



Technologie und Logistik Markkleeberg

hydropuls[®] - process



TLM Technologie und Logistik Markkleeberg GmbH
Hauptstraße 103, 04416 Markkleeberg, Germany
Tel.: +49 (0) 341 4617848 Fax.: +49 (0) 341 4617854
www.tlm-gmbh.de
postmaster@tlm-gmbh.de

TLM Technologie und Logistik Markkleeberg GmbH

TLM is an outsourcing of special business divisions of ELM Gesellschaft für Handel und Transfer mbH and Steinbrecher hydropuls[®] engineering company.

In TLM, the years of experience and the technical know-how with regard to the regeneration of wells and development wells is combined.

In doing so, the utilisation and enhancement of product and process patents concerning the hydropuls[®] process is central.

Our range of services:

- Production and distribution of hydropuls units
- Regeneration of wells and development wells using the hydropuls[®] process
- Awarding licences and know-how



Work in Romania I



Work in Romania II

The company pursues a strongly international orientation. It is the objective to establish the brand hydropuls[®] worldwide in the next 5 years. Currently the company is working internationally in France/Kazakhstan, Italy, Russia and Romania. More countries are under way. On the German market, we are nationwide active primarily via our licence partner Berlin Water Group, and in Greater Leipzig in cooperation with Bau und Service Leipzig GmbH.



N°DE7000046-1

The company has introduced the quality management system according to the European standard DIN EN ISO 9001-2000.

The hydropuls[®] technology complies with the standards of the European CE standard.

The director, Mr. Alexander Steinbrecher, is the owner of some patents and the international word mark „hydropuls[®]“.

hydropuls®

What is the hydropuls® process?

hydropuls® is a pulse process in order to increase or restore the productiveness of production wells and development wells as well as the restoration of the functional capability of groundwater measuring points.

Process description

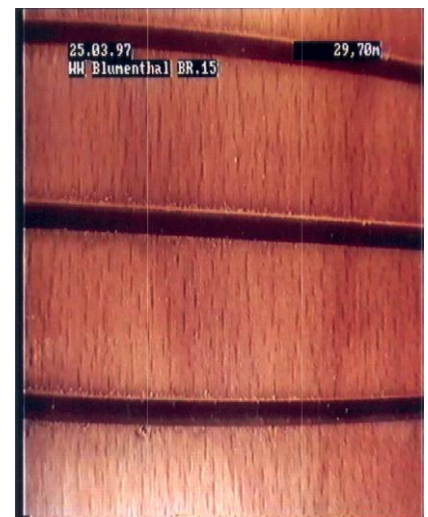
The basic principle of pulse creation by the abrupt expansion of a highly compressed gas or liquid has been used in both the seismic exploration and the oil production with different tasks since the beginning of the fifties. At the beginning of the nineties, the first pulse technology modifications were developed to be used as well regeneration processes.

The mode of action is that pressure pulse sequences are created by pulsing inputs of gas or water portions under high pressure using a pulse generator that is inserted in the well attached to the pressure hose. The pulse generator is provided with a valve system that is able to release the energy that is accumulated in the generator in the form of high-tension gas or water within a very short switching time (milliseconds) by opening large cross sections. This creates hydraulic shock waves. At the same time, a cavitation effect is caused by the sudden volume change leading to the formation of a “vacuum bubble” that subsequently collapses and thus creates a hydraulic “suction wave”.

The alternating effect of the pressure load and the pressure relief loosens the fine grain portions, iron cloggings, precipitations, etc. that have been inserted into the gravel layer and into the pore space of the water-bearing stratum. The „suction wave“ transports the loosened congestion to the centre of the well where it is pumped off. According to the DVGW leaflet W 130, this process is an approved process.

Process characteristics:

- Pulse creation speed is ca. 2000 m/s and can be adjusted within a certain spectrum during use
- Thus, creation of a soft pressure pulse by means of which extension materials like PVC, HD-PE, OBO and stoneware can be processed
- Creation of pressure pulse sequences the chronologies of which can be adjusted during use – according to the well characteristics, the process can be set to „more intensive“ or „softer“
- The pulse output pressure level can be adjusted, making an adjustment to the extension material and to the well condition possible, as well.
- Quick, cheap application due to little technical effort



Well filter after completed regeneration using the hydropuls® process

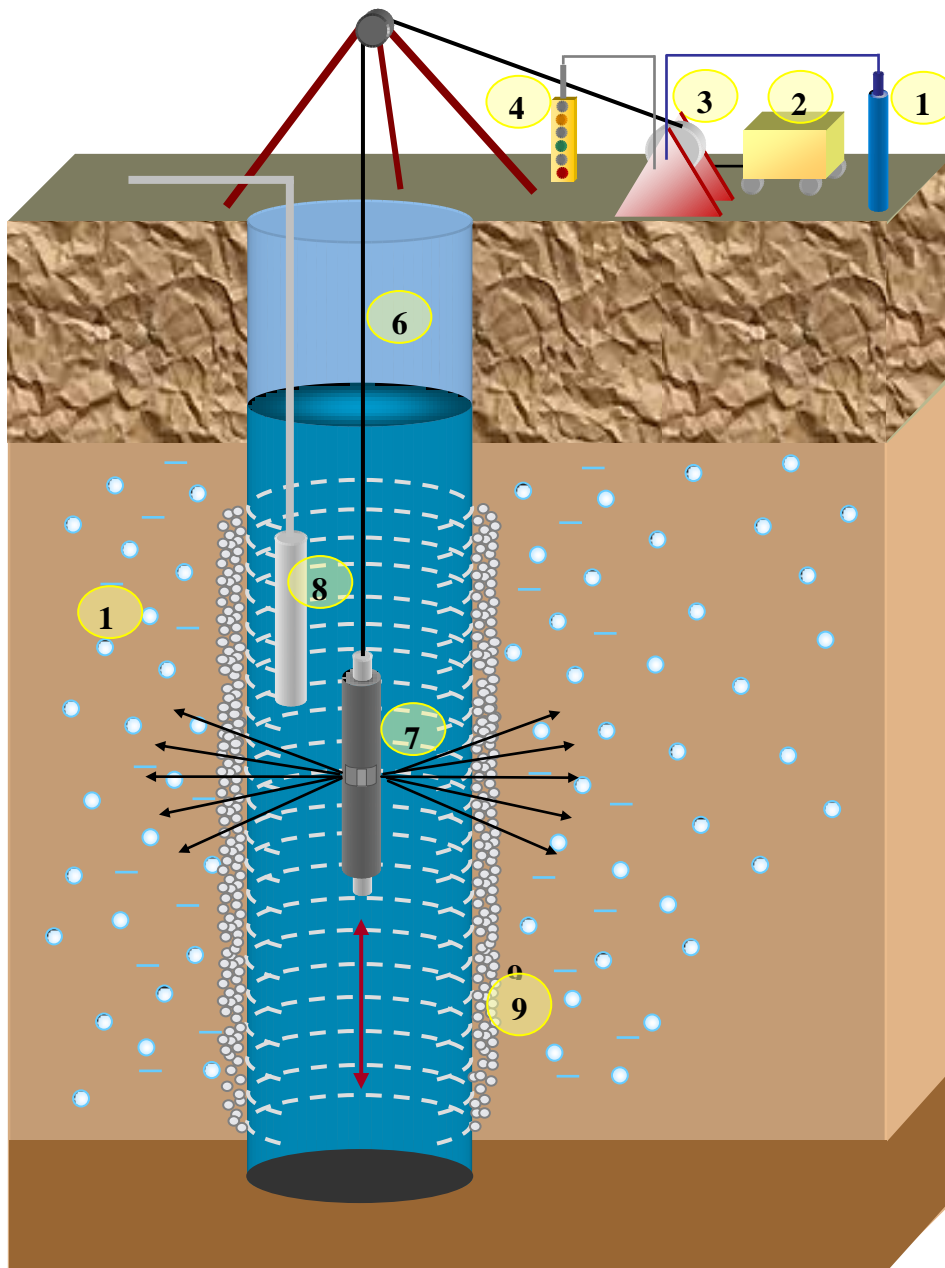
What are the advantages of the process?

From an ecological point of view, the hydropuls® process is completely harmless as during the application, there is no input of environmentally hazardous, foreign substances like e.g. chemicals and explosive gases.

It has a large effective depth combined with good dosability and a good effect.

Due to the process specification, there is still the possibility of a targeted, depth-orientated processing of local, strongly congested areas in development wells / borings and/or gauges.

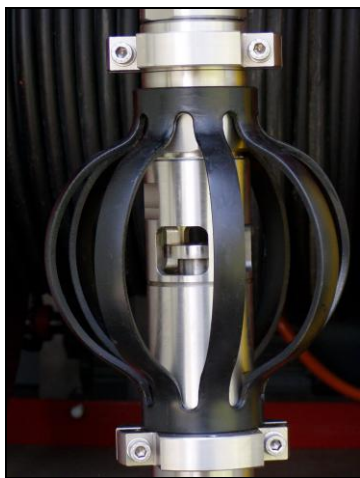
Schematic sketch



- | | | | |
|---|--|----|---------------------------------|
| 1 | Compressor or compressed-air bottles | 6 | Compressed-air hose |
| 2 | Electric generator | 7 | Pulse generator |
| 3 | Electric hose reel | 8 | Underground pump |
| 4 | Control unit | 9 | Filter pipe with gravel filling |
| 5 | Tripod with idler pulley and depth gauge | 10 | Water-bearing stratum |

Pneumatic pulse generators

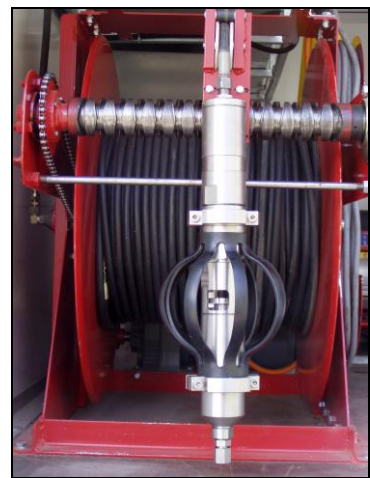
Characteristics	GI	GII	GIII
Area of application	Wells and development bores, measuring points	Wells and development bores, injection wells	Wells and development bores, injection wells
Well diameter Operating depth	> 50 mm down to 500 m	> 100 mm down to 2000 m	> 75 mm down to 500 m
Pulse generator length Pulse generator diameter Weight Working pressure (adjustable)	310 mm 40 mm 1,0kg 1-4 MPa	570 mm 70 mm 8,0 kg 1-10 MPa	570 mm 60 mm 4,1 kg 1-10 MPa
Pulse release Pulse sequences Design	Automatic adjustable stainless steel acid resistant	Automatic adjustable stainless steel acid resistant	Automatic adjustable stainless steel acid resistant
Energy deposit	Approx. 5 kJ conform to 1,2 g TNT	Approx. 25 kJ conform to 6-7 g TNT	Approx. 12,5 kJ conform to 3-4 g TNT
Effective depth around the wells	Approx. 5 m	Approx. 25 m	Approx. 12 m



GII with hole centering device



Effect of a pulse



GII with electric hose reel

Technique specifications

The **hydropuls[®]**-technique is manufactured according to customers request and the different special requirements. The installation of the singular **hydropuls[®]**-technique components electric hose reel, compressed-air bottles, electric generator, tripod and accessory parts can alternatively be installed in containers, box bodies, trailers or other transport-vehicles.

Most suitable for easy transport and fast availability, even by airfreight, technique-containers are particularly qualified.

Box bodies stand the test to be assembled on to different types of vehicles.

In Central Europe mostly technique-trailers or vehicles with installed **hydropuls[®]**-technique are used.



Box body



Box body – side view



Box body – interior view



Technique container



Technique container - interior view



In action



VW T4 with technique



Trailer



Opened trailer with electro aggregate



T4 - developed



Compressor container



Compressor container - interior view

Technological applications

	Raw materials extraction	Wells	Seismic
Application	Copper/ and uranium extraction with ISL-method (In-Situ-Leaching)	Wells for water extraction (mineral/thermal/... water), injection/disposal/producing wells, groundwater measuring points, construction of new wells	Seismic prospecting in wells
Technology	Regeneration and intensification of injections/ and producing wells	Intensification, regeneration, mobilization of underground pollutants, horizontal and vertical	Production of seismic vibrations without explosive
Depth	Down to depths of 700 m	Down to depths of 2000 m	Down to depths of 2000 m
Well diameter	> 75 mm	> 50 mm	> 50 mm
Lining material	Steel PVC HDPE	Steel PVC HDPE OBO open ground	Steel PVC HDPE OBO open ground

Results from applications of the hydropuls® technique

	Raw materials extraction	Wells
State / location	Kazakhstan, uranium mining, Muyunkum	Germany, wells for water extraction, Naunhof
User	KATCO	KWL/BSL
Example 1 specification	Approx. 370 injection wells well dia. 74/93 mm, PVC depth 460-480 m	Well 43a well dia. 250 mm, depth 17,19 m, stainless steel
Delivery rate pre-regeneration	0,9-1,5 cbmh ⁻¹	12,22 cbmh ⁻¹
Delivery rate after regeneration	7,0-12,5 cbmh ⁻¹	23,14 cbmh ⁻¹
Example 2 specification	Approx. 140 producing wells well dia. 200 mm, PVC depth 460-480 m	Well 45a well dia. 250mm, depth 19,30 m, stainless steel
Delivery rate pre-regeneration	7,4 cbmh ⁻¹	22,55 cbmh ⁻¹
Delivery rate after regeneration	10,0-12,0 cbmh ⁻¹	36,90 cbmh ⁻¹

Global application area of the hydropuls® process

Germany: 

User:

- TLM GmbH
- pigadi GmbH (BerlinWater Group)
- Van Dornick GmbH

Field of application:

- Water plants
- Chemical industry

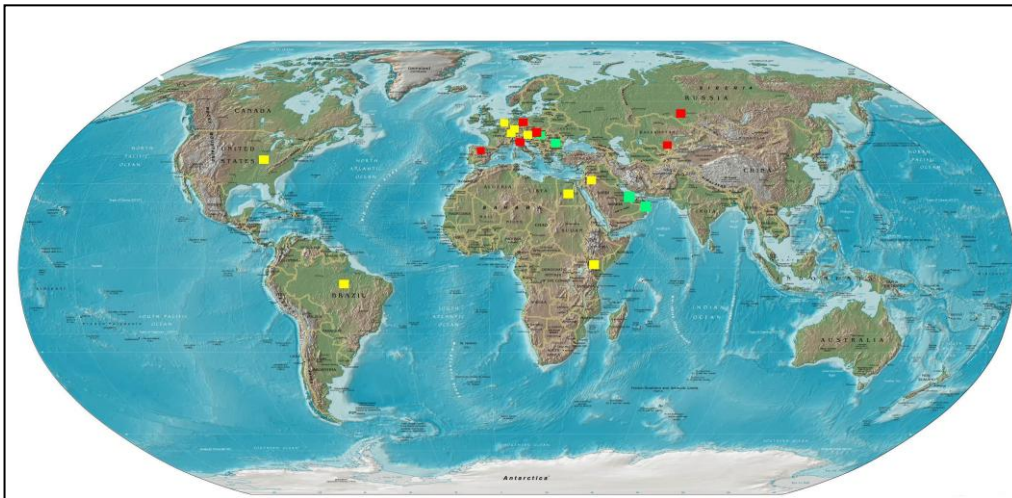
Italy : 

User:

- Idrogeo s.r.l.
- I.P.T.A. di Vassalli s.r.l.
- Ghiberti Domenico
- Acque Servizi s.r.l.

Field of application:

- Water plants
- Chemical industry




Russland: 

User:

- OOO Uran Geofisika

Field of application:

- Copper extraction with ISL-method

Kasachstan: 

User:

- JV Katco
- JV Inkai
- Kazatomprom (RU-6)
- Kendala KZ

Field of application:

- Uranium extraction with ISL-method



Rumänien:

User:

- Aquanova Services S.R.L.

Field of application:

- Water plants
- Chemical industry
- Mineral water wells



Further activities



Aquanova Services S.R.L.



TLM GmbH



Aquanova Services S.R.L.



pigadi GmbH



Aquanova Services S.R.L.



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