

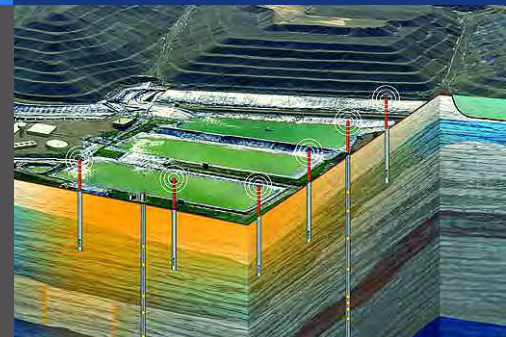
Product description

Diver-DXT



Drive-by Diver

A Schlumberger Technology



The ease of wireless measurement



Drive-by Diver saves you time

Using the Drive-by Diver technology monitoring of ground- and surface water measuring points becomes much more easy. The time at the well, to download data from a Diver, is less than 35% in regards with the old situation. This is due to the new, wireless system supplied by Schlumberger Water Services.

Periodical groundwater measurements can take quite some time and cost time and money. Not only at the well, opening the cap and making a physical connection, but also finding the well in the different seasons of the year the Drive-by Diver is a unique solution. It is easier to find the well, the well will find you. Also it is possible to communicate with more than one Diver at the same time. In the office it is very simple to transfer the data to a PC or laptop for integration into a data management system. HydroGeo Analyst, www.waterloohydrogologic.com, is a software package which can be used for importing all kind of (Diver) data, presenting these in graphs or even do modeling.

Your Drive-by Diver is:

Innovative

Worldwide, the Drive-by Diver offers a unique, new solution for communicating with the Diver.

Wireless

In the field it is possible to read the data from a distance of up to 150 metres.

Reliable

No more chance of disruption: the monitoring wells no longer need to be opened to read the diver.

Fewer errors, there is no chance that a Diver is mistakenly replaced in a different monitoring well, or that it is suspended at a different depth.

Efficient and effective

It is no longer necessary to look for the exact location of the monitoring wells.

Various Divers can be read out simultaneously.

The advantage of visual contact remains.

The Drive-by Diver is compatible with existing projects, everything is possible in a single system.

Affordable

No highly qualified personnel are required to take readings.



Field experience

Saving time in Canada

The City of Guelph (Ontario) is situated close to the Arkell Spring Grounds, an area of about 280 hectare. The city subtracts about 60% of their potable water from these wells; the remaining 40% is coming from wells spread out over the City area. To manage the quality and quantity of the groundwater the City wants to monitor all pumping and monitoring wells in the area. For this purpose a pilot has started in 2006 using more than 20 Drive-by Divers, mainly in the Arkell Spring Grounds. The time needed to download data from all the Divers including getting to the wells was about 14 hours. Using the Drive-by solution the time is no only 4 hours, even in the winter time.

Drive-by Diver

For simpler communication with the Diver

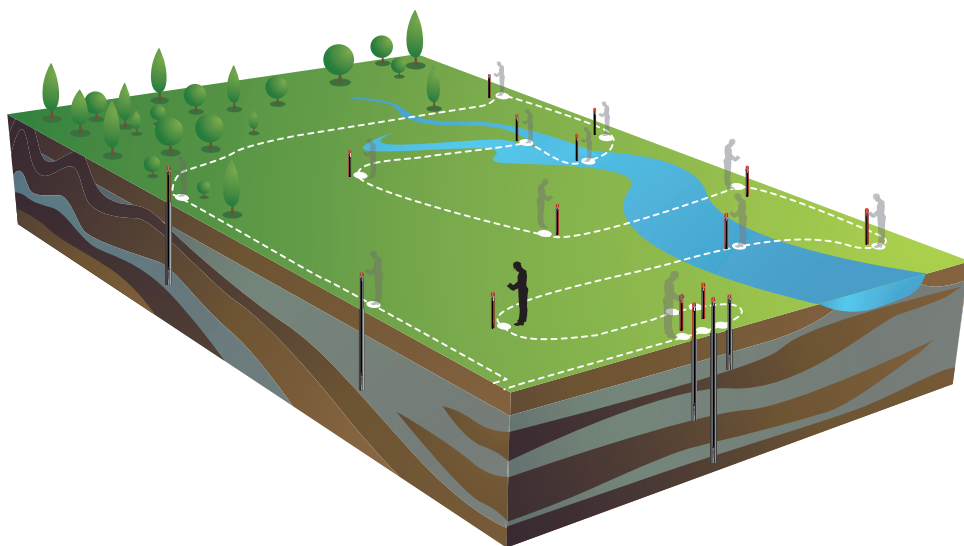


Description:

In every (monitoring) well a Drive-by Diver is placed, existing of a Diver, cable and radio-unit on top of the well. The user can program the Diver using the wireless connection between the well and the Field PC. On the FDC a radio dongle is mounted using an USB slot. On the Field PC the program Diver-Pocket is installed. Just by simple driving by the connection between the Diver and the FDC is established in less than 30 seconds and the communication can start. The distance between the FDC and the well can be up to 150 meters, depending on the local situation. Using this new and unique technology downloading data or even changing the settings of a Diver becomes easy, fast and saves time, up to more than 60%. The system has been tested at several locations in the world and has proven to be reliable and easy to use.

The battery inside the radio unit on top of the well has an estimated life time of 5 years. The battery is field replaceable.

Traditional data collection



Community monitoring.

The Drive-by (walk-by) is a very good approach for engaging entire communities in monitoring activities for groundwater. The combination of people concerned by their environment with solution like the Drive-by solution, or should we call this Walk-by, allow to build local capacity to collect, deliver, and use groundwater information to facilitate sustainable decision-making. Drive-by (walk-by) is a solution given to anyone to contribute in the protection of the environment at no risk for the stakeholder for the well integrity or the quality of the data downloaded.

For every monitoring location you require:

- a monitoring well
- a Diver
- a Drive-by cable (DBC)
- Optional:
 - Drive-by radio cover
 - monitoring well cap with pull-relief
 - monitoring well ring

For reading out the Diver:

With your own laptop*:

- Laptop
 - Win2000/XP/Vista
 - PCMCIA slot
- Drive-by dongle with CF/PCMCIA adapter
- LDM 6

* Not supplied by Schlumberger Water Services

With a Pocket-PC**:

- Pocket-PC
 - Windows Mobile 5
 - Compact Flash II slot
- Drive-by dongle
- Pocket-Diver 3 Manager/Reader (for free)

Applications:

mining, monitoring networks, community monitoring, golf management

** Schlumberger Water Services supplies fully installed robust Pocket-PCs (Archer), but you can also use your own Pocket-PC.

In all cases, Schlumberger Water Services can supply the complete installation for you.

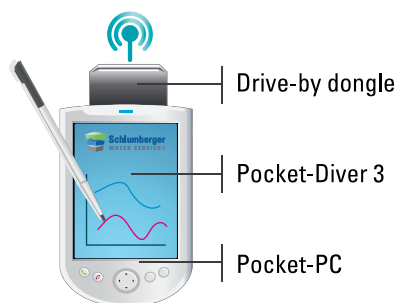
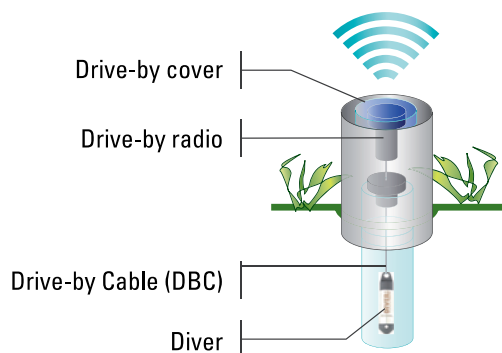
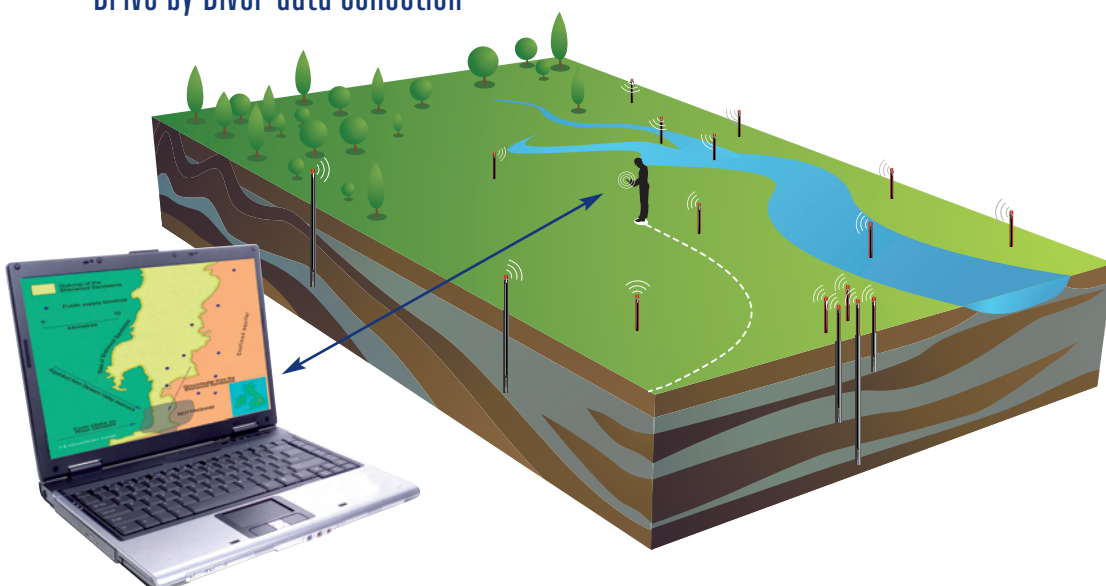
In addition, Schlumberger Water Services can handle the maintenance, the data collection and the processing, in short the management for the entire measurement network.



The complete package

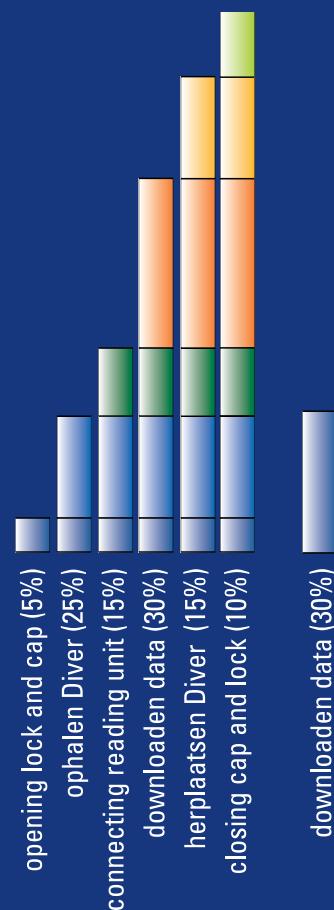
If you use Diver data loggers the move to the Drive-by radio is simple. The signal from the Drive-by radio does not pass through metal, so if your monitoring wells are protected by a metal sleeve they require amendment. The Diver itself can be suspended in a metal monitoring well casing, but the sleeve that protects the monitoring well must be able to allow radio signals to pass through. The simplest way to achieve this is to drill a hole in the sleeve so that the radio is located outside of it. The radio is then covered and protected by the robust plastic Drive-by cover. If your Divers are suspended on steel cables, these cables must be replaced by DBC cables. Of course, a Drive-by dongle and the relevant hardware and software are required to take readings.

Drive-by-Diver data collection



"Wireless does not need a physical contact for the communication with the Diver"

- time reduction with a factor of three
- efficient, reliable
- high cost/performance ratio
- no training needed for handling the system
- data transfer and integration fast and easy



Products and Technologies

Sophisticated technologies engineered to overcome challenges and bring value to projects

Field Monitoring



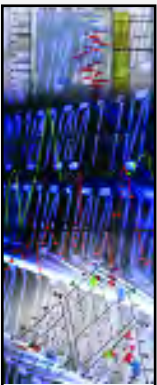
Fully integrated monitoring packages combine high-quality field instrumentation with sophisticated data transfer and data management technologies. Our field technicians are qualified to characterize, assess, and deploy optimal groundwater monitoring technologies for your site.

- Multilevel well systems monitor any number of zones in a single borehole
- Measure pressure under shut-in conditions
- Sample fluids without repeated purging
- Conduct a variety of hydraulic tests
- Frequent long-term measuring of conductivity, temperature, and water levels
- Ceramic housing offers corrosion-resistance in most environments
- Real-time, wireless data transfer to centralized information management systems

Field Monitoring Technology

- Baro-Diver
- Micro-Diver
- Cera-Diver
- CTD-Diver*
- HydroGeo Analyst
- HydroManager
- Micro-Diver
- Mini-Diver
- Westbay* System

Analysis and Management



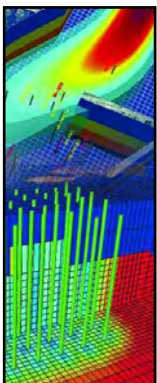
Field data, analytical data and spatial data are all critical components of a successful groundwater management strategy. Schlumberger Water Services can help you to integrate, analyze and report on these many data types.

- QA/QC functionality ensures data is accurate and within acceptable ranges
- GIS capabilities provide the spatial and temporal distribution of virtually any field parameter
- Cross-section interpretations of geologic and hydrogeologic data validate conceptual models
- Advanced borehole logs highlight geologic features critical to subsurface characterization
- Customized reports that address compliance guidelines and client needs

Analysis and Management Technology

- AquaChem
- AquiferTest
- HydroGeo Analyst
- HydroManager
- Visual HELP

Modeling and Simulation



Advanced modeling programs address geologically complex site conditions that extend beyond traditional flow and transport modeling. Our programs provide the highest degree of accuracy necessary to minimize uncertainty.

- Hydrogeologic conceptual models are developed directly within the data management system to support input for various numeric models
- Model input incorporates multiphase flow, density-dependent flow, air flow, and discrete fractures, surfacewater and groundwater interactions
- Aqueous geochemical analysis and modeling predict changes to water quality
- Models results are optimized and calibrated to site conditions
- Finite element, finite difference, and finite volume gridding capabilities provide the numerical power to address any modeling project
- Three dimensional visualization tools reveal spatial and temporal trends

Modeling and Simulation Technology

- AquaChem (PHREEQC)
- ECLIPSE*
- Petrel
- Visual MODFLOW
- UnSat Suite Plus



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WATER SERVICES