

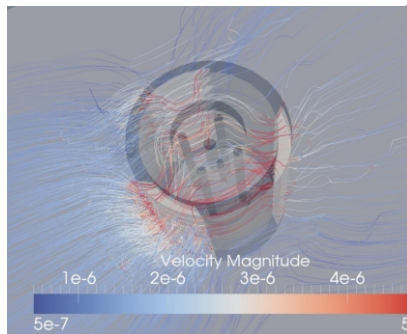
ASK FOR OUR REFERENCES

In the past decade PHREALOG has worked in a various number of hydrogeological investigation projects covering environmental protection, water resources management and civil engineering issues in Germany, Europe and Overseas.

PHREASIM BOREHOLE FLOW SIMULATION

PHREASIM is a result of our recent R&D activities. In collaboration with the Geological Institute of the University of Mainz and the Fraunhofer Institute for Industrial Mathematics ITWM in Kaiserslautern the CAD-supported Expert System PHREASIM was developed.

PHREASIM allows for modeling a broad variety of well constructions and the simulation and visualization of stationary flow scenarios covering porous flow, free flow and flow in the transition zone between porous and free flow (aquifer/well/aquifer).



Simulation of groundwater flow in a 3" well section with PHREALOG probe

PHREASIM aims to reproduce flow scenarios based on measuring data gained with PHREALOG probes in order to derive aquifer flow velocities with maximum accuracy. (www.phreasim.com)

To innovate our products and improve our service are our driving forces. In our field of expertise, we work at the cutting edge of scientific and technological development. We aim to convert our knowledge and experience to improve our product and to increase efficiency for the benefit of our customers.



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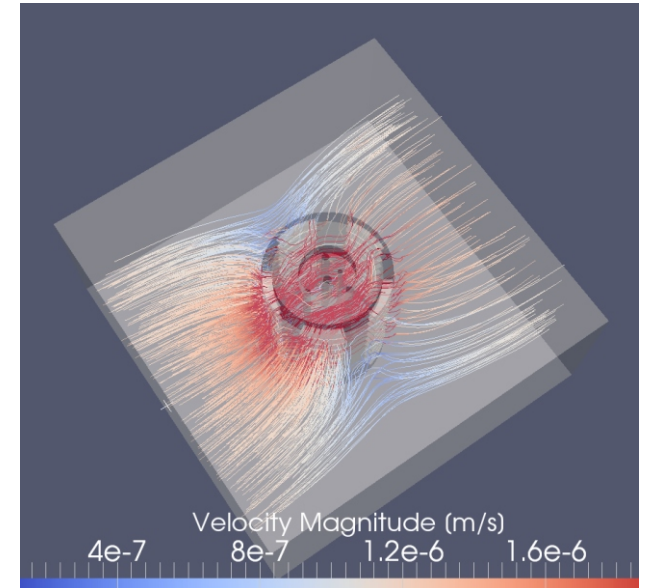
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PHREALOG

GROUNDWATER FLOW MEASUREMENTS



YOUR EXPERTS FOR IN-SITU
GROUNDWATER FLOW MEASUREMENTS

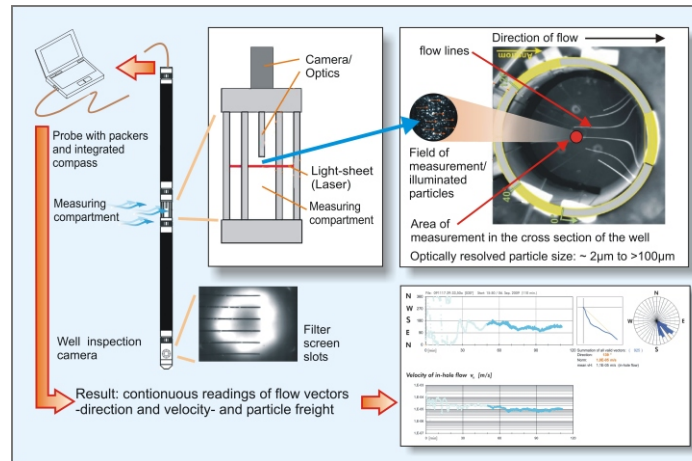
We bring LIGHT into Groundwater Flow....

Since 1999 our innovative borehole measuring technique visualizes ground water flow by tracking particle transport - providing a new perspective to groundwater flow monitoring.

As experts for in-situ bore hole flow measurements we deliver information on groundwater flow direction and velocity to support the construction of groundwater flow models - independent of water level measurements or pumping tests.

Our high level of expertise in instrumentation and project handling enables us to provide customized professional, economical, flexible services and expert knowledge for the benefit of our clients.

Optical well inspections, multi-level-measurements and continuous recording of measurement readings that reliably document steady state flow conditions are integral elements of our investigation programs.



PHREALOG measuring technique

PHREALOG...

Our experienced hydrogeologists carry out flow measurements from planning on through evaluation to reporting.

....especially when:

- water well levels are incomparable
- a wide-spaced well network lacks for accurate flow information
- a restricted number of wells inhibits conventional investigation
- a low groundwater gradient conceals flow certainty
- alternating flow and particle freight is to be monitored in time

....advantages:

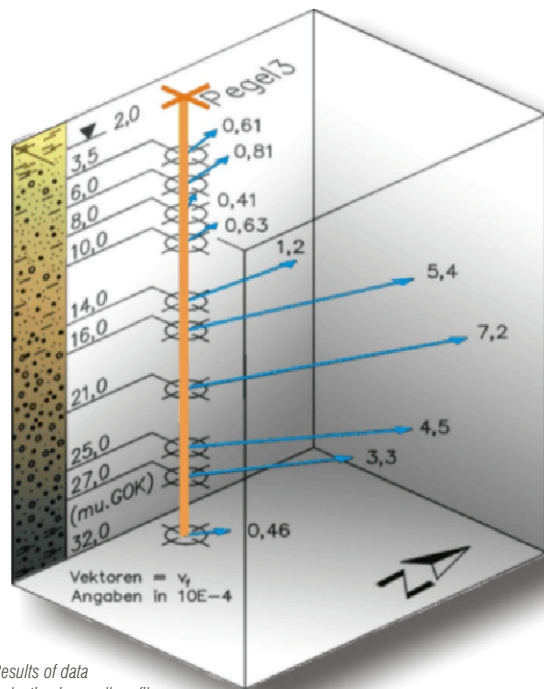
- continuous, high resolution measurement without time limitation
- measuring range: $10E-3m/s$ to $10E-7m/s$
- no artificial tracers > no approval for application required
- use of natural tracers > no sources of error due to artificial labelling
- delivers information on particle freight
- ruggedly designed and reliable in aggressive environment
- integrated optical well inspection to meet our QM requirements



Installation of a PHREALOG probe

Areas of application:

- control of ground water remediation
- define border lines of water catchment areas
- contaminant transport
- monitoring flow and particle freight near excavation pits
- pilot survey for tunnel construction
- pilot survey for ground freezing
- pilot survey for near-surface geothermal projects
- identifying dam leakages/subrosion/subsurface outwash
- particle freight surveillance
- register flow and particle freight in the aquifers profile



Results of data evaluation in a well profile

