



SOLENO

Mastering Storm Water

STORAGE

EASY-TO-INSTALL AND ECONOMICAL STORAGE SYSTEMS



EASY-TO-INSTALL AND ECONOMICAL STORAGE SYSTEMS

The increase in frequency and magnitude of rainfall events along with the acceleration and growth of peak flow significantly intensifies erosion of embankments and overloading existing networks with already insufficient capacity. The traditional approach favoring quick and efficient evacuation of surface runoff in the network is no longer enough.

We must now shift our focus to storm water infiltration, to reproduce the hydrological conditions that existed prior to urbanization.

STORM WATER STORAGE

Soleno's **easy-to-install and economical** storage solutions effectively meet the demands of increased surface runoff volume and are safe because they are subsurface. Soleno's retention chambers, which allow for the temporary storage and replenishment of ground water, are unique in their class. Unlike other retention chambers, they easily accommodate multi-level installations, allowing you to maximize the development potential of your site by minimizing the surface footprint of the units.

For very large volumes, watertight detention systems made from Solflo Max, Weholite or DuroMaxx pipes with flow regulators permit temporary storage of a significant amount of water in order to minimize the load on municipal storm water sewer systems during peak periods.

These systems consistently prevent the oversizing of storm water sewer pipes and absorb downpours while preventing sudden surges.

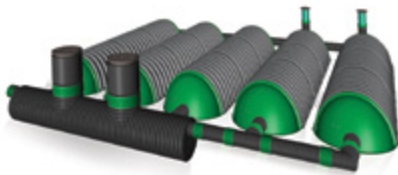
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RETENTION SYSTEM

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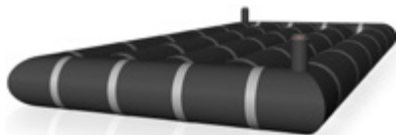
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DETENTION SYSTEM

Subsurface storage zone allowing quality control of surface runoff before it is evacuated to an outlet. Water volume can be evacuated with or without flow control.

LEED®

For several years in Quebec and elsewhere in Canada, it has been possible to obtain environmental certifications for the design and construction of sustainable buildings. Businesses and organizations use the LEED¹ certification program or other certification systems, to develop the necessary tools that have an immediate and measurable impact on their buildings' performance.

Some solutions available from Soleno are eligible for the obtainment of credits leading to certification. Whether for the Sustainable Sites (SS), Water Efficiency (WE) or credits relating to Materials and Resources (MR) under the LEED program, or for other opportunities for certification, please contact the Soleno team to learn more about how our solutions can positively contribute to your obtainment of a certification for your project.

¹ Canada Green Building Council's Leadership in Energy and Environmental Design



CHOOSING THE RIGHT SOLUTION

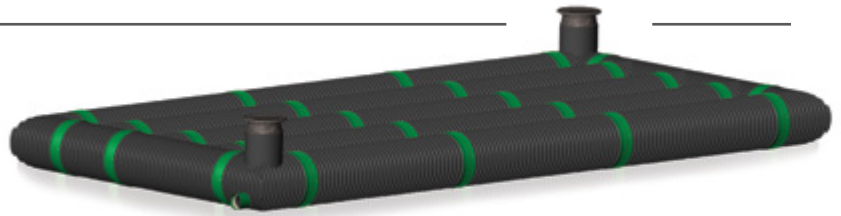
Product selection is based on the volume of water to store while taking into account the constraints of the site: excavation depth and available surface area.

ADVANTAGES AND BENEFITS

- The subsurface detention system helps maximize a site's potential for development.
- All solutions offered by Soleno are **economical and durable**.
- The **modular design** makes installation easy while significantly reducing shipping costs.
- On-site equipment capacity for unloading and handling is minimized.
- Compared to open ponds, subsurface storage systems are safe and require little maintenance.
- Reduces liability.

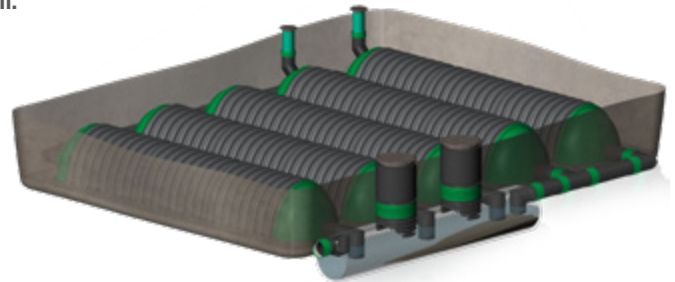
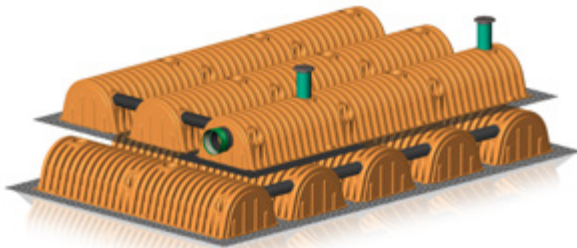
NON-PERFORATED SOLFLO MAX DETENTION SYSTEM EASY-TO-INSTALL

With a design developed for every project and a specifically defined assembly sequence, **quick component installation** provides managers with guaranteed results.



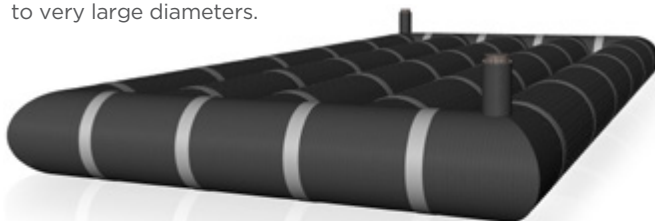
CHAMBER WITH WATERTIGHT GEOMEMBRANE ECONOMICAL

For construction of a large or very large basin, StormChamber or HydroStor with a watertight membrane is very **economical, simple and quick to install**.

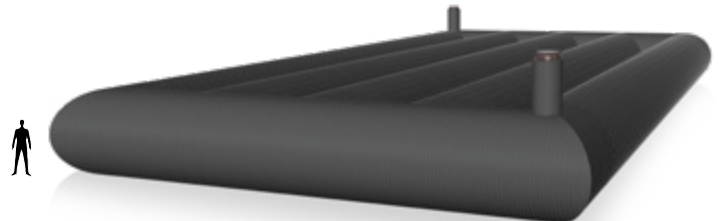


DUROMAXX OR WEHOLITE RETENTION SYSTEM HIGH VOLUME

Weholite and DuroMaxx should be favored when the basin requires installation of large to very large diameters.



DuroMaxx: 750 mm (30 in) to 3000 mm (120 in)



Weholite: 1500 mm (60 in) to 3350 mm (132 in)

- Weholite and DuroMaxx basins are **suitable for storm water, sanitary and combined applications**.
- Weholite and DuroMaxx **fit accessories available at Soleno**.
- DuroMaxx pipes are available with watertight gasket for a quick installation or sealed by a thermal fusion process to form a perfectly tight connection.
- The Weholite joints can be screwed or sealed by a thermal fusion process to form a perfectly tight connection.



RETENTION SYSTEM

Based on the percolation properties of the soil, a subsurface storage zone that allows previously collected and treated surface runoff to be returned to the ground water to reproduce hydrological conditions that existed prior to urbanization.



CHOOSING THE RIGHT SOLUTION

Product selection is based on the volume of water to store while taking into account the constraints of the site: excavation depth and available surface area. If recovery of sediments is required, the HydroStor system using our pretreatment helps recover Total Suspended Solids (TSS).



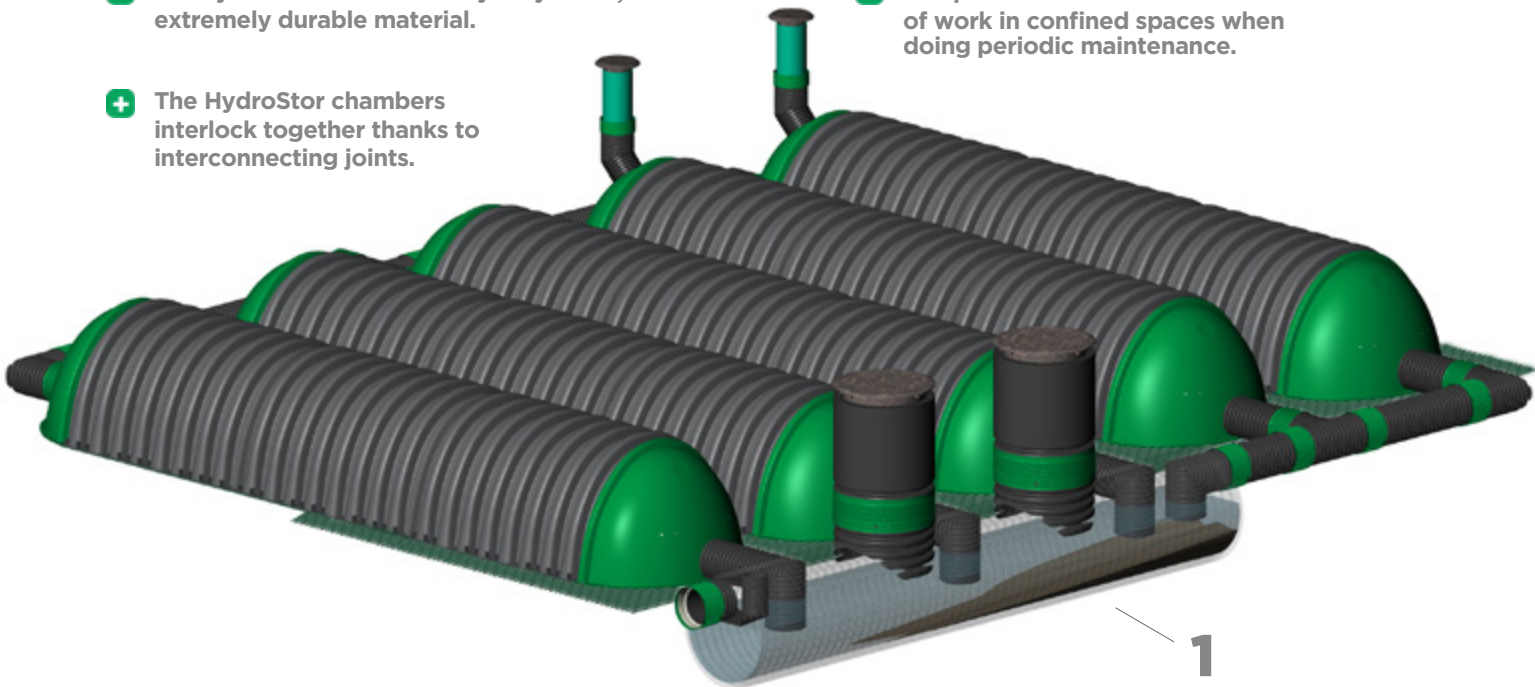
RETENTION & DETENTION SYSTEMS

The HydroStor™ storage system is exceptionally efficient. It effectively prevents the spread of sediment, eliminating any risk of clogging. The pretreatment unit captures hydrocarbons and floating debris, thus preserving the quality of the water table.

+ The system is made of a fully recyclable, extremely durable material.

+ The HydroStor chambers interlock together thanks to interconnecting joints.

+ The pretreatment unit eliminates 100 % of work in confined spaces when doing periodic maintenance.



1 The pretreatment unit which is included in the system upstream of the diffuser eliminates the possibility of sediment migration to the chambers. Fine particles, obeying the Stokes law*, remain trapped there. With its unique design, the system prevents the dispersion of hydrocarbons and floating debris.

2 Because it's factory-made, the performance of the pretreatment unit never depends on the quality of the installation.

*Stokes law defines the behaviour of settling solid particles in a fluid.

2



Alternative system configurations

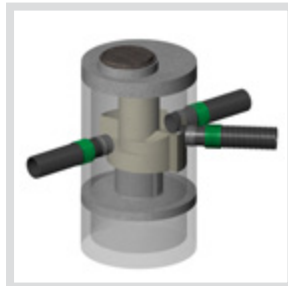
Retention system with pretreatment



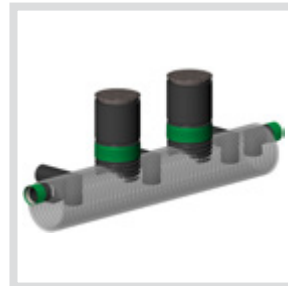
Options



Aqua-Swirl



CDS



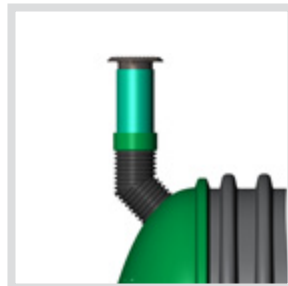
Pretreatment unit



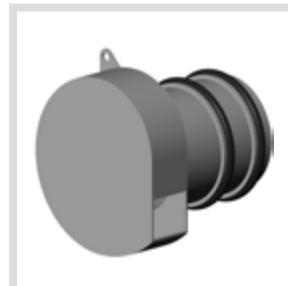
Diffuser



Collector



Access port

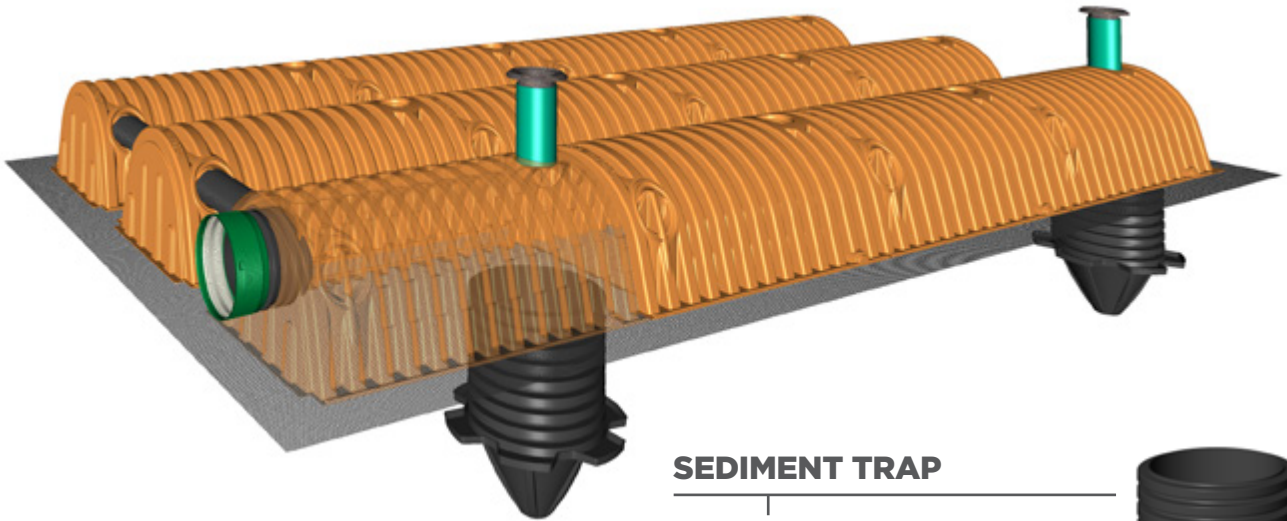


Diffuser

We recommend contacting Soleno Technical Services before specifying a HydroStor system without pretreatment,

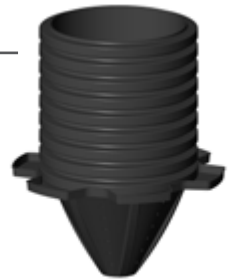
STORMCHAMBER RETENTION SYSTEM

- StormChamber systems for replenishing ground water offer the best ratio of cost/cubic meter (cubic foot) of water stored.
- Soleno offers the largest HPDE chamber on the market.
- The only range of retention chambers that allows installation on multiple levels.
- The depth of the backfill can reach **4.88 m (16 ft), or 2 times** more than allowed by injection moulded polypropylene chambers.
- HDPE is much more resistant to the temperature fluctuations of a northern climate than polypropylene.



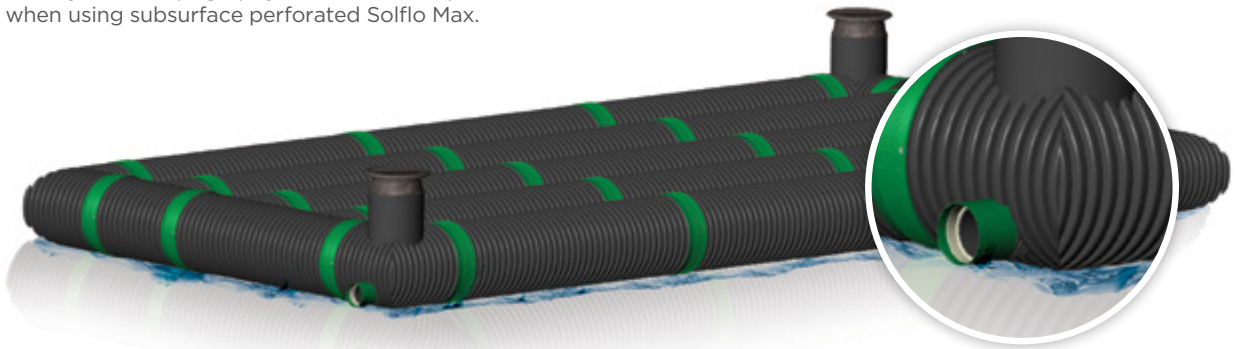
SEDIMENT TRAP

The sediment trap reduces the clogging risks of the subsurface retention system by recuperating suspended solids. Easy, direct access to the sediment trap for maintenance.



PERFORATED SOLFLO MAX RETENTION BASIN

- Pipe diameters and perforation plans can be tailored to the specifics of every site based on the soil percolation properties.
- A customized retention system design conforming exactly to the topography of the terrain is possible when using subsurface perforated Solflo Max.
- Modular in-factory construction facilitates installation while minimizing project implementation time.
- Use of a subsurface basin maximizes a site's potential for surface development.



FLOW CONTROL AND REGULATION

Vortex device to control the flow and velocity of water.

VORTEX FLOW REGULATOR

Vortex flow regulators are **ideal when the outlet can handle low to moderate discharge rates**. Available for flow rates between 0.2 and 300 litres per second, they are usually used directly in a catch basin or in a manhole. They can be installed directly on the pipe (model shown) or directly on a wall using a mounting plate provided for this purpose. They can also be installed at the outlet of a retention system.

ADVANTAGES AND BENEFITS:

- The diameter of the inlet and outlet ports, always greater (by 4 to 6 times) than that of a plug style or plate flow regulator, **eliminates the risk of clogging**.
- Vortex flow regulators available at Soleno are made of stainless steel and provide **increased durability**.
- As there are no moving parts and no human intervention required, **maintenance is facilitated**.
- **Quick and easy installation** that requires no special tools.
- The vortex flow regulator, whose inlet is always submerged, provides for the pretreatment of storm water, by containing floating debris and oil within the sump or the manhole.



FLEXIBLE WEIR



A wide range of devices to monitor water levels and flow rates. Each case is analyzed by our team of engineers and a solution for your application is provided.

For example, the flexible weir (model shown) **allows to raise existing weirs or substantially reduce the size of the overflow structures** (by 2 to 10 times).

ADVANTAGES AND BENEFITS:

- Operates **autonomously**, without an external energy supply.
- As it contains no moving parts, bearings, counterweights or axis of rotation, it is **reliable and durable**.

CHECK VALVE

Check valves are suitable for low pressures while minimizing load losses.

- The valve opens under a low pressure differential.
- Quick and easy installation.



PLUG STYLE REGULATOR

Plug style regulators are usually used to regulate storm water at the source. They are generally **installed directly in the catch basins** and are kept in position by their slightly conic shape and by hydrostatic pressure. Plug style regulators permit storage of storm water in catch basins and surface accumulation during downpours.

Plug style regulators allow economical control of the maximum peak flows authorized by many municipalities.

ADVANTAGES AND BENEFITS:

- Made of thermoplastic, they are **economical** and **easy to install** (without tools or mounting hardware).
- Can be tailored to an existing installation.
- Can be tailored to PVC, HDPE and concrete pipes.
- Allow municipalities to regulate the flow entering the pipes.



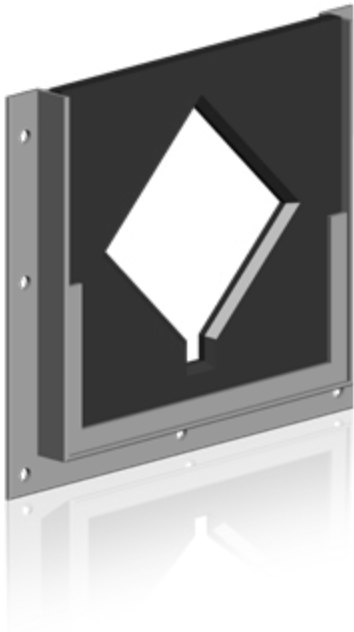
REMOVABLE PLATE REGULATOR

Plate regulators are usually used to regulate storm water at the source. They are generally installed directly in the catch basins and are kept in position by a grooved framing system bolted to the catch basin. **The removable plate can be replaced to optimize flow.** Plate regulators permit storage of storm water in catch basins and surface accumulation during downpours.

Plate regulators allow economical control of the maximum peak flows authorized by many municipalities.

ADVANTAGES AND BENEFITS:

- Made of thermoplastic, they are **economical** and **easy to install**.
- Can be tailored to an existing installation.
- Can be tailored to rectangular concrete catch basins.
- Allow municipalities to regulate the flow entering the pipes.



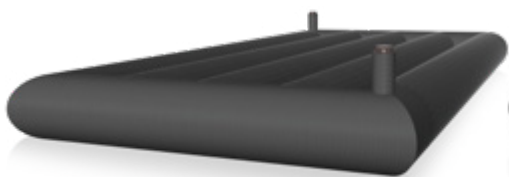


HIGH-VOLUME STORAGE

Permanent subsurface tank serving as a water supply or as temporary retention system for storm water, unitary or sanitary sewer.

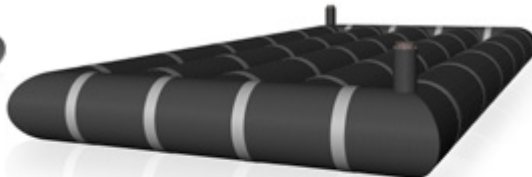
WEHOLITE

- Weholite reservoir with joints welded on site.
- Can store up to 8.8 m³ of water per linear meter.
- Installation at lower cost by using lighter equipment.



DUROMAXX

- Available with watertight gasket up to 15 lb/in (1800 mm (72 in)) for a quick installation or sealed by a thermal fusion process to form a perfectly tight connection.
- Can store up to 7.1 m³ of water per linear meter.



NEMO

- One piece tank.
- Can store up to 7.1 m³ of water per linear meter.
- Used to hold water permanently or temporarily.



THE MOST POWERFUL APPROACH

DESIGN AND TECHNICAL SERVICES

RECOMMENDATIONS

Soleno has recognized expertise in implementing comprehensive storm water management solutions. Our representatives and engineers can advise you in selecting and designing the most appropriate solution for your project and assist you during its installation. Our solutions are supported by customized, detailed technical documentation.



COMPLETE SYSTEM

Expertise developed with network managers enables us to suggest comprehensive solutions integrating all the elements related to collecting, conveying, treating and storage of storm water. Water collected at the source is returned to the receiving environment at an established rate and flow, minimizing environmental impact.

CUSTOMIZED SOLUTIONS

A retention/detention system must meet several quantitative and qualitative criteria and be designed based on the site specifics. Many of Soleno's solutions allow you to configure watertight or soil tight basins of various sizes and volumes, allowing replenishment of ground water as needed.

OPTIONS

Soleno's storage systems can be enhanced with several options: access pits, stainless steel ladders, multiple outlets with watertight and soil tight connectors and, of course, flow regulators to control input to existing infrastructure.

If you are concerned about storage of surface runoff, our HDPE solutions can perfectly meet your needs while ensuring the longevity of your installations and protecting receiving environments.

All references to LEED in our brochures correspond to the Canadian Green Building Council requirements. Please consult Soleno for information on the U.S. Green Building Council requirements.





SOLENO OBTAINED

its **ECORESPONSIBLE** Certification - level **2. Performance** in sustainable development from the Council for sustainable industries (CSI) **ECORESPONSIBLE™** Program.

(Solenó plant located at 1160, route 133, Saint-Jean-sur-Richelieu only)



SOLENO IS ISO 9001 CERTIFIED

(Saint-Jean-sur-Richelieu plant only)

SOLENO IS A MEMBER OF THESE AGENCIES:



OUR HDPE PRODUCTS AND SOLUTIONS ARE DESIGNED AND MANUFACTURED ACCORDING TO THE MOST RIGOROUS STANDARDS.