



DAT instruments: construction project success around the world



DAT instruments Dataloggers Installations find new success in latest Saudi Arabia, Ecuador and Malaysia Projects

by Giuditta Asnaghi

DAT instruments, a specialized manufacturer of dataloggers – data acquisition systems used in building and dam site for geotechnics and special foundations works – announces the successful application and performance of its products and services at major projects in Saudi Arabia, Ecuador and Malaysia. The success of these projects in distinctly different climates and conditions

underscores the problem solving and in project consultancy for specific jobsite requirements provided by DAT instruments experts and the reliability and precision quality of DAT instruments products literally anywhere in the world.

Riyadh Metro Project

The Riyadh Public Transport Project (RPTP), which will combine bus and train transportation networks, started

construction in January 2014, with a planned completion in 2018. According to the managing authority, the Development Authority Arriyadh (ADA), the project will generate around 15.000 new jobs and will have 85 stations across 178 km of the entire underground. The construction of tunnels and stations beneath the stratum level required a geotechnical study focused on soil permeability. DAT instruments customer, who conducted the double packer tests, used DAT instruments Lugeon / Lefranc Test datalogger, the JET DSP 100 / IR, to monitor in real time and to record water flow, pressure and final volume.



ABOUT DAT INSTRUMENTS

DAT instruments products are designed and manufactured in Italy. DAT instruments is composed of a team of: engineers responsible for product and software design and development, multifunction technicians involved in supply chain process, installation and customer service. The company has a knowledgeable inside sales team in charge of customer sales and project consulting supported by international representative offices. Founded in 2001 by Amedeo Valoroso, DAT instruments currently serve customers in more than 100 countries on 5 continents with a range of products, both standard and custom, that assist in the planning, construction and maintenance of multi-site operations.

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Data fundamental for performing accurate design construction of all tunnels and stations are extracted from the Italian company's dataloggers. «The JET DSP 100 / IR is also available for cement injections application and is specifically designed for Lugeon and Lefranc Tests to calculate soil permeability coefficient», said Daniele Dal Boni, the DAT instruments' technician who installed the product. The datalogger displays these parameters in real time directly on screen and also records the data. Stored data are then transferred to a PC, where daily summary information related to the injections can be used for final report documents or, if required, the data can be exported to Excel spreadsheets. All data are stored in the datalogger internal memory and are accessed with DAT instruments JET S 104 Software. «In this specific case», says Mr. Dal Boni, «we have brought a few minor changes to the software, to view appropriately the full scale of our customers' uncommon parameters. As expected, the operation has been a routine installation and, thanks to the user-friendly instrument, we did not even require training support for the project team.»

The Quito Metro

«Quito Metro Project was about creating Diaphragm-walls to define a station perimeter», said Gabriele Aliberti, the DAT instruments technician responsible for Quito installation. «For this work we

supplied the JET DSP 100 / D datalogger, together with the relevant sensors, to monitor depth, inclination, deviation and rotation. The actual installation took us just one day». The Diaphragm walls technique requires particular attention to be paid to the panel verticality, deviation and rotation, to ensure the joints' water resistance. For this reason, the JET DSP 100 / D datalogger is able to monitor and record the depth with a 1 cm resolution, the X/Y axes inclination with a 0,1° resolution, the grab rotation on Z axes with a 1° resolution, and the X and Y axes deviation to the vertical with 1 cm resolution. Data are acquired via sensors installed on digging equipment, and they can be filed and organized through DAT instruments JET S 104 software. Afterward the installation, Aliberti provided a training course about the datalogger functionalities and the modalities to download recorded data into the computer and to create reports with the JET S 104 software. «DAT instruments, from our headquarters in Cairate, Italy, ensure prompt and proper assistance via e-mail, phone or Skype videoconference. Additionally, DAT instruments has a reseller in the area who can assist the customer with any question», said Aliberti.

From Malaysia to Bhutan

The construction of Kuala Lumpur's Maluri Station required the JET 4000 AME / J datalogger together with MDJ sensor kit

(drill and jet grouting) and inclinometer. «We had to improve soil before the TBM excavation of 3 meters diameter», said Daniele Dal Boni, DAT instruments technician. «Technically, we had to deal with a tri-fluid jet grouting plant, which could become mono or bi-fluid as well. The cement flow was measured through an electromagnetic flowmeter, connected to the datalogger via radio.

This let change pumps with no need of new installation of sensors. The switch from mono-fluid jet grouting to bi or tri-fluid injection resulted to be considerably more comfortable and faster». During the Malaysian project, the initial plant configuration and data analysis were performed by DAT instruments technicians. The JET 4000 AME / J datalogger measures, displays and records the parameters during both drilling and piling.

Recorded data are: soil relative energy, drill depth, feed force, translation rod speed, boring rod rotation torque, X/Y axes inclination, water and cement flow and pressure, air pressure, rod rise step time and injected column length. Each graph reports date, time and duration of the work. In Bhutan, DAT instruments took part in a large dam cutoff project. The drilling and jet grouting instrumentation assisted the operators during the construction of a bulkhead under the dam. The purpose of this structure is to prevent dam erosion caused by water flow.

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