

Focus-information

▼ Geotechnology ▼ Hydrogeology ▼ Monitoring
▲ ▲ ▲

Hydrogeology >> Products >> Multi-Packer Systems

PMPS – Pump Multi-Packer System

The PMPS is a cost-effective multi-level groundwater monitoring and sampling system for slim boreholes from 10 to 1000 m depth

Applications

- Groundwater monitoring related to underground constructions like tunnels and caverns
- Groundwater control around waste disposal sites
- Monitoring of drinking water protection zones
- Site characterization for radioactive waste disposal
- Groundwater contamination
- Slope instability
- Buoyancy at dams
- Salt water intrusion



Advantages

- Requires only small borehole diameters
- Up to 8 (12) isolated monitoring and sampling sections in one vertical NQ-Ø76 (HQ-Ø96 mm) borehole
- Usable also in unstable ground and inclined boreholes
- Precise positioning of monitoring and sampling sections
- Modular construction for possible system configuration changes in the field
- Rapid system installation using tripod, crane or drill rig
- Entire system can be retrieved and re-used in other boreholes
- Low maintenance and operating costs
- System operation and maintenance can be managed by the customer
- Permanent pressure monitoring with stand-alone data loggers
- Pressure monitoring during sampling activities
- Easy and fast sampling due to integrated double-valve pumps – neither submersible pump nor sampler are needed
- Cost-effective monitoring and sampling solution

The System

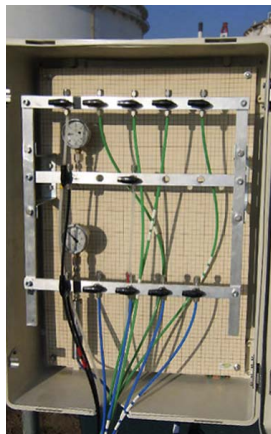
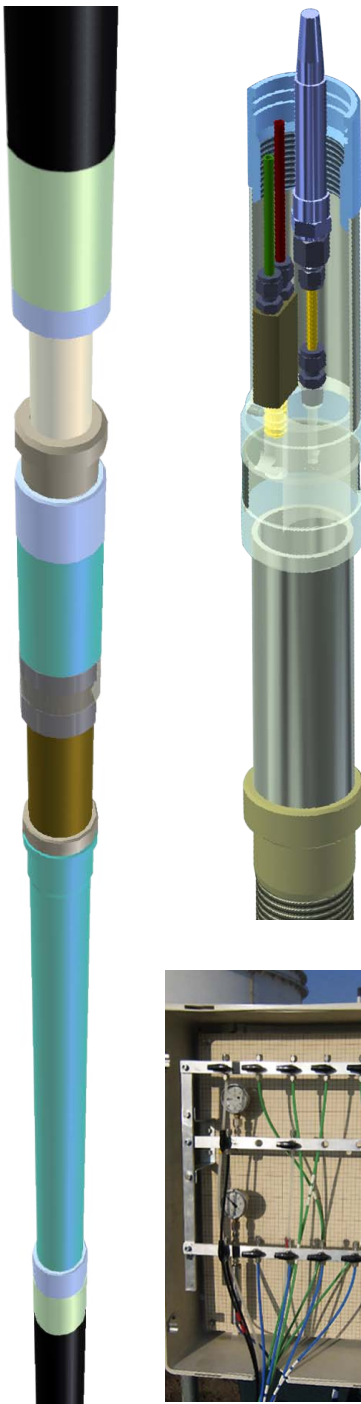
The Pump Multi-Packer System consists of inflatable rubber sleeves so-called packers, tubing and interval access modules. Each interval access module is equipped with a pressure sensor and a double-valve pump which are connected to individual interval access ports. The double-valve pump is controlled via a pressure and a sampling line. All module connections are fitted with double O-ring seals.

Accessories

Once the Pump Multi-Packer System is installed, the pressure and sampling lines as well as the packer inflation lines are connected to a control unit. The packers are inflated with water to isolate the defined borehole sections. The packer inflation lines can be connected to a pressure vessel to guarantee constant inflation pressure in the long term.

The pressure data are recorded with the Solexperts stand-alone data logger SDL. Remote access via mobile phone network is available.

The pump control unit is used to take water samples. During the pumping cycle Nitrogen or compressed air is injected into the pressure line. The pressure must be high enough to move the water column from the pressure line into the sampling line. During the following production cycle the Nitrogen or compressed air over-pressure is discharged through a valve in the pump control unit and water flows from the test section into the pressure line. The pump control unit can be manually or electronically operated.



Control unit



Pump control unit in two versions
(low P = up to 17 bar, high P = up to 35 bar)



Stand-alone data logger

Technical Specifications

	PMPS PVC	PMPS ss
Minimum borehole diameter [mm]	76 (NQ) / 96 (HQ)	
Maximum no. of intervals	8 / 12	
Minimum interval length [m] ¹⁾	0.5	
Packer diameter [mm] ²⁾	72 / 88	
Packer sealing length [m] ³⁾	1.0, 0.5	
Packer material	natural rubber, nitrile, viton	
Lines outer/inner diameter [mm]	6/4; 6/3; 4/3	
Tubing material	PVC	stainless steel
Tubing outer diameter [mm]	60 / 75	48.3 / 60.3
Tubing lengths [m]	3.0, 2.0, 1.5, 1.0, 0.5	6.0, 3.0, 2.0, 1.5, 1.0, 0.5
Maximum installation depth [m]	300	1000
	Type	Range
Pressure sensors	piezoresistive vibrating wire	variable
Sample pump	double valve	ca. 200 ml/min

¹⁾ Interval length is increased with additional tubing ²⁾ Other diameters on request

³⁾ Custom lengths on request. Technical specifications subject to change.

Solexperts AG

Mettlenbachstrasse 25
P.O. Box 81
8617 Mönchaltorf
Switzerland

Tel +41 (0) 44 806 29 29

Fax +41 (0) 44 806 29 30

info@solexperts.com

www.solexperts.com