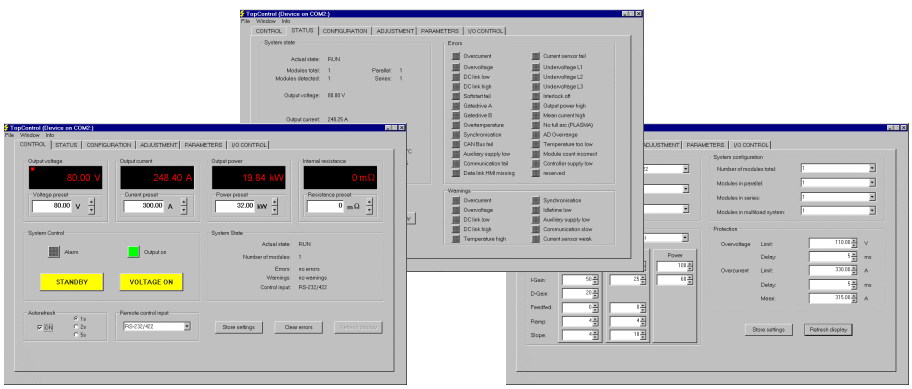
Applications of Regatron Power Supplies in the Automotive Industry

In the automotive industry, programmable DC power supplies are used in many different applications in research, development and testing. The change-over to the 42 V automotive electrical system, testing of many different loads of the automotive electrical system and the development of vehicles with hybrid or fuell cell drive are just some examples of where programmable primary switched DC power supplies simulate lead-acid batteries or fuel cells. Depending on the load, the power supply unit has to deliver continuous power or very short peak currents. The power supply unit must accept control signals from any superposed control structure like serial or parallel interfaces, field buses, LabView, etc.

TopCon power supply unit of the power categories of 10 and 16 kW

TopCon power supply unit of the power categories of 20 and 32 kW

The Programmable High-Power DC Power Supplies from Regatron have been successfully placed in many different applications in the automotive industry. The adjustable internal resistance simulation facility (range: of 0 - 12'000 mOhm) enables the power supply unit to simulate the actual behaviour of lead-acid batteries or other voltage sources with internal resistance. In order to compensate the voltage drop on the line from the power supply to the load, a sense line can be connected. For the programming of Regatron power supplies, the following interfaces are available as standard: Analog/digital control port, serial interface RS-232 with the operating and service software TopControl, and application programming interface for LabView and C/C++. The front panel control unit HMI, the remote control unit RCU and interfaces for IEEE488.2, different field buses and RS422 are offered as options. Regatron power supplies cover the voltage range from 50 to 1000 VDC with finely graduated nominal output voltages. Power categories of 10, 16, 20 and 32 kW are available for each nominal output voltage. For high-power applications, several power supply units can be operated in parallel, series or multi-load operation. The multi-unit master/slave operation is fully digitally controlled.



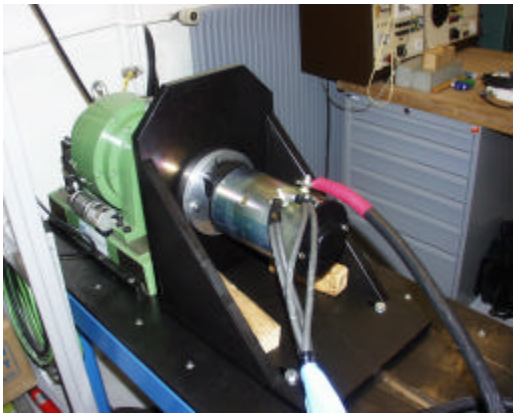
TopControl: Versatile operating and service software

The use of Regatron power supplies can be roughly grouped into the follwing two application fields:

a) Lead-acid battery simulation

High power, accuracy and control dynamics as well as perfect reproducibility due to fully digital control and regulation are just some of the reasons for the use of Regatron power supplies. Regatron power supplies in the lower voltage range successfully supply many test benches in the automotive industry. Some examples of typical loads are:

- Motor starter and (integrated) starter-alternator-systems
- Auxiliary DC loads like e.g. airconditioning compressors, fuel and oil pumps, hydraulic aggregates, door-locking mechanisms
- Harnesses
- Electric automobile compartment heaters
- Halogen- and gas discharge lamps
- Switching contacts, automatic fuses, connectors
- Contactless switches and switch arrays



DC-Motor (test sample) on eddy current brake

Liquid cooled 32 kW power supply unit

b) Fuel cell simulation

As a substitute for fuel cell stacks, DC power supplies from Regatron are used as voltage-, current- or power-controlled sources for research, development and testing purposes. The mainly used power supplies in this application field have nominal output voltages of 400, 500 and 600 VDC. In a fuel cell vehicle's power train, the fuel cell stack is typically followed by an energy accumulator (SuperCap e.g.) and a converter which delivers the energy to the traction motor. Also these elements can be tested and evaluated by Regatron power supplies.

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