

# UNITROL® Power Converter UNL 14300

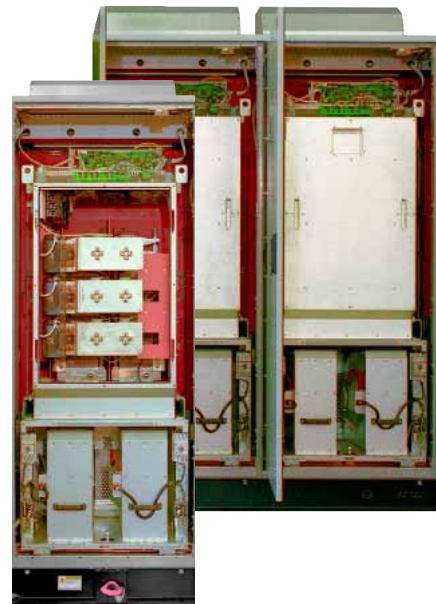
## Unique Power Converter for UNITROL® Excitation Systems

**The forced air-cooled module, which is especially designed for large Static Excitation Systems (SES), contains six 4" thyristors and six fuses. Its design and features make it extremely suitable for redundant excitation converters.**

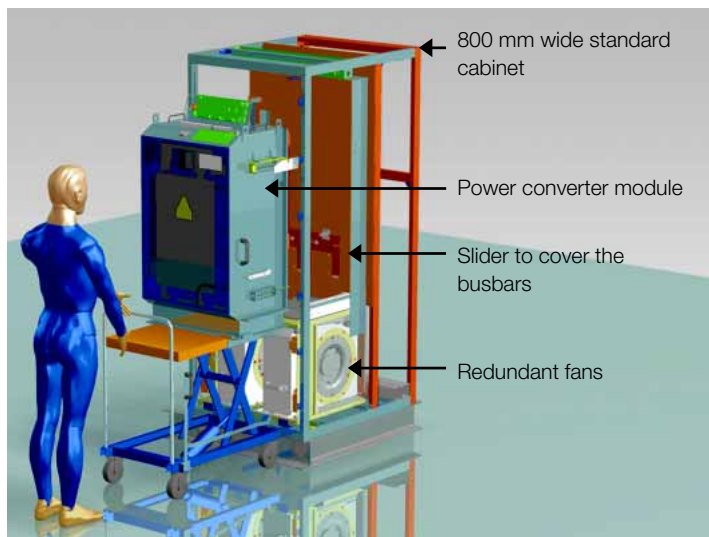
The power converter of a Static Excitation System is connected to the generator's rotor circuit. Faults on the AC terminals, including the step-up transformer and the network the generator is connected to, can cause excessive currents and voltages in the rotor circuit. Thus, the power converter has to withstand such conditions safely.

The converter module UNL 14300 is **especially designed for these harsh conditions**. For example, the HiPot test voltage is up to 7.5 kV and it can withstand current peaks resulting from short-circuits. The forced air-cooled converter module is equipped with six 4" thyristors and six matching fuses. The main data of the single converter module with various thyristor types are shown on the next page.

**Major advantage:** Thanks to the **modular design** it is possible to easily slide the complete power part, including snubber circuit and control electronics, in a safe TEST position or out of the cabinet by means of a trolley. Thus, necessary repair work can be done safely on the spot, or it can be removed or exchanged conveniently to be repaired elsewhere.



Converter module with and without cover plate



When the Power Converter Module is in "draw out" position, the openings to AC and DC busbars will be automatically closed

### Main Features of UNL 14300

- Maximum AC supply voltage: 1500 V<sub>AC</sub>
- Low noise level of cooling fans: ≤ 70 dB(A)
- Airflow monitoring by pressure difference relay
- High insulation level: HiPot test voltage of up to 7.5 kV
- Redundant fans, replaceable during operation of the system (option)
- Draw-out design (option)
  - Safe **TEST position** allowing on-line repair and function tests
  - Removal or replacement of the power part with a module trolley



The power part is **forced cooled by two redundant fans** at the bottom of the module. However, only one fan in operation ensures that the rated module data are met. In case the pressure relay detects a fan failure, it initiates an automatic changeover to the standby fan. Should both fans fail, the thyristor triggering pulses are blocked and the snubber circuit is disconnected by means of an IGBT element. The fan boxes can be **safely exchanged during operation in less than 15 minutes**.

The UNL 14300 module is **very compact**. It can be built into a standard cabinet frame of 800 mm width and 2000 mm height. Thus, a standardized excitation system up to an  $I_{EN}$  of 8000 A will cover a footprint of only 7800×1000 mm with n-2 converter redundancy\*.

\*) With 2 converter modules out of service all operational conditions are still met.

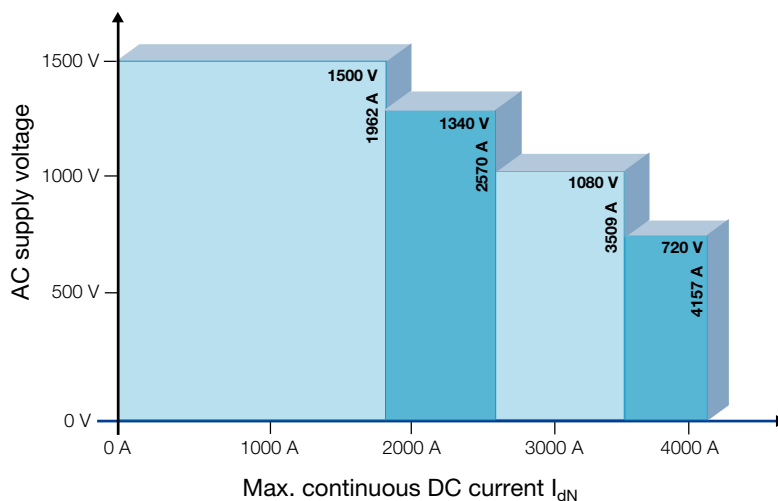
#### Additional Features of UNL 14300

- Inlet and outlet air temperature monitoring
- Disconnectable snubber circuit
- Thyristor case temperature monitoring (option, UNITROL 6000 only)

#### UNL 14300 is suitable:

- For parallel connection of up to 5 converter modules (can be increased if necessary)
- For actively controlled current distribution among parallel converter modules (feature included in the control part of the excitation system)
- To be built into cabinets with protection degree up to IP 54, incl. air to water heat exchanger if necessary

#### Technical data



Data of single UNL 14300 module, forced cooled, 50/60 Hz, built in IP54 cabinet  
Ambient temperature 45 °C, Altitude up to 1000 m a.s.l.



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