| KVT6 03/6 | A1 | B4 | D1 | F3 | E2 |
| KVT6 03/7 | A1 | B4 | D1 | F3 | E2 |
| KVT6 03/8 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/4 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/5 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/6 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/7 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/8 | A1 | B4 | D1 | F3 | E2 |
| KVT6 13/9 | A1 | B4 | D1 | F3 | E2 |
| KVT6 23/4 | A1 | B3 | D1 | F2 | E1 |
| KVT6 23/5 | A1 | B3 | D1 | F2 | E1 |
| KVT6 23/6 | A1 | B3 | D1 | F2 | E1 |
| KVT6 23/7 | A1 | B3 | D1 | F2 | E1 |
| KVT8 13N/4 | A1 | B4 | D1 | F3 | E2 |
| KVT8 13N/5 | A1 | B4 | D1 | F3 | E2 |
| KVT8 13N/6 | A1 | B5 | D1 | F4 | E3 |
| KVT8 24N/5 | A1 | B5 | D1 | F4 | E3 |
| KVT8 35N/5 | A2 | B5 | D2 | F4 | E3 |
| KVT8 45N/2 | A2 | B5 | D2 | F3 | E2 |
| KVT8 45N/4 | A2 | B5 | D2 | F4 | E3 |
| KVT10 15N/2A | B2 | B5 | F1 | F4 | E3 |
| KVT10 15N/3CD | B1 | C1 | F1 | H1 | G1 |
| KVT10 26N/3A | B2 | C1 | F1 | H1 | G1 |

**EP:** Electric pump **PP:** Jockey pump **MP:** Motor Pump

# MF CI-TSUB

Negative suction head fire-fighting system for underground installation with submersible pumps according to UNI EN 12845:2020 standards.
Fire fighting system including water storage tank with submersible pumps fixed inside the tank and hydraulic part and fire fighting unit electrical cables installed externally in a manifold room.

## TANK AND MANIFOLD ROOM

- Tank material: S235JR carbon steel according to UNI 10025.
- Material: horizontal and vertical bearing steel structure and infill elements made with polyurethane insulated panels. Roof covering, also made with insulated panels and covered with corrugated sheet, inclined and complete with rainwater collection.
- Components and accessories selected from those available in the appropriate section on page 80. Various optionals are also available, such as reinforcements to make the system suitable for vehicles and anti-floating devices in the event of groundwater.
- System dimensions as per the following tables.
  Also available to measure and/or made directly on site.
- Opening: Single or double front door, made of A1 fire reaction class material.
- Manifold room floor: not included.
- Flanged connection inside the box.
- Tank painting, internal and external: 120 micron thick bitumen epoxy paint.
- Inspection well included on water reservoir.

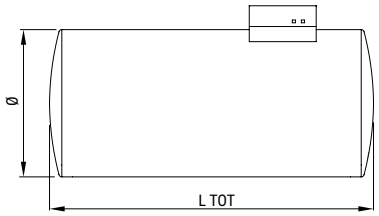

Hydraulic and electrical group with submersible pump housing box

**MajiFire MF CI-TSUB DIMENSION TABLE (tank only)***

| Working capacity ($m^3$) | Ø (mm) | L TOT (mm) | Thickness (mm) | Weight (q) ** |
|---|---|---|---|---|
| 10 | 2000 | 4000 | 4 | 20 - 24 |
| 20 | 2500 | 5000 | 5 | 27 - 31 |
| 30 | 2500 | 7000 | 5 | 33 - 37 |
| 40 | 2500 | 9000 | 5 | 40 - 44 |
| 50 | 2500 | 11000 | 5 | 46 - 50 |
| 60 | 3000 | 9000 | 6 | 53 - 57 |

* Approximate dimensions to be confirmed upon order

** Empty weight and without pumping group

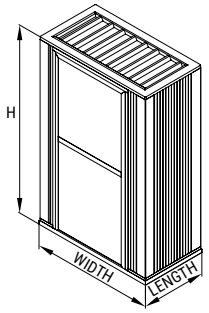



**MajiFire MF CI-TSUB DIMENSION TABLE (TSUB only)***

| H (mm) | WIDTH (mm) | LENGTH (mm) | Weight (Kg) ** |
|---|---|---|---|
| 1500 | 800 | 1500 | 300 |
| 1500 | 800 | 2000 | 350 |

* Approximate dimensions to be confirmed upon order

** Empty weight and without pumping group




## PUMPING GROUP

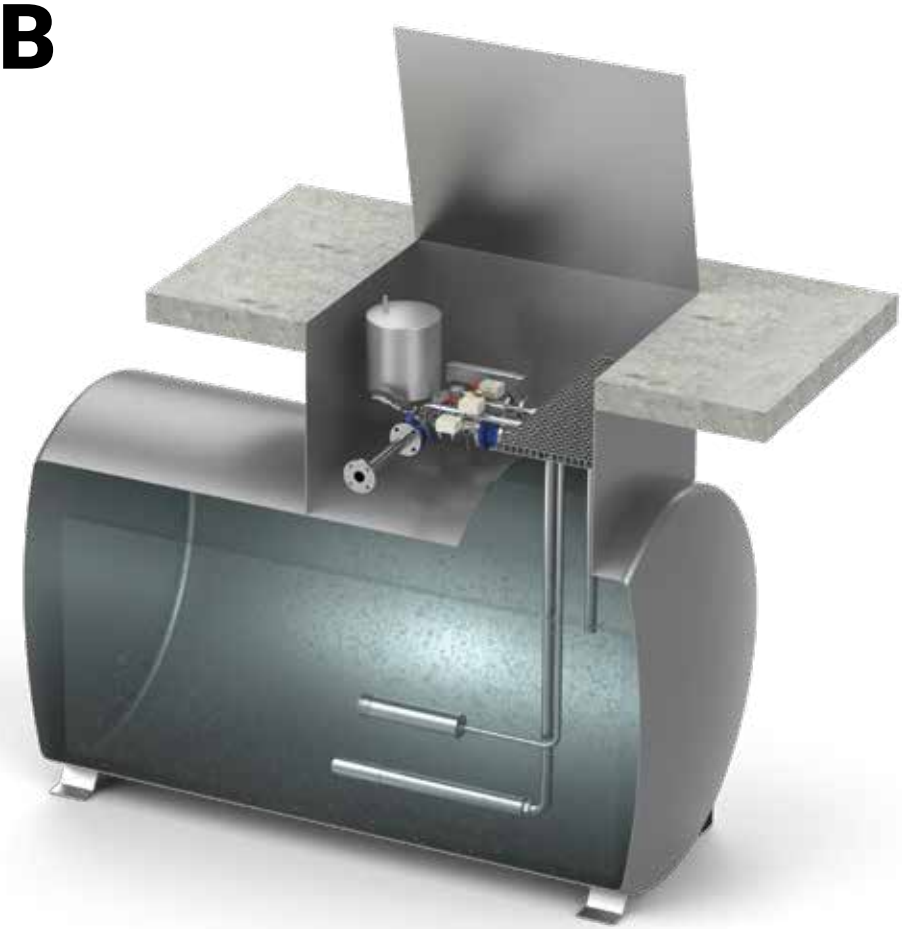
Pumping system hydraulically installed inside the tank, hydraulic and electrical part secured inside the manifold room, with negative suction head, in compliance with UNI EN 12845:2020 standards, in the set-up with electric pumps only.


Reservoir with submersible pumps installed inside

MF TSUB interior

# MF CI-SUB

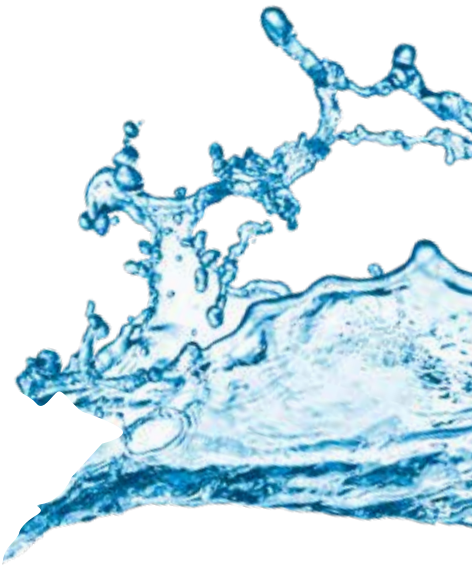
Negative suction head fire-fighting system for underground installation with submersible pumps according to UNI EN 12845:2020 standards. The system includes: underground water storage tank, with submersible pumps installed inside and the hydraulic part of the fire-fighting unit installed in the tank well; electrical part supplied separately to be put in a separate room.



## TANK AND MANIFOLD ROOM

- Tank material: S235JR carbon steel according to UNI 10025.
- Components and accessories selected from those available in the appropriate section on page 80. Various options are also available, such as reinforcements to make the system suitable for vehicles and anti-floating devices in the event of groundwater.
- System dimensions as per the following tables. Also available to measure.
- Tank painting; internal and external: 120 micron thick epoxy bitumen paint.
- There is an inspection well on the water reservoir for the water side and one for housing the hydraulic part of the pumping group.

MF CI-SUB internal hatch detail

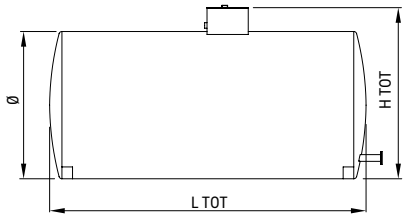


## PUMPING GROUP

Pumping system hydraulically installed inside the tank in negative suction head installation according to UNI EN 12845:2020 standard in the set-ups with electric pumps.

### MajiFire MF CI-SUB* DIMENSION TABLE

| Working capacity ($m^3$) | Ø (mm) | L TOT (mm) | Thickness (mm) | Weight (q) ** |
|---|---|---|---|---|
| 10 | 2000 | 4000 | 4 | 16 |
| 20 | 2500 | 5000 | 5 | 22 |
| 30 | 2500 | 7000 | 5 | 27 |
| 40 | 2500 | 9000 | 5 | 34 |
| 50 | 2500 | 11000 | 5 | 41 |
| 60 | 3000 | 9000 | 6 | 59 |




* Approximate dimensions to be confirmed upon order

** Empty weight and without pumping group


MF CI-SUB system

# MF CO-TW

## WELDED VERSION

Vertical outdoor welded version
water storage tank.

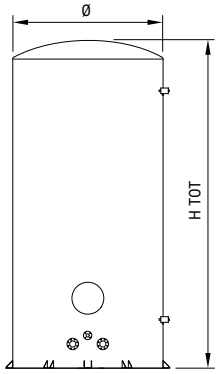
Special executions and constructions on request

### WATER STORAGE TANK

- Material: S235JR carbon steel according to UNI 10025.
- Components and accessories according to UNI EN 12845:2020 fire regulations (see specific section on p. 80).
  Various optional accessories also available.
- System dimensions as per the following tables, also available to measure, and/or made directly on site.
- Welded version painting: epoxy bitumen paint for the interior, epoxy cycle paint and RAL 7030 industrial enamel for the exterior finish, thickness 120 micron.
- There are connections on the tank to attach the pumping group and two inspection wells: one of heavy type in the lower part of the tank, diameter Ø 600 mm, and a light type at the top of the tank, 700x700 mm.
- Ladder for access to the top of the tank, complete with resting surface (for ladders over 10 m in height) and protective cage, available on request.

**MajiFire MF CO-TW* DIMENSION TABLE (welded version)**

| Working capacity ($m^3$) | Ø (mm) | H TOT (mm) | Thickness (mm) | Weight (q) ** |
|---|---|---|---|---|
| 10 | 2000 | 4000 | 4 | 14 |
| 20 | 2500 | 5000 | 5 | 24 |
| 30 | 2500 | 7000 | 5 | 29 |
| 40 | 2500 - 3000 | 9000 - 6000 | 5 | 35 - 32 |
| 50 | 2500 - 3000 | 11000 - 7500 | 5 | 42 - 39 |
| 60 | 3000 | 9000 | 6 | 52 |
| 70 | 3000 | 10500 | 6 | 58 |
| 72 | 3000 | 11000 | 6 | 60 |
| 80 | 3000 | 12000 | 6 | 67 |
| 90 | 3000 | 13500 | 6 | 73 |
| 100 | 3000 | 15000 | 6 | 80 |
| 200*** | 6500 | 7000 | 5-6 | 105 |
| 300*** | 7500 | 8000 | 5-6 | 138 |
| 500*** | 9500 | 8000 | 5-6 | 180 |
| 750*** | 10000 | 10000 | 5-6 | 230 |




* Approximate dimensions to be confirmed upon order

** Empty weight and without pumping group

*** Constructed directly on site

Available with higher capacity executions and dimensions on request

# MF CO-TW

## PANELLED VERSION

Vertical outdoor water storage tank made directly on site in the bolted modular version with internal membrane.

### WATER STORAGE TANK

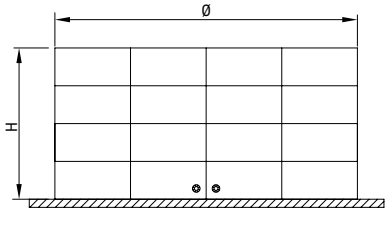
- Material: magnesium galvanised steel compliant with the UNI 10025 standard, with hot-dip galvanised profiled steel beam structure, S350GD + Z350g/m² flat galvanised steel sheet side panels thickness 20-30/10 mm and internal membrane made of EPDM or PVC.
- Components and accessories according to UNI EN 12845:2020 fire regulations (see specific section on p. 80).
  Various optional accessories also available.
- System dimensions as per the following tables, available also made to measure.
- There are connections on the tank to attach the pumping group, two inspection wells: one of heavy type in the lower part of the tank, diameter Ø 600 mm, and a light type at the top of the tank, Ø 500 mm.
- Ladder for access to the top of the tank, complete with resting surface (for ladders over 10 m in height) and protective cage and rail around the stairwell, available on request.

**DIMENSION TABLE MajiFire MF CO-TW* (panelled version) - Constructed directly on site**

| | Working capacity ($m^3$) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H (m) | | | | | | | | | | | | | | |
| Ø (m) | 2.4 | 3 | 3.6 | 4.2 | 4.8 | 5.4 | 6 | 6.6 | 7.2 | 7.8 | 8.4 | 9 | 9.6 | 10.2 | 10.8 |
| 4.675 | 25 | 35 | 45 | 55 | 65 | 75 | 85 | 95 | 105 | 115 | 125 | 135 | 145 | 155 | 165 |
| 5.455 | 35 | 50 | 60 | 75 | 90 | 105 | 115 | 130 | 145 | 155 | 170 | 185 | 200 | 210 | 225 |
| 6.235 | 45 | 65 | 80 | 100 | 120 | 135 | 155 | 170 | 190 | 205 | 225 | 245 | 260 | 280 | 295 |
| 7.015 | 60 | 80 | 105 | 130 | 150 | 175 | 195 | 220 | 240 | 265 | 285 | 310 | 330 | 355 | 375 |
| 7.795 | 75 | 105 | 130 | 160 | 185 | 215 | 245 | 270 | 300 | 325 | 355 | 385 | 410 | 440 | 465 |
| 8.575 | 90 | 125 | 160 | 195 | 225 | 260 | 295 | 330 | 365 | 395 | 430 | 465 | 500 | 535 | 565 |
| 9.355 | 110 | 150 | 190 | 2320 | 270 | 310 | 350 | 395 | 435 | 475 | 515 | 555 | 595 | 635 | 675 |
| 10.135 | 130 | 175 | 225 | 270 | 320 | 365 | 415 | 460 | 510 | 555 | 605 | 655 | 700 | 750 | 795 |
| 10.915 | 150 | 205 | 260 | 315 | 370 | 425 | 480 | 535 | 590 | 650 | 705 | 760 | 815 | 870 | 925 |

* Approximate dimensions to be confirmed upon order

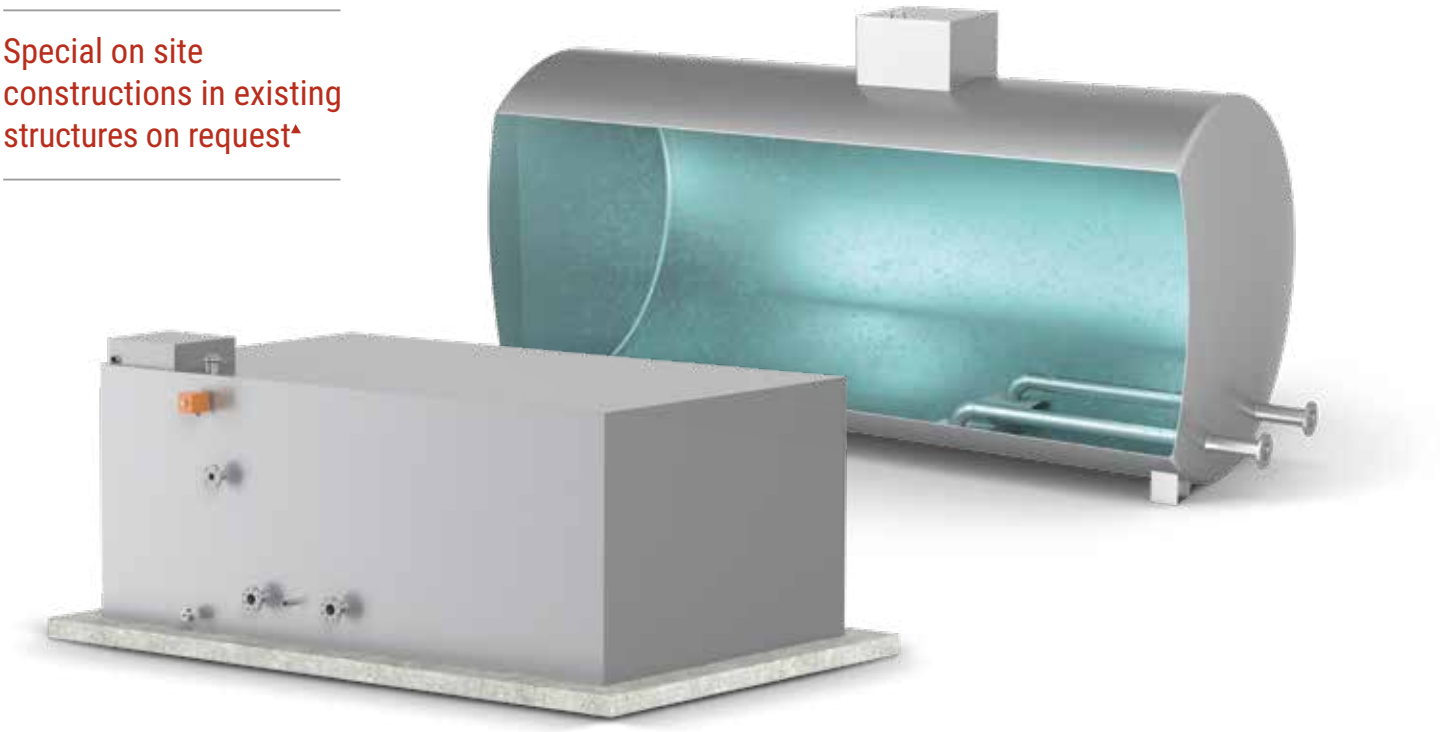
Available with higher capacity executions and dimensions on request



# MF CO / MF CI

Water storage tank:
Outdoor MF CO and underground MF CI

Special on site constructions in existing structures on request▲



▲ Parallelepiped versions on request (only for outdoor installations)

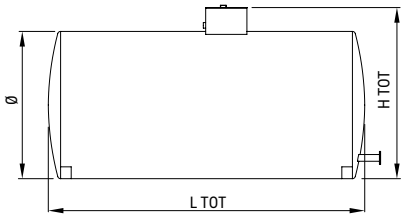
Plant constructed directly on site

## WATER STORAGE TANK

- Material: S235JR carbon steel according to UNI 10025.
- Components and accessories according to UNI EN 12845:2020 fire regulations (see specific section on p. 80).
  Various optional accessories also available.
- System dimensions as per the following tables. Also available to measure, and/or made directly on site (only for outdoor tanks) and in the drive-over version (only for underground tanks).
- Underground tank internal and external painting: 120 micron thick epoxy bitumen paint.
- Outdoor version , internal painting: epoxy bitumen paint. External painting: epoxy cycle paint and RAL 7030 industrial enamel finish, thickness 120 micron.
- The tank is equipped with connections to attach the pumping group, and a 700x700mm inspection pit on the top.

### MajiFire MF CO/CI* DIMENSION TABLE

| Working capacity ($m^3$) | Ø (mm) | L TOT (mm) | Thickness (mm) | Weight (q) ** |
|---|---|---|---|---|
| 10 | 2000 | 4000 | 4 | 15 |
| 20 | 2500 | 5000 | 5 | 21 |
| 30 | 2500 | 7000 | 5 | 27 |
| 40 | 2500 | 9000 | 5 | 33 |
| 50 | 2500 | 11000 | 5 | 40 |
| 60 | 3000 | 9000 | 6 | 47 |
| 70 | 3000 | 10500 | 6 | 54 |
| 72 | 3000 | 11000 | 6 | 55 |
| 80 | 3000 | 12000 | 6 | 60 |
| 90 | 3000 | 13500 | 6 | 67 |
| 100 | 3000 | 15000 | 6 | 71 |




* Approximate dimensions to be confirmed upon order

** Empty weight and without pumping group

Available with higher capacity executions and dimensions on request

# MF CI - VRC

## Prefabricated vibrated reinforced concrete version

Prefabricated mono bloc vibrated reinforced concrete tanks with hydraulic seal, with pressurised water penetration certification of verification according to the UNI EN 12390-8 standard:
Outdoor MF CO and underground MF CI

### WATER STORAGE TANK

- Material: reinforced concrete made with PORTLAND CEMENT type I 52.5R, resistant to sulphates according to UNI 9156 (with instruction: epoxy resin finish), vibrated in metal formworks for the total elimination of porosity and gravel nests, added with super-plasticizer, resistance class C 45/55, with a minimum cement content of 400 kg/m³, XA3 environmental exposure classes compliant with the standard UNI 206-1, with double round steel reinforcement with improved adhesion and factory tested type B450C electro-welded meshes; a 2 cm thick concrete plate block compliant to Italian Ministerial Decree 17.01.2018 and current anti-seismic law.
- Components and accessories according to UNI EN 12845:2020 fire regulations (see specific section on p. 80).
  Various optional accessories also available.
- System dimensions as per the following tables, also available to measure, and/or made directly on site.
- Cover: tanks available without cover, or with separate cover, resting directly on the edges, or with mono bloc cover. For the underground versions, the cover is available with a thickness of 150 mm for light vehicle access, or with a thickness of 200 mm for heavy vehicle access, according to the UNI EN 124 standard.
- Inspection openings measuring 700x700 mm are provided on the tanks. PVC joints, stainless steel flanges, galvanised or stainless steel sleeves of various sizes can also be applied.
- In the event of any problems deriving from the presence of groundwater, prefabricated tanks and cisterns made of vibrated reinforced concrete for anti-floating can be prepared.

**Features**

| Capacity ($m^3$) | External dimensions (mm) thickness 110 mm | Weight (q) |
|---|---|---|
| 1.6 | 1500x1050 - H 150 + cover | 16 + cover |
| 2.1 | 1500x1050 - H 180 + cover | 20 + cover |
| 2.1 | 1600x1300 - H 140 + cover | 21 + cover |
| 2.7 | 1600x1300 - H 180 + cover | 25 + cover |
| 3.1 | 1600x1300 - H 200 + cover | 28 + cover |
| 3.5 | 2000x1500 - H 150 + cover | 28 + cover |
| 4.1 | 2000x1500 - H 180 + cover | 32 + cover |
| 4.6 | 2000x1500 - H 200 + cover | 35 + cover |
| 5.1 | 2000x1500 - H 220 + cover | 38 + cover |
| 5.5 | 2500x2100 - H 150 + cover | 46 + cover |
| 7.3 | 2500x2100 - H 180 + cover | 55 + cover |
| 8.2 | 2500x2100 - H 200 + cover | 59 + cover |
| 9 | 2500x2100 - H 220 + cover | 64 + cover |
| 10.4 | 2500x2100 - H 250 + cover | 70 + cover |
| 11 | 2500x2100 - H 265 + cover | 74 + cover |
| 12.7 | 3200x2500 - H 200 + cover | 85 + cover |
| 14 | 3200x2500 - H 220 + cover | 91 + cover |
| 16.1 | 3200x2500 - H 250 + cover | 100 + cover |
| 16.9 | 4200x2500 - H 200 + cover | 110 + cover |

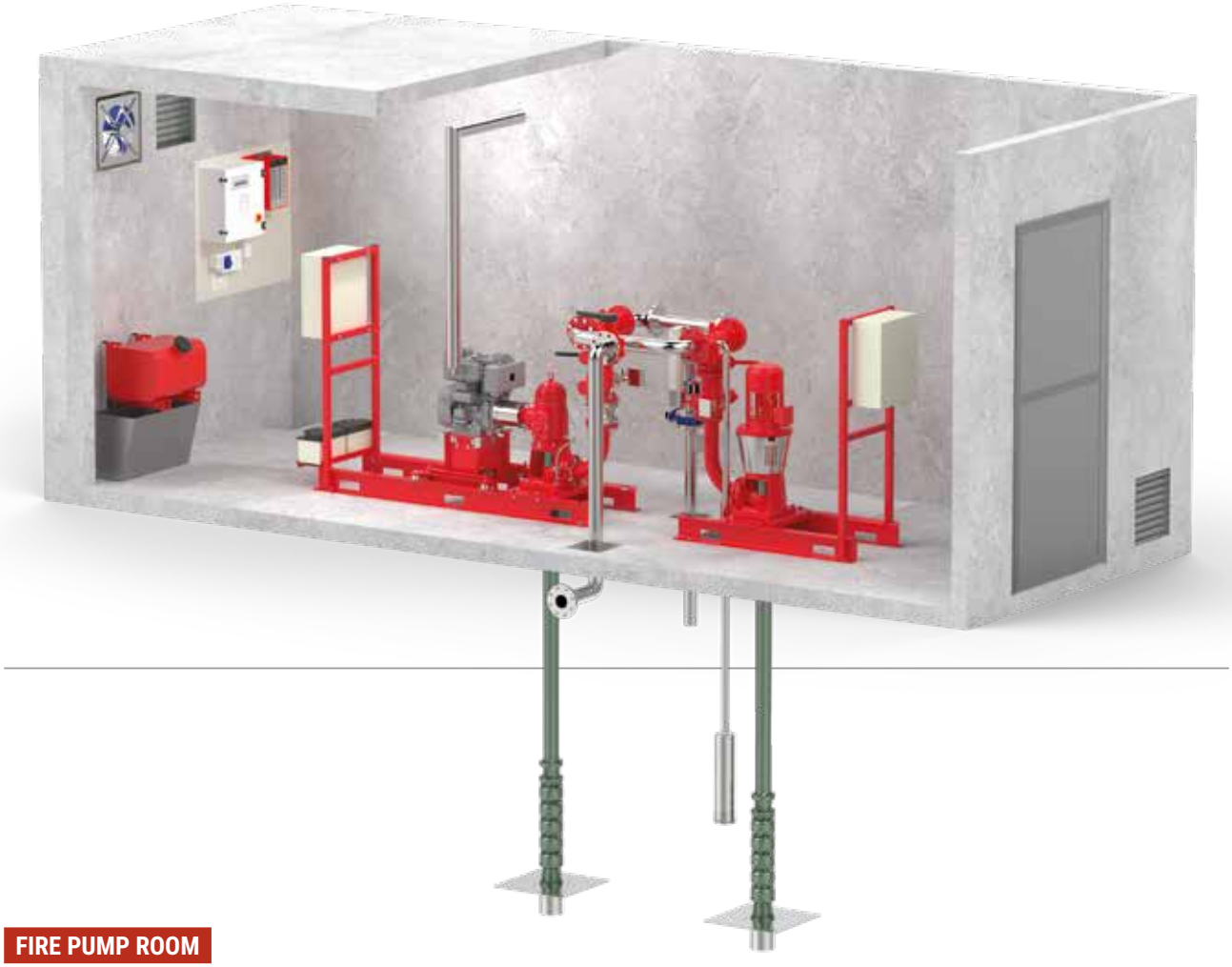
| Capacity ($m^3$) | External dimensions (mm) thickness 110 mm | Weight (q) |
|---|---|---|
| 18.7 | 4200x2500 - H 220 + cover | 117 + cover |
| 21.5 | 4200x2500 - H 250 + cover | 129 + cover |
| 23.3 | 4200x2500 - H 270 + cover | 136 + cover |
| 26 | 4200x2500 - H 300 + cover | 147 + cover |
| 21.1 | 5200x2500 - H 200 + cover | 138 + cover |
| 23.3 | 5200x2500 - H 220 + cover | 148 + cover |
| 26.7 | 5200x2500 - H 250 + cover | 160 + cover |
| 29 | 5200x2500 - H 270 + cover | 170 + cover |
| 32.4 | 5200x2500 - H 300 + cover | 183 + cover |
| 26.4 | 6500x2500 - H 200 + cover | 173 + cover |
| 30.7 | 6500x2500 - H 230 + cover | 189 + cover |
| 33.6 | 6500x2500 - H 250 + cover | 200 + cover |
| 36.5 | 6500x2500 - H 270 + cover | 210 + cover |
| 39.3 | 6500x2500 - H 290 + cover | 222 + cover |
| 33.6 | 8200x2500 - H 200 + cover | 213 + cover |
| 39.1 | 8200x2500 - H 230 + cover | 233 + cover |
| 42.7 | 8200x2500 - H 250 + cover | 245 + cover |
| 46.3 | 8200x2500 - H 270 + cover | 260 + cover |
| 50 | 8200x2500 - H 290 + cover | 575 + cover |

Underground reinforced concrete tank

# MF TBOX - VRC

## Prefabricated vibrated reinforced concrete version

Prefabricated outdoor fire pump room for fire-fighting systems with horizontal centrifugal pumps (END-SUCTION) in the positive suction head or negative suction head version, or with vertical axial flow submersible pumps (VERTICAL TURBINE PUMPS) in the negative suction head version, made according to the UNI EN 12845: 2020 and UNI 11292: 2019 standards in vibrated reinforced concrete.



### FIRE PUMP ROOM

- Material: reinforced concrete packed with PORTLAND CEMENT type I 52.5R, resistant to sulphates according to UNI 9156 (with instruction: epoxy resin finish), vibrated in metal formworks for the total elimination of porosity and gravel nests, with the addition of super-plasticizer. C 45/55 resistance class, with minimum cement content equal to 400 kg/m³, XA3 environmental exposure classes compliant with UNI 206-1, with double round steel reinforcement with improved adhesion and factory tested type B450C electro-welded meshes; minimum 2 cm concrete plate block compliant with Ministerial Decree 17.01.2018 and current anti-seismic law.
- Components and accessories according to UNI EN 12845: 2020 and UNI 11292: 2019 fire regulations (see specific section on p. 80). Various optional accessories also available.
- Fire pump room dimensions as per the following tables, in compliance with UNI 11292: 2019 standard point 5.2.2.
- Access: Single or double front door made of A1 fire reaction class material.
- Floor: reinforced concrete
- Removable roof to allow installation and alignment of the pumping system in case of vertical axial flow submersible pumps (Vertical Turbine Pumps).
- The joints may be placed inside the pump room, in order to prevent insulation, as well as outside the box, on condition they are flanged.

External technical render in reinforced concrete

External technical fire pump room in reinforced concrete

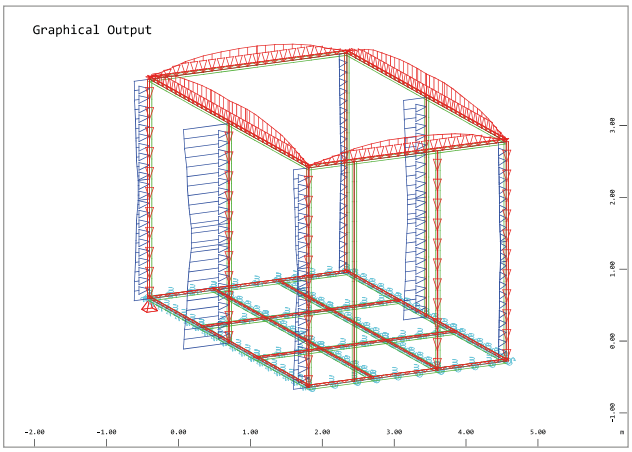
## PUMPING GROUP

1. Pumping system electrically and hydraulically installed inside the fire pump room, in positive suction head/negative suction head installation in case of horizontal centrifugal pumps (END-SUCTION).
2. Or supplied separately, to be installed in the water reservoir on site, the hydraulic and electrical part installed inside the pump room in the case of vertical axial flow submersible pumps (VERTICAL TURBINE PUMPS) with negative suction head, in compliance with UNI EN 12845:2020 standard in set-ups with electric pumps and/or motor pumps.

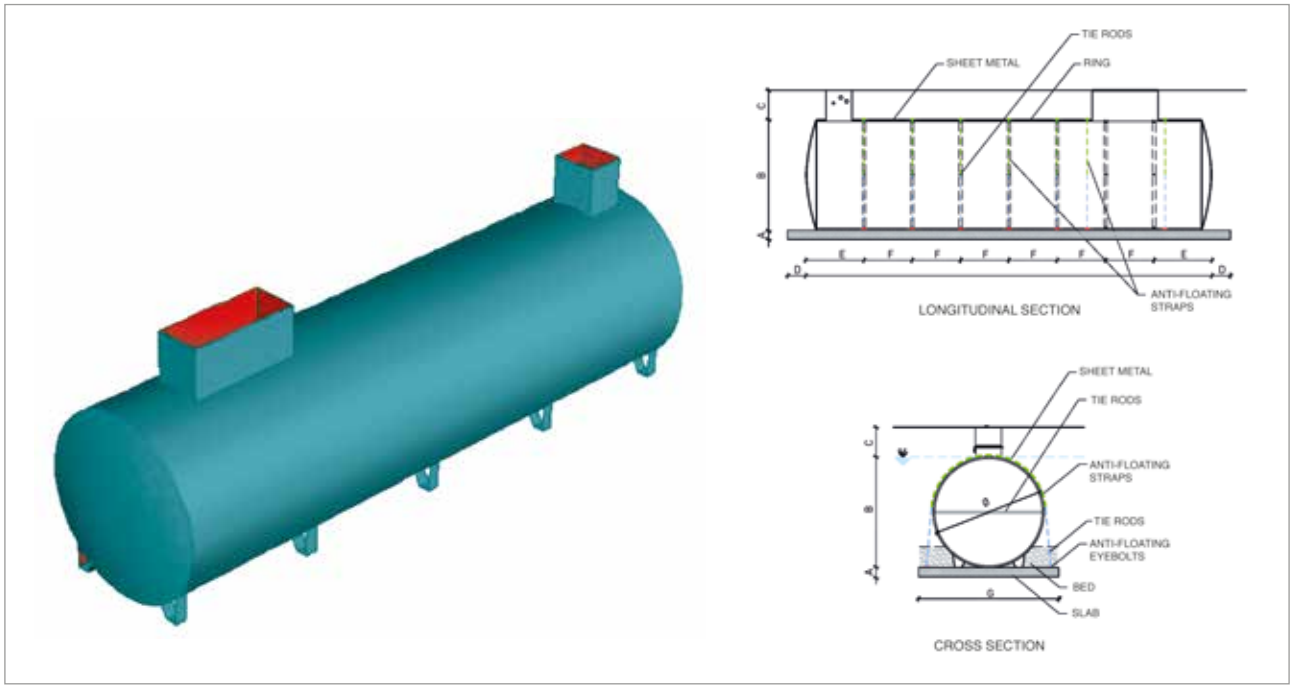
# Technical documentation and certifications

**Majitekno** can provide, on request, calculation report, project with structural design, maintenance plan and report on materials with digital signature of documents relevant to the seismic deposit, according to Law L.1086/1971, Decree DPR 380/2001 and the Regional Law L.R. 33/2015.
For underground systems it is also possible to provide drive-over reports.

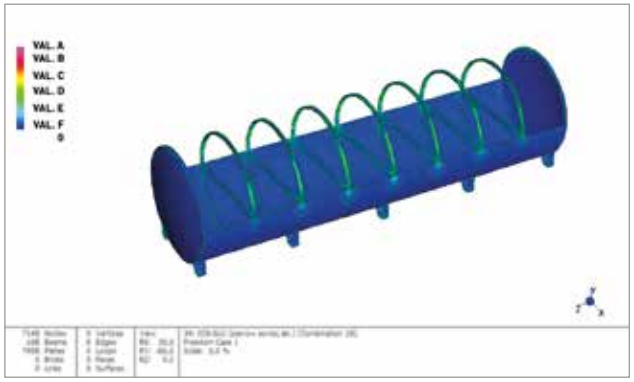
Finished element structural analysis



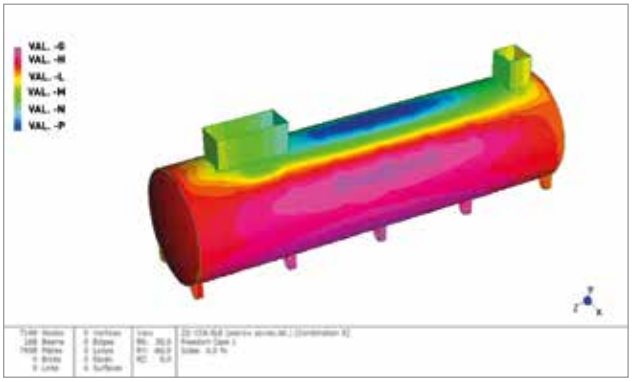

Structural fire pump room



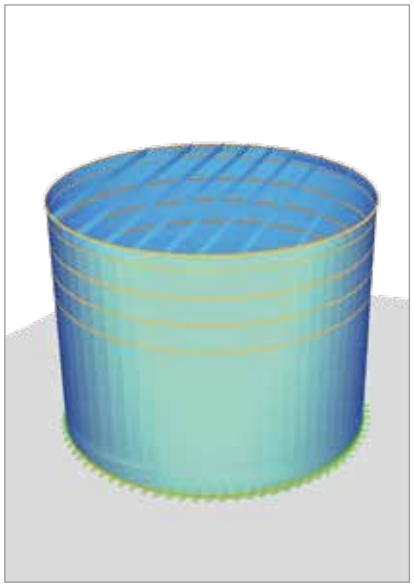

Underground tank



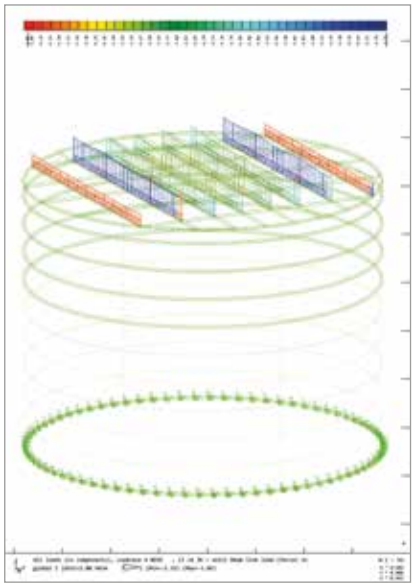
Drive over reinforced underground tank scheme



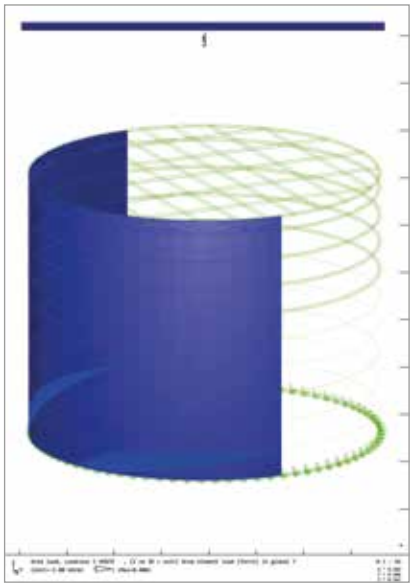
Finished element structural analysis



Outdoor tank

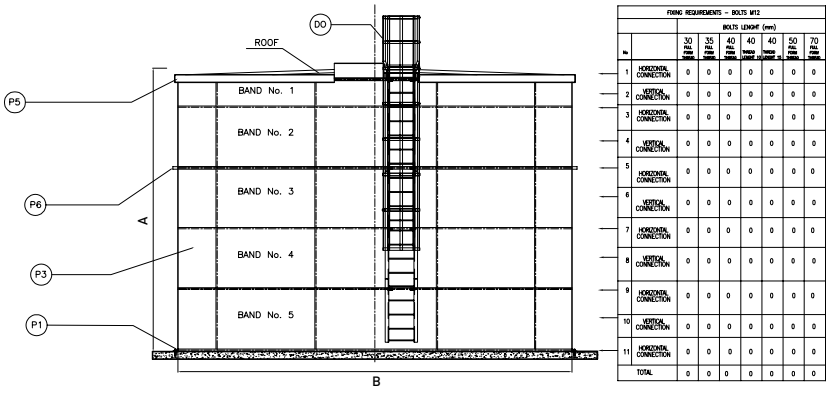


Snow load structural analysis



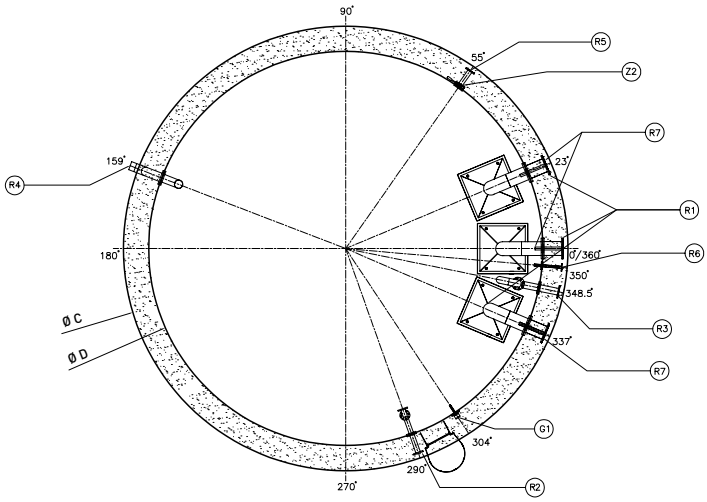
Wind load structural analysis

TANK SHELL STRUCTURE

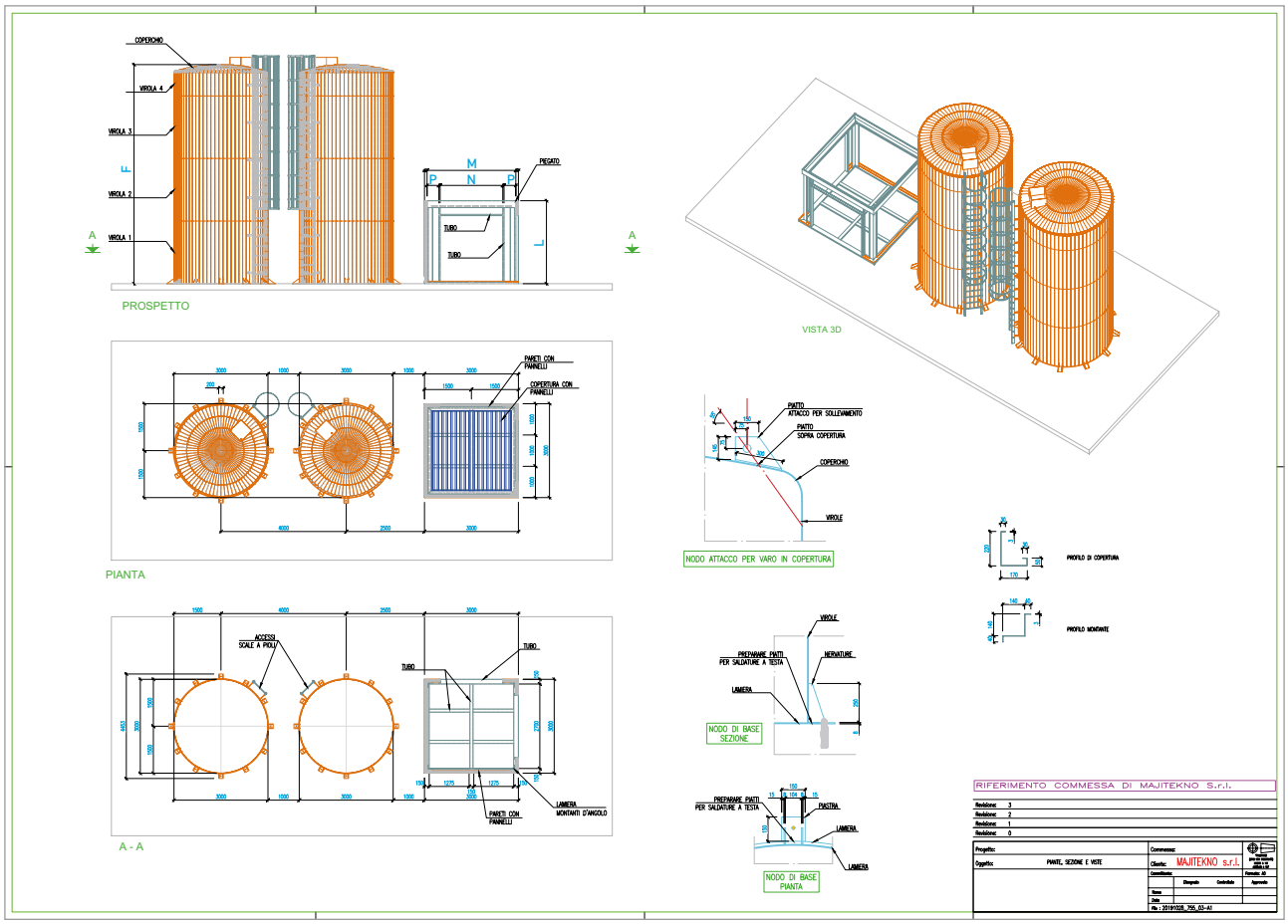



| FIXING REQUIREMENTS – BOLTS M12 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | BOLTS LENGHT (mm) | | | | | |
| No. | | 30 FULL THREAD | 35 FULL THREAD | 40 FULL THREAD | 40 THREAD LEAVE 10 LENGHT IN | 50 FULL THREAD | 70 FULL THREAD |
| 1 | HORIZONTAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | VERTICAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | HORIZONTAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | VERTICAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | HORIZONTAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | VERTICAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | HORIZONTAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | VERTICAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | HORIZONTAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | VERTICAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | HORIZONTAL CONNECTION | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | | 0 | 0 | 0 | 0 | 0 | 0 |

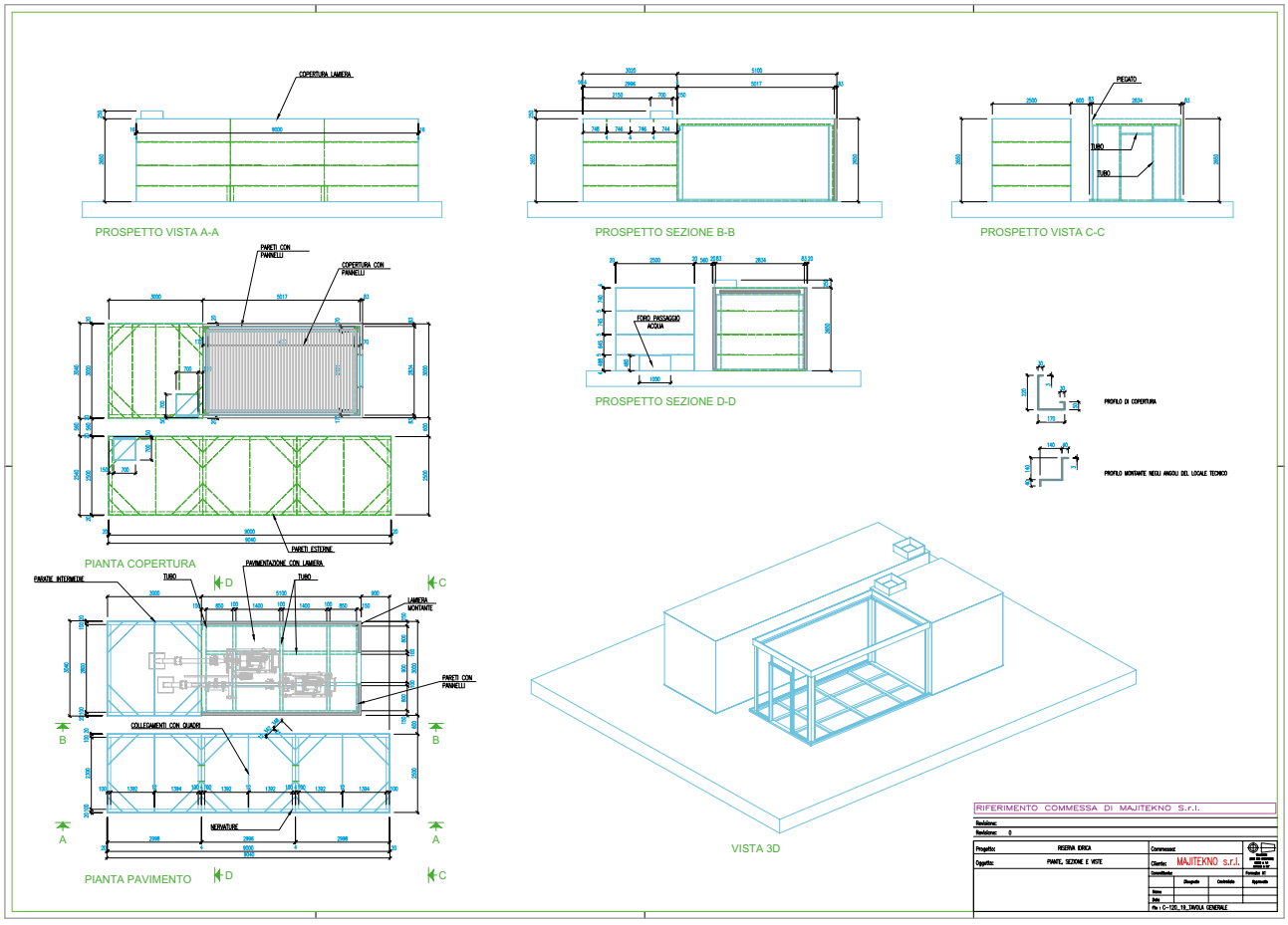
SPACING OF PIPELINES – VIEW FROM ABOVE




Structural technical drawing of vertical outdoor tank



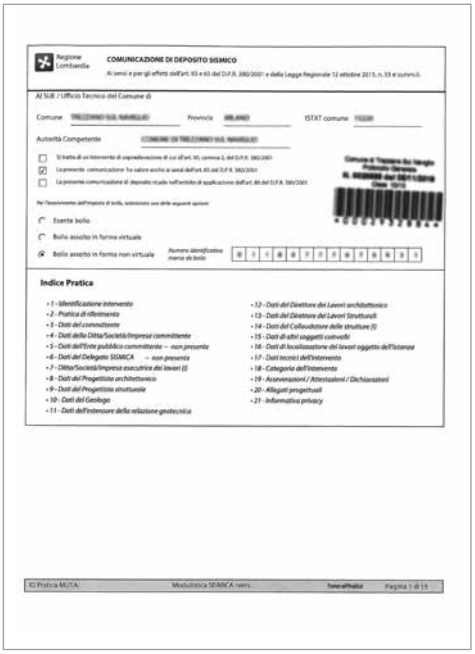

MF CO-TW + TBOX system structural drawing




MF CO-TBI structural technical drawing

## Certifications

**Majitekno** is supported by professionals who deal entirely with seismic deposit cases, the construction management of structural works and the production of documents such as fire resistance certification of products/building elements (CERT.REI), declaration concerning the products used for fire reaction and resistance and door opening devices (DICH.PROD), declaration of performance (DoP), according to the UNI EN 1090 standard and declarations according to Decree DM 37/08 for the electrical system.
Documentation available upon request, at cost.






# Fire fighting pump set

UNI EN 12845 COMPLIANT FIRE-FIGHTING GROUPS

## 1. With horizontal centrifugal pumps (End-Suction)

"MF KDN BS" fire-fighting groups supplied with diesel and electric motors, ideal for automatic sprinkler systems and/or hydrants. Designed to be coupled together, so as to be able to compose and satisfy all the versions required by the UNI EN 12845 and UNI 10779 standards.

The pump is coupled via an elastic spacer joint to an electric (IE3 efficiency level) or diesel motor, capable of supplying the power absorbed by the pump in any pump load condition, from zero flow to the flow rate corresponding to an NPSH16m (as required from point 10.1 of the UNI EN 12845 standard).

### STRONG POINTS

- MODULARITY
  The UNI EN 12845 DAB fire-fighting pump groups are supplied in a modular version, a conformation that allows easy transport and installation of the DAB fire-fighting groups in the pump rooms, even in the presence of narrow access doors.
  Through a coupling KIT (supplied as an accessory) it is possible to assemble all the compositions foreseen by the standard (one-two-three pumps, electric or Diesel, with or without compensation pump).

## 2. With vertical axial flow submersible pumps (Vertical Turbine Pumps)

"MF KDN BS" fire-fighting groups supplied with diesel and electric motors, ideal for automatic sprinkler systems and/or hydrants. They are made with vertical axial flow submersible pumps (Vertical turbine pumps), as required by the UNI EN 12845 standards in article 10.6.1, and are completed with an electric motor or with a diesel engine with a radiator or an air cooler system (on request with heat exchanger), they are also equipped with cork, control head installed on a suitable base and electrical panel.

### STRONG POINTS

- SIMPLIFIED MAINTENANCE
  → The submerged pump body and the surface motor control unit eliminate the problem of priming, as well as significantly facilitate the maintenance.

- MODULARITY
  → The UNI EN 12845 DAB fire-fighting pump groups are supplied in a modular version, a conformation that allows easy transport and installation of the DAB fire-fighting groups in the pump rooms, even in the presence of narrow access doors.

Through a coupling KIT (supplied as an accessory) it is possible to assemble all the compositions foreseen by the standard (one-two-three pumps, electric or Diesel, with or without compensation pump).

## 3. With submersible pumps

S4, SS6, SS7 and SS8 fire-fighting groups supplied with electric motor, ideal for automatic sprinkler systems and/or hydrants. They are made with 4", 6", 7" and 8" AISI 304 stainless steel submersible pumps as required by the UNI EN 12845 standards in article 10.6.1, and are completed with an electric motor immersed in an oil bath or in water bath supplied as standard with 15 metres of cable.

DAB WATER•TECHNOLOGY

INSTALLATION WITH "MF KDN BS" APPLICATION EXAMPLES

# MF KDN BS

## Negative suction head installation

(Point 10.6.1-10.6.2.2 UNI EN 12845)

The standards define the different possibilities of installing a pump intended to power a fire-fighting system in order of preference. Horizontal centrifugal pumps (End-suction) must be installed, if possible, with negative suction head. The UNI EN 12845 standard clearly defines the parameters to define an negative suction head power supply:

- at least two thirds of the effective capacity of the suction tank must be above the level of the pump shaft;
- the pump shaft must not be more than 2 m above the minimum water level in the supply tank.

## Positive suction head installation

(Point 10.6.2.3-10.6.2.4 UNI EN 12845)

If negative suction head installation is not possible, the positive suction head system can be installed. The UNI EN 12845 standard indicates the maximum distance between the pump shafts and the lowest point of the suction pipe equal to 3.2 m. Furthermore, it is necessary to ensure the priming of the main pumps with a specific priming tank (1 for each main pump) positioned above them.

INSTALLATION WITH "MF KVT BS" APPLICATION EXAMPLES

# MF KVT BS

## Negative suction head installation

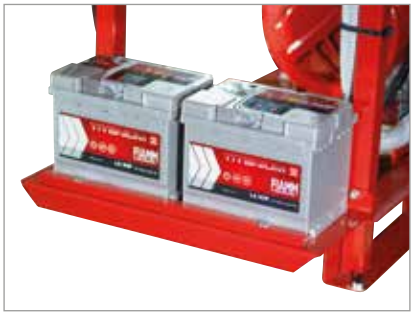
(Point 10.6.1 UNI EN 12845)

If positive suction head installation is not possible with End-suction horizontal centrifugal pumps), the UNI EN 12845 standard recommends the use of vertical axial flow submersible pumps (vertical turbine pumps). In fact, vertical submersible pumps have the enormous advantage of having a negative suction head installation even with an underground tank. Thanks to the submerged pump body and the surface motor control unit, they can eliminate the problem of priming, as well as significantly facilitate the maintenance technician's work.

# MF KDN BS

Features

**COLLECTION TANK**
Basin to contain any fuel spills from the diesel tank, included up to 11kW, as required by the UNI 11292 standard



**BATTERIES - MAINTENANCE**
The batteries and sensitive components are positioned in front of the fire-fighting group in order to simplify maintenance.

**FRAME**
Compact pump support frame in RAL 3000 red painted steel, complete with anti-vibration devices to dampen vibrations transmitted to the system.

**DESIGN**
Compact dimensions and modular structure in order to be coupled together (modular design) so as to be able to compose and satisfy all the versions provided for by the EN 12845 standard and facilitate their transport and handling in confined spaces.

**TANK**
All motor pumps are equipped with a fuel tank dimensioned for 6 hours of operation, as required for the maximum hazard classes according to EN12845 - 10.9.6.

**CLAPET VALVE**
A non-return valve that can be inspected is mounted on the delivery of each main pump, so to simplify maintenance.

**CONTROL PANELS**
All fire-fighting groups include an electrical control panel, according to EN 12845/UNI 10779 for each main pump and an electrical panel for the jockey pump, already connected to the main components (motor, pressure switches, sensor, batteries, etc.).

**HYDRAULICS**
End-suction back pull out normalised horizontal axis centrifugal pump (as required by EN 12845 - 10.1) coupled to an electric or diesel motor by means of a spacer elastic joint protected by safety joint cover.

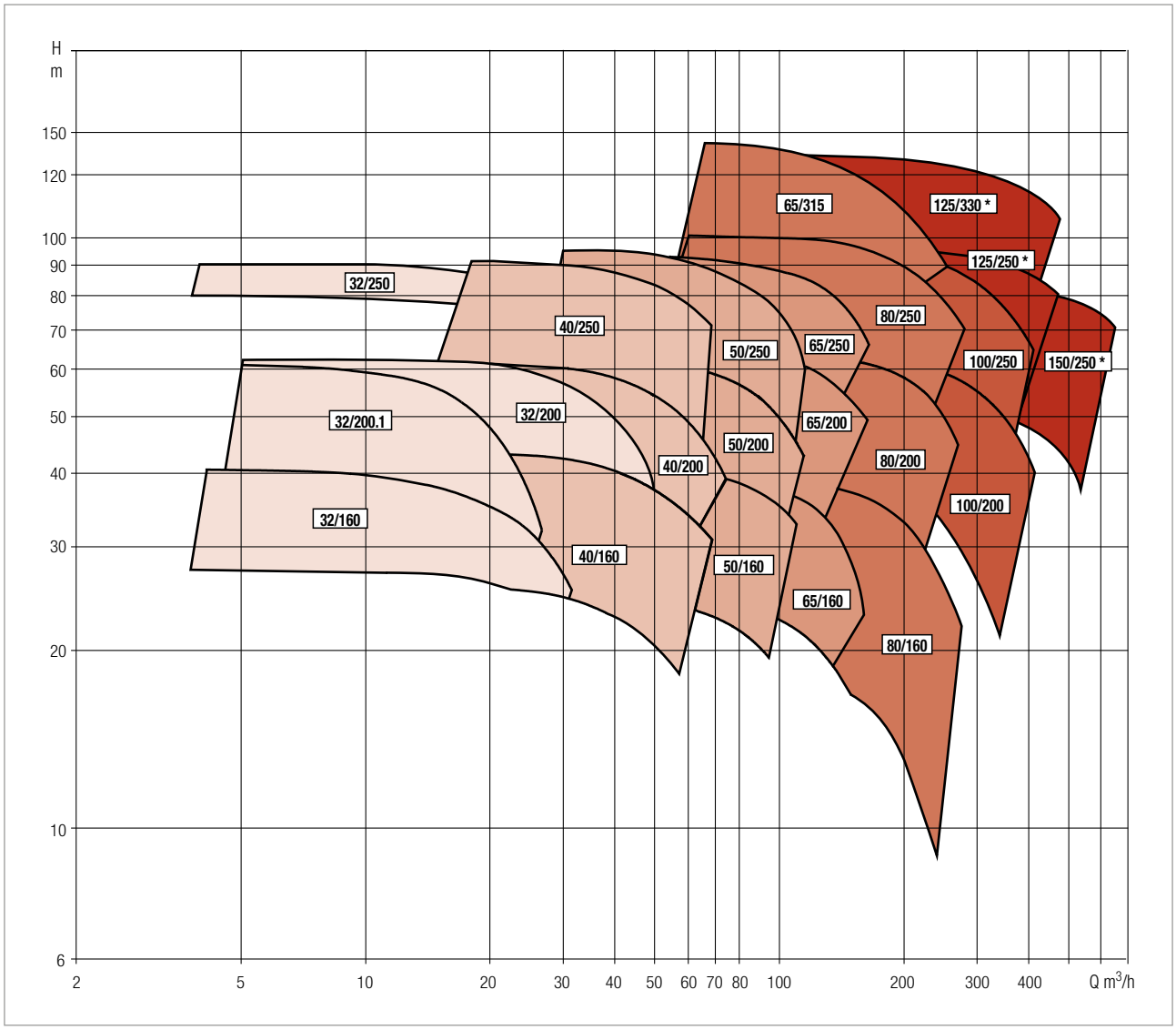
**MOTORS**
All the main pump motors are dimensioned in accordance with EN 12845 - 10.1, capable of providing the power absorbed by the pump in any load condition up to NPSH equal to 16 m.c.a.

**HIGH QUALITY**
Fire-fighting groups designed and manufactured with components that guarantee high quality standards.

# MF KDN BS

Range of fire-fighting groups with flow rates up to650m³/h and heads up to 130 m.

## "MF KDN BS" COMPACT EN12845 FIRE-FIGHTING GROUP PERFORMANCE




* KDN OVERSIZE : 125-250 / 125-330 / 150-250

**MF KDN BS OVERSIZE RANGE**

- Flow rate: up to 650 m³/h
- Head: up to 130 m

**MF KDN BS NORMALISED RANGE**

- Flow rate: up to 400 m³/h
- Head: up to 120 m

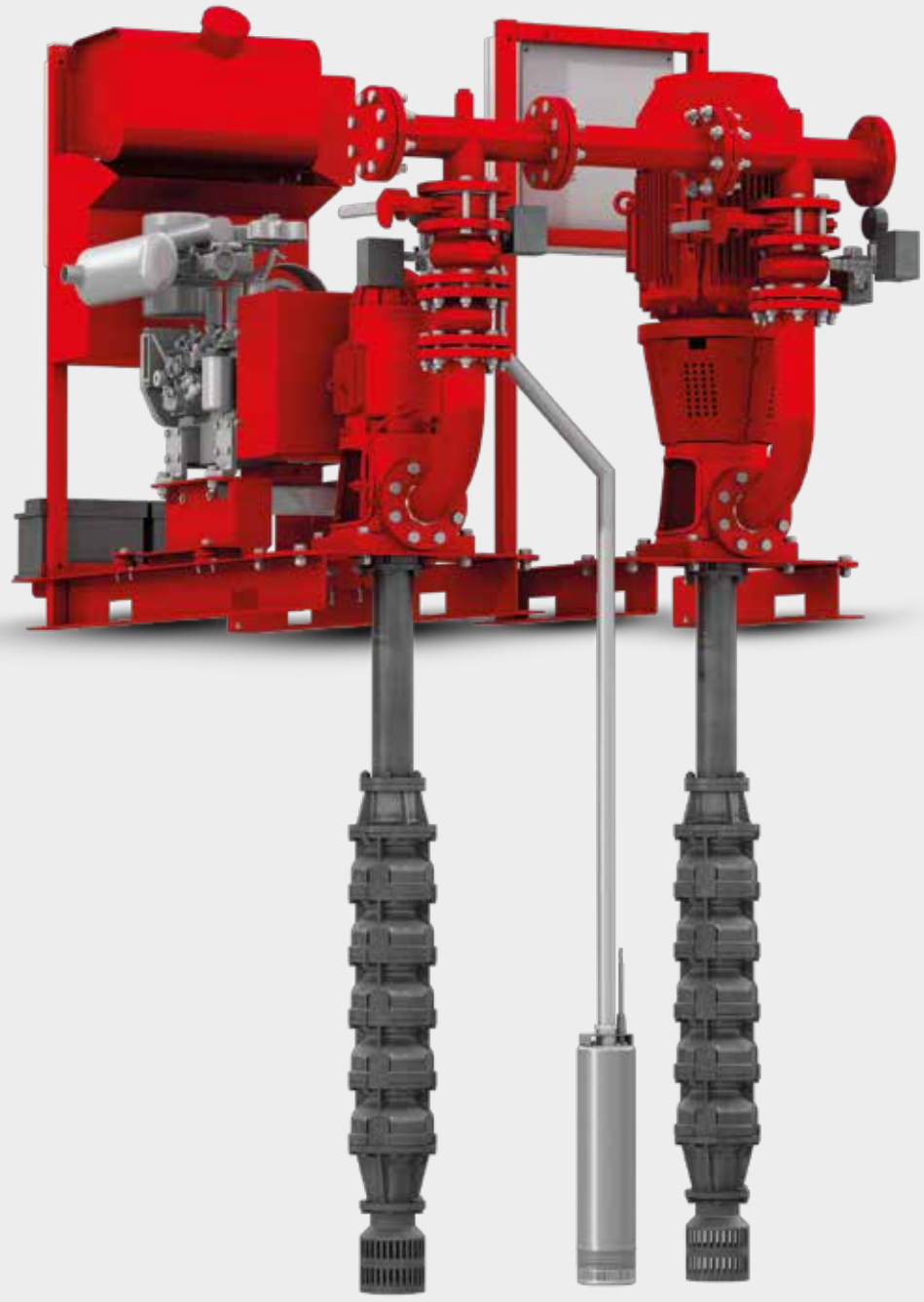
| Group Model **MF KDN BS** | P2 Electric [kW] | P2 Diesel [kW] | | CAPACITY Q | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | m³/h | 0 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 | 84 |
| | | | l/min | 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 |
| KDN 32-160.1/161 | 3 | 7.1 | | 32 | 32 | 30 | 27 | 21 | 10 | - | - | - | - | - | - | - | - | - |
| KDN 32-160.1/169 | 4 | 7.1 | | 36 | 36 | 35 | 32 | 26 | 16 | - | - | - | - | - | - | - | - | - |
| KDN 32-160.1/177 | 5.5 | 7.1 | | 40 | 39 | 39 | 37 | 33 | 26 | 12 | - | - | - | - | - | - | - | - |
| KDN 32-160/177 | 5.5 | 7.1 | | 44 | 43 | 43 | 42 | 40 | 37 | 32 | 28 | 23 | - | - | - | - | - | - |
| KDN 32-200.1/190 | 5.5 | 7.1 | | 45 | 44 | 43 | 37 | 31 | 21 | 8 | - | - | - | - | - | - | - | - |
| KDN 32-200.1/200 | 5.5 | 7.1 | | 52 | 51 | 48 | 44 | 36 | 28 | 14 | - | - | - | - | - | - | - | - |
| KDN 32-200.1/207 | 5.5 | 7.1 | | 56 | 55 | 53 | 48 | 43 | 32 | 20 | - | - | - | - | - | - | - | - |
| KDN 32-200/180 | 7.5 | 7.1 | | 43 | 42 | 41 | 39 | 36 | 30 | 23 | 13 | - | - | - | - | - | - | - |
| KDN 32-200/190 | 7.5 | 7.1 | | 46 | 46 | 45 | 44 | 40 | 38 | 32 | 25 | 18 | - | - | - | - | - | - |
| KDN 32-200/200 | 7.5 | 7.1 | H | 54 | 53 | 53 | 50 | 48 | 44 | 39 | 32 | 20 | - | - | - | - | - | - |
| KDN 32-200/210 | 11 | 11 | [m] | 58 | 57 | 57 | 56 | 55 | 52 | 48 | 42 | 36 | 28 | - | - | - | - | - |
| KDN 32-200/219 | 11 | 11 | | 65 | 65 | 64 | 63 | 61 | 58 | 53 | 48 | 40 | 32 | - | - | - | - | - |
| KDN 32-250/257 | 15 | 15 | | 90 | 90 | 89 | 88 | 79 | 63 | - | - | - | - | - | - | - | - | - |
| KDN 40-160/161 | 7.5 | 7.1 | | 35 | 35 | 34 | 34 | 34 | 33 | 32 | 31 | 29 | 26 | 22 | 18 | - | - | - |
| KDN 40-160/177 | 11 | 11 | | 44 | 44 | 43 | 43 | 43 | 42 | 41 | 40 | 38 | 36 | 34 | 31 | 27 | 24 | 18 |
| KDN 40-200/200 | 11 | 11 | | 50 | 50 | 49 | 49 | 49 | 48 | 47 | 45 | 42 | 38 | 34 | 29 | 24 | - | - |
| KDN 40-200/219 | 15 | 15 | | 61 | 61 | 60 | 60 | 60 | 59 | 58 | 56 | 55 | 52 | 48 | 44 | 41 | 36 | 31 |
| KDN 40-250/230 | 15 | 19 | | 72 | 72 | 72 | 71 | 70 | 68 | 66 | 64 | 61 | 58 | 54 | 48 | - | - | - |
| KDN 40-250/240 | 18.5 | 19 | | 77 | 77 | 77 | 76 | 76 | 75 | 74 | 71 | 69 | 65 | 61 | 56 | 50 | - | - |
| KDN 40-250/260 | 30 | 26 | | 91 | 91 | 91 | 90 | 90 | 90 | 89 | 87 | 85 | 81 | 78 | 75 | 70 | 66 | 60 |

| Group Model **MF KDN BS** | P2 Electric [kW] | P2 Diesel [kW] | | CAPACITY Q | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | m³/h | 0 | 12 | 18 | 24 | 30 | 36 | 42 | 54 | 60 | 72 | 84 | 102 | 114 | 120 | 150 |
| | | | l/min | 0 | 200 | 300 | 400 | 500 | 600 | 700 | 900 | 1000 | 1200 | 1400 | 1700 | 1900 | 2000 | 2500 |
| KDN 50-160/161 | 11 | 11 | | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 31 | 29 | 24 | 19 | - | - |
| KDN 50-160/177 | 15 | 15 | | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 40 | 38 | 34 | 32 | 30 | - |
| KDN 50-200/190 | 15 | 15 | | 48 | 48 | 48 | 48 | 47 | 47 | 46 | 45 | 43 | 38 | 33 | 20 | - | - | - |
| KDN 50-200/210 | 18.5 | 19 | | 59 | 59 | 58 | 58 | 58 | 57 | 57 | 56 | 55 | 52 | 48 | 40 | 34 | 28 | - |
| KDN 50-200/219 | 22 | 26 | | 64 | 64 | 64 | 64 | 64 | 64 | 63 | 62 | 61 | 59 | 55 | 48 | 42 | 38 | - |
| KDN 50-250/230 | 22 | 26 | | 70 | 70 | 70 | 70 | 70 | 69 | 69 | 68 | 66 | 62 | 57 | 45 | 40 | - | - |
| KDN 50-250/250 | 30 | 37 | | 83 | 83 | 83 | 83 | 83 | 82 | 82 | 81 | 80 | 77 | 73 | 64 | 57 | 53 | - |
| KDN 50-250/263 | 37 | 37 | | 92 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 90 | 87 | 83 | 76 | 65 | 61 | - |
| KDN 65-160/153 | 11 | 11 | H | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 28 | 28 | 27 | 27 | 24 | 22 | 21 | 14 |
| KDN 65-200/190 | 18.5 | 19 | [m] | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 45 | 42 | 39 | 36 | 23 |
| KDN 65-200/200 | 22 | 26 | | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 50 | 47 | 44 | 34 |
| KDN 65-250/230 | 30 | 26 | | 71 | 71 | 71 | 71 | 71 | 70 | 70 | 69 | 69 | 68 | 66 | 61 | 58 | 56 | 39 |
| KDN 65-250/250 | 37 | 37 | | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 82 | 81 | 80 | 77 | 75 | 73 | 61 |
| KDN 65-250/263 | 45 | 53 | | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 91 | 90 | 88 | 85 | 84 | 74 |
| KDN 65-315/275 | 55 | 53 | | 104 | 104 | 104 | 104 | 104 | 103 | 103 | 103 | 102 | 101 | 99 | 97 | 95 | 94 | 84 |
| KDN 65-315/290 | 75 | 73 | | 117 | 117 | 117 | 117 | 117 | 117 | 117 | 117 | 116 | 115 | 114 | 111 | 109 | 107 | 99 |
| KDN 65-315/305 | 90 | 110 | | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 129 | 128 | 127 | 126 | 125 | 122 | 115 |
| KDN 65-315/320 | 110 | 110 | | 142 | 142 | 142 | 142 | 142 | 142 | 142 | 142 | 142 | 141 | 139 | 138 | 138 | 136 | 131 |

| Group Model **MF KDN BS** | P2 Electric [kW] | P2 Diesel [kW] | | CAPACITY Q | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | m³/h | 0 | 42 | 60 | 84 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | 330 | 360 | 390 |
| | | | l/min | 0 | 700 | 1000 | 1400 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 | 6500 |
| KDN 80-160/177 | 30 | 26 | | 40 | 40 | 40 | 40 | 39 | 39 | 38 | 36 | 33 | 29 | 26 | - | - | - | - |
| KDN 80-200/200 | 37 | 37 | | 51 | 51 | 51 | 51 | 51 | 50 | 49 | 47 | 42 | 35 | 27 | - | - | - | - |
| KDN 80-250/240 | 55 | 73 | | 76 | 76 | 76 | 76 | 76 | 75 | 74 | 71 | 66 | 59 | 46 | 21 | - | - | - |
| KDN 80-250/260 | 75 | 110 | | 90 | 90 | 90 | 90 | 90 | 89 | 88 | 87 | 83 | 77 | 70 | 62 | - | - | - |
| KDN 80-250/270 | 90 | 110 | | 98 | 98 | 98 | 98 | 98 | 96 | 95 | 94 | 91 | 88 | 82 | 74 | 65 | - | - |
| KDN 80-315/290 | 110 | 110 | | 114 | 114 | 114 | 114 | 114 | 113 | 112 | 109 | 107 | 97 | 93 | 80 | 70 | - | - |
| KDN 100-200/200 | 55 | 53 | H | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 49 | 48 | 44 | 42 | 39 | 36 | 32 |
| KDN 100-200/219 | 75 | 73 | [m] | 64 | 64 | 64 | 64 | 64 | 64 | 63 | 62 | 61 | 60 | 58 | 56 | 53 | 50 | 47 |
| KDN 100-250/240 | 90 | 110 | | 74 | 74 | 74 | 74 | 74 | 73 | 73 | 71 | 70 | 70 | 68 | 64 | 59 | 56 | 50 |
| KDN 100-250/260 | 110 | 110 | | 89 | 89 | 89 | 89 | 89 | 89 | 88 | 88 | 87 | 86 | 84 | 82 | 79 | 76 | 70 |
| KDN 125-250/235 | 90 | 110 | | 72 | 72 | 72 | 72 | 72 | 70 | 70 | 70 | 68 | 66 | 64 | 62 | 60 | 57 | 54 |
| KDN 125-250/264 | 160 | 145 | | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 95 | 94 | 94 | 93 | 91 | 89 | 87 |
| KDN 125-330/300 | 160 | 164 | | 123 | 123 | 123 | 123 | 123 | 122 | 121 | 121 | 120 | 119 | 118 | 117 | 115 | 111 | 107 |

# MF KVT BS

DAB WATER•TECHNOLOGY



## Features

**VERTICAL TURBINE PUMP**
Vertical turbine pumps have the enormous advantage of having a negative suction head installation even with an underground tank.
(UNI EN 12845 – 10.6.1). Vertical turbine pumps are EDP and complete with cork and can be coupled to electric or diesel motors by means of the control head which is installed on a special base.

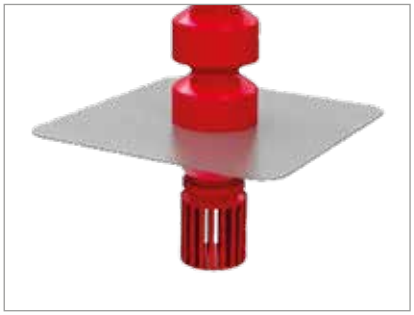
**SHAFT LINE**
The shaft line is an EDP flanged pipe complete with transmission shaft that connects the submersible pump to the control head and relative guide supports (separate accessory).


**JOCKEY PUMP**
Submersible jockey pump complete with 20 l expansion tank and its own electrical control panel.

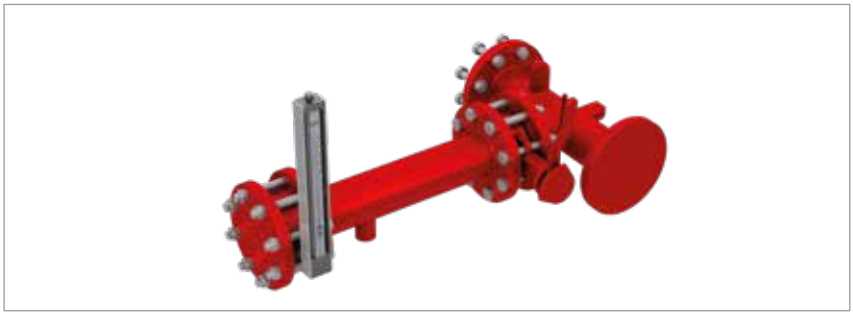
**TANK**
Each diesel motor pump has a diesel fuel tank able to guarantee 6 hours of autonomy and the collection tank is included (required by UNI 11292) to contain any fuel spills up to 26 kW motor power.

**COUPLING KIT**
To compose all the various versions allowed by the Standard (Groups with 2-3 pumps), DAB supplies an accessory coupling kit. It must be assembled between the delivery manifolds of the individual groups.

**CONTROL HEAD**
Control head connected to the motor by means of a spacer joint consisting of 3 pieces. This way you can remove the 2 elements (motor or pump) independently, as required by UNI EN 12845 - 10.1.



**ANTI-VORTEX PLATE**
Vertical turbine pumps can be equipped with anti-vortex plates to limit the value of the minimum head above the suction (UNI EN 12845 - 9.3.5), in order to fully exploit the volume of the storage tank.

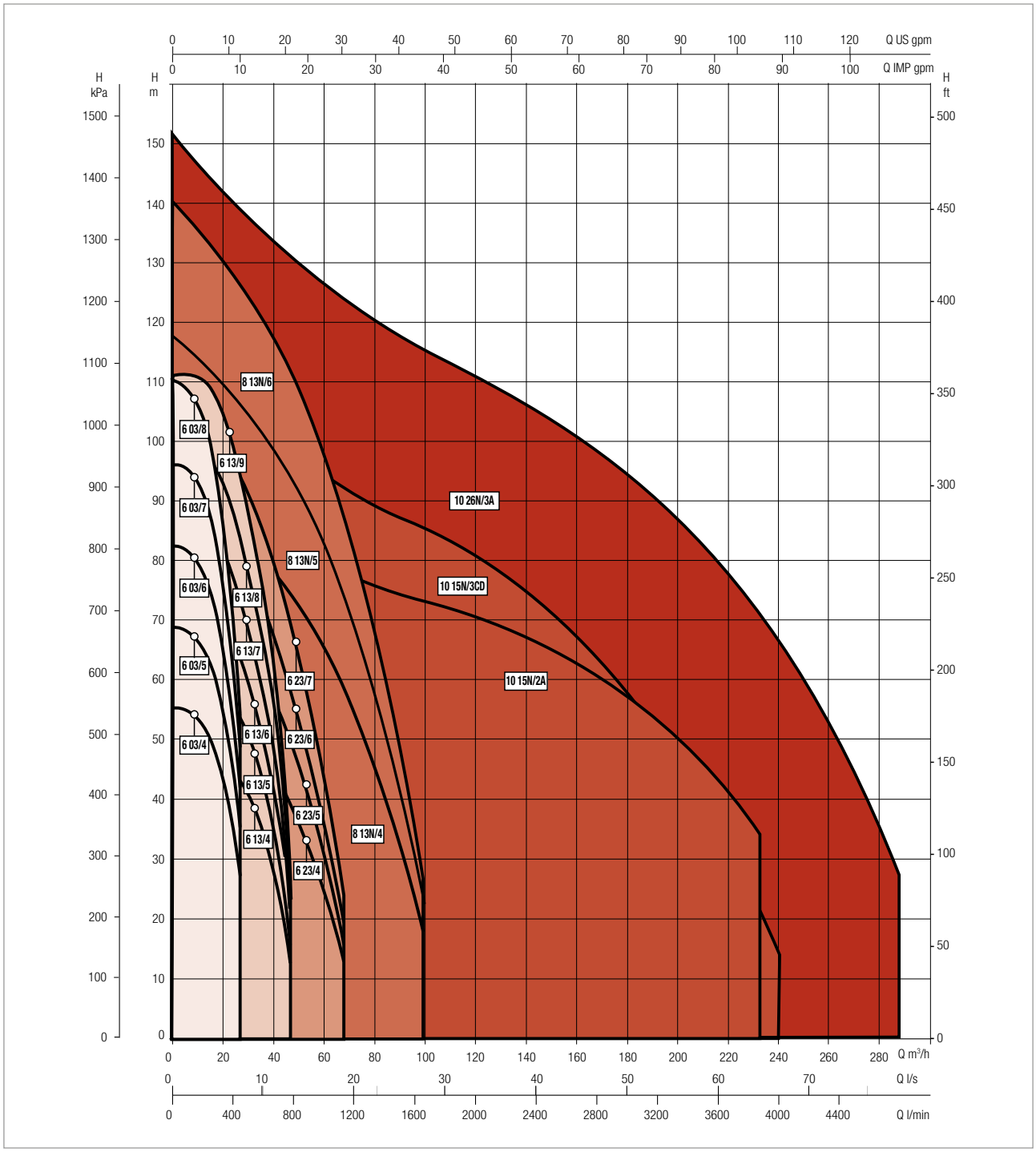


**FLOW METER**
The meter kit complete with flow meter must be installed as a shunt on the delivery manifold of the unit. It allows the performance of the main pumps to be checked.

# MF KVT BS

Range of fire-fighting groups with flow rates up to 300m³/h and heads up to 150 m.

## "MF KVT BS" EN12845 FIRE-FIGHTING GROUP PERFORMANCE




**"MF KVT BS" RANGE**

- Flow rate: up to 300 m³/h
- Head: up to 150 m

| Group Model **MF KVT BS** | P2 Electric [kW] | P2 Diesel [kW] | | CAPACITY Q | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | m³/h | 0 | 4 | 8 | 10 | 12 | 16 | 20 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| | | | l/min | 0 | 67 | 133 | 167 | 200 | 267 | 333 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| KVT6 03/4 | 5.5 | 7.1 | | 55 | 54.5 | 54 | 53 | 52 | 48 | 43 | 36 | - | - | - | - | - | - |
| KVT6 03/5 | 7.5 | 7.1 | | 69 | 68 | 67 | 66.5 | 65 | 61 | 54 | 45 | - | - | - | - | - | - |
| KVT6 03/6 | 7.5 | 11 | | 82.5 | 82 | 81 | 80 | 78 | 73.5 | 65 | 53 | - | - | - | - | - | - |
| KVT6 03/7 | 11 | 11 | | 96 | 95 | 94 | 93 | 91 | 86 | 76 | 62 | - | - | - | - | - | - |
| KVT6 03/8 | 11 | 11 | | 110 | 109 | 107 | 105 | 104 | 97 | 87 | 71 | - | - | - | - | - | - |
| KVT6 13/4 | 7.5 | 7.1 | | 50 | 49.8 | 49.7 | 49.5 | 49 | 47 | 45.5 | 44 | 39 | 32.5 | 24.5 | - | - | - |
| KVT6 13/5 | 7.5 | 11 | | 63 | 62.8 | 62.6 | 62 | 61.5 | 60 | 58 | 56 | 51 | 43 | 30 | - | - | - |
| KVT6 13/6 | 11 | 11 | H [m] | 76 | 75.7 | 75.4 | 74.8 | 74 | 72 | 70 | 66 | 59 | 49 | 36.5 | - | - | - |
| KVT6 13/7 | 11 | 11 | | 89 | 88.5 | 88 | 87 | 86 | 84 | 81 | 76 | 66 | 57 | 42 | - | - | - |
| KVT6 13/8 | 15 | 15 | | 101 | 100 | 99 | 99.5 | 98 | 96 | 93 | 88 | 78 | 65 | 49 | - | - | - |
| KVT6 13/9 | 15 | 15 | | 116 | 115 | 114 | 111 | 110 | 98 | 105 | 98.5 | 88 | 75 | 56 | - | - | - |
| KVT6 23/4 | 11 | 11 | | 63 | 62 | 61 | 60 | 59 | 57.5 | 56.5 | 55 | 52 | 47.5 | 43 | 37.5 | 31 | 23.5 |
| KVT6 23/5 | 11 | 15 | | 78 | 77 | 76 | 75 | 74 | 72.5 | 71 | 69 | 65 | 60 | 54 | 46.5 | 38.5 | 29.5 |
| KVT6 23/6 | 15 | 15 | | 94 | 92 | 90.5 | 90 | 88 | 86.5 | 85 | 83 | 78 | 71 | 64 | 56 | 46.5 | 35.5 |
| KVT6 23/7 | 18.5 | 19 | | 110 | 107 | 105 | 104 | 103 | 102 | 99 | 97 | 91 | 83 | 75 | 65 | 54 | 41 |

| Group Model **MF KVT BS** | P2 Electric [kW] | P2 Diesel [kW] | | CAPACITY Q | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | m³/h | 0 | 10 | 24 | 30 | 42 | 54 | 60 | 72 | 84 | 90 | 102 | 114 | 126 | 144 |
| | | | l/min | 0 | 167 | 400 | 500 | 700 | 900 | 1000 | 1200 | 1400 | 1500 | 1700 | 1900 | 2100 | 2400 |
| KVT8 13N/4 | 18.5 | 19 | | 94 | 90.5 | 83 | 82.5 | 78 | 70 | 66 | 55 | 41 | 33.5 | - | - | - | - |
| KVT8 13N/5 | 22 | 26 | | 118 | 113 | 107 | 104.5 | 98 | 88 | 83 | 69 | 51 | 41.5 | - | - | - | - |
| KVT8 13N/6 | 30 | 37 | | 141 | 135 | 128 | 124.5 | 118 | 106 | 99 | 82 | 61 | 50 | - | - | - | - |
| KVT8 24N/5 | 30 | 37 | H [m] | 130 | 122 | 113 | 110 | 104 | 99 | 96 | 89 | 80 | 72 | 61 | 43 | - | - |
| KVT8 35N/5 | 37 | 37 | | 138 | 131 | 124 | 121 | 115 | 110 | 107 | 102 | 96 | 93 | 88 | 78 | 68 | 53 |
| KVT8 45N/2 | 18.5 | 19 | | 49 | 47 | 45 | 44 | 44 | 44 | 43 | 42 | 40 | 39 | 38 | 36 | 34 | 30 |
| KVT8 45N/4 | 37 | 37 | | 99 | 98 | 95 | 94 | 91 | 87 | 86 | 84 | 81 | 80 | 78 | 74 | 68 | 60 |
| KVT8 45N/5 | 45 | 53 | | 123 | 122 | 120.5 | 120 | 117.5 | 115.5 | 114 | 110 | 106 | 104 | 99 | 93 | 87 | 76 |

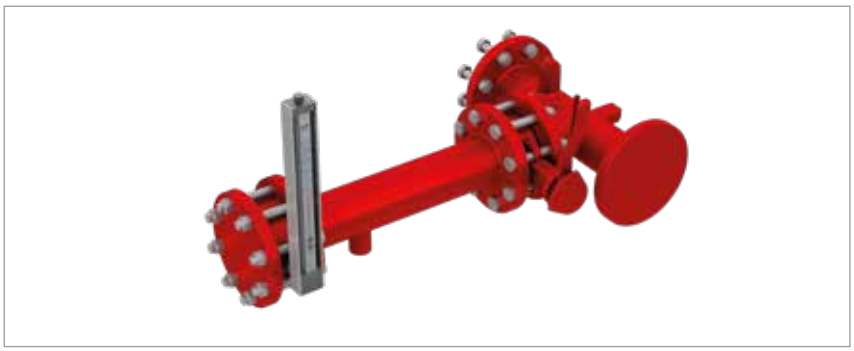
| Group Model **MF KVT BS** | P2 Electric [kW] | P2 Diesel [kW] | | CAPACITY Q | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | m³/h | 0 | 42 | 84 | 102 | 114 | 126 | 144 | 156 | 180 | 192 | 204 | 228 | 240 | 280 |
| | | | l/min | 0 | 700 | 1400 | 1700 | 1900 | 2100 | 2400 | 2600 | 3000 | 3200 | 3400 | 3800 | 4000 | 4667 |
| KVT10 15N/2A | 45 | 53 | | 99 | 83 | 76 | 74 | 72 | 70 | 66 | 65 | 59 | 54 | 51 | 41.5 | - | - |
| KVT10 15N/3CD | 55 | 73.5 | H [m] | 116 | 102 | 94 | 92 | 90 | 87 | 84 | 80 | 72 | 67 | 62 | 49 | - | - |
| KVT10 26N/3A | 75 | 73.5 | | 152 | 132 | 120 | 114 | 111 | 109 | 105 | 103 | 94 | 90 | 85 | 72 | 66 | 38 |

# MF S4 BS - MF SS6 BS - MF SS7 BS - MF SS8 BS

**COUPLING KIT**
To compose all the various versions allowed by the Standard (Groups with 2-3 pumps), DAB supplies an accessory coupling kit which must be assembled between the delivery manifolds of the individual groups.

**COOLING SLEEVE KIT**
Kit of cooling sleeves of different lengths, which can be used to allow perfect cooling of the 6" motor in case of installation in tanks or cisterns or where a minimum cooling flow on the motor itself is not ensured. The choice of pipe length must be made based on the power and type of motor.

**JOCKEY PUMP**
Submersible pilot pump complete with 20 l expansion tank and its own electrical control panel.



**FLOW METER**

The meter kit, complete with flow meter, must be installed as a shunt on the delivery manifold of the group. It allows main pump performance to be verified.

**HYDRAULIC PART**

Pre-assembled manifold with flanged connection for each pump, pressure gauge, pump running signal pressure switch, check valve, butterfly shut-off valve, galvanised steel delivery manifold with pressure gauges and two pump start-up pressure switches, pressure switch test circuit, expansion tank (in case of jockey pump).

**CONTROL PANELS**

All fire-fighting groups include an electrical control panel, according to UNI EN 12845 UNI 10779 standards for each main pump and an electrical panel for the jockey pump, already connected to the main components (motor, pressure switches, sensor, batteries, etc.).

**SUBMERSIBLE PUMP**

4" PUMP CONSTRUCTION FEATURES

Multi-stage centrifugal type with radial or semi-axial impellers. Pump and motor coupled directly through a rigid coupling. Technopolymer impellers; pump jacket, shaft with coupling, filter and cable cover are made of stainless steel.

6" PUMP CONSTRUCTION FEATURES

Motor support and delivery body made of stainless spheroidal cast iron (niresist D2B). Grooved profile shaft, made of AISI 420, completely protected. Impellers and diffusers made of noryl.

8" PUMP CONSTRUCTION FEATURES

Multi-stage semi-axial submersible type. Painted cast iron pump body, cast iron impellers. Shaft guided by coaxial bush bearings and completely protected by bushings.

**SUBMERSIBLE PUMP PERFORMANCE FOR FIRE FIGHTING APPLICATION:**

- Max head 130 m
- Max flow rate up to 160 $m^3/h$
- Liquid temperature range from 0 to +40°C
- Max working pressure 16 bar

# Negative suction head installation

(Point 10.6.1 UNI EN 12845)

If positive suction head installation is not possible with (End-suction) horizontal centrifugal pumps, the UNI EN 12845 standard recommends the use of submersible pumps, as they have the enormous advantage of having an negative suction head installation even with an underground tank. Thanks to the submerged pump body, they eliminate the problem of priming.

## "MF S4 BS - MF SS6 BS - MF SS7 BS - MF SS8 BS" EN12845 FIRE FIGHTING GROUP PERFORMANCE

| Group Model MF S4 BS | P2 Electric [kW] | CAPACITY Q | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | m³/h | 0 | 4.2 | 4.8 | 6 | 9 | 11.4 |
| | | l/min | 0 | 70 | 80 | 100 | 150 | 190 |
| S4E 12 | 1.5 | H [m] | 81 | 63 | 60 | 55 | 35.2 | 15.5 |
| S4E 17 | 2.2 | | 114.8 | 89.5 | 86 | 78 | 49.8 | 21.9 |
| S4E 20 | 3 | | 135 | 105 | 101.5 | 91 | 58.6 | 25.7 |

| Group Model MF S4 BS | P2 Electric [kW] | CAPACITY Q | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | m³/h | 0 | 9 | 11.4 | 18 | 24 | 27 |
| | | l/min | 0 | 150 | 190 | 300 | 400 | 450 |
| S4F 7 | 2.2 | H [m] | 40.5 | 36 | 33 | 24 | 15 | 11 |
| S4F 10 | 3 | | 58 | 50.8 | 47 | 34 | 22 | 16 |
| S4F 13 | 4 | | 76 | 66 | 62 | 44.7 | 28 | 20 |
| S4F 18 | 5.5 | | 104.5 | 91 | 84 | 61.2 | 39 | 28 |

| Group Model MF SS6 BS | P2 Electric [kW] | CAPACITY Q | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m³/h | 0 | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 |
| | | l/min | 0 | 1.7 | 2.8 | 3.9 | 5 | 6.1 | 7.2 | 8.3 | 9.4 | 10.6 |
| SS6 C6 | 5.5 | H [m] | 70 | 69 | 67 | 64 | 60 | 56 | 51 | 45 | 38 | 30 |
| SS6 C8 | 7.5 | | 94 | 92 | 89 | 85 | 80 | 75 | 68 | 60 | 51 | 40 |
| SS6 C11 | 9.2 | | 129 | 126 | 122 | 117 | 110 | 103 | 93 | 82 | 70 | 55 |

| Group Model MF SS6 BS | P2 Electric [kW] | CAPACITY Q | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m³/h | 0 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| | | l/min | 0 | 5.6 | 6.9 | 8.3 | 9.7 | 11.1 | 12.5 | 13.9 | 15.3 | 16.7 |
| SS6 D4 | 7.5 | H [m] | 56 | 50 | 47 | 44 | 41 | 38 | 35 | 32 | 27 | 21 |
| SS6 D5 | 7.5 | | 70 | 63 | 59 | 56 | 52 | 48 | 44 | 39 | 34 | 26 |
| SS6 D6 | 9.2 | | 84 | 75 | 71 | 67 | 62 | 57 | 53 | 47 | 41 | 31 |
| SS6 D7 | 11 | | 98 | 88 | 83 | 78 | 72 | 67 | 61 | 55 | 47 | 36 |
| SS6 D9 | 15 | | 126 | 113 | 107 | 100 | 93 | 86 | 79 | 71 | 61 | 47 |

| Group Model MF SS6 BS | P2 Electric [kW] | CAPACITY Q | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m³/h | 0 | 20 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 |
| | | l/min | 0 | 5.6 | 11.1 | 12.5 | 13.9 | 15.3 | 16.7 | 18.1 | 19.4 | 20.8 |
| SS6 E3 | 5.5 | H [m] | 45 | 38 | 31 | 30 | 28 | 27 | 25 | 23 | 20 | 17 |
| SS6 E4 | 7.5 | | 60 | 51 | 42 | 40 | 38 | 38 | 33 | 31 | 27 | 23 |
| SS6 E5 | 9.2 | | 75 | 64 | 52 | 50 | 47 | 45 | 42 | 38 | 34 | 28 |
| SS6 E6 | 11 | | 90 | 77 | 62 | 59 | 57 | 54 | 50 | 46 | 41 | 34 |
| SS6 E7 | 15 | | 105 | 90 | 73 | 69 | 66 | 63 | 59 | 54 | 48 | 40 |
| SS6 E8 | 15 | | 120 | 103 | 83 | 79 | 75 | 71 | 67 | 61 | 54 | 45 |
| SS6 E9 | 18.5 | | 135 | 115 | 94 | 89 | 85 | 80 | 75 | 69 | 61 | 51 |

| Group Model MF SS7 BS | P2 Electric [kW] | CAPACITY Q | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m³/h | 0 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| | | l/min | 0 | 5.6 | 8.3 | 11.1 | 13.9 | 16.7 | 19.4 | 22.2 | 25 | 27.8 |
| SS7 A4 | 15 | H [m] | 77 | 74 | 72 | 69 | 65 | 61 | 56 | 50 | 42 | 33 |
| SS7 A5 | 18.5 | | 96 | 93 | 90 | 86 | 81 | 76 | 69 | 62 | 53 | 41 |
| SS7 A6 | 22 | | 115 | 111 | 108 | 103 | 97 | 91 | 83 | 74 | 63 | 50 |

| Group Model MF SS7 BS | P2 Electric [kW] | CAPACITY Q | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m³/h | 0 | 20 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 115 |
| | | l/min | 0 | 5.6 | 11.1 | 13.9 | 16.7 | 19.4 | 22.2 | 25 | 27.8 | 31.9 |
| SS7 B3 | 15 | H [m] | 64 | 64 | 61 | 59 | 56 | 54 | 51 | 47 | 43 | 32 |
| SS7 B4 | 22 | | 85 | 86 | 81 | 78 | 75 | 72 | 68 | 63 | 57 | 43 |
| SS7 B5 | 30 | | 106 | 107 | 101 | 98 | 94 | 90 | 85 | 79 | 71 | 54 |

| Group Model MF SS8 BS | P2 Electric [kW] | CAPACITY Q | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m³/h | 0 | 30 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 |
| | | l/min | 0 | 8.3 | 19.4 | 22.2 | 25 | 27.8 | 30.6 | 33.3 | 36.1 | 38.9 |
| SS8 A3 | 22 | H [m] | 83 | 78 | 69 | 66 | 63 | 59 | 54 | 49 | 44 | 37 |
| SS8 A4 | 30 | | 111 | 104 | 91 | 88 | 83 | 78 | 73 | 66 | 58 | 49 |
| SS8 A5 | 37 | | 139 | 129 | 114 | 110 | 104 | 98 | 91 | 82 | 73 | 61 |

| Group Model MF SS8 BS | P2 Electric [kW] | CAPACITY Q | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m³/h | 0 | 40 | 70 | 90 | 120 | 130 | 140 | 150 | 160 | 170 |
| | | l/min | 0 | 11.1 | 19.4 | 25 | 33.3 | 36.1 | 38.9 | 41.7 | 44.4 | 47.2 |
| SS8 B3B.3 | 30 | H [m] | 80 | 75 | 70 | 66 | 58 | 55 | 52 | 47 | 42 | 35 |
| SS8 B3 | 27 | | 98 | 92 | 85 | 80 | 71 | 68 | 63 | 58 | 51 | 43 |
| SS8 B4 | 45 | | 131 | 122 | 113 | 107 | 95 | 90 | 84 | 77 | 68 | 58 |

# Split Case Pumps

## TECHNICAL FEATURES

Split case pumps have dual suction with single or double impeller, as they are supported between bearings. This allows the final thrust to be reduced and the efficiency and life of the bearings to be increased. The pump casing is axially split, with suction and delivery flanges on the sides, a solution that simplifies extraordinary maintenance by removing the rotating element without having to disconnect the pump from the pipes. These pumps can be operated by electric or diesel motors, with delivery diameters ranging from 65 mm to 350 mm; flow rates that can reach 3500 $m^3/h$ and heads up to 300 m.

## CERTIFICATIONS

All split case units installed in our systems comply with NFPA 20 and are UL/FM approved. To have the approval of these Bodies, the fire-fighting groups must meet rigorous operational tests to comply with the safety standards imposed by the certification authority.

## ADDED VALUE ENGINEERING

Thanks to solutions that generate added value, the pumps used in our systems are at the forefront of the fire fighting market (for example, the fire-fighting groups have square section bases for which the connection to the concrete slab is sufficient, avoiding the need to cement them to the ground).

## INNOVATIVE INTEGRATED DESIGN

The fire-fighting groups have skids on which the pumping group complete with motor and control panel, is installed.

## FAST, IN-HOUSE MANUFACTURE

In addition to a wide range of pumps that embraces the common applications of fire-fighting groups, the pumps supplied by our partner are designed and manufactured in-house. This allows made to measure and fully integrated solutions to be tailored to maximise reliability and performance.

## STRINGENT TESTS AND REQUIREMENTS

Operating to the highest quality standards, all fire pumps and fire pump groups are built to ISO 9001: 2008 standards and, through the use of advanced computerised tests, both the structures and the performance of each unit are checked before leaving the factory.

## SPECIAL FIRE FIGHTING GROUPS

All the fire-fighting pump set, installed in our systems, meet the strictest quality standards, are able to provide a high degree of reliability and safety and comply with the reference fire regulations (UNI EN 12845 - UNI 10779 - NFPA 20).
As a further guarantee, our partners have requested third party certifying bodies to carry out technical checks of conformity, with the specifications required by the above standards, obtaining the certification. In addition, in our partners' offices, the pumping unit is tested in order to be sure of offering our customers high quality products that comply with the required performance, in **Majitekno** we assemble and check the complete fire-fighting group instead.
The groups installed in **Majitekno** systems are completely customisable, as each type of installation can be studied directly with the designer, to jointly develop the ideal solution capable of satisfying all customer needs and offering "tailor made" solutions.
**Majitekno** is able to design and build special fire-fighting groups with the aim of achieving the maximum degree of integration and innovation within the system.

VTP fire-fighting group for the Ghana market

Fire-fighting group with horizontal centrifugal pumps

Fire-fighting group with horizontal centrifugal pumps

Fire fighting group with VTP

# Services

## INSTALLATION, TESTING AND ASSISTANCE

**Majitekno** designs and assembles fire-fighting groups to satisfy every request and achieve the highest degree of integration and innovation within the system.
In addition to an excellent product, however, also careful testing before the departure of each system from our headquarters and after-sales customer care are essential.
From following the designer in the correct selection of a fire-fighting group, to constant support in the installation, we arrive at the selection of highly specialised maintenance technicians.
**Majitekno** offers various after-sales services based on need, from the first start-up of the fire-fighting system to ordinary maintenance as required in point 20 of the UNI EN 12845: 2020 standard thanks to a capillary network of service centres, organised throughout the nation, able to guarantee efficient technical and information support.
**Majitekno** then offers two solutions for the assembly and alignment of vertical immersed axial flow submersible pumps; in the first, our staff will provide consultancy technical support to the firm or the company appointed by the customer for the installation.


In the second, a team of qualified and specialised external technicians will take care of all the necessary activities for on-site assembly with their own means, equipment and manpower. Not to be forgotten in a digital world such as today, the possibility of implementing remote assistance service.
**Majitekno** proposes the installation of an innovative device that extends the control and supervision of the system thanks to a simple internet connection and a smartphone. In this way, the efficiency of the assistance service is improved thanks to a continuous monitoring of the functional parameters and at the same time a greater speed of intervention in case of failure and a lowering of management and maintenance costs are obtained.
The result is a perfect solution to facilitate system management, helping to lower the operating costs of the structure and consequently, maximising efficiency and general comfort.

## TRANSPORT AND INSTALLATION

By relying on trustworthy and qualified transport companies, **Majitekno** can guarantee fast and safe delivery systems.
Deliveries to the installation site are managed with the same level of accuracy and efficiency, to guarantee a risk-free positioning for professionals.
The attention to every detail means that even the installation phase is absolutely simplified, **Majitekno** systems are Ready-to-install, because they are complete with all the necessary components, already pre-assembled, to ensure the best installation experience. Below are some examples of our deliveries on site.

# References

MF CO-TW 730 m³ + TBOX - Confectionery industry - Pavia

MF CO-TW 250 m³ + TBOX - Plastic recycling plant - Biella

MF CO-TBI special - Motorway tunnel - Florence


MF CO-TBI special - Motorway tunnel - Florence

MF CI-VERT - Metalworking industry - Bergamo

MF CO-TW 75 m³ + TBOX - Pharmaceutical industry - Brescia

MF CO-TW 125 m³ + TBOX - Manufacturer - Verona

MF TBOX - Elementary school - Cremona

MF CO-TW 1800 m³ + TBOX - Logistics centre - Novara

MF TBOX-VERT - Food producer - Pavia

MF TBOX-VERT - Logistics centre - Brescia

MF TBOX-VERT - Logistics centre - Brescia

MF CO-TBI - Manufacturer - Brescia

MF CO IN OPERA 20 m³ - Public building - Rome

MF CO IN OPERA 40 m³ - Public library - Pavia

MF TBOX-VERT - University - Pavia

MF CO-TW 1800 m³ + TBOX - Logistics centre - Novara

MF TBOX - Hospital - Rome

MF TBOX-VERT - Farm - Cremona

MF CO-TBI - Biogas plant - Brescia

MF CO-TBI - Shopping centre - Lodi


MF CO-TBI - Manufacturer - Lodi

MF CO-TBI - Motorway tunnel system - Florence

MF CO-TW 1800 m³ + TBOX - Logistics centre - Novara

MF TBOX - Logistics warehouse - Milan

MF CO-TW 78 m³ + TBOX - Manufacturer - Verona

MF CO-TW 75 m³ + TBOX - Food producer - Cremona

MF CO-TW 200 m³ + TBOX - Rail cargo terminal - Venice

MF CO-TBI - Retirement home - Novara

MF CO-TBI - Motorway tunnel system - Florence

MF CO-TW 730 m³ + TBOX - Confectionery industry - Pavia

MF CO-TW 50x2 m³ + TBOX - Chemical industry - Milan

MF CI - Food wholesale - Cuneo


MF CO-TBI - Manufacturer - Novara

# Accessories

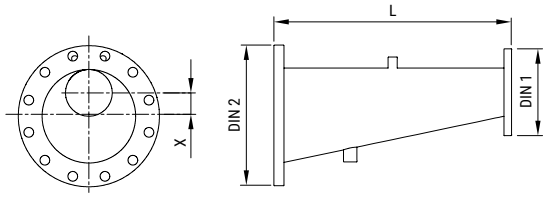
The fire fighting systems are made according to our specific design in accordance with the UNI EN 12845 and UNI 11292 standards and include:

## EQUIPMENT ACCESSORIES FOR MAJITEKNO FIRE-FIGHTING SYSTEMS according to UNI EN 12845 and UNI 11292

### SUCTION KIT

It consists of a suitably sized eccentric conical stub pipe, to be installed on the suction side of the main pump, complete with connection for positioning a vacuum pressure gauge. It is necessary to avoid air pockets in the intake and to maintain the water speed below 1.8 m / s when the pump is running at the maximum required flow rate, in case of negative suction head installation, 1.5 m / s in case of positive suction head installation.

(Point 10.6.2.2– 10.6.2.3 - UNI EN 12845: 12845)




EN 12845 ECCENTRIC EXHAUST PIPE REDUCERS

| Pump model | Pipe model | DN1 - PN 16 Pump side | DN2 - PN16 System side | L (mm) | X (mm) |
|---|---|---|---|---|---|
| NKV10 | KIT ASP.NKV 10 EN12845 (DN65-19°) | DN 40 | DN 65* | 145 | 14 |
| NKV15<br>NKV20<br>KDN32 | KIT ASP.KDN32<br>NKV15-20 EN 12845 (DN80-19°) | DN 50 | DN 80 | 200 | 14 |
| KDN40 | KIT ASP.KDN40 EN12845 (DN100 -19°) | DN 65 | DN 100 | 235 | 19 |
| KDN50 | KIT ASP.KDN50 EN12845 (DN125-19°) | DN 65 | DN 125 | 320 | 32 |
| KDN65 | KIT ASP.KDN65 EN12845 (DN150 -19°) | DN 80 | DN 150 | 380 | 40 |
| KDN80 | KIT ASP.KDN80 EN12845 (DN200 -19°) | DN 100 | DN 200 | 570 | 52 |
| KDN100 | KIT ASP.KDN100 EN12845 (DN250 - 19°) | DN 125 | DN 250 | 685 | 67 |

* The standard provides for a minimum DN 80 for positive suction head installations in this case, contact our sales network.

### COUPLING KIT

Coupling manifold, to assemble two pumping groups

*Product images are purely indicative*

## FLOW METER KIT

It is composed of: a diaphragm flow meter of the calibrated flange type, with a bypass flow meter of adequate diameter, and two shut-off valves to be positioned upstream and downstream of the flow meter, the first to regulate the flow of water through the flow meter, the second to be able to isolate and maintain the instrument. The installation of the flow meter is allowed both vertically and horizontally. The flow meter is available in various sizes, dimensioned on the flow rate of the pumping group and is designed for connection on the delivery TEE of the pumping group. It is necessary to check the hydraulic performance of the pumping group during testing and periodic tests.

(Points 8.5.2 and 20.3.2.5 - UNI EN 12845:2020)

| Standard FLOW RATE range with ΔP max 10000 mm $H_2O$ | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DN | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
| Q. $m^3/h$ $H_2O$ | 25 | 50 | 80 | 130 | 150 | 300 | 350 | 450 | 800 | 800 |
| | 40 | 65 | 100 | 150 | 200 | 420 | 450 | 800 | 1000 | 1000 |
| | 55 * | 55 * | 140 * | - | 280 | 480 ** | 600 | 1000 | 1600 | - |

* ΔP max 19000 mm $H_2O$ ** ΔP max 13000 mm $H_2O$

## SUCTION PIPE

Appropriately dimensioned, complete with anti-vortex plates.

(Table 12 - UNI EN 12845:2020)

## SUCTION VALVE

Butterfly valves, LUG, PN 16, with lever handle for diameters up to DN 100, with hand wheel and force reducer for diameters from DN 125 upwards.

## FOOT VALVE WITH FILTER

It consists of a check valve and a filter. It is in case of positive suction head installation, as well as in negative suction head installations, on condition the pump axis it is above the minimum water level "X".

(Point 9.3.5 - UNI EN 12845:2020)

*Product images are purely indicative*

**RECIRCULATION FLOW VISUAL INDICATORS**

Device to ensure a continuous flow of water through the pump, to prevent overheating of the pumping group with closed delivery.

(Point 10.5 - UNI EN 12845:2020)

**WATER RESERVOIR FILL VALVE**

Automatic diaphragm with float jockey valve, electric valve activated by level probes, or a mechanical float valve.

**PRIMING TANK KIT**

It consists of a 500 L capacity tank, one for each pumping group, complete with: ¾" filling float valve, electric float, 2" pump priming outlet with shut-off valve and check valve, overflow and drain for test circuit. It is necessary in case of positive suction head installation to keep the pumping group and its suction pipe primed; for this reason it must be installed at a higher level than the pump with a connecting pipe descending towards it.

(Point 10.6.2.4 - UNI EN 12845:2020).

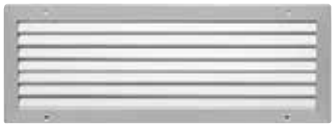
**ANTI-VIBRATION JOINT**

In the presence of pumps driven by a diesel engine, it is recommended to install an anti-vibration elastic compensator in the intake to dampen vibrations.

**VENT GRILLE**

Permanent opening, suitably sized, protected by a grille.

(Point 5.4.1 - UNI 11292:2019)



**FLOW SWITCH KIT**

It consists of an EN 12259-5 compliant alarm flow switch, bulb sprinkler, up right with standard response at T = 49 °C and test circuit complete with test valve and drain pipe. It is necessary to remotely provide visual and audible indication of sprinkler operation in the pump room.

(Point 10.3.2 - UNI EN 12845: 2020 and Point 6.8 - UNI 11292:2019)

*Product images are purely indicative*

**EXTINGUISHER**

Powder, at least 34A144BC, for electrical powers below 40 kW overall installed inside of the fire pump room and in addition to $CO_2$, at least 113BC, for higher electrical powers.

(Point 6.9 - UNI 11292:2019).

**DIESEL TANK LEAK DRIP BASIN**

Appropriately dimensioned to contain 100% of motor pump tank capacity.

(Point 6.10.1 - UNI 11292:2019).

**HYDROMETER**

Tool for checking the density of the electrolyte contained in the starter motor batteries.

(Point 10.9.8 - UNI EN 12845:2020).

**DIESEL MOTOR SPARE PART KIT**

Consists of:
- 2 series of filter elements and relative gaskets for fuel;
- 2 series of filter elements and relative gaskets for lubricant;
- 2 sets of belts (if used);
- 1 complete set of motor fittings, gaskets and hoses;
- 2 injector nozzles.

**WATER HEAT EXCHANGER KIT**
**[ OPTIONAL ]**

To be installed on diesel motor as an alternative to radiator cooling system.

**FLOW INDICATOR FOR HEAT HEAT EXCHANGER DISCHARGE**

To be installed on the heat exchanger discharge pipe if it is not open, to allow the fluid passage to be seen.

(Point 10.9.3 - UNI EN 12845:2020).

*Product images are purely indicative*

**FLEXIBLE JOINT FOR DIESEL MOTOR EXHAUST PIPE**

Diesel motor exhaust: flexible connection between motor muffler and gas exhaust pipe (motor/duct).

(Point 6.5 - UNI 11292:2019).

**DIESEL MOTOR EXHAUST PIPE**

Appropriately dimensioned exhaust pipe and insulated for accidental contact, by means of mineral rock wool tiles and aluminium finishing.

(Point 6.5 - UNI 11292:2019).

**DIESEL MOTOR MUFFLER**

**[ OPTIONAL ]**

Muffler to reduce diesel motor noise.

**MANUAL FUEL PUMP**

Supplied in case of diesel tanks with a capacity greater than 50 L.

(Point 6.10.2 - UNI 11292:2019).

**DOCUMENT FOLDER**

**Majitekno** folder, containing the hard copy certification of the fire fighting system and use and maintenance manuals for its installed components.


*Product images are purely indicative*

**PRODUCT IDENTIFICATION PLATE**

Metal plate, supplied with the fire-fighting system, showing all the most significant data of it.


**SUBMERSIBLE PUMP COOLING SLEEVE KIT**
[ OPTIONAL ]

It consists of a cooling tube of suitable size, a filter and two horizontal supports.
The cooling sleeve kit is recommended where a minimum cooling flow is not ensured on the submerged motor installed in water reservoirs.

**ANTI-FLOATING KIT FOR UNDERGROUND WATER RESERVOIR IN PRESENCE OF GROUND WATER**
[ OPTIONAL ]

It is made up of straps, tie rods and cables, made of stainless steel, suitably dimensioned.
It is necessary to secure the underground water reservoir to the concrete slab below it in the event of ground water.

**UNDERGROUND WATER RESERVOIR REINFORCEMENT FOR DRIVE-OVER**
[ OPTIONAL ]

Stiffening rings to be welded inside of the water reservoir to ensure resistance to breaking loads according to UNI EN 124, suitably dimensioned.

**DRIVE-OVER MANHOLE FOR UNDERGROUND WATER RESERVOIR**
[ OPTIONAL ]

Manhole cover made of cast iron according to UNI EN 1563: 2018, available in different resistance classes according to UNI EN 124: 2015 and related breaking loads.

**STRAY CURRENT PROTECTION KIT FOR UNDERGROUND WATER RESERVOIRS**
[ OPTIONAL ]

It is composed of galvanic units and electrodes, suitably dimensioned to be installed in the ground, or by external painting treatment based on fibreglass and polyester resin.

*Product images are purely indicative*

**SPECIAL EXTERIOR PAINT COLOURS**
**[ OPTIONAL ]**

Bi-component epoxy enamel for industrial painting of metal surfaces, available in special colours on request.

Standard colour
RAL 7030

**ANTI-FLOODING PUMPS**

Automatic start drain pumps, designed to discharge a flow of not less than 5% of the maximum flow rate of the pumping unit outside the room, with a minimum of 10m³/h. It is necessary to install 2 drain pumps, one as a backup of the other, of which at least one must be operational even in the absence of mains electricity. They are included in the basic set-up of underground fire pump rooms; they are available on request, for outdoor systems.

(Point 6.3.2 - UNI 11292:2019).

**LIGHTING SYSTEM**

It consists of a lamp with a normal lighting level of 200 lux and an emergency lamp of 25 lux for at least 60 minutes, with automatic ignition, and switch.

(Point 6.2.1 - UNI 11292:2019).

**SERVICE SOCKET**

2P + N 16 A 230 V 50 Hz interlocked socket for industrial use with minimum protection degree IP54, according to CEI EN 60309, with power supply distinct from that of the pumping unit electrical panels.

(Point 6.2.2 - UNI 11292:2019).

**FORCED VENTILATION GENERATOR SYSTEM**

It is made up of a fan, available at 12 V or 230V, the control panel that regulates its ignition and shutdown, by means of a temperature probe; from uninterruptible power supply (UPS) which powers the fan in the event of a power failure and a gravity damper.
It is necessary in the presence of pumps driven by a diesel motor and is dimensioned with an expelled air flow according to the power and type of cooling of the diesel motor. It is activated when the diesel motor-driven unit starts up or when the maximum temperature inside the fire pump room is exceeded, managed by the electrical service panel and a temperature probe.

(Point 5.4.2 - UNI 11292:2019).

In the absence of pumps driven by a diesel motor, a forced ventilation system is installed to ensure the air exchange required by the standard, managed by the electrical service panel and a temperature probe.

(Point 5.4.1 - UNI 11292:2019).

*Product images are purely indicative*

**HEATING SYSTEM**

Thermostat convector, with 2000 W electrical power and anti-freeze function to maintain temperatures above 4° C for electric pumps and 10° C for those driven by a diesel motors.

(Point 10.3.3 - UNI EN 12845:2020 and Point 6.4 - UNI 11292:2019).

**AIR CONDITIONING SYSTEM**
[ OPTIONAL ]

It consists of an electric device for maintaining the temperature below 40° C.

(Point 6.4 - UNI 11292:2019).

**WATER RESERVOIR ANTIFREEZE SYSTEM**
[ OPTIONAL ]

It consists of a recirculation pump complete with a thermostat that regulates its ignition and shutdown or a 3 kW electric resistance thermostat.

**TRANSDUCER**

Water reservoir level reading device. This accessory is included in the standard supply when the fire-fighting water reservoir is supplied by **Majitekno**.

**UPS**

Device suitably dimensioned to power the forced ventilation system of the air from the fire pump room and the drain pump, even in the absence of mains electricity.

**LIGHTED SIREN**
[ OPTIONAL ]

Visual and acoustic fire alarm signalling device to be installed outside the fire pump room.

*Product images are purely indicative*

## MF CU1 BASIC

**CENTRAL ELECTRICAL PANEL**

**Electromechanical panel, assembled in a PVC case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards and compliant with UNI EN 12845.**
**It is installed for pumping groups with electric pumps** and is designed to be powered from the mains to protect and control the utilities against overloads or short-circuits.

It includes the following functions:

- Heat convector power supply;
- Fire pump room lighting power supply;
- Single-phase electric socket power supply;
- Level control panel power supply with CU 4 probes;
- Forced ventilation system power supply;
- Antifreeze system recirculation pump power supply (PLUS VERSION RECIRCULATION PUMP);
- Electric resistance power supply (PLUS RESISTANCE VERSION);
- Solenoid valve power supply for water reservoir filling (PLUS EV VERSION);
- Power and alarm trip LED signals;
- Water level display;
- Room temperature display;
- Analog input for level sensor (transducer);
- Digital input for recirculation pump control (PLUS VERSION RECIRCULATION PUMP);
- Digital input for antifreeze heater control (PLUS RESISTANCE VERSION);
- Modbus connection for alarm panel.

## MF CU2

**CENTRAL ELECTRICAL PANEL WITH EXTERNAL UPS**

**Electromechanical panel, assembled in a PVC case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards and compliant with UNI EN 12845.**
**It is installed for pumping groups with motor and/or electric pumps** and is designed to be powered from the mains to protect and control the utilities against overloads or short-circuits.

It includes the following functions:

- Direct mains power supply for bilge pump 1;
- UPS/SER power supply for bilge pump 2;
- Heat convector power supply;
- Room lighting power supply;
- Exhaust fan power supply;
- Single-phase electric socket power supply;
- Connection for UPS or SER power supply;
- Power and alarm trip LED signals;
- Bilge pump 2 and room exhaust on LED;
- Water level display;
- Room temperature display;
- Input for bilge pump float switch;
- Analog input for level sensor (transducer);
- Fan “ON” remote test button;
- Bilge pump 2 and fan on buttons;
- Modbus connection for alarm panel.

*Product images are purely indicative*

## MF CU2 BASIC

**CENTRAL ELECTRICAL PANEL WITH INTERNAL UPS + BATTERY BOX**

**Electromechanical panel, assembled in a sheet metal case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards and compliant with UNI EN 12845.**
**It is installed for pumping groups with motor and electric pumps** and is designed to be powered from the mains to protect and control the utilities against overloads or short-circuits.

It includes the following functions:

- Heat convector power supply;
- Fire pump room lighting power supply;
- Single-phase electric socket power supply;
- Level control panel power supply with CU 4 probes;
- Forced ventilation system power supply;
- Battery charge power supply;
- Antifreeze system recirculation pump power supply (PLUS VERSION RECIRCULATION PUMP);
- Electric resistance power supply (PLUS RESISTANCE VERSION);
- Power and alarm trip LED signals;
- Fan "ON" LED;
- Battery charge level LED;
- Water level display;
- Room temperature display;
- Analog input for level sensor (transducer);
- Digital input for recirculation pump control (PLUS VERSION RECIRCULATION PUMP);
- Digital input for antifreeze heater control (PLUS RESISTANCE VERSION);
- Input for signal, coming from motor pump, for fan control when starting the motor pump;
- Battery installed on board, plus battery charger, to power fans even in case of power failure and main information display;
- Modubus connection for alarm panel.

## MF CU3

**CENTRAL ELECTRICAL PANEL**


**Electromechanical panel, assembled in a PVC case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards and compliant with UNI EN 12845.**
The panel reports pumping group operating conditions remotely.

It includes the following functions:

- Power on LED signal;
- Battery charge LED signal;
- Battery fault LED signal;
- Test lamp button;
- Siren mute button;
- LED matrix for signalling whether alarm type A (fire) or type B (fault);
- Modbus connection for electric pump and motor pump panels.

*Product images are purely indicative*

## MF CU4

**CENTRAL ELECTRICAL PANEL WITH LEVEL PROBES**

[ OPTIONAL ]

**Electromechanical panel, assembled in a PVC case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards and compliant with UNI EN 12845.**

The panel allows you to monitor the water level inside the water storage tank, by using 4 level probes to be installed inside the water reservoir.

It includes the following functions:

- Power on LED signal;
- Maximum level alarm LED signal;
- NORMAL level LED signal;
- Minimum level LED signal;
- Minimum level alarm LED signal.

## MF CU

**DISTRIBUTION ELECTRIC PANEL**

[ OPTIONAL ]

**Electromechanical panel, assembled in a PVC case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards and compliant with UNI EN 12845.**

The panel can power:

- Central electric panel, model MF CU1/CU2;
- Compensation pump control panel;
- Motor pump control panel.

**GSM900C MODULE**

[ OPTIONAL ]

Remote alarm panel additional module designed for sending alarm messages (SMS), equipped with antenna and 5m cable.
Reference standards:
EN 60950-1, EN 301 489, EN 301 511.

## SV BOX

**ELECTRICAL PANEL**

[ OPTIONAL ]

It allows system management and monitoring.
Using any web access device (laptop, tablet, smartphone, iphone), the user can connect to the control interface to:

- Manage and monitor the system (up to 10 control panels);
- Manage alarms;
- Manage maintenance.

Any faults or alarm situations are not only recorded and reported on the platform, but also communicated to the system operators by sending emails and SMS messages*.


*Product images are purely indicative*

D+ CONNECT

DAB WATER•TECHNOLOGY

## D-CONNECT FIRE

[ OPTIONAL ]

VALID FOR

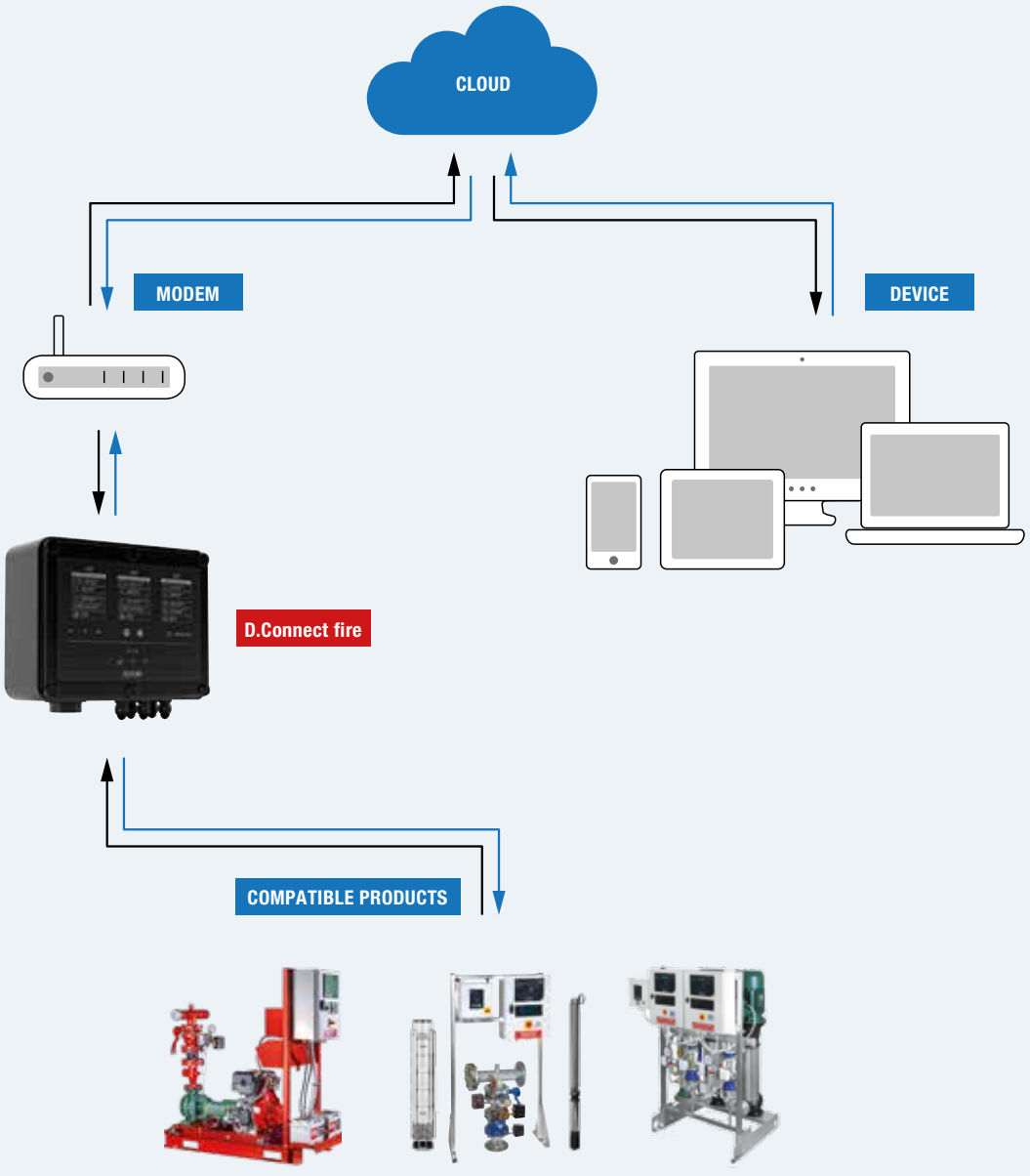
4.0 INDUSTRY

Innovative device that extends the ability to control and supervise the fire-fighting system through the internet from any part of the world using a web browser.

It offers:

- Remote alarm signal not only from the electrical panel but also from the APP;
- Jockey pump restart/leak monitoring;
- Configuration from APP without physical intervention inside the electrical panel;
- Compliance with all fire regulations.

### Operating diagram




*Product images are purely indicative*

## MF CU EPE

**ELECTRICAL PANEL FOR ELECTRIC MOTOR DRIVEN PUMPING GROUP CONTROL**

*For Majitekno pumping group supply*

**Electromechanical panel, assembled in a PVC case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards and compliant with UNI EN 12845.**

The panel is designed to power and monitor the feed electric pump.

It includes the following functions:

- Electric pump power;
- General mains data display;
- Electric pump data display;
- Power and general alarm LED signals;
- Minimum suction level LED signal;
- Electric pump running LED signal;
- Sequence and blackout LED signal;
- Failure to start LED signal;
- Minimum priming level LED signal;
- Pressure switch automatic start LED signal;
- Automatic turn off LED signal;
- Manual start LED signal;
- Manual stop LED signal;
- Alarm mute button;
- Lamp test button;
- Manual START button;
- Manual STOP button;
- Key selector switch for manual or automatic start of the system;
- Modubus connection for alarm panel.

## MF CU DPE

**ELECTRICAL PANEL FOR DIESEL MOTOR DRIVEN PUMPING UNIT CONTROL**

*For Majitekno pumping group supply*

**Electromechanical panel, assembled in a PVC case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards and compliant with UNI EN 12845.**

The panel is designed to power and monitor the feed motor pump.

It includes the following functions:

- Motor pump start from battery A and battery B;
- General mains data display;
- General battery data display;
- Motor rpm display;
- Fuel level display;
- Work hour display;
- Power and general alarm LED signals;
- Minimum suction level LED signal;
- Electric pump running LED signal;
- Minimum level priming LED signal;
- Pressure switch automatic start LED signal;
- Automatic turn off LED signal;
- Minimum fuel level LED signal;
- Over temperature LED signal;
- Oil pressure LED signal;
- Broken belt LED signal;
- High oil temperature LED signal;
- Battery diagnostics LED signal;
- Alarm mute button;
- Lamp test button;
- Battery start buttons;
- Stop system button;
- Key selector switch for manual or automatic start of the system;
- Modbus connection for alarm panel.

*Product images are purely indicative*

## MF CU JP

**ELECTRICAL PANEL FOR COMPENSATION PUMP CONTROL**

*For Majitekno pumping group supply*

Electromechanical panel, assembled in a PVC case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards and compliant with UNI EN 12845.
The panel is designed to power and monitor the compensation electric pump.

It includes the following functions:

- Compensation electric pump power;
- General mains data display;
- Power and general alarm LED signal;
- Alarm mute button;
- Manual START button;
- Manual STOP button.

*Product images are purely indicative*

MAJIbar

# INTEGRATED WATER PRESSURE BOOSTER SYSTEMS

# MB CAPI

Outdoor pre-autoclave system, MB CAPI model (compressor autoclave pump inverter) composed of a pressurised first collection tank made of hot-dip galvanised steel or AISI 316 stainless steel, a compressor and pumping unit to keep the mains water under pressure in a system.

## FUNCTIONS AND ADVANTAGES

When the water network does not supply sufficient pressure and/or quantity of water, the MB CAPI pre-autoclave system, consisting of a pressure tank filled 2/3 of water and 1/3 of air and a pressurisation unit, is designed to guarantee the water supply to the highest floors of the buildings. The system guarantees maximum water hygiene, as it is drawn from a closed container under pressure with direct arrival from the water mains without coming into contact with the atmosphere before use.

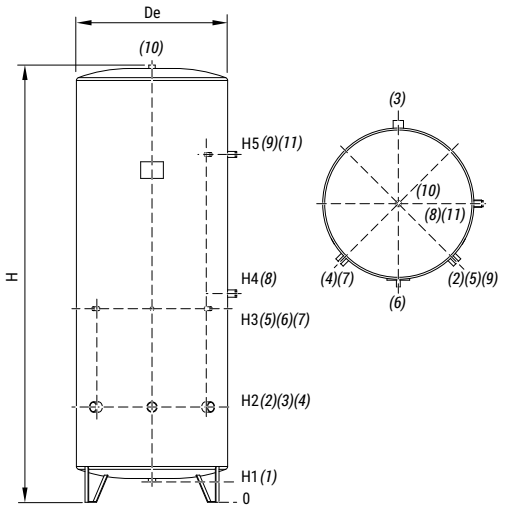
If the network pressure is sufficient, the system remains stationary, avoiding waste of electricity and the water is renewed inside the tank, flowing towards the users. In this way the water never stagnates avoiding bacterial contamination. If the pressure is insufficient, the system intervenes with a constant flow of water to the electric pump(s) thanks to the inverter system. Therefore the inlet pressure from the water mains accumulated in the tank combines with the pressure of the chosen pumping group. In this way it is possible to reduce the installed power and thus obtain economic savings.

**Dimensional table**

| Model | Capacity (L) | Compressor (HP) | De | H | H1 | H2 | H3 | H4 | H5 | 1-8-10 | 2-3-4 | 5-6-7-9 | 1v1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MB CAPI 1-300 | 300 | 1 | 550 | 1554 | 135 | 445 | 745 | 845 | 1245 | 1" 1/4 | 1" 1/4 | 1/2" | - |
| MB CAPI 1-500 | 500 | 1 | 650 | 1847 | 127 | 462 | 862 | 962 | 1512 | 1" 1/4 | 1" 1/2 | 1/2" | 1" |
| MB CAPI 1-750 | 750 | 1 | 750 | 2133 | 103 | 518 | 968 | 1068 | 1718 | 1" 1/4 | 2" | 1/2" | 1" |
| MB CAPI 1-1000 | 1000 | 1 | 850 | 2633 | 103 | 518 | 1168 | 1268 | 2218 | 1" 1/4 | 2" | 1/2" | 1" |
| MB CAPI 2-1500 | 1500 | 1 | 1000 | 2295 | 105 | 600 | 1100 | 1200 | 1800 | 1" 1/4 | 2" | 1/2" | 1" |
| MB CAPI 2-2000 | 2000 | 1.5 | 1000 | 2795 | 105 | 600 | 1250 | 1350 | 2300 | 1" 1/4 | 2" | 1/2" | 1" |

**Pressurised tank technical drawing**

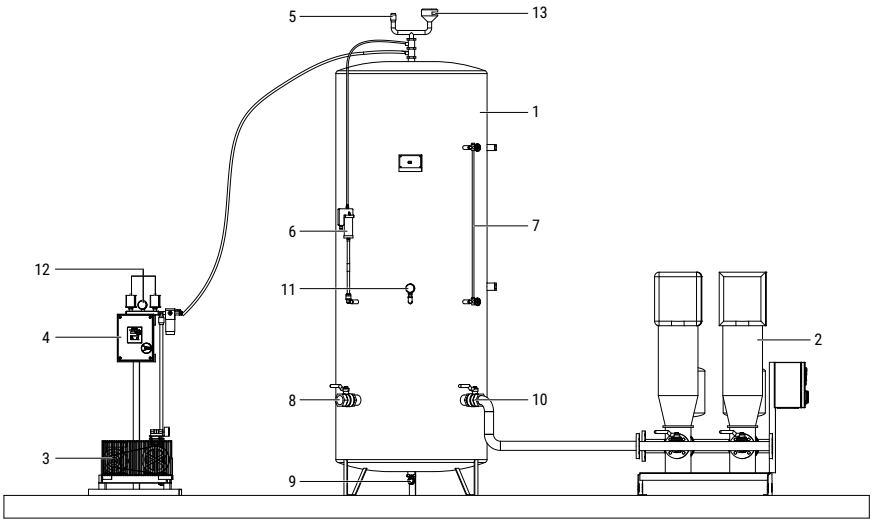
| Art. no. | Description |
|---|---|
| 1 | Discharge |
| 2-3-4 | Power - Use |
| 5-9 | Visual level indicator |
| 6 | Pressure gauge |
| 8-11 | Level switch |
| 7 | Control instrument |
| 10 | Safety valve, anti-vacuum valve and automatic air supply |



## Pre-autoclave system example layout

| Art. no. | Description |
|---|---|
| 1 | Pressurised tank |
| 2 | Pumping group |
| 3 | Belt driven compressor on base |
| 4 | Electric panel for compressor control |
| 5 | Tank relief safety valve |
| 6 | Level switch to maintain air/water ratio (to be installed at 2/3 tank height) |

| Art. no. | Description |
|---|---|
| 7 | Visual air/water level indicator inside the tank |
| 8 | Water network inlet with 2" ball valve |
| 9 | Tank discharge with 1" ball valve |
| 10 | Pressure booster pumping group delivery |
| 11 | Pressure gauge |
| 12 | Compressor pressure switch |
| 13 | Anti-vacuum valve |




# Accessories

## ACCUMULATION AND PRESSURE BOOSTER SYSTEM ACCESSORIES

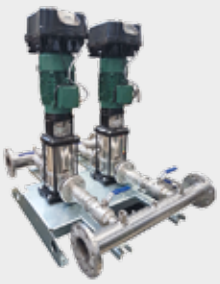
**Pressurised tank**

- Pressurised tank, made of hot-dip galvanised steel or AISI 316 stainless steel, in vertical version with or without PVC finishing insulation.
- Maximum working pressure 8 Bar.
- The tank is manufactured and tested according to directive 2014/68/EU (PED) regulating pressure equipment.

Capacities from 300 to 2000 L available, other dimensions on request.

**Pumping group**

- Pumping group suitable for specific needs;
- E.SYBOX: the new integrated system for water pressurisation in domestic and residential environments. It consists of a self-priming multi-stage pump, control inverter electronics, pressure and flow sensors, high resolution adjustable LCD display and an integrated 2-litre expansion tank. Suitable for houses and small condominiums up to 6 floors and a maximum of 9 apartments. Or up to 9 floors and a maximum of 17 apartments for the version with double E.SYBOX;
- Variable speed pressurisation units with 1/2/3 multi-impeller pumps coupled by means of a rigid coupling to high energy efficiency IE3 electric motors with integrated inverter panel and complete with expansion tank. AISI 316 stainless steel version available on request



**Compressor**

Compressor with belt drive on base, without tank, single-cylinder or two-cylinder single-stage with single-phase or three-phase electric motor and 1 or 1.5 HP power.
Maximum distribution pressure 8/10 Bar.
Noise emissions from 70 db to 85 db.

**Anti-condensation filter**

The anti-condensation filter on the compressor outlet pipe, prevents the condensate produced by the compressor from reaching the pressurised tank. A check valve is installed on the same pipe to keep the system under pressure and to prevent the pressurised tank discharge from reaching the compressor, in case of system malfunction.

*Product images are purely indicative*

**Level switch**

Device for checking the level of air/water in the pressurised tank. It is composed of a brass cylinder with a float inside. There is a permanent magnet on the float head which activates the control micro switch when the liquid increases.

**Safety valve**

Adjustable pressure relief valve with "free discharge" compliant with European Directive 97/23/EC (PED).
It is a device designed to open when the internal pressure reaches the maximum set limit for the valve and automatically resets when the internal pressure of the system returns below the set limit.
The valve discharge is not conveyable.
Maximum pressure: 16 Bar, adjustable from 0.5 to 16 Bar.

**Anti-vacuum valve**

Pressurised air inlet valve with opening in depression condition.
The valve opens to allow air to enter if the water inlet has a lower pressure than the atmospheric one and then closes tightly when the water flow is restored to normal pressure.
Maximum pressure: 16 Bar.
Minimum sealing pressure: 0.2 Bar.

**Level indicator**

It consists of two taps with needle seal and a transparent pipe. By exploiting the principle of communicating vessels, the level reading is absolutely faithful to the real level of liquid present in the tank.
The needle closure allows the transparent pipe to be isolated for quick replacement in case of faults, while the tap located in the lower part of the indicator pair has the function of draining the liquid still present in the transparent pipe.

**Pressure gauge**

Pressure gauge capable of detecting the pressure inside the pressurised tank.
Pressure gauge with 0-10 / 0-16 Bar scale and 1/4" rear connection.

*Product images are purely indicative*

**Pressure switch**

Pressure switch for compressor control.
The switch automatically adjusts the compressor start and stop according to the set pressure values.
It is equipped with an automatic drain valve capable of evacuating the air from the compressor cylinder for a high number of stop cycles, ensuring correct restart at the next cycle.

**Inverter, VASCO model**

Device for pumping system control and protection based on the variation of the pump supply frequency to keep a certain physical quantity (pressure, flow rate or temperature of the fluid) constant.
It has 4 configurable digital outputs, 4 analog inputs and 4 digital inputs.
Communication: Modbus RTU SS485, Bluetooth SMART (4.0).
Available with pressure or temperature sensors.

**Electric panel**

**Electromechanical panel, assembled in a PVC case with IP 56 protection degree, built according to EN61000-6-3 and EMC 61000-6-1 standards.**
The panel is designed for compressor power supply and control.
When the minimum pressure switch detects a low pressure, the panel sends a signal to the compressor to start. Similarly, when the pressure entered is reached, the compressor is stopped.

D+ CONNECT

DAB WATER•TECHNOLOGY

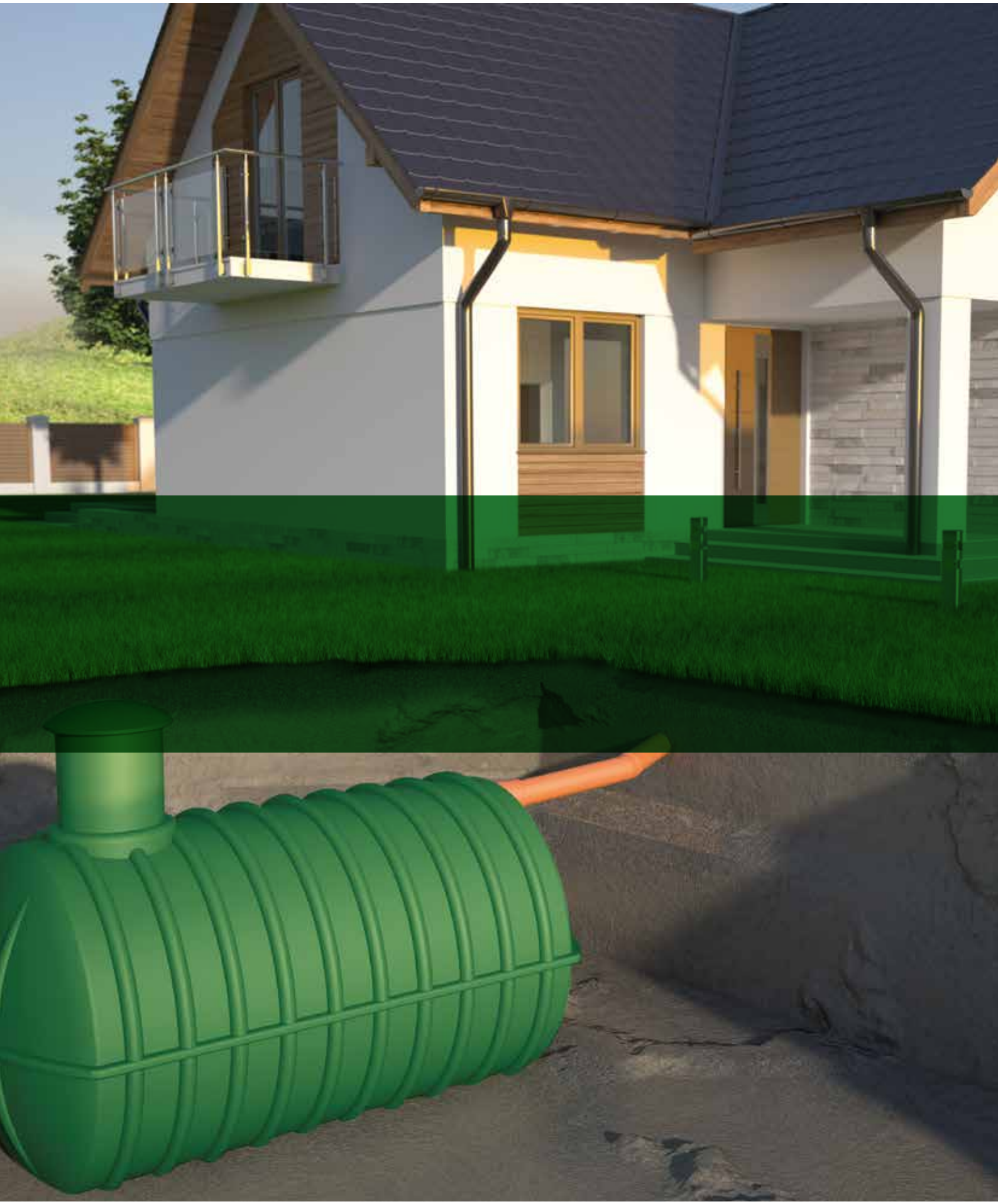
**D-CONNECT**
**[ OPTIONAL ]**

**Innovative device that extends the ability to control and supervise the fire-fighting system through the internet from any part of the world using a web browser.**

It offers:

- Constant supervision and acquisition of the operating data of the pumping group 24 hours a day, 7 days a week;
- Remote intervention to modify the parameters in real time;
- Remote alarm signalling not only from the electrical panel but also from the APP;
- Configuration from APP without physical intervention inside the electrical panel.

*Product images are purely indicative*



MAJIeco

# INTEGRATED RAIN AND GRAY WATER RECOVERY SYSTEMS

**Majitekno** manufactures a series of systems for the recovery and reuse of grey water and rainwater, offering a range of systems and components to meet the multiple plant requirements, associated with a remarkable system control simplicity and significant water savings.

**MajiEco range products are entirely made and certified by Majitekno in compliance with all relevant regulations.**

The MajiEco line is made up of grey water and rainwater recovery and reuse systems designed for applications in residential, commercial, public, industrial and agro-industrial structures.

**All water recovery systems have been designed with advanced manufacturing techniques and the use of materials and plant components with high quality standards.**

## The MajiEco range is divided into three product lines:

MAJIECO-RAIN

### Rain, well, river and lake water recovery, storage and re-use systems

MAJIECO-GRAY

### Grey water purification and recovery systems

MAJIECO-TREAT

### Waste water processing systems

Rain, river or lake water recovery, storage and re-use systems. Complete with electronic unit for functional system control, automatic water supply from the water network and management of the pumping system to pressurise utilities. Supplied with standard underground tanks with useful capacity from 1,000 to 50,000 litres each and with the possibility of multiple modular installations.

Rainwater is a continuously available source and its non-potable reuse requires simple and economical processes; recovering and reusing them saves about 30% of drinking water.

The MajiEco-Rain system consists of:
1. Underground polyethylene tank for water collection.
2. Pressurisation system with suction kit.
3. Leaf filter.
4. Control panel.

Advantages of rainwater recovery and reuse:
- Reuse for toilet flushing, house cleaning, for laundry, to power household appliances, to wash the car and to irrigate vegetable gardens and laws.
- Reduction of sewerage overload and possibility of flooding in case of very intense rainfall.
- Reduction in drinking water consumption and the cost of water supply bills by up to 50%.

Purification and recovery systems for shower, bathtub, bidet and washbasin drain grey water.
Complete with electronic control unit and electric pump pumping system. Applications in homes, residential complexes, shopping centres, sports centres and industrial units.
Processing capacity from 250 to 9,000 l/day.

Gray water is domestic waste water from from: showers, bathtubs, bidets, sinks and washing machine drains and represent about 50-80% of the entire domestic discharge.
This water ends up directly in the drain, but with appropriate treatments it is possible to recover grey water and reuse it for other daily uses; it's an eco-sustainable and cheap solution.
The MajiEco-Gray implant is characterised by a purification process that takes place in several phases:
1. Coarse filtration.
2. Unprocessed grey water accumulation (one or more tanks);
3. Ultra filtration with membranes (one or more bioreactors);
4. Purified grey water accumulation (one or more tanks).

Advantages of grey water recovery:
- Reduction in drinking water consumption and the cost of water supply bills up to 80%.
- Reuse of filtered grey water for WC flushing, for domestic cleaning, for washing cars, for fire-fighting networks and for irrigation.
- Possibility of combining grey water with rainwater recovery by using a single tank to collect bpth fluids.
- Reduction of polluting emissions.
- Economic revaluation of existing properties.

Reuse of grey water:
- Urban uses: domestic residential use, outdoor residential use, public and commercial use (construction, irrigation of green areas).
- Industrial uses: cooling systems, boiler feeding, process water (paper, chemical, textile, petrochemical industry), irrigation and maintenance of green areas.
- Agricultural uses.
- Landscape and recreational uses, or environmental enhancement and recovery (natural and artificial marshes, groundwater refill).

Integrated standard degreaser and oil separator systems for the collection and pre-processing of waste water from kitchens and laboratories with a high content of fats and oils.
Complete with pumping unit with electronic control unit for automatic operation. Processing systems are integrated in the underground or outdoor tanks to separate the oils and fats from the water and give them the characteristics required by current regulations before being introduced into the sewer system.

All water containing grease, vegetable oils, petrol and hydrocarbons must be purified before being introduced into the sewer system.
The MajiEco-Treat systems are divided into two categories: degreasers and oil separators and have been designed for the collection and pre-treatment of waste water from kitchens, hotels, food establishments, refineries, soap factories, car washes, workshops, yards and laboratories with high fat and oil content.

MajiEco-Treat systems are composed of:
1. Underground or outdoor polyethylene tank for water collection.
2. Processing systems to separate oils and fats from water.

# MAJIECO-RAIN

Rain, well, river and lake water recovery, storage and re-use system

## OPERATING PRINCIPLE

The rainwater recovered from roofs through gutters is channelled into special storage tanks; after being filtered, it is reintroduced into the domestic system through pressurisation units and intended washing points, drain cisterns, irrigation systems and washing machines.
The rainwater recovery system for domestic, residential, sports, commercial and industrial centres or from other sources has the purpose of recovering rainwater and is composed of:

- A non-toxic high density polyethylene underground tank.
- A filtration system.
- A control unit.

The water is collected from the gutters and conveyed to the filter inside the washing tank. The purpose of the filter is to separate water from dirt and channel it inside the tank through a pipe (decanter terminal) whose final part is facing upwards, in order not to create turbulence and therefore not to move any sediments lying on the bottom of the tank.
The filtered residues are eliminated through the drain line.
The control unit, consisting of an electrical panel and a pump, controls the entire system from inside the home.
The main purpose of the rainwater recovery system is to give priority to the consumption of rainwater, but when it is insufficient, the control unit switches to the mains water supply, thus ensuring a flow of water to the withdrawal points.

The connection between the rainwater tank and the mains water tank integrated in the system is selected by means of a two or three way valve. The pump operates exactly like a pump with "start-stop" system with flow and pressure control, when the pressure drops below a default value, the pump starts, when the utility closes the pump stops.
The capacity of the storage tank is calculated based on the average annual rainfall of the area where the system is installed, on the surface available for water recovery (roofs and balconies) and water needs.

Majieco-Rain system installation example

# ME-RT-SP

## Rainwater recovery system with submersible pump

Rainwater recovery system 7.2 m³ / h
equipped with submersible pump
DTRON2 X 45/90.

**COMPLETE KIT**

- Underground tank for rain water collection.
- Submersible pump model: DTRON2 X 45/90 with suction kit, assembled and mounted inside the tank.
- Leaf filter.
- Pump electrical control panel with integrated solenoid valve and transducer for system operations with reintegration from the water network in the absence of rainwater inside the tank.

**DTRON2 X 45/90 multi-impeller pump characteristics**

| | |
|---|---|
| Protection degree | IP68 |
| Max flow rate | 7.2 m³/h |
| Max head | 45 m |
| Pumped liquid temperature | From 0°C to +50°C |
| Mains water pipe diameter | 1" |
| Delivery and suction pipe diameters | 1" 1/4 |
| Overflow diameter | DN50 |

Example of tank with pump and leaf filter installed

# ME-RT-AT

## Rainwater recovery system with AQUATWIN TOP tank

9.6 m³/h rainwater recovery system
equipped with 150 L AQUATWIN TOP
submersible pump.

**COMPLETE KIT**

- Underground tank for rain water collection.
- Jetinox Europium automatic electric pump enclosed at the bottom of the structure.
- Control panel located on the side of the structure.
- 150 L water reserve tank positioned in the upper part of the structure which also guarantees continuity of supply in case of lack of rain water.
- Adjustable feet positioned at the base that allow to stabilise the system even in irregular plans.

**JETINOX EUROINOX automatic electric pump characteristics**

| | |
|---|---|
| Ambient temperature | max +40°C |
| Max flow rate | 9.6 m³/h |
| Max head | 57 m |
| Pumped liquid temperature | from +0°C to +40°C |
| Max system pressure | 5.5 bar (550 kpA) |
| Max mains pressure | 3-5 bar (300-500 KpA) |
| Mains water pipe diameter | 1/2" |
| Delivery and suction pipe diameters | 1" |
| Overflow diameter | DN50 |

Aquatwin Top system

Example of tank with pump and leaf filter installed

# ME-RT-EB

## Rainwater recovery system with E.SYBOX

120 l/min rainwater recovery system
equipped with E.SYBOX system.

**COMPLETE KIT**

- Underground tank for rain water collection.
- Self-priming multi-stage pump with inverter electronics controls and pressure and flow sensors enclosed in the structure.
- Frontal control LCD display
- 2-litre integrated expansion tank
- Both vertical and horizontal installation

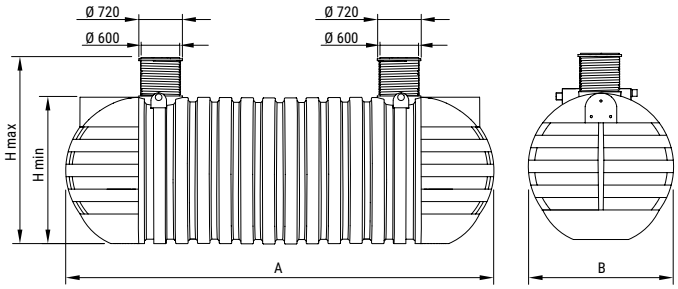
**E.SYSBOX characteristics**

| | |
|---|---|
| Ambient temperature | max +50°C |
| Max flow rate | 120 l/min |
| Max head | 65 m |
| Pumped liquid temperature | from +0°C to +35°C |
| Max system pressure | 8 bar (800 kpA) |
| Max mains pressure | 3-5 bar (300-500 KpA) |
| Mains water pipe diameter | 1" |
| Delivery and suction pipe diameters | 1" |

Example of tank with pump and leaf filter installed

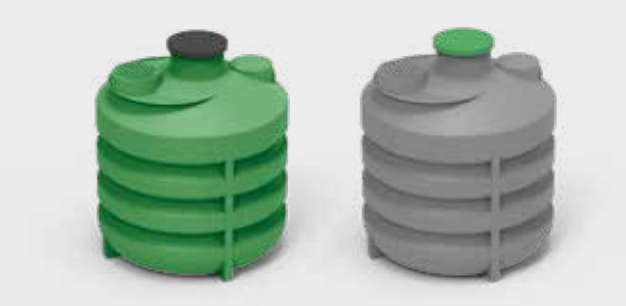
## HORIZONTAL ME-RT dimensional tables

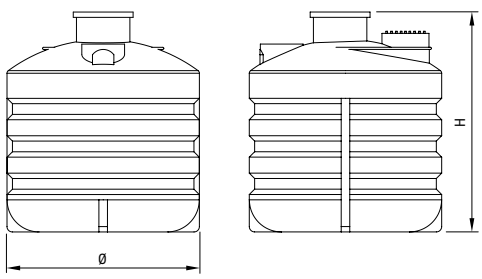
| Volume (L) | A Length (mm) | B WIDTH (mm) | H min (mm) | Φ Manhole (mm) | Weight (Kg) | Thickness (mm) | Material |
|---|---|---|---|---|---|---|---|
| 500 | 1085 | 860 | 1100 | 600 | 80 | 6-12 | Polyethylene |
| 2,200 | 1840 | 1400 | 1600 | 600 | 100 | | |
| 2,600 | 2150 | 1400 | 1600 | 600 | 115 | | |
| 3,000 | 2400 | 1400 | 1600 | 600 | 130 | | |
| 3,500 | 2080 | 1800 | 2050 | 600 | 165 | | |
| 5,000 | 2450 | 1800 | 2050 | 600 | 195 | | |
| 6,000 | 2820 | 1800 | 2050 | 600 | 235 | | |
| 8,000 | 2680 | 2300 | 2350 | 600 | 275 | | |
| 10,000 | 3040 | 2300 | 2350 | 600 | 315 | | |
| 12,000 | 3760 | 2300 | 2350 | 600 | 365 | | |
| 16,000 | 4480 | 2300 | 2350 | 600 | 465 | | |
| 22,000 | 6280 | 2300 | 2350 | 2x600 | 820 | | |
| 25,000 | 7370 | 2300 | 2350 | 2x600 | 1040 | | |
| 30,000 | 8450 | 2300 | 2350 | 2x600 | 1080 | | |
| 35,000 | 9890 | 2300 | 2350 | 2x600 | 1340 | | |
| 40,000 | 10970 | 2300 | 2350 | 2x600 | 1380 | | |
| 45,000 | 12410 | 2300 | 2350 | 2x600 | 1640 | | |
| 50,000 | 13490 | 2300 | 2350 | 2x600 | 1680 | | |




## VERTICAL ME-RT dimensional tables

| Volume (L) | A Diam (mm) | H (mm) | Φ Manhole (mm) | Weight (Kg) | Thickness (mm) | Material |
|---|---|---|---|---|---|---|
| 900 | 1300 | 1300 | 600/800 | 40 | 6-12 | Polyethylene |
| 1,200 | 1300 | 1550 | 600/800 | 50 | | |
| 1,500 | 1300 | 1800 | 600/800 | 65 | | |
| 1,700 | 1300 | 2050 | 600/800 | 80 | | |
| 2,000 | 1300 | 2300 | 600/800 | 95 | | |
| 2,300 | 1300 | 2550 | 600/800 | 115 | | |
| 2,500 | 1300 | 2800 | 600/800 | 130 | | |
| 2,800 | 1300 | 3050 | 600/800 | 145 | | |
| 3,000 | 1300 | 3300 | 600/800 | 160 | | |
| 3,200 | 1800 | 2350 | 600/800 | 136 | | |
| 4,000 | 1800 | 2700 | 600/800 | 155 | | |
| 5,000 | 1800 | 3100 | 600/800 | 182 | | |
| 6,000 | 2300 | 2400 | 2x600 | 212 | | |
| 7,500 | 2300 | 2750 | 2x600 | 243 | | |
| 8700 | 2300 | 3100 | 2x600 | 274 | | |
| 10,000 | 2300 | 3500 | 2x600 | 306 | | |





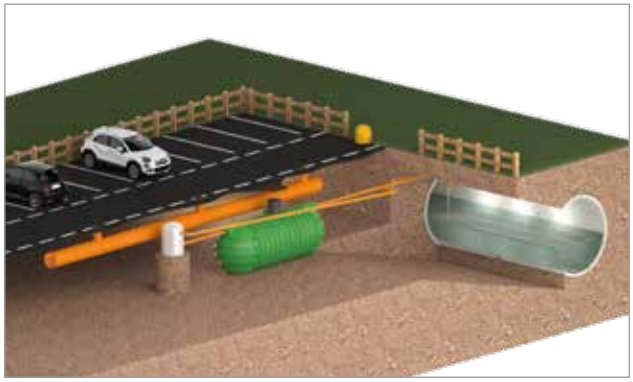

Vertical version ME-RT rain water tank

# MAJIECO-RAIN

## Rainfall and washout water processing system

Rainfall or washout systems are essential to control the polluting effect of rainwater.
The term "rainfall" means the initial part of the collection of rainwater. Rainfall systems are dimensioned with reference to the local rainfall and meteorological coefficients.
The areas affected by rainfalls must be suitably prepared to facilitate the conveyance of the water in a single point where the rainfall system will be positioned.

More precisely, "rainfall" defines the quantities of rainwater precipitated in the first 15 minutes of the meteoric event. Such quantities are defined as a reference value which is usually 5 mm across the entire affected surface.
This water must be separated from the “subsequent rainfall” (precipitated in the following 15 minutes) and treated before the final release, as it carries away the polluting elements present on the draining surface due to washout.



Rainfall and washout water processing system example

## OPERATING PRINCIPLE

The operation of a "rainfall" tank is such that once filled, a surface spillway comes into operation, therefore all the water from that moment onwards can be introduced directly into the receiving water body or, when provided, into th stormwater attenuation tank upstream of the receiving body.
The water accumulated in the rainfall tank is gradually sent to the black sewer system and then conveyed towards the processing plant.

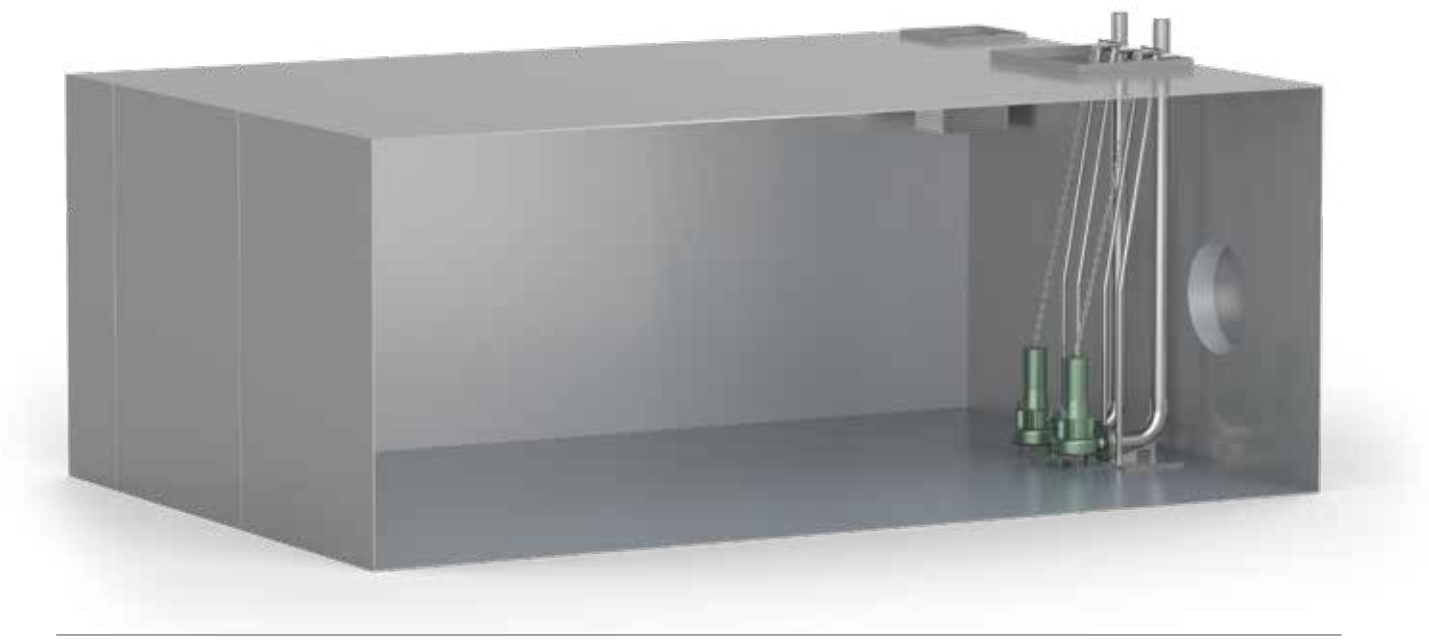
Refer to water quality aspects for tank dimensioning.
From a regulatory point of view, rainfall water corresponds to one or more atmospheric precipitations with a total height of at least 5 mm uniformly distributed over the entire drainage surface served by the drainage network.
For the purpose of calculating the flow rates, it is established that this value occurs in 15 minutes and a runoff coefficient is assumed for impermeable areas equal to 1. This rain water, which flows out in the initial moments of a meteorogical event, are particularly charged with polluting substances since they carry out a "washing" action on the uncovered surfaces and the atmosphere, therefore they must be subjected to a specific process.

Necessary information:
1. Surface of the collection basin and type (waterproofed areas);
2. Nature of discharges: in addition to 5 mm of rain, the discharge rates of car washes must be evaluated;
3. Definition of the entry flow rates and concentrations;
4. Definition of concentration limits for each pollutant that must be discharged into the sewer system (Reference standard for processed discharge parameters:suspended solids, grease and mineral oils, total hydrocarbons tab. 3 annex 5 Legislative Decree 152/06);
5. Once the inflow and concentration limits have been obtained, the rainfall tank, sand trap and the oil separator are dimensioned.

# MAJIECO-RAIN

## Stormwater attenuation tanks

Steel tanks complete with pumping systems.



Example of stormwater attenuation tank complete with pumping group

Stormwater attenuation tanks are dimensioned and built according to the maximum stormwater events; they allow for the stormwater attenuation of the flood flow rates so as to reduce the danger of surface flooding caused by the lack of watercourses and conducts.
These tanks are characterized by an inlet pipe, consisting of the final part of the downspout network which collects the rainwater from the area where the system is, and an outlet pipe connected directly to the receiver.
The design of these works is based on the necessary volume to accumulate excess flow; the problem is addressed using the continuity equation which is solved in line the maximum inlet flow and the maximum disposable flow in the water body.

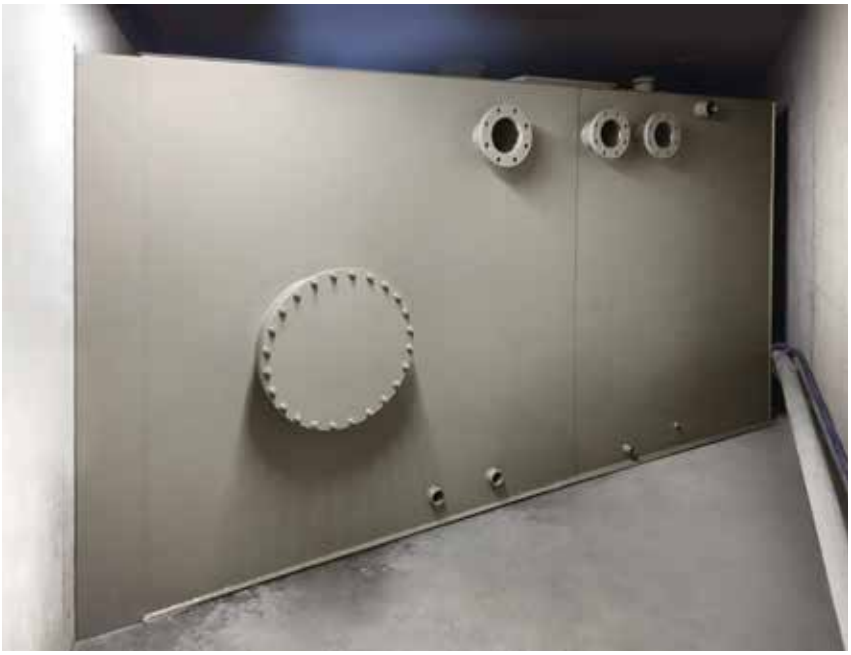
This solution can be obtained analytically, but to simplify the design, most of the Basin Authorities have imposed specific volumes (depending on the area that is going to be urbanised) to be identified with the necessary volume for the stormwater attenuation tank.
At the national level there is no specific legislation regarding the dimensioning of attenuation basins; the only rules on the subject are those issued by the various Basin Authorities present in the area. These rules, in order to define the volume to be assigned to the tanks, introduce the concept of "**hydraulic invariance**" in the transformations of the territory, that is: the transformation of an area that does not cause an increase in the flood stage of the receiving water body originated from the area itself (the purpose is to keep the flow coming from a new settlement lower than the one which came from it before urbanisation).

## NECESSARY INFORMATION DOR DIMENSIONING

Three parameters must be known to be able to dimension stormwater attenuation tanks:

1. **Catchment area conformation**, thus the type and amount of draining surfaces.
2. **Critical event duration** in relation to the type of catchment basin and the intensity of critical rainfall, which affects the calculation of the flood hydrograph.
   (Flows entering the tank over time).
3. By approximating a constant outgoing flow rate and compatible with sewer drains, the minimum volume to be filled is calculated, that is the **minimum volume of the tank**.
   This maximum allowable flow rate can be:
   a. The flow rate that respects the hydraulic invariance, i.e. the flow rate previous to the construction and waterproofing of the basin surfaces;
   b. The maximum discharge capacity in the sewer allowed to the user and variable according to the place.

In the event that, for proven technical reasons, it is necessary to adopt an attenuation tank equipped with a lifting pump, the discharge granted to the private user cannot be modulated by means of the lifting pump, instead an additional well must be provided and equipped with a calibrated bottom drain to collect the flow rate raised by the pump.
This pit can be equipped with an overflow drain with return to the stormwater attenuation tank, in order to avoid that the discharge capacity granted to the user is exceeded due to the pumps.

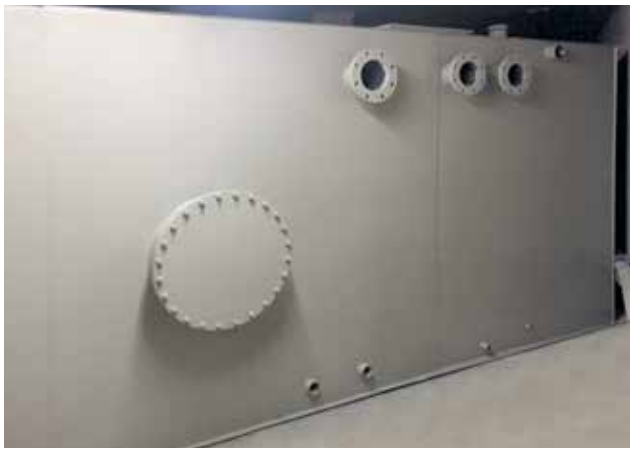


# 140 m³

## Divided into 4 stormwater attenuation tanks

### THE SYSTEM

System consisting of 4 40 m³, 35m³, 35 m³ and 30 m³ stormwater attenuation tanks respectively, made of steel, built on site in the basement of the building and complete with pumping units.



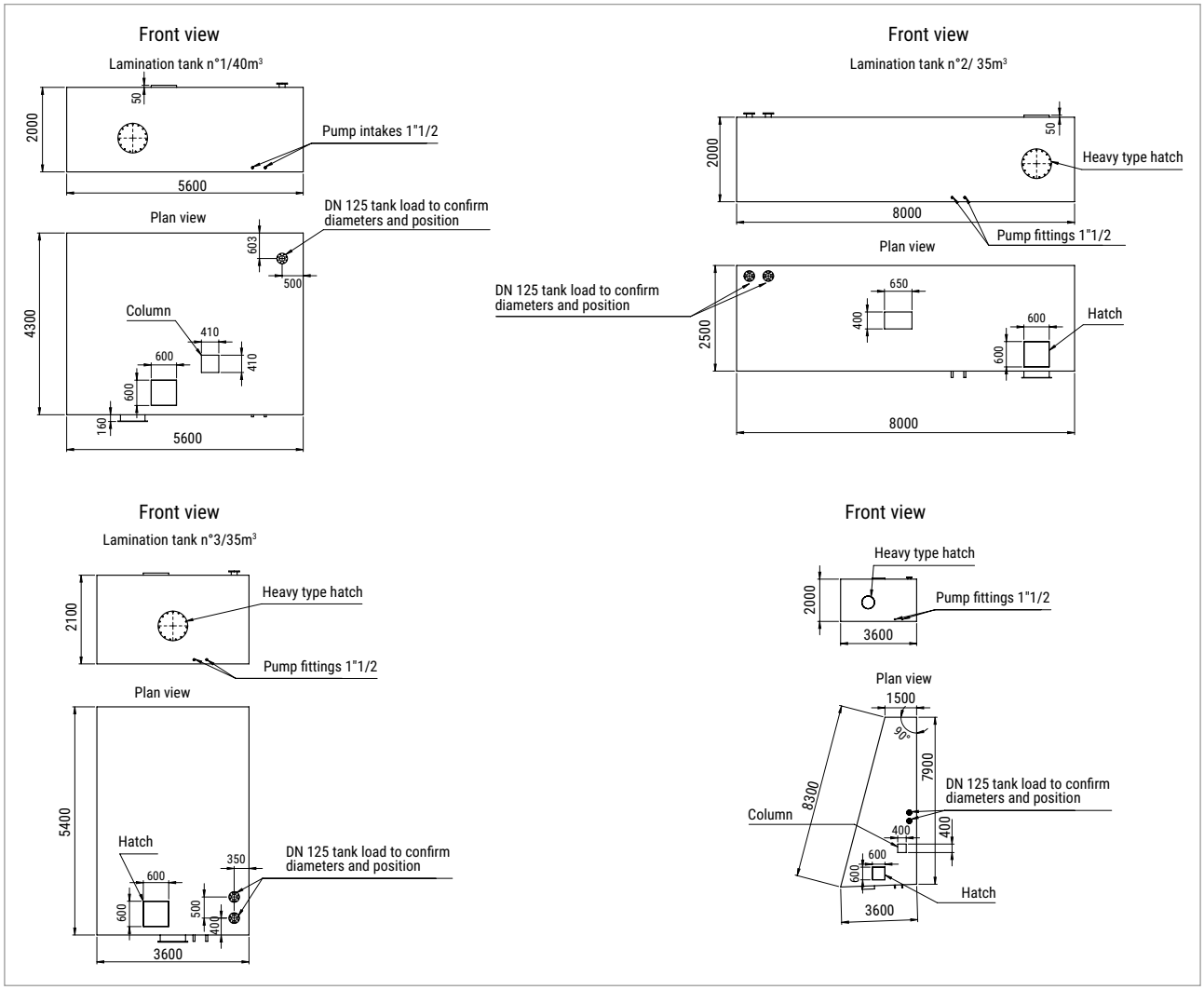
**WHERE**
Residenze Carlo Erba, Piazza Carlo Erba 6, 20129 Milan (MI)

**WHEN**
September 2018

**CONTRACTOR**
Italiana Costruzioni SPA

**HOW**
The "Residenze Carlo Erba" represent a 15,000 square metre residential complex located in a historic area of Città Studi in Milan, formerly the site of a women's prison, the offices of Rizzoli, Rinascente and Zurich Assicurazioni.
The residences are spread over 9 floors, for a total of 75 apartments, ranging from 80 to 200 square meters.
Following the construction of the building, it was necessary to create 4 stormwater attenuation tanks for a total of 140 m³ capacity; the tanks were welded in place in the basement of the building in order to exploit all the available spaces.
A DAB K 12/200 M single-impeller centrifugal pump was supplied for each tank, characterised by an operating range with flow rates from 3 to 17 m³/h and head up to 18 metres, to which a DAB E.box electronic control and command panel was combined.

## Stormwater attenuation tank technical drawings



# 43 $m^3$

## Stormwater attenuation tank

**THE SYSTEM**

System consisting of 1 43 $m^3$ stormwater attenuation tank, made of steel in the basement of the building and complete with pumping units.

WHERE

Condominium in Viale Legioni Romane 15, Milan (MI)

WHEN

June 2018

CONTRACTOR

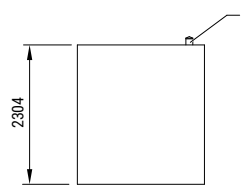
Colombo Carlo - Building Maintenance

HOW

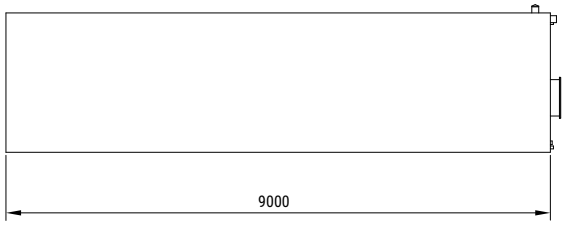
Residence used as apartments and commercial activities for which required the construction of a 43 $m^3$ capacity stormwater attenuation tank; the tank was welded in place in the basement of the building in order to exploit all the available spaces.
Two DAB K 12/200 T single-impeller centrifugal pumps were connected to each tank, characterised by an operating range with flow rates from 3 to 17 $m^3$/h and head up to 18 metres, to which a DAB E.box electronic control and command panel was combined.
Part of the collected water (about5/6$m^3$) is used for irrigation and an AD EUROINOX 10*80 M model DAB pump was provided for this.

## Stormwater attenuation tank technical drawings

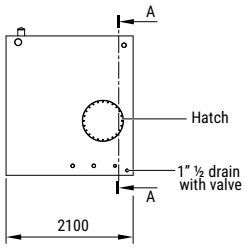
Rear view



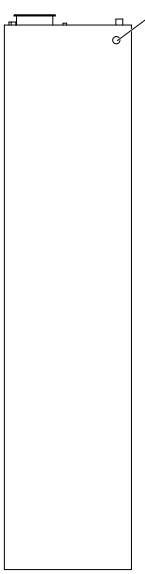

Left side view




Front view DETAIL D

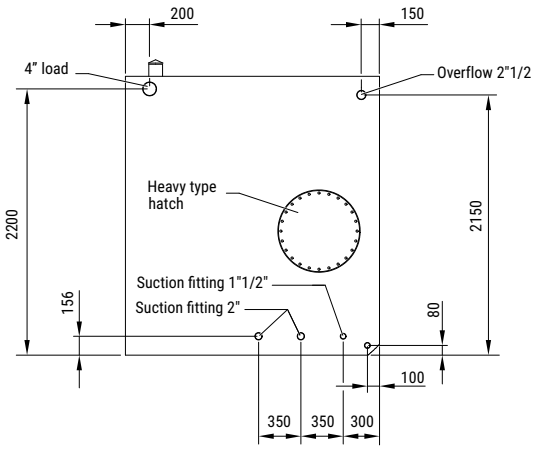



Plan view




SECTION A-A


DETAIL D



# Drain system for stormwater attenuation tanks

## With FEKA submersible pumps

FEKA submersible cast iron pumps with vortex backward impeller for rainwater, clear water, river or lake water, groundwater and black waste water.
Specifications for systems for lifting or transferring sewage from septic tanks and water containing solid bodies with a maximum diameter of 38 mm.

### Pump construction characteristics

- Pump body, motor casing, suction cover and cast iron impeller.
- Rotor shaft, handle and screws made of stainless steel.
- Inspectable oil seal chamber.
- Carbon/ceramic mechanical seal.
- 2" GAS threaded radial delivery port for easy assembly with lifting devices.

### Motor construction characteristics

- Continuous-duty asynchronous submersible type, watertight encapsulated.
- Rotor assembled on oversized ball bearings and permanently lubricated.
- Overload protection inserted in the windings, to be connected to the control panel.
- Construction according to CEI 2-3.

**FEKA technical specifications**

| | |
|---|---|
| Ambient temperature | max +40°C |
| Max flow rate | From 6 to 30 $m^3/h$ |
| Max head | 14 m |
| Pumped liquid temperature | from +0°C to +55°C |
| Max immersion | 7 m |
| Protection rating | IP 68 |
| Insulation class | F |

# Self-priming centrifugal pumps with open impeller

Self-priming close-coupled centrifugal pumps with open impeller equipped with a check flow device incorporated in the suction port which prevents, when stopping, the siphon effect and ensures automatic re-priming at each start.
The pump re-primes even if only partially filled with liquid and with completely empty suction pipe. Specific for draining tanks or pits, civil and industrial applications, irrigation, clean or slightly dirty water even with solid bodies up to a diameter of 10-15 mm.

## Pump construction characteristics

- Cast iron pump body, suction flange and fitting.
- Cr-Ni-Mo stainless steel (AISI 316) rotor shaft.
- Integrated clapet valve that guarantees rapid self-priming after filling the pump body with water.
- Open impeller that allows the passage of suspended solids in the pumped liquid.
- Carbon/ceramic/NBR mechanical seal.

## Motor construction characteristics

- 2-pole induction motor, 50 Hz (n = 2900 1/min).
- Three-phase or single-phase with overload protector and capacitor inserted in the terminal box.
- Execution according to EN 60034-1, EN 60034-30-1, EN 60335-1, EN 60335-2-41 standards.

### Pump technical specifications with open impeller

| | |
|---|---|
| Ambient temperature | max +40°C |
| Max flow rate | From 6 to 33 $m^3/h$ |
| Max head | From 5 to 19.5 m |
| Pumped liquid temperature | from -10°C to +90°C |
| Max. operating pressure | 6 bar (600 kpA) |
| Protection rating | IP 54 |
| Insulation class | F |

# Accessories

## MAJIECO-RAIN SYSTEM ACCESSORIES: RAIN WATER RECOVERY

**FILTERING SYSTEMS FOR CLEAN WATER**

Domestic water system that provides purified, microbiologically safe and clean water. Designed to be installed at the entrance of the structure, as a central system for UV filtration and disinfection. The water source can be the water mains, rainwater or groundwater.

**FILTERING SYSTEMS FOR SANITARY WATER**

Combined water filtration system for complete water cleaning designed for domestic use in the home. Thoroughly cleans water from mechanical particles, chlorine and bad odour. If necessary, it can be installed with the filter device for UV disinfection.

**GUTTER WELL**

Connection element between the gutter and the tank filling pipes.
DN 110, 125, 160 drain. Dimensions Ø 250x600.

**FILTER SET**

Plastic fill/drain hose - Ø 110mm, self-cleaning filter, overflow siphon, slow fill, installation in the tank. Dimensions 100x60x20 mm.

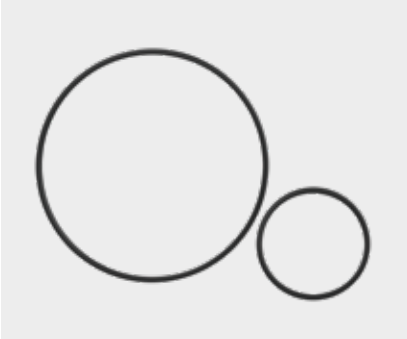
**SUMP WITH FILTER**

Sump with filter that cleans the water before it flows into the tank.
A steel grate is inserted into the plastic compartment to separate leaves and branches from the water before it enters the tank. The filter is closed with a plastic lid. It is available in two dimensions: Ø 400x800 and Ø 600x800.

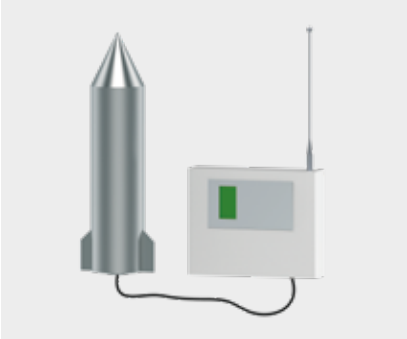
**FINE FILTER**

Fine filter with 2xDN110 inlet and DN110 and DN 125 outlet.
Cleans the water drained from the roof and gutters. The filter is self-cleaning.
Dimensions: Ø 400x450.

**ADDITIONAL EXTENSION**
Telescopic extension that allows you to adjust the height according to the depth of the excavation. Ø 600x400, Ø 400x200 e Ø 600x200.



**RUBBER GASKET**
Rubber gasket for PVC / PP pipes with smooth surface. Available dimensions: Φ 50 mm, Φ110 mm, Φ125 mm, Φ160 mm.



**WATER LEVEL GAUGE**
It measures the water level in the tank and is equipped with LCD display. Dimensions Ø 250x600.

**PEDESTRIAN COVER PLATE**
Up to 600 kg: POLYPROPYLENE lid with drive-over capacity up to 600 kg; equipped with a rubber gasket inserted inside the cover itself. Dimensions Ø 600x30.

**CAST IRON COVER**
15 KN drive-over cast iron cover equipped with rubber gasket. Dimensions Ø 600x30.

**PEDESTRIAN COVER PLATE**
Up to 200 kg: Pedestrian waterproof cover equipped with rubber seal characterised by a drive-over capacity up to 200 kg; meets the DIN 1989 standard.

**CU5 IN ELECTRICAL PANEL**
Electromechanical panel, assembled in a PVC case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards. The panel allows you to monitor the water level inside the water storage tank by means of a solenoid valve inside the panel. It includes the following functions:

- Power on LED signal;
- Alarm LED signal;
- Alarm Buzzer signal;
- Water reservoir level display;
- Analog input for level sensor;
- Level sensor input.

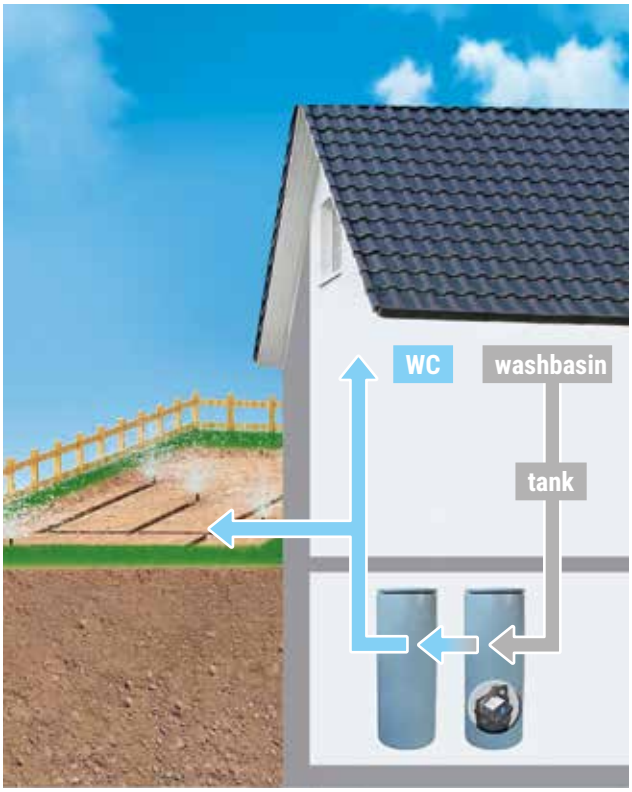
**CU5 OUT ELECTRICAL PANEL**
Electromechanical panel, assembled in a PVC case with IP 55 protection degree, built according to EN 60204-1, EN 60439-1 standards. The panel allows you to monitor the water level inside the water storage tank by means of a solenoid valve outside the panel. It includes the following functions:

- Power on LED signal;
- Alarm LED signal;
- Alarm Buzzer signal;
- Water reservoir level display;
- Analog input for level sensor;
- Level sensor input.

# MAJIECO-GRAY

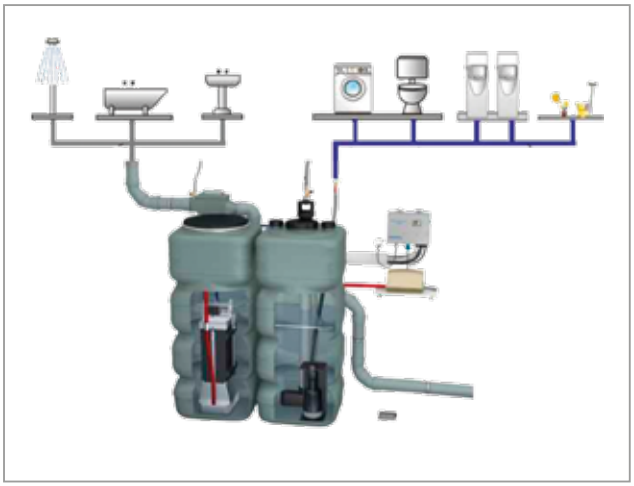
## Grey water purification and recovery systems

Purification and recovery systems for shower, bathtub, and washbasin drain grey water. The filter with applied membrane technology guarantees the complete separation of the biomass from the purified grey water; this process produces a type of water free from solids and completely sterilised with a guaranteed efficiency of 99.99%. The recycling process consists of biological processing and membrane filtration of the water which will be stored in a special tank for clear water; the result will be purified water free from any bacterial load, reusable for toilet flushing, domestic cleaning and irrigation. The system CANNOT be used to process and recover water from organically polluted kitchen drains, water containing chlorine, acids, medicines, chemicals, paint, substances and dyes, dishwasher and washing machine waste water, water from mud baths, water from washing clothes in the shower / bathtub / sink, aquarium water.

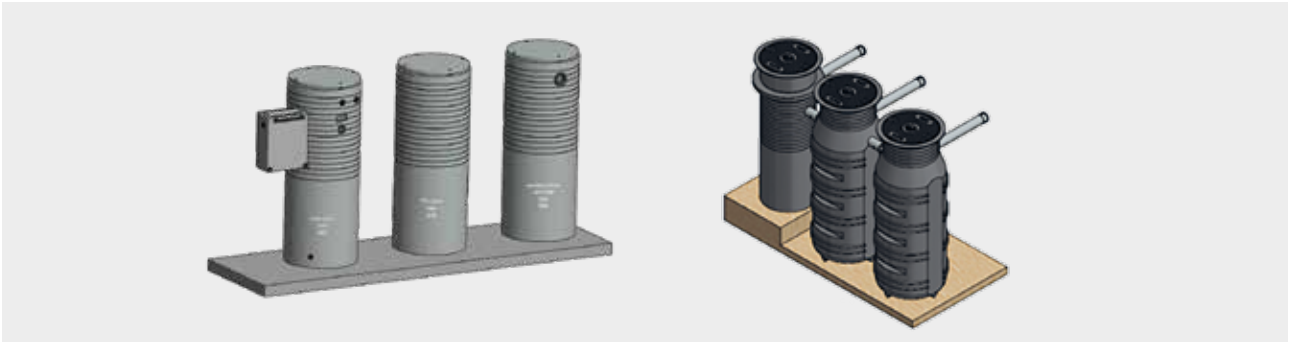



Installations can be:

- Indoor installation with above ground tanks in a technical room;
- Outdoor installation with underground tanks;
- Combination of a rainwater recovery and reuse system using the latter tank for the storage of clarified water.



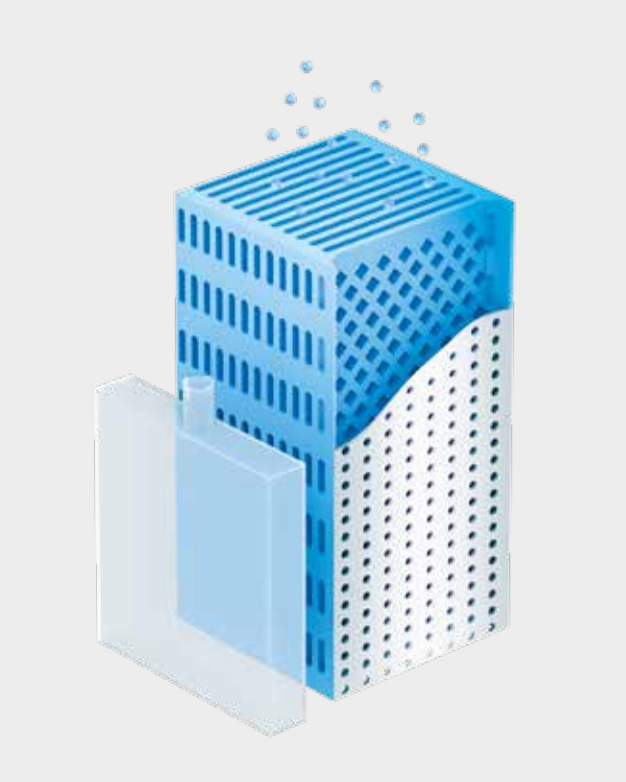
Gray water recovery example:



Indoor system example

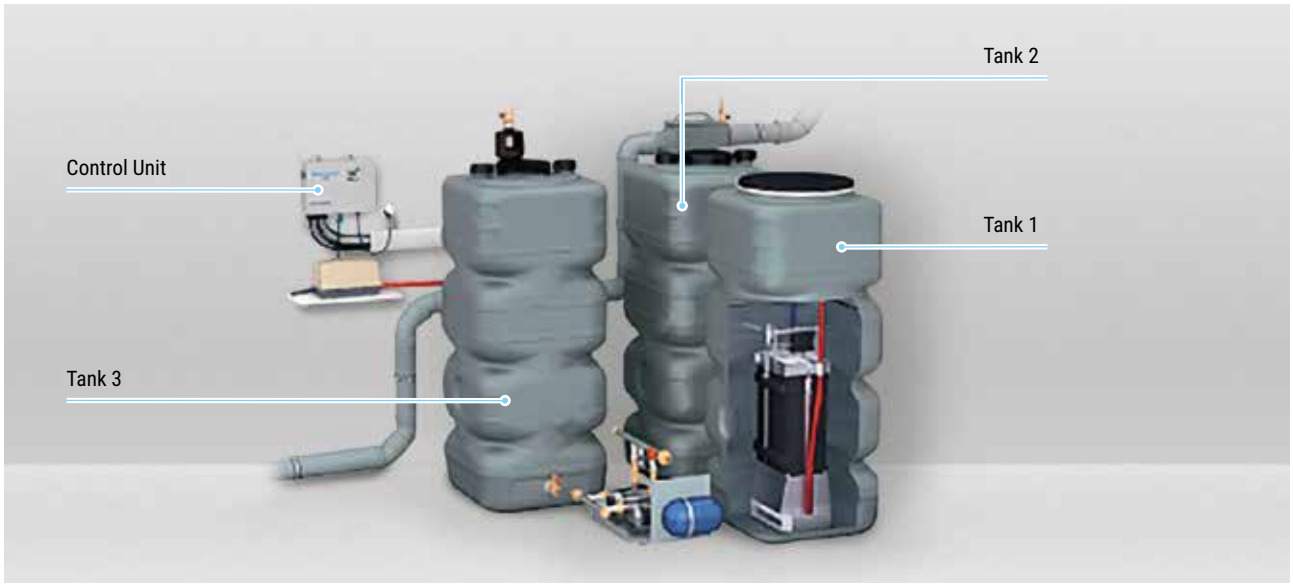
## MEMBRANE FILTER

Thanks to its barrier effect, the organic membrane filter technology (Micro-Clear) ensures that the biomass is completely separated from the purified grey water.
This ensures that the purified water is free from solids, bacteria and viruses with a 99.99% filter retention rate.
The membrane filtering system biological process can be used safely for reuse of purified grey water at home and for the garden.
The maintenance is extremely low: the system only requires an annual check to verify the correct operation of the system parts, and possibly a simple cleaning of the filter membranes.



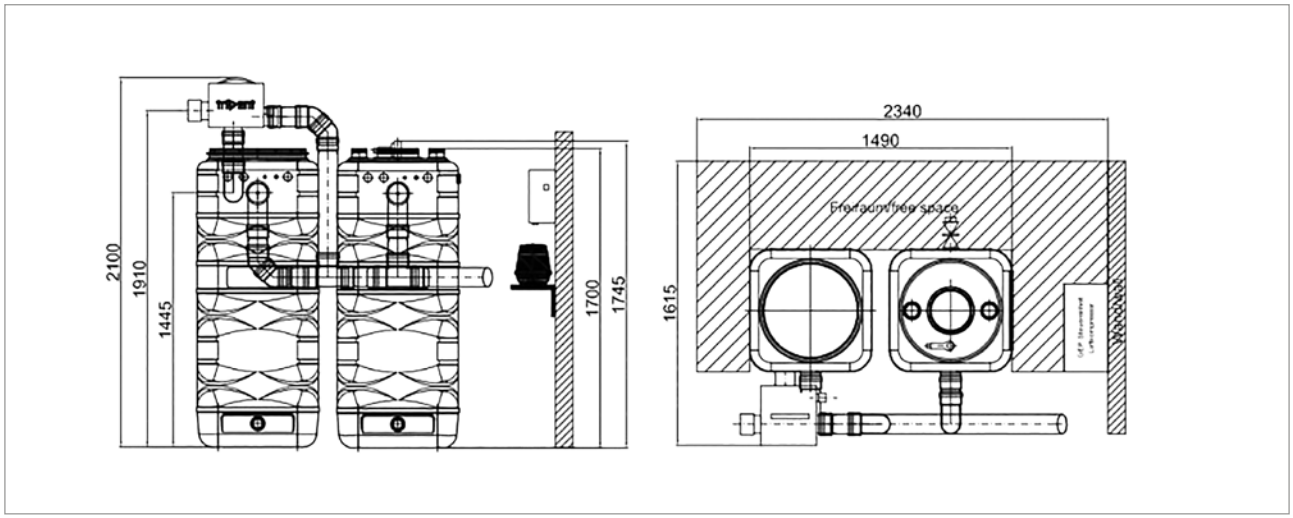
## MAJIECO-GRAY SYSTEM COMPOSITION

- Tank 1: grey water sedimentation and aeration tank complete with grey water inlet, outlet to filtration tank, drain overflow, drain valve and connection kit;
- Tank 2: filter tank complete with grey water inflow, air blowing system, filtering system with membrane filter, filtering push pump, cables and connections;
- Tank 3: processed water tank complete with filtered water access, topping up with drinking water, connection to the pumping station;
- Control unit complete with stainless steel bracket, compressor, system management unit, electrical connections.

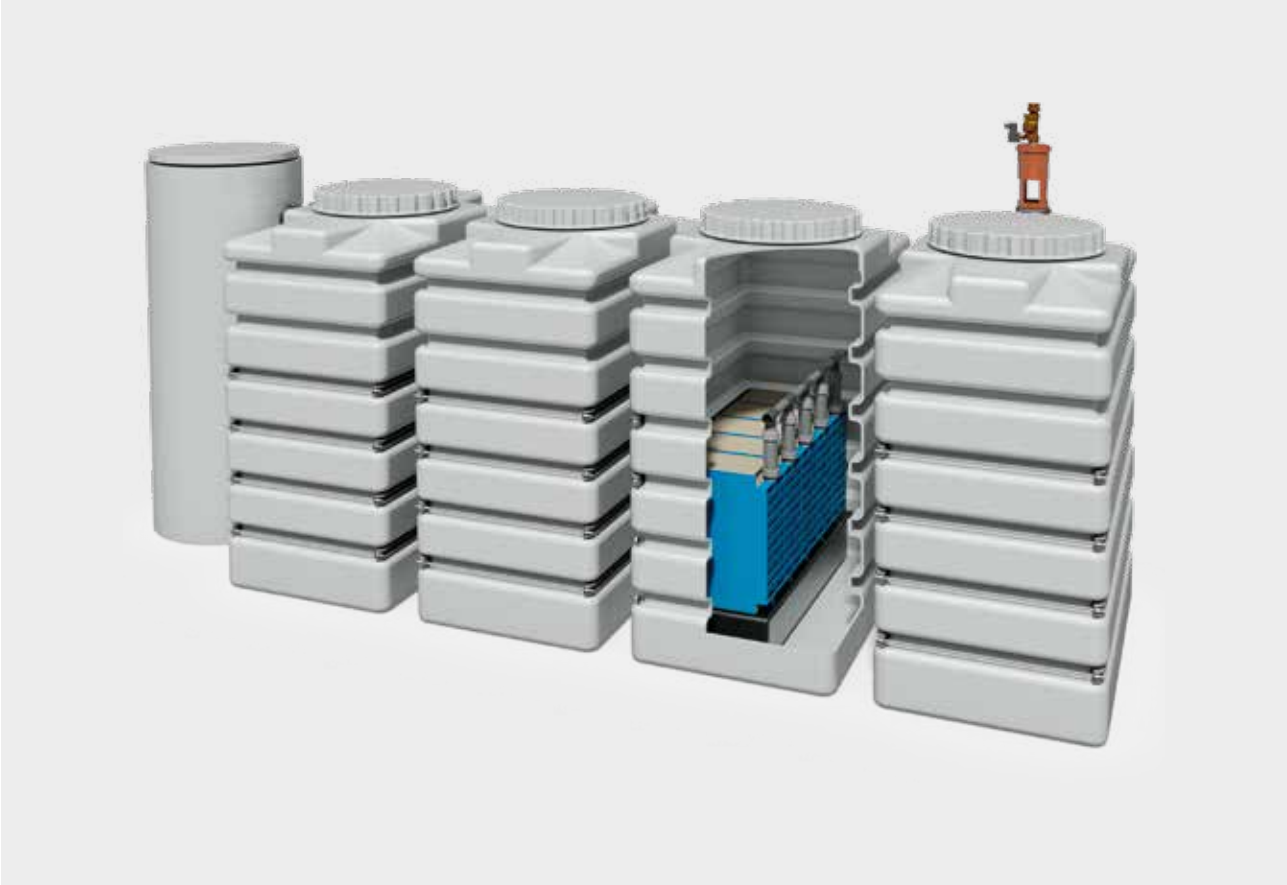


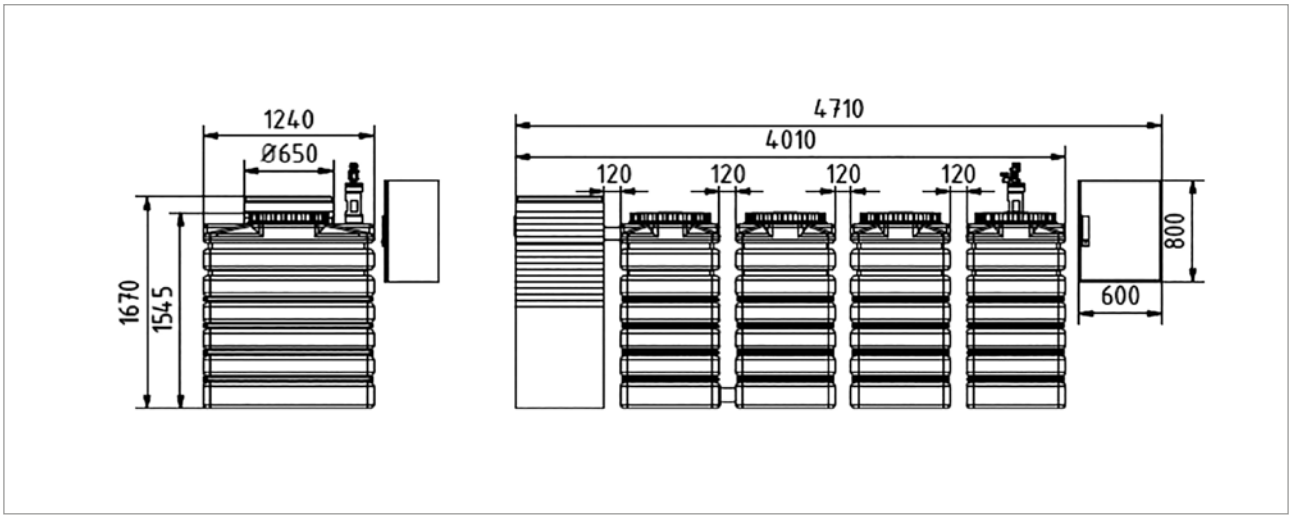
**Example of 250 l/day indoor system**

Example of indoor system installation



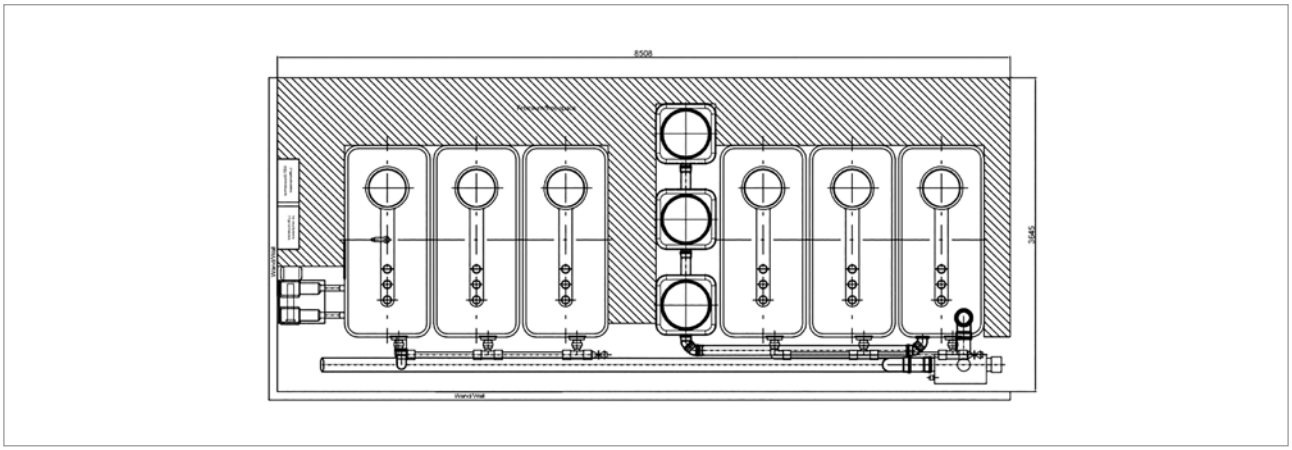
**Example of 2000 l/day up to a maximum of 9000 l/day indoor system**

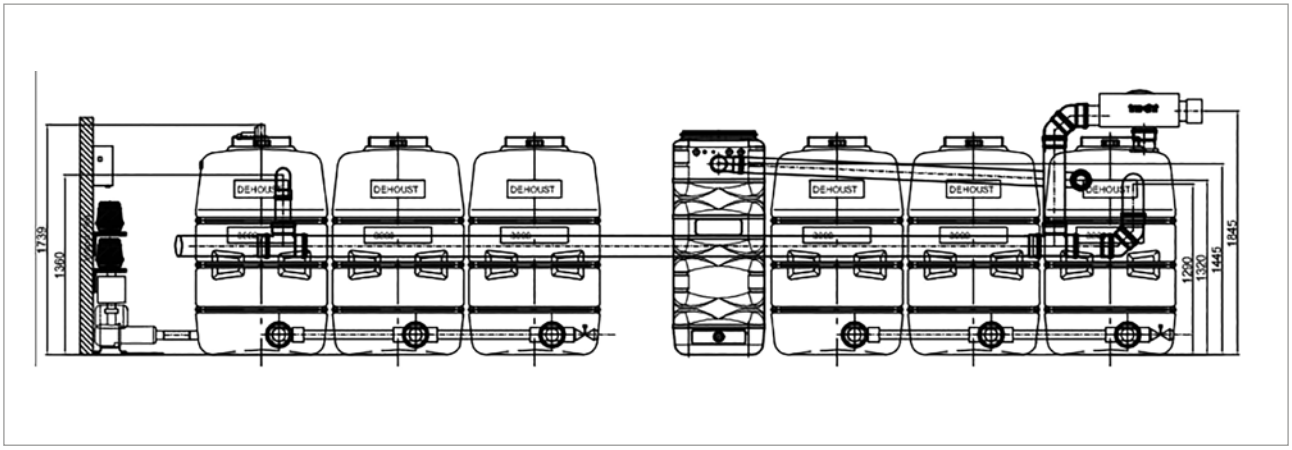




**Example of 2000 l/day up to a maximum of 9000 l/day indoor system**

Example of indoor system installation



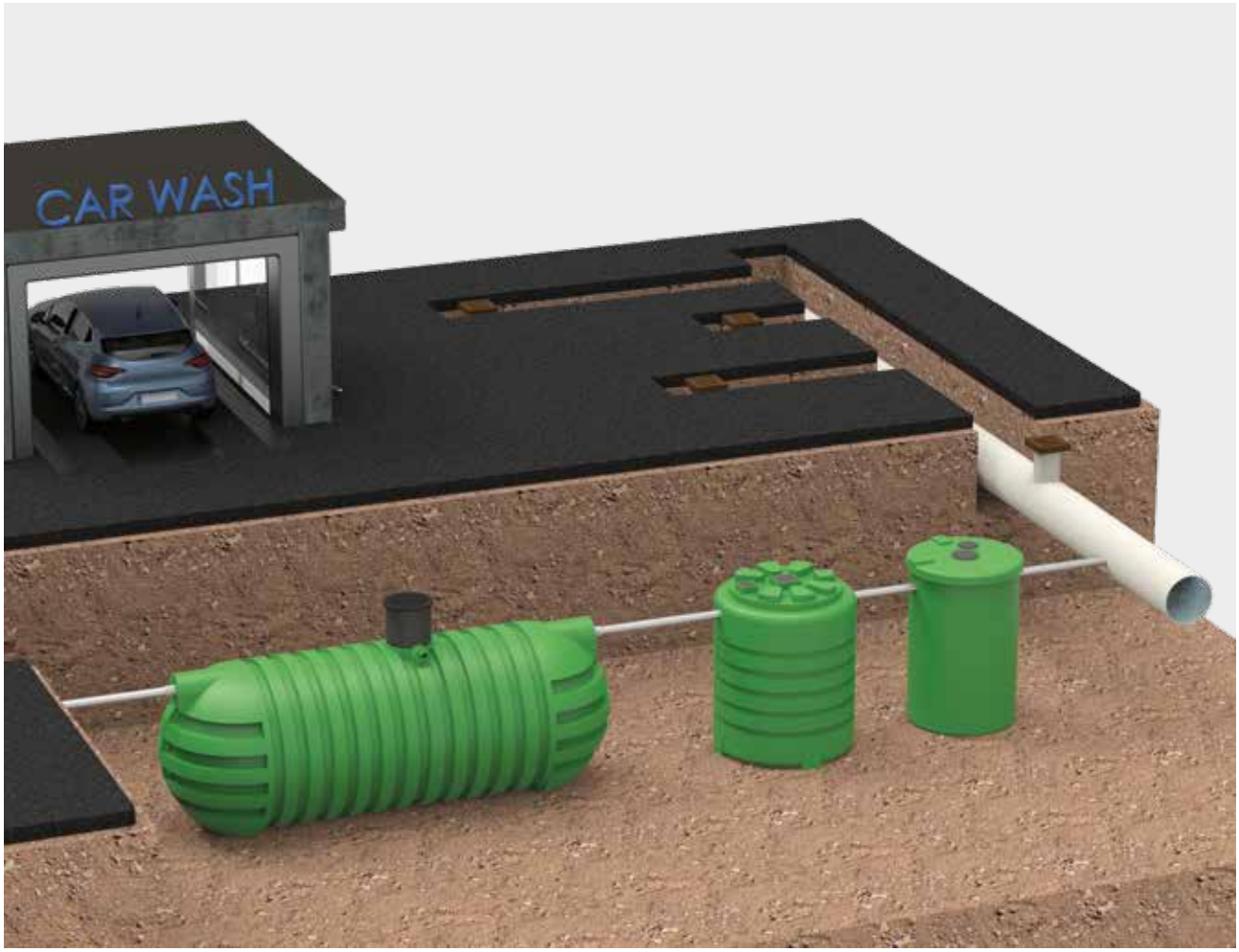


# MAJIECO-TREAT

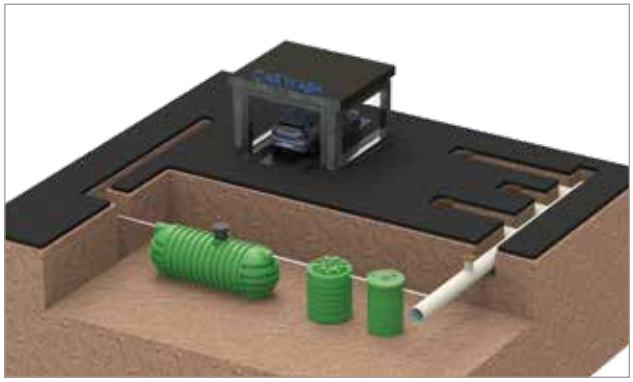
## Oil separator and degreaser systems

All water containing fats, vegetable oils, petrol and hydrocarbons must be purified before being introduced into the sewer system. Standard integrated **degreasers** and **oil separators** have been designed for the collection and pre-treatment of waste water from kitchens, hotels, food establishments, refineries, soap factories, car washes, workshops, yards and laboratories with high fat and oil content.

Waste water processing systems are integrated in the underground or outdoor tanks to separate the oils and fats from the water and give them the characteristics required by current regulations.
Waste water processing systems are complete with pumping unit with electronic control unit for automatic operation.




Example of a system with degreasers and oil separators



# ME-DO

## Oil separators

Oils and fats are present in many industrial waste waters and their removal is necessary before releasing them into the sewers. Oil separators are used for the removal of this type of pollutant.
The oil separator, in fact, is one of the systems for the treatment of grey waste water, and consists in the separation of petrol, petroleum and oils from the water before being released into the sewer.
Thus it can be used in car parks, service stations and car washes and for the primary treatment of run-off water from yards, workshops, garages or rest areas.
More precisely, oil separators are polyethylene underground tanks consisting of a sedimentation and accumulation area in which the light liquid is separated.

The oil separation process allows for separation by lifting substances with a specific weight lower than that of washout water (oils, hydrocarbons, etc.) and by sedimentation for the sediment substance part.
These systems are regulated by the reference standards UNI EN 858 - 1 and UNI EN 858 - 2 which specify the principles and guidelines for the design, the choice of nominal dimensions and the methods of installation, maintenance and operation.

They are divided into two classes:
**- Oil separators with coalescing filter**
**- Gravitational oil separators.**

### Oil separators with coalescing filter: ME–DO CLASS I

Oil separator systems with class I coalescing filter are one of the systems used for the primary treatment of grey waste water. These are polyethylene underground tanks intended for the primary treatment of run-off water in yards, workshops, garages or rest areas. The oil separation process allows for separation **by lifting** substances with a specific weight lower than that of washout water (oils, hydrocarbons, etc.) and by **sedimentation** for the sediment substance part.

**Technical specifications**

- Coalescing filter oil separators are stilling tanks which allow to obtain greater returns in terms removal of light substances.
- They are defined as class I according to the UNI EN 858-1standard.
- They exploit a polyurethane sponge support on which the oil and hydrocarbon particles are aggregated, until they reach such dimensions as to be able to leave the waste water by gravity.
- The oils and hydrocarbons that have a specific weight lower than that of water are separated in a still zone, while all solid particles with a specific weight higher than that of water (e.g. sand) are deposited on the bottom of the tank.
- The oil particles are then removed by coalescence (a phenomenon whereby small drops of a liquid are dispersed in another non-miscible liquid tend to join the larger ones, forming larger aggregates) thanks to presence of the filter.
- This process is recommended in the presence of particularly restrictive limits on the concentrations of mineral oils and hydrocarbons in the drain.
- The introduction of a sand removal phase is recommended upstream of the oil separator to prevent solid substances from clogging the filter mesh.
- They are designed to achieve a hydrocarbon concentration below 5 mg/L.
- Tank material: Polyethylene.
- Dimensions: vary with the required capacity as reported in the dimensional tables on page 132 of the catalogue.
- They must be dimensioned according to the maximum drainage capacity and the draining surface that can be covered (covered parking - for washing flooring or fire fighting water) or uncovered (outdoor lot).

ME–DO Class I tank

## Gravitational oil separators: ME-DO CLASS II

ME-DO Class II tank

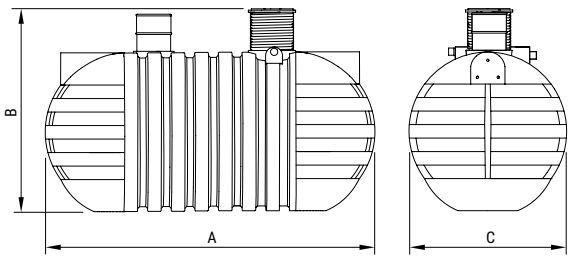
Class II gravitational oil separator systems are one of the systems used to process grey waste water. These are polyethylene underground tanks intended for the primary treatment of run-off water in yards, workshops, garages or rest areas. The oil separation process allows for separation **by lifting** substances with a specific weight lower than that of washout water (oils, hydrocarbons, etc.) and **by sedimentation** for the sediment substance part.

### Technical specifications

- Static oil separation tanks are stilling tanks that are dimensioned with retention times, referred to the maximum discharged flow rate, of at least 15 minutes.
- These oil separators are defined as class II according to the UNI EN 858-1 standard and consist of a sedimentation area in which light liquid and aggregates (mud, sand and silt) are separated.
- The flow is slowed at the inlet of the gravitational separator and, at the same time, the turbulence caused is dampened by the flow itself.
- Light substances such as mineral oils and hydrocarbons are accumulated in the upper area of the tank, while the solid substances settle on the bottom.
- They are designed to achieve a hydrocarbon concentration below 100 mg/L.
- Tank material: Polyethylene.
- Dimensions: vary with the required capacity as reported in the dimensional table below.
- They must be dimensioned according to the maximum drainage capacity and the draining surface that can be covered (covered parking - for washing flooring or fire fighting water) or uncovered (outdoor lot).

### ME-DO CLASS I - II dimensional tables

| Volume (L) | NS flow rate (L/s) | Surface area (m³) | A Length (mm) | B Height (mm) | C Diam. (mm) | Pipes DN | Φ Manhole (mm) | Thickness (mm) | Material |
|---|---|---|---|---|---|---|---|---|---|
| **1,200** | 1.5 | 80 | 1600 | 1060 | 1460 | - | 600 | | |
| **2,200** | 3 | 120 | 2090 | 1400 | 2100 | 110 | 600 | | |
| **3,000** | 6 | 240 | 2560 | 1400 | 2100 | 125 | 600 | | |
| **3,500** | 10 | 400 | 2660 | 1800 | 2600 | 200 | 600 | | |
| **5,000** | 15 | 600 | 2190 | 1800 | 2600 | 200 | 600 | | |
| **6,000** | 20 | 800 | 3030 | 2300 | 2850 | 250 | 600 | | |
| **8,000** | 30 | 1200 | 2870 | 2300 | 2850 | 250 | 600/800 | | |
| **10,000** | 40 | 1600 | 3330 | 2300 | 2850 | 315 | 600/800 | | |
| **12,000** | 50 | 2000 | 4360 | 2300 | 2850 | 315 | 600/800 | 8-12 | Polyethylene |
| **16,000** | 65 | 2600 | 5030 | 2300 | 2850 | 315 | 600/800/250 | | |
| **22,000** | 80 | 3200 | 6470 | 2300 | 2850 | 315 | 2x600/800 | | |
| **25,000** | 100 | 4000 | 7650 | 2300 | 2850 | 315 | 2x600/800 | | |
| **30,000** | 125 | 5080 | 8830 | 2300 | 2850 | 400 | 2x600/800 | | |
| **35,000** | 150 | 6100 | 10170 | 2300 | 2850 | 400 | 2x600/800 | | |
| **40,000** | 200 | 8100 | 11350 | 2300 | 2850 | 400 | 2x600/800 | | |
| **45,000** | 250 | 10100 | 12290 | 2300 | 2850 | 400 | 2x600/800 | | |
| **50,000** | 300 | 12100 | 13600 | 2300 | 2850 | 500 | 2x600/800 | | |



# ME-DG

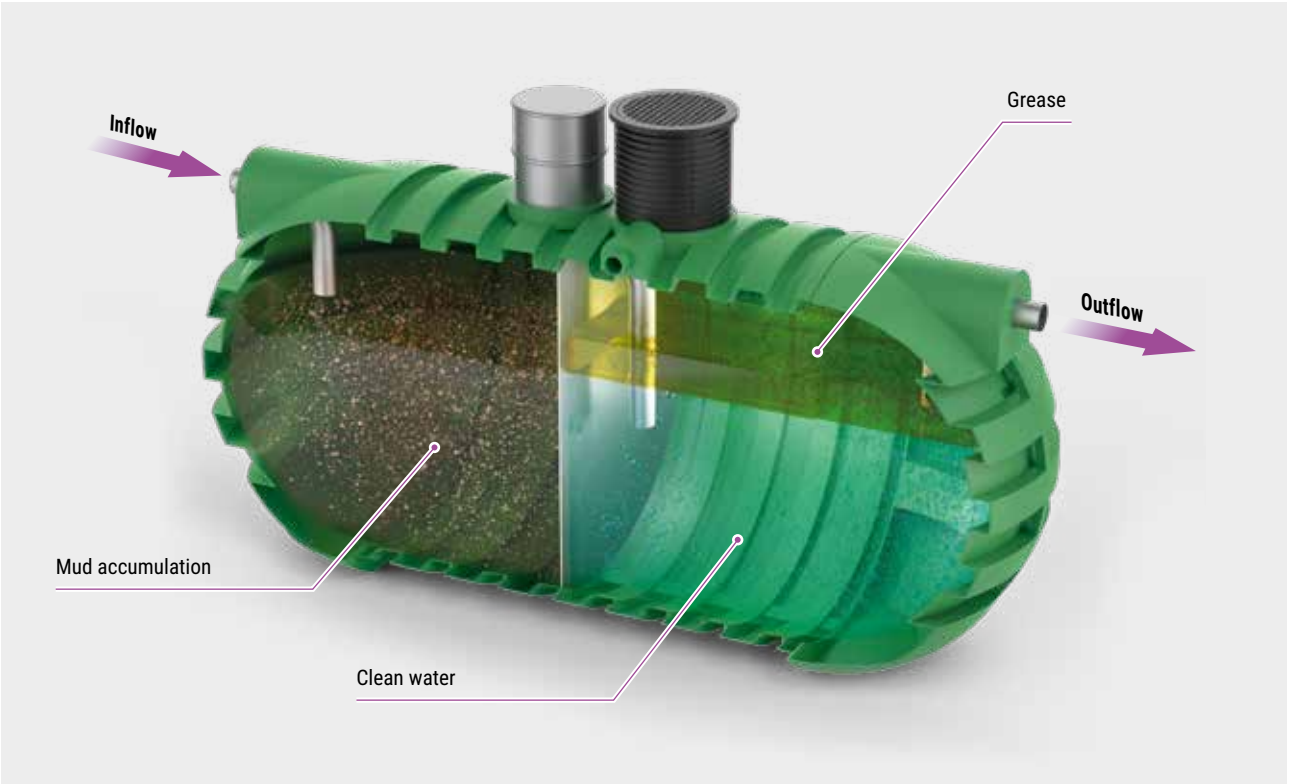
## Degreasers

A degreaser is one of the systems used to primarily process grey waste water. It is a stilling tank where substances with a specific weight lower than that of water are separated by lifting.
The degreasing process, in fact, allows for the separation of fats, foams, heavy sediments and oils of vegetable and animal origin from waste water from kitchens, bathrooms and laundries.
Degreasing systems are regulated by two reference standards: UNI EN 1825-1 and UNI EN 1825-2.
The latter, in particular, establishes that the degreasers must be installed in all of the following fields:

- Kitchens in canteens, restaurants, hotels and for group catering.
- Meal and various food production plants.
- Meat processing plants (slaughterhouses, sausage factories, butchers, etc.).
- Other plants such as: vegetable oil and fat refineries, soap factories, etc.

### OPERATING PRINCIPLE

The flow of grey, unprocessed water enters the polyethylene tank.
The heavier liquids sink to the bottom, while the fats, foams and oils remain on the surface.
In this way, the suction pipe, located approximately halfway through the tank, is able to draw only the water free of impurities which can then be discharged into the sewer.
The underground grease separator should be placed away from buildings, in areas where the release of strong and aggressive odours is not a problem and where the separator can be accessed with the disposal hose.
Dimensions: vary with the required capacity.




ME-DG Operating principle

## HORIZONTAL ME- DG dimensional tables

| Volume (L) | NG (L/s) | A Length (mm) | B Height (mm) | C Diam (mm) | Φ Manhole (mm) | Thickness (mm) | Material |
|---|---|---|---|---|---|---|---|
| 500 | 2 | 1330 | 860 | 1000 | 400 | 8-12 | Polyethylene |
| 1,000 | 3 | 1740 | 1060 | 1020 | 400 | | |
| 2,000 | 4 | 1900 | 1400 | 2060 | 600 | | |
| 3,500 | 6 | 2100 | 1800 | 2450 | 600 | | |
| 5,000 | 10 | 2550 | 1800 | 2500 | 600 | | |
| 6,000 | 15 | 2900 | 1800 | 2500 | 600 | | |
| 8,000 | 20 | 2780 | 2300 | 2850 | 600 | | |
| 12,000 | 25 | 3800 | 2300 | 2870 | 600 | | |

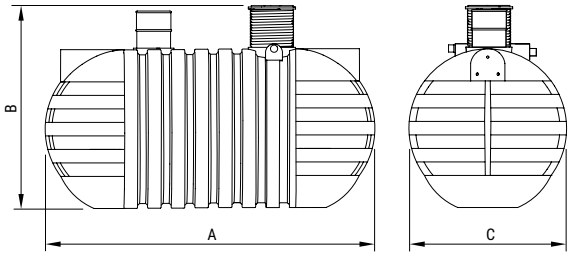
## VERTICAL ME- DG dimensional tables

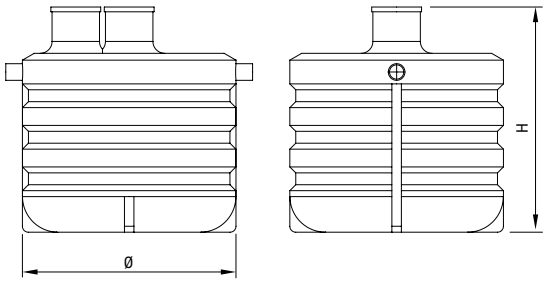
| Volume (L) | NG (L/s) | Φ Diam (mm) | H Height (mm) | Thickness (mm) | Material |
|---|---|---|---|---|---|
| 1,000 | 2 | 1200 | 1450-1700 | 8-12 | Polyethylene |
| 2,200 | 4 | 1500 | 1500-1800 | | |
| 3,200 | 7 | 1800 | 1650-1950 | | |
| 4,000 | 10 | 1800 | 2050-2350 | | |
| 6,000 | 15 | 2300 | 2000-2300 | | |
| 7,500 | 20 | 2300 | 2400-2700 | | |

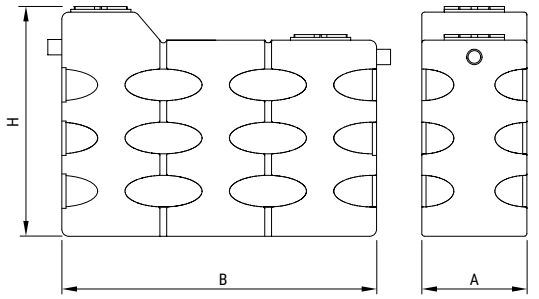
## ME-DG domestic dimensional tables (under sink installation capacity)

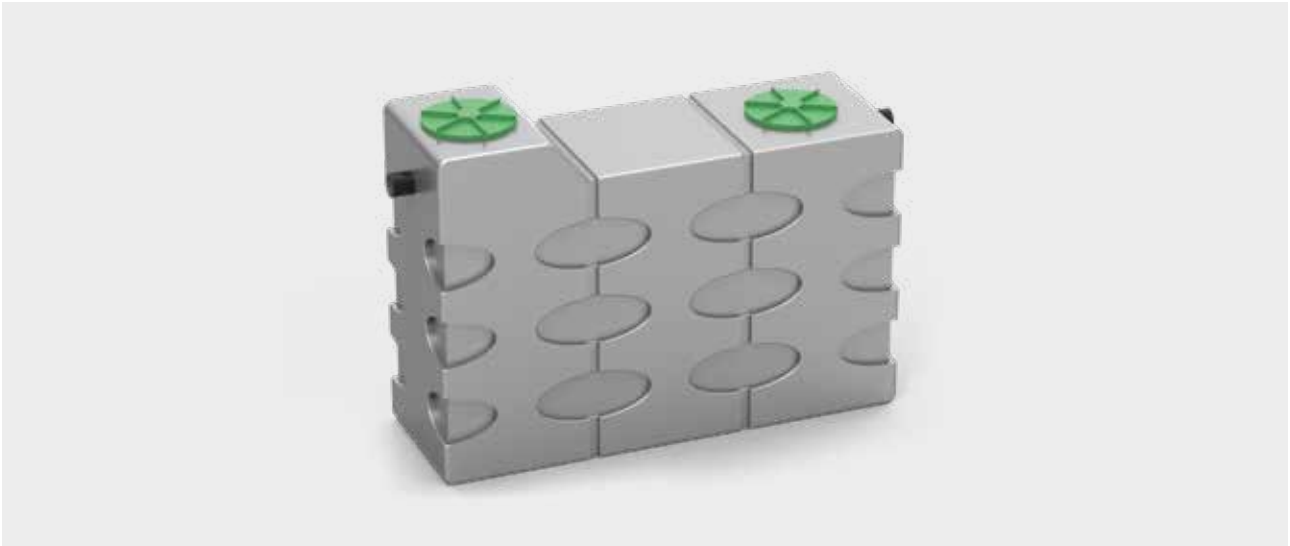
| Volume (L) | NG (L/s) | A WIDTH (mm) | B LENGTH (mm) | H Height (mm) | DN Pipes | Thickness (mm) | Material |
|---|---|---|---|---|---|---|---|
| 100 | 0.25 | 530 | 530 | 1000 | 110 | 8-12 | Polyethylene |
| 250 | 0.5 | 600 | 600 | 1020 | 110 | | |
| 500 | 1 | 760 | 760 | 2060 | 110 | | |
| 1,000 | 2 | 1800 | 1520 | 2450 | 110 | | |
| 2,000 | 4 | 1800 | 2250 | 2500 | 160 | | |

Vertical ME-DG



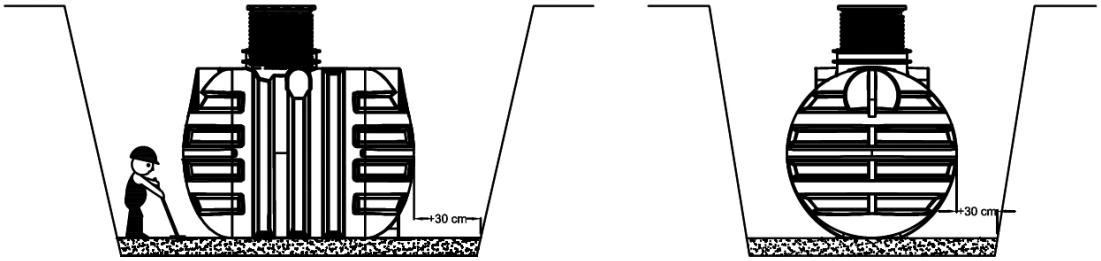



Domestic ME-DG

## POLYETHYLENE TANK GENERIC BURIAL DIAGRAM

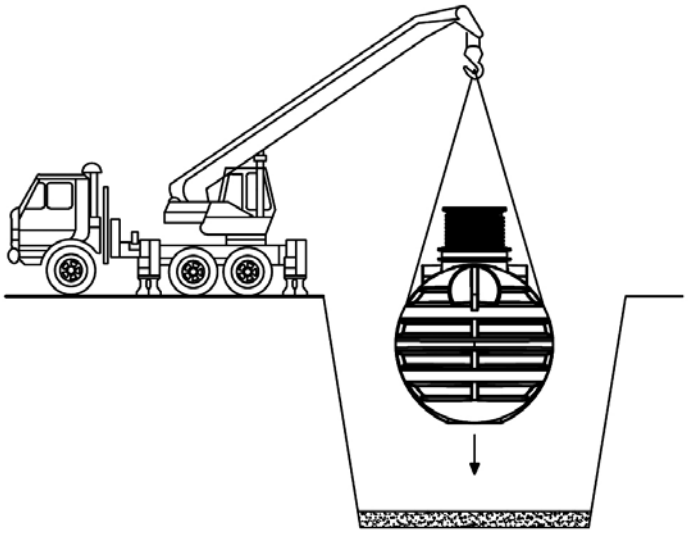
Prepare an excavation of adequate size, so that the space around the tank between 20 and 50 cm. Spread a compact base coat (thickness: 10-15 cm) of gravel (grit 4 - 16 mm) so that the tank rests on a uniform and even base.

**1**



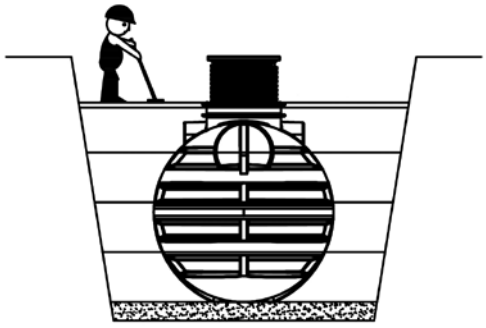

Position the tank in the excavation using a crane or excavator, hooking it with straps that should be positioned at 1/3 and 2/3 of the length of the tank. If the tank has a capacity of 20,000 L or more, use more straps.

**2**



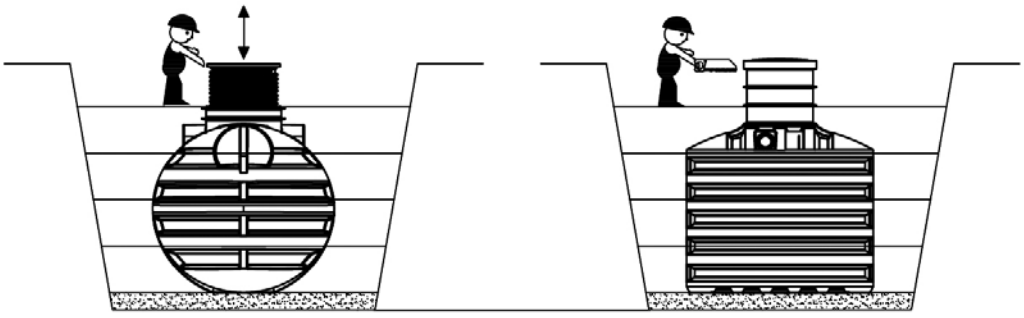
After inserting the tank into the excavation, start filling it with water and at the same time fill the excavation with gravel (size 4 -16 mm) up to ¼ of the tank. Continue filling the tank and excavation ¼ at a time to the top at the same time; burying in this way ensures that the pressure is the same on both sides.

**3**



The tank can be buried up to 50 cm below the ground, but the plastic cover must be above ground level.

**4**



Special installations to be defined upon request.

Majitekno s.r.l.
**Registered office** Via L. da Vinci 10 - 23900 Lecco - Italy
**Production headquarters** Via Ca' Fittavoli 31 - 24030 Barzana (BG) - Italy
T. + 39 035 553042 - info@majitekno.com - www.majitekno.com

# WATER RECOVERY SYSTEM DIMENSIONING FORM

DESIGN QUESTIONNAIRE

## CUSTOMER DATA

Company _____

Address _____

Telephone _____ E-mail _____

## MAIN DATA

Approximate total no. of people _____ Approximate average no. of people _____ A.E. (Equivalent inhabitants) _____

**Subject**

- ☐ Single family house
- ☐ Apartment house
- ☐ Hotel
- ☐ Sports facility
- ☐ Other _____

**Use**

- ☐ Private
- ☐ Public
- ☐ Industrial

## GREY WATER RECOVERY

**Available water**

- ☐ Shower approx. _____ l/person dd
- ☐ Bathtub approx. _____ l/person dd
- ☐ Sink approx. _____ l/person dd

**Purified grey water use**

- ☐ Services approx. _____ l/person dd
- ☐ Cleaning approx. _____ l/person dd
- ☐ Washing machine approx. _____ Average quantity
- ☐ Irrigation approx. _____ $m^2$ area

**System location**

- ☐ Indoor - Tank in technical room (basement, garage, cellar)
- ☐ Outdoor - Underground tanks (yard, lawn)

**Pressurisation group dimensioning**

Required flow rate _____ $m^3/h$

Last connection maximum height _____ m approx.

Last connection maximum distance _____ m approx.

## RAIN WATER RECOVERY

**Captive surface**

Average annual local rain _____ (mm/year)

- ☐ Flat roof _____ $m^2$ approx.
- ☐ Green roof _____ $m^2$ approx.
- ☐ Slanted roof _____ $m^2$ approx.

**Purified rain water use**

- ☐ Services approx. _____ l/person dd
- ☐ Cleaning approx. _____ l/person dd
- ☐ Washing machine approx. _____ Average quantity
- ☐ Irrigation approx. _____ $m^2$ area

**Pressurisation group dimensioning**

Required flow rate _____ $m^3/h$

Last connection maximum height _____ m approx.

Last connection maximum distance _____ m approx.

**Notes**

# General sales conditions

## 1. Conditions

1.1 These general conditions, except for exceptions specifically agreed in writing, govern all current and future sales contracts between the parties

## 2. Offers and Orders

2.1 Orders are accepted if sent with written communication by post or e-mail and are considered binding on the company Majitekno only if approved by the firm with order confirmation. Majitekno reserves the right to modify its products without prior notice.

2.2 All the illustrative and descriptive product documentation, such as photographs, drawings, technical specifications, data relating to dimensions and weights are merely indicative and Majitekno is not liable for any inaccuracies in the information contained therein.

2.3 Any rectification or modification by the customer subsequent to Majitekno's delivery of the order confirmation will be valid only after written acceptance by Majitekno srl and will result in the debit of all consequent charges to the customer.

2.4 The purchaser shall be held liable for the damages caused by the revocation or modification of the orders, which in any case will not be considered valid and effective without written acceptance by Majitekno.

2.5 In the event of withdrawal, the customer must notify Majitekno of his/her intention by registered letter no later than ten days from the contract date. The customer is in any case required to pay all expenses incurred by Majitekno up to the time of receipt of the notice of withdrawal with a minimum of 15% of the contract value.

## 3. Subcontracting

3.1 Majitekno may assign, transfer or subcontract the contract relating to the works to third-party companies and/or natural-legal persons, without the prior consent of the customer. In this case, the works will also be carried out under the full liability of Majitekno.

## 4. Delivery and Delivery Terms

4.1 The delivery terms in the order confirmation are purely indicative and not binding, unless otherwise agreed between the parties. In no case may a delivery delay justify requests for compensation and/or cancellation of an order. Any right of the customer to compensation for damages, if signed and accepted by both parties at the time of order confirmation, is however limited to the maximum value of 5% of the contract.

4.2 No indemnity or compensation for damages will be taken into consideration for any delivery delays due to carriers or to causes not attributable to Majitekno.

4.3 Unless otherwise agreed in writing between the parties, the supply of the products is deemed to be agreed ex-factory.

4.4 Even in the event of a mandatory delivery deadline, Majitekno cannot in any case be held liable for any delays in delivery due to unforeseeable circumstances, force majeure or in any case to causes not attributable to it. In such cases Majitekno will process the order as soon as the impeding causes have ceased.

4.5 The goods are deemed to be accepted by the customer upon leaving our production plant, therefore any delays, damage or loss resulting from the shipment cannot be attributed to Majitekno srl.

4.6 The notice of goods ready will be notified by Majitekno in writing 48 hours before delivery. In case of non-collection or request for delay in delivery by the customer, Majitekno will issue the invoices relating to the supply to be paid by the customer, as established in the order confirmation, even if the goods have not been collected/shipped.

4.7 After 30 days from the notification of goods ready, if the customer does not collect the goods or authorise the shipment, Majitekno srl will be tacitly authorised to move the goods in storage with consequent charge of the costs to be quantified in relation to the type of system and in any case with a minimum of 250 Euro/month or fractions of a month, as reimbursement for handling and labour costs.

## 5. Warranty

5.1 Majitekno undertakes to deliver products that comply with what has been agreed and free from defects that make them unsuitable for the use to which such products are usually used.

5.2 The products are guaranteed for 24 months for defects due to construction materials or manufacturing defects starting from the delivery note of the goods; defective products must be delivered ex works and will be replaced free of charge.

5.3 Majitekno cannot be held liable for any consequence or direct or indirect damage deriving from the goods supplied. All expenses and damages resulting from malfunctioning, incorrect use, repair and the need to replace defective parts, including assembly, disassembly, transport and damage to third parties are excluded.

5.4 Majitekno will not be liable in any way, and the warranty cannot be recognised, in the event of modifications or repairs or replacements by the customer or third parties without Majitekno's written authorisation.

5.5 The following are excluded from the warranty:

- Defects due or derived from causes not attributable to Majitekno;
- Defects due to normal product wear;
- Defects due to recognised insufficiency or inadequacy of the electrical system, power supply, or alterations deriving from environmental, climatic or other conditions;

- Defects due to installation, use and maintenance of the products in a way that does not comply with the technical instructions reported in the use and maintenance manual that is supplied with the product, with the technical or safety standards and in any case deemed unsuitable by Majitekno;
- Defects due to defects in the systems or equipment to which the product is connected;
- Damage deriving from surface corrosion of the finish caused by atmospheric agents or phenomena of deep corrosion due to stray currents.

5.6 The lack of conformity and the defect must be reported in writing, under penalty of forfeiture, within eight days from the date of delivery of the product or from the date of discovery.

5.7 The submission of a defect claim does not authorise the customer to partially or totally suspend or delay payments.

5.8 In any case, the lack of conformity and the defect must be reported within the limitation period of 24 months for all products.

## 6. Returns and Repairs

6.1 Majitekno does not accept returns of the products supplied.

6.2 The customer who wishes to return goods must send a written request with indication of the goods, references of the purchase document, and reason for the return. Returned goods are not accepted unless previously accepted in writing by Majitekno. The goods authorised by Majitekno for return must be returned carriage paid to our headquarters. Any agreed amount will be credited after evaluation and control of the perfect operation of the returned goods, and in any case with a minimum charge of 20% of the contract value.

6.3 The goods that are delivered to Majitekno for repair will be evaluated and if necessary, a repair offer will be issued. In the event that the offer is not confirmed, and a new replacement product is not purchased, the costs incurred for estimates and disassembly will be charged. Products not repaired are to be collected at the expense and expense of the customer.

6.4 The goods that are delivered to Majitekno for repair after 6 months from the dispatch of the repair offer, in the absence of confirmation or other communication from the customer, will be scrapped.

6.5 Should the product be repaired at the installation site, Majitekno will make its assistance service available, after the customer has sent and signed a repair estimate.

6.6 The warranty for repaired goods will last 12 months, unless otherwise agreed.

## 7. Prices

7.1 The prices indicated in the price list or in the offers are net of any tax or ex-factory tax.

7.2 The agreed prices are subject to revision in the event of significant increases in the cost of raw materials, labour or other major burdens of any kind. We reserve the right to adjust the prices even after the contract is signed.

## 8. Payments

8.1 Payments must be made to our account at the deadline indicated in the pro forma or invoice and according to the agreed methods.

8.2 In case of non-payment or late payment, default interest will be applied at the official discount rate and authorises Majitekno to immediately suspend supplies.

## 9. Property rights

9.1 The products delivered, shipped or collected by the customer remain the property of Majitekno until the agreed price is paid in full.

## 10. Claims

10.1 Claims that are not made in writing within 8 days of delivery of the goods will not be accepted. Claims or disputes do not authorise suspensions or delays in payments, under penalty of forfeiture of the warranty.

## 11. Applicable law and jurisdiction

11.1 Contracts are governed by these General Conditions of Sale. Anything not provided for hereto is exclusively governed by Italian law. Any dispute will be exclusively submitted to the Court of Lecco with the express exclusion of any other competing and/or alternative jurisdiction.

Pursuant to and for the purposes of articles 1341 and 1342 of the Italian Civil Code, the purchaser declares to expressly approve the following clauses:
- 2. Offers and Orders
- 3. Delivery and Delivery Terms
- 4. Warranty
- 8. Applicable law and jurisdiction.

06/2020 Majitekno s.r.l.


MAJITEKNO SRL


waterinbuilding


WATER IN
BUILDING
MAJITEKNO


Perché esiste Majitekno?


MAJITEKNO SRL

gf|studio
CATGEN_EN0820R0

MAJITEKNO
engineering for water

**Majitekno s.r.l.**
**Registered offices**
Via L. da Vinci 10 - 23900 Lecco - Italy
**Production headquarters**
Via Ca' Fittavoli 31 - 24030 Barzana (BG) - Italy
T. + 39 035 553042 - info@majitekno.com
**www.majitekno.com**