



Case Study

The Realization of a Telemetric Monitoring Network in Peru

CHALLENGE

The realization of a monitoring network in the areas Ica and Tecna in Peru where circumstances are highly differing and standard solutions are not applicable.

SOLUTION

Partnership between local distributor SensorVital and manufacturer Van Essen Instruments resulted in a telemetric network of 146 CTD-Diver dataloggers and Diver-Link modems.

RESULTS

Today the customer has a monitoring system with daily transmission and reliable measurements which can be used by the communities that require water from the monitored wells. The network of piezometers for automated real-time monitoring of water table fluctuations in the area of the Ica, Villacurí and Lanchas aquifer and the Caplina aquifer was increased. It has become possible to obtain a daily sampling of the groundwater, in order to evaluate the behavior and the hydrochemical tendencies.



The Aquifers of Ica and Caplina

The aquifers of the Pacific slope of Peru have are fragile, due to the strong demand for water that cannot be met by the other water resources. This demand has increased in recent years, the main affected being the aquifer, on which a series of restrictions, limitations, recharge proposals, closures and all actions aimed at maintaining the balance in natural sources are centered, highlighting the aquifers from Ica and from Caplina in Tacna.

Faced with this problem, the PGIRH has planned to implement a series of water resource management actions in two critical overexploited pilot basins, the Ica aquifers, Ica, Villacurí and Lanchas sectors and the Caplina aquifer in Tacna. Among these actions, the installation and start-up of measurement and monitoring of the evolution of the groundwater table in aquifers stand out.

Need For a Monitoring Network

Given that the current control networks are insufficient to monitor in detail some sectors of each aquifer, a new control network has been each water balance with greater precision and to be able to make the appropriate decisions, to reverse the situation as far as possible, with a solid foundation and an adequate scientific background.

The objective of the project is to monitor the static levels of several wells in southern Peru and share this information with nearby communities that use the water from the aquifers for human consumption and irrigation.





The system also has an integration of the information towards a proprietary database of the client. This project was carried out for the National Water Authority of Peru (ANA in Spanish).

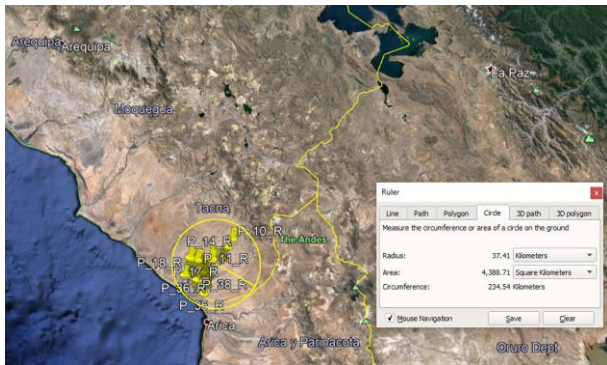
Location and Start Date

The project was divided in 2 zones or areas – the Tacna area consisting of 47 instrumented wells and the Ica area consisting of 99 wells. The monitoring area in each zone is approximately 44 km.

The installation began in December 2020. Since many wells are located in remote areas, the installation process took several months.



Ica monitoring points



Tacna monitoring points

The involvement of Van Essen Instruments

The project was born as a requirement of the Peruvian state through the ANA. A call is made through a Public Tender for the instrumentation of Tacna and Ica. SensorVital is a local company and distributor for Van Essen Instruments in Peru for more than 10 years. SensorVital proposed the use of the Diver-Link modem, the CTD-Diver and the DXT cable. SensorVital was already very knowledgeable with the different products and the integration. Due to the advantages of the proposed system, characteristics and cost, SensorVital won the tender.

Instrumentation

The instruments been used in this project are 146 CTD-Divers (different ranges), 146 Diver-Link modems and 146 DXT cables with lengths up to 200m. There are two lithium batteries used per modem, which have a life time of 5 years based on daily communication. Each Diver-Link modem sends a data file over FTP protocol to customer servers every day and data is uploaded with an engine service developed for this particular project to the database of ANA.

Impact

This is one of the first large-scale monitoring projects implemented in Peru. Thanks to daily information, it is possible for the communities benefiting from the wells to understand their behavior and to better plan their water consumption.

Another important factor is that the system also delivers information about the long term trends of the conductivity of the water, which is also very important for planning the use of water from these wells.

Choice for Diver instruments

The Diver-Link system manufactured by Van Essen Instruments was used because it has been designed specifically for projects like this. On the other hand, Van Essen Instruments is a brand recognized worldwide for its quality and experience in groundwater monitoring. Several of these wells had already been monitored with the CTD-Diver, so ANA was already familiar with this technology. And another very important factor to use Van Essens Instruments equipment is the technical support we receive, enabling us to provide future features for these kind of systems.

SensorVital, Peru

<https://sensorvital.com/>





Installation type 1



Installation type 2



Installation type 3