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Robust and reliable: Mitsubishi Automation Technology helps to build Alpine Tunnels



The New Alpine Transversal Rail Tunnel (NEAT) is being bored and blasted through the solid rock of the mountains between Sedrun and Faido in Switzerland. It is a heavy-duty job that requires the best possible equipment, and the walls of the tunnel are being secured with the help of concrete spraying machines fitted with Mitsubishi control technology. The automation control is being carried out by the Swiss company ECONOTEC from Nürensdorf.

Boring the tunnel progresses in stages. Every 2-3 meters the walls of the new section must be secured and reinforced with spray concrete, among other things to prevent rock falls. The concrete is applied with a SIKA®-PM500 spraying system. During application a precisely-metered quantity of quick-setting accelerator is mixed with the concrete in the head of the sprayer. The accelerator quantity is adjusted and automatically regulated with the help of a frequency inverter.

The conditions could hardly be tougher – in addition to the water, humidity, dirt, concrete additives, cement and dust in the environment, extreme safety requirements must be observed at all times – but the Mitsubishi FX2N PLC and the MAC E300 control unit have been taking it all in their stride, performing reliably year in, year out.

In addition to the great reliability of the equipment the tunnel workers and engineers also praise their simple operation – both on site with large keys that can be operated reliably with gloves and from a safe distance with wireless and cable remote control equipment.

The MAC E300 also function as a database and information system – for example they store the concrete mix recipes and display and store any error messages generated by the machines. Operating hours are logged automatically, which greatly simplifies servicing, and the consumption figures for the concrete and additives can be displayed as columns of figures and graphs with up-to-the-minute accuracy.

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