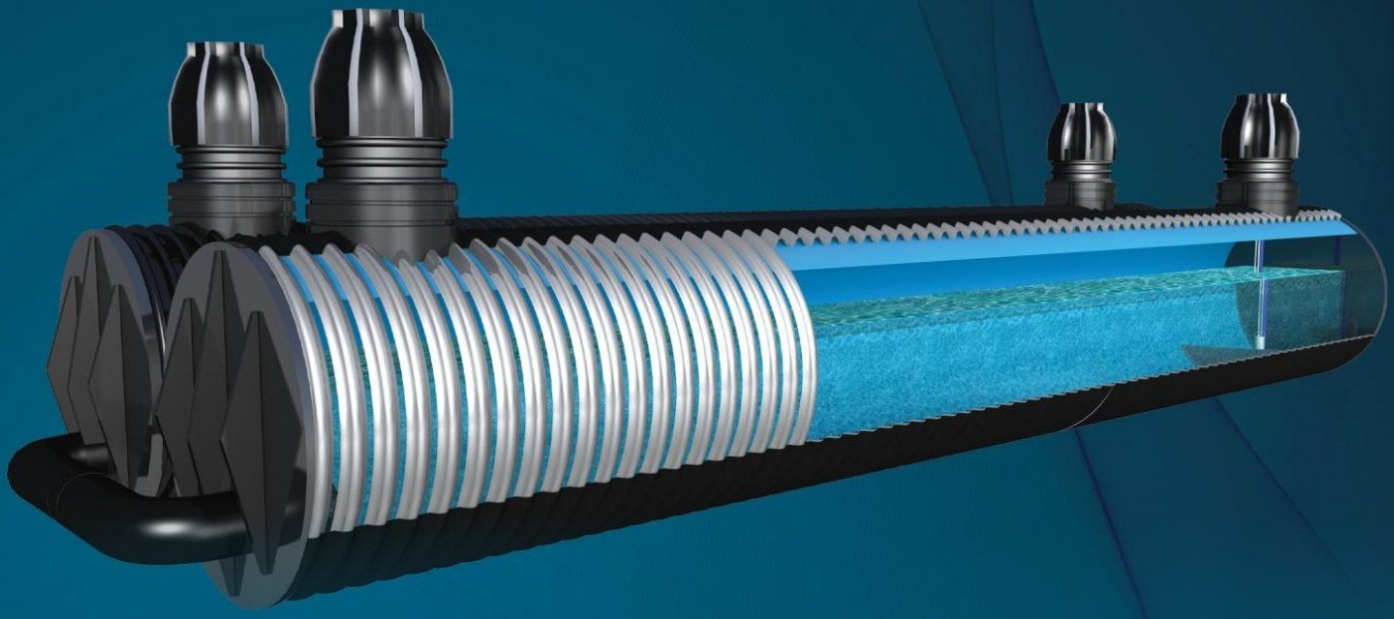
PALADERI
INNOVAZIONE COSTANTE



TECHNICAL DATA SHEET · PALASTORM

PALARETAIN stormwater detention tanks

Buffer tank built from steel and polyethylene pipes that stores stormwater from impermeable surfaces and gradually releases it to the network or the receiving watercourse.

FUNCTION
Flow attenuation, hydraulic invariance

INSTALLATION
Buried, beneath trafficable surfaces

Technical data

Material	**Spiral-wound galvanised steel and polyethylene pipes to UNI 11434**
Function	**Flow attenuation, hydraulic invariance**
Installation	**Buried, beneath trafficable surfaces**
Discharge	**By gravity through a calibrated orifice or with inverter-controlled electric pumps**
Connections	**PE spigots, sockets, electrofusion couplings, rubber couplings, flanges**
Regulatory references	**Regional regulations on hydraulic invariance, river basin plans, Minimum Environmental Criteria (CAM)**

How it works



PALARETAIN tanks store stormwater from impermeable surfaces and release it to surface water bodies at a much lower flow rate, attenuating flood peaks and protecting storm and combined sewers during heavy rainfall events.

Discharge is generally by gravity, through free-flow outlets at the bottom with a diameter smaller than the inlet. Alternatively, submersible electric pumps controlled by inverter panels are installed, regulating performance and ensuring the design flow rate at the outlet.

Construction

The tank consists of spiral-wound pipes in DX51D+Z galvanised steel and polyethylene compliant with UNI 11434, with inlets, outlets and inspection openings in polyethylene pipe stubs and housing for lifting pumps. Extensions for the inspection openings are available as an option.

The steel core is continuously bonded to the polyethylene walls by chemical fixing, which makes the tank much lighter than concrete or GRP tanks, with fast and economical transport and installation.

Connections

Detention tanks are integrated into urban drainage networks and must be connected to pipes of different types. Connections, inspection openings and joints are made to measure:

- stub or socket connection for smooth PE, PVC and PP pipes;
- stubs with HDPE stub flanges and loose flanges in galvanised steel, aluminium, AISI 304 stainless steel or polypropylene-coated galvanised steel;
- electrofusion socket, electrofusion couplings for HDPE up to DE 1000 mm, universal rubber couplings up to DE 1000 mm, gasketed socket, compression couplings up to DE 110 mm, mechanical couplings up to DE 250 mm.

Indicative volumes

Indicative usable volumes in m³ by total length and internal diameter (mm), for preliminary sizing: shape, lengths and volumes are adapted to each project thanks to the modular system.

Total length (m)	ID 1400	ID 1640	ID 1800	ID 2000	ID 2200	ID 2400	ID 3000
40	44	61	74	91	110	131	204
60	67	92	110	136	165	196	306
80	89	122	147	182	220	261	409
100	111	153	184	227	275	327	511
140	156	214	257	318	385	458	715
180	200	275	331	409	494	588	919
220	245	336	404	499	604	719	1.124
260	289	397	478	590	714	850	1.328
340	378	519	625	772	934	1.111	1.736
420	467	641	772	953	1.154	1.373	2.145
500	556	763	919	1.135	1.373	1.634	2.554
600	667	916	1.103	1.362	1.648	1.961	3.064
700	779	1.068	1.287	1.589	1.923	2.288	3.575
800	890	1.221	1.471	1.816	2.197	2.615	4.086
900	1.001	1.374	1.655	2.043	2.472	2.942	4.596
1.000	1.112	1.526	1.839	2.270	2.746	3.269	5.107
1.200	1.335	1.831	2.206	2.724	3.296	3.922	6.128
1.400	1.557	2.137	2.574	3.178	3.845	4.576	7.150
1.800	2.002	2.747	3.309	4.086	4.944	5.883	9.193
2.200	2.447	3.358	4.045	4.994	6.042	7.191	11.236

Frequently asked questions

What is a stormwater detention tank for?

The PALARETAIN stormwater detention tank stores stormwater from impermeable surfaces during an intense event and discharges it at flow rates no higher than those before urbanisation, protecting separate stormwater and combined sewers and downstream receiving waters. It is used to comply with the hydraulic invariance required by regional regulations, for example regional resolution D.G.R. 53/2014 of the Marche Region.

Can a PALARETAIN tank be installed under a car park?

Yes. PALARETAIN is made of spiral-wound pipes in galvanised steel and polyethylene compliant with UNI 11434, designed for burial beneath trafficked surfaces such as yards, car parks, roundabouts and roads. The PALASTORM data sheet gives cover depths of up to 8 m, even with groundwater present, without cast-in-place concrete support structures.

What is the minimum cover depth for a PALARETAIN tank under a road?

For the class SN 8 PALADEX pipes forming the PALARETAIN tank, the table in the PALASTORM data sheet gives a minimum cover depth of 0.5 m beneath carriageways with heavy loads, EN 124 class D400, 0.4 m for class C250 and 0.3 m for B125. The design value results from the structural verification.

What volume can a PALARETAIN tank have?

In the preliminary sizing table, a PALARETAIN DI 2000 tank 100 m long has about 227 m^3 of usable volume, and a DI 3000 tank 1000 m long about 5107 m^3. Volumes are calculated with a filling ratio of 85%; shape and lengths are adapted to the site thanks to the modularity of the system.

How is the water stored in a PALARETAIN tank discharged?

Usually by gravity, through calibrated orifices smaller in diameter than the inlet, located at the bottom of the PALARETAIN tank. If the discharge point is higher, submersible electric pumps are installed, controlled by panels with inverters that guarantee the design flow rate. The outlet can also be connected to the network with electrofusion couplings for HDPE or rubber couplings up to DE 1000 mm.

How are several PALARETAIN tanks connected to each other?

In the modular configuration, adjacent single-block PALARETAIN tanks are connected with HDPE fittings welded to one of the end caps, close to the invert, so that the whole stored volume is mobilised. The inspection openings are DN/OD 800 mm HDPE spigots with a manhole opening larger than 60 cm, with an aluminium ladder on request.

Indicative data, subject to change without notice. The Paladeri technical department is available for sizing and selecting the right solution.

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Plant and operational headquarters
Via San Leonardo, 2
45010 Villadose (RO)
+39 0425 154 62 00

Registered office
Via Francesco Crispi, 69
80121 Napoli (NA)
+39 081 573 45 97

Sales contacts
Italy: direzionevendite@paladeri.it
International: foreign@paladeri.it

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