

Success Story

UNITROL® 1010 Automatic Voltage Regulator (AVR) Successfully installed in shunter locomotive, replacing analog regulator for a DC machine operated on variable speed

UNITROL® 1010 Automatic Voltage Regulator (AVR) has been installed in a shunter locomotive to replace obsolete analog controller for a DC machine. The device shows excellent performance over wide range of speed and under harsh environment.



UNITROL® 1010 Automatic Voltage Regulator (AVR)

The Story

ABB know-how combined with the innovative Excitation System UNITROL® 1000 was the basis for replacing the design of a 30 year old analog voltage regulator for a DC machine.

In collaboration between ABB and BLS Bern (Lötschberg Simplon) traction company, UNITROL® 1010 was successfully installed and commissioned on a shunter locomotive for railway station service. UNITROL® 1010 controls a 20 kVA DC machine, supplying the onboard electricity for window heating, compressors for cooling and the control system.

Customer needs and ABB's solution

UNITROL® 1010 meets demanding environmental requirements for traction applications. The unit is installed nearby the diesel engine and is exposed to heavy vibration and to wide temperature range from -25°C up to 70°C. The solution allows the customer to replace the older system with limited adjustments and gives therefore a cost optimized solution.

The project can be seen as a reference for a none typical use of an excitation system. Especially operating the DC machine from a speed of 700 rpm to 2100 rpm gives a demanding task for controlling the voltage.

UNITROL® 1000 software functionality was extended to cope with demanding regulation tasks, particularly to target variable speed applications. Most demanding task is the changing system gain due to variable speed.

UNITROL® 1000 provides special functions for correcting this automatically, and therefore provide stable regulations over a wide range of speed.

UNITROL® 1000 devices are designed and type tested according to traction application requirements. Power generation on traction vehicles are a strong growing market. Demanding environments and highly complex regulation tasks are a challenge for voltage regulators. The UNITROL® 1000 product family fulfils the demanding requirements and provide the best solutions for our customers.



Commissioning team of BLS shunter locomotive: BLS-Service employee; Peter Bänziger and Rudolf Moeckli, ABB Ltd (from left)

Power and productivity
for a better world™





UNITROL® 1010 and UNITROL® 1020 Automatic Voltage Regulator (AVR)

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