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.

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.

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.

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.

Commissioning team of BLS shunter locomotive: BLS-Service employee; Peter Bänziger and Rudolf Moekli, ABB Ltd (from left)
UNITROL® 1010 and UNITROL® 1020 Automatic Voltage Regulator (AVR)

For more information please contact:

ABB Switzerland Ltd
Excitation Systems
and Synchronizing Equipment
Austrasse
CH-5300 Turgi, Switzerland
Phone: +41 (0)58 589 24 86
Fax: +41 (0)58 589 23 33
Email: pes@ch.abb.com

www.abb.com/UNITROL