

New Partnerships for Rapid Environmental Water Quality Assessments in Boreholes

Partnerships for Solutions

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Current Issues:

Environmental investigations are constantly seeking new and better ways to collect water quality data. Water supply and monitoring wells provide easy access points for sampling, but also present inherent limitations on the types of instrumentation that can be used. Seeking partners in the private sector can help address these issues.



Region 5 Field Services Section sought a better method to evaluate water chemistry, in-situ, through existing or proposed wells at Superfund sites.



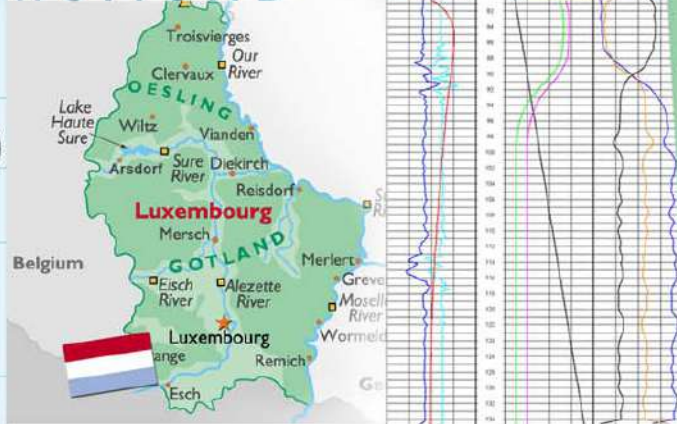
A marine instrumentation company based in Milan, Italy drew our attention through its experience with multi-parameter probes, sensors and systems. Idronaut previously addressed many environmental operating limitations. However, system required an ancillary set of equipment.

IDRONAUT s.r.l. MILANO

Project Criteria:

- ❑ System must fit within wells from 2 inches in diameter and greater.
- ❑ Interchangeable multi-parameter water chemistry sensor systems for water column depths of 3,000 feet or more.
- ❑ Data digitally processed downhole in real time to eliminate signal degradation due to cable length.
- ❑ Rapid sensor response for data collection allows measurements while traversing within the borehole.
- ❑ Integrate system to operate with existing commercial winches and logging rig systems.
- ❑ Real time data, corrections, graphic output and storage for rapid assessments.

WellCAD®



Data displays are presented in real time on software developed in Redange-sur-Attert, Luxembourg. Program integrates with operating systems used by logging companies. Software integrates calibration inputs which corrects for any parameter in real-time.

Benefits Expected:

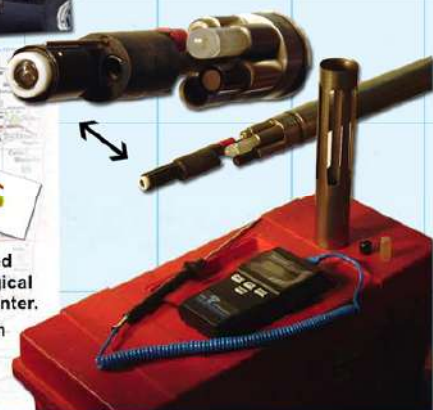
- A "first run" tool for new wells to obtain a general background of water quality.
- Provide data for sampling at specific anomalous zones.
- Data used as an indirect method for detecting flow patterns.
- A "time-lapse" monitoring device that can track changes in water quality.
- Integrated system to operate with existing commercial winches and logging rig systems.
- Measurements made in-situ.
- Provide data that can be used to evaluate natural attenuation of contaminants.



A commercial borehole logging company located in Golden, Colorado adapted the system to operate from a conventional borehole logging power winch and operating system. This configuration would allow users to purchase or rent the tool for operation on most conventional borehole logging systems.



System evaluation is currently underway and jointly being tested with assistance from U.S Geological Survey Illinois Water Science Center. Funding and final review through USEPA's Technical Innovation and Field Services Division in Washington, D.C.



Idronaut Sensor Options Currently Available for Water Quality Assessments

- Pressure
- Oxygen
- Conductivity
- Nitrate
- Ammonia
- Temperature
- pH
- Eh
- Chloride
- Copper
- Iodine
- Sulfide



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