E-COATING PROCESS RECTIFIERS

Modular IGBT and Classic Thyristor Type

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Modular IGBT design, e.g. 400 V / 1200 A

flexible – modular – redundant – scalable

The e-coating process requires more than a standard electoplating rectifier or AC to DC converter can deliver. High DC quality, robustness, reliability and safety requirements are above and beyond the common standards in electroplating.
Our **classic** SCR controlled high efficiency e-coating rectifiers are serving in hundreds of lines worldwide. Efficiency above 90 %, DC quality at almost 98 %, single high output with a capacity of up to 5000 A, rated for 100 % duty cycle for extra reliability are standard for us, not an option.
Our **modular** IGBT e-coating rectifiers are serving the industry since 2015. Adding single anode current monitoring, single anode current control and easy upgrade capability to up to 1200 A in addition to the set standards of the classic version.
Our e-coating rectifiers are in compliance with highest safety standards according to UL and CE regulations. IoT / Industry 4.0 ready interfaces are provided to achieve highest productivity at lowest cost. These and others are already standards for us and not options. Of course, all our e-coating rectifiers come in a robust industrial cabinet for extra protection and safety.
Made to meet the requirements of the e-coating process, made to meet your specific needs - we can.

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Classic:

Backbone of hundreds of industrial lines our SCR e-coating rectifiers are rated for 100 % duty cycle and therefore just deliver. Used in batch lines and continuous lines the SCR e-coating rectifier is available with current density control, Asec counter and sparkfree section transition function.

Local control by touch panel, remote control via Profinet or Ethernet-IP are standards for us like the integrated power safety switch. Ground current monitoring is an available option as well as coupling fields to support rectifier change-over-systems for maintenance service.

All control and power components are accessible from the front side, no extra spacing required around the system. Air sealed control compartment and air guided power section for extra robustness are standards for us, too.

Technical Data:

- Mains voltage: 380 - 575 V
- Output voltage: 0 ... 500 V
- Output current: 0 ...5000 A
- Efficiency: > 90 %
- Ripple: < 2 %
- Control: U-constant (I-constant optional)
- Ambient temperature: + 40 °C
- Site altitude: < 1000 m above sea level
- Protection grade: IP54 panel/IP43 power section
- Profibus DP, ProfiNet, Ethernet-IP

Options:

- Medium voltage input
- Current density control (10 standard programs)
- Ground current monitoring
- AC energy monitoring
- Anode current measurement section
- Coupling field for maintenance
- Sparkfree section transition
- UL field inspection

Classic thyristor design e.g. 500 V / 1000 A

universal - durable - reliable

Features:

- Service-friendly design
- High DC quality
- Asec counter (Coulomb counter)
- Durable design
- Customized solutions

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E-COATING PROCESS RECTIFIERS

for Batch and Continuous Line Systems

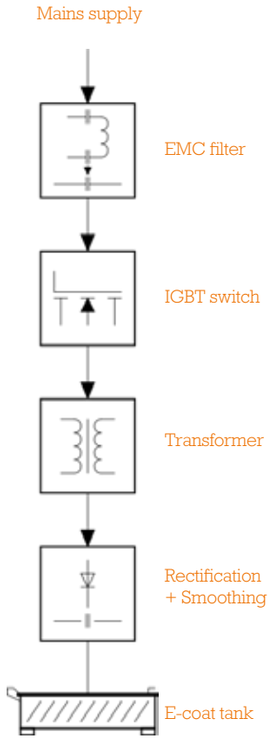
Mobile compact devices in IGBT technology

A significant advantage of high frequency (IGBT or MOSFET) transistor technology is its unique compact design. These high precision switch mode power supplies have already set standards, especially for mobile applications or in the laboratory.

The switch mode power supplies include a high frequency design on the primary side. An internal transformer guarantees galvanic mains isolation. At the output it delivers a fully regulated voltage or a current with constant low ripple.

e.g. 400 V / 3,5 A, bench case

e.g. 400 V / 20 A, bench case



Block diagram

Modular

The very compact design, the upgrade option at a later stage, the available redundancy design and single anode current monitoring and control are just a few new functions now becoming available with the modular IGBT based design.

Ranging from 400 V / 200 A up to 1200 A the rectifier is featured with safety switch, local touch panel for emergency use on site and IoT/Industry 4.0 ready interface.

Less than 1/3 of the weight, providing the same power as the classic type, the modular e-coating rectifier offers new unknown options like the individual anode current control. Installed into and protected by an industrial cabinet we care to ensure highest productivity.

Modular IGBT design e.g. 400 V / 600 A

Features:

- Mains voltage: 3x 220-480 V
- Light weight
- Compact design
- Small footprint
- Constant ripple
- Constant high power factor
- Digital control panel
- Asec counter (Coulomb counter)
- Timer
- Ramp function
- Remote off function

Technical Data:

- Mains voltage: 3 x 380-480 V 50/60 Hz
- Output voltage: 0 ... 400 V
- Output current: 0 ... 1200 A
- Efficiency: > 90 %
- Ripple: < 2 %
- Control: U-constant (I-constant optional)
- Ambient temperature: +40 °C
- Site altitude: < 1000 m above sea level
- Protection grade: IP54 panel / IP43 power section
- Interface analog, Profibus DP, ProfiNet, Ethernet IP

Options:

- Single anode control
- Current density control (10 standard programs)
- Ground current monitoring
- AC energy monitoring
- Combination with classic systems as an entry or exit rectifier possible
- Customized solutions on request
- External air supply