

SYKO - Expert in Power Electronics

**SYKO**®

*POWER*

Railway technology



Measurement instrumentation



Automotive equipment



Custom equipment



Industrial systems engineering

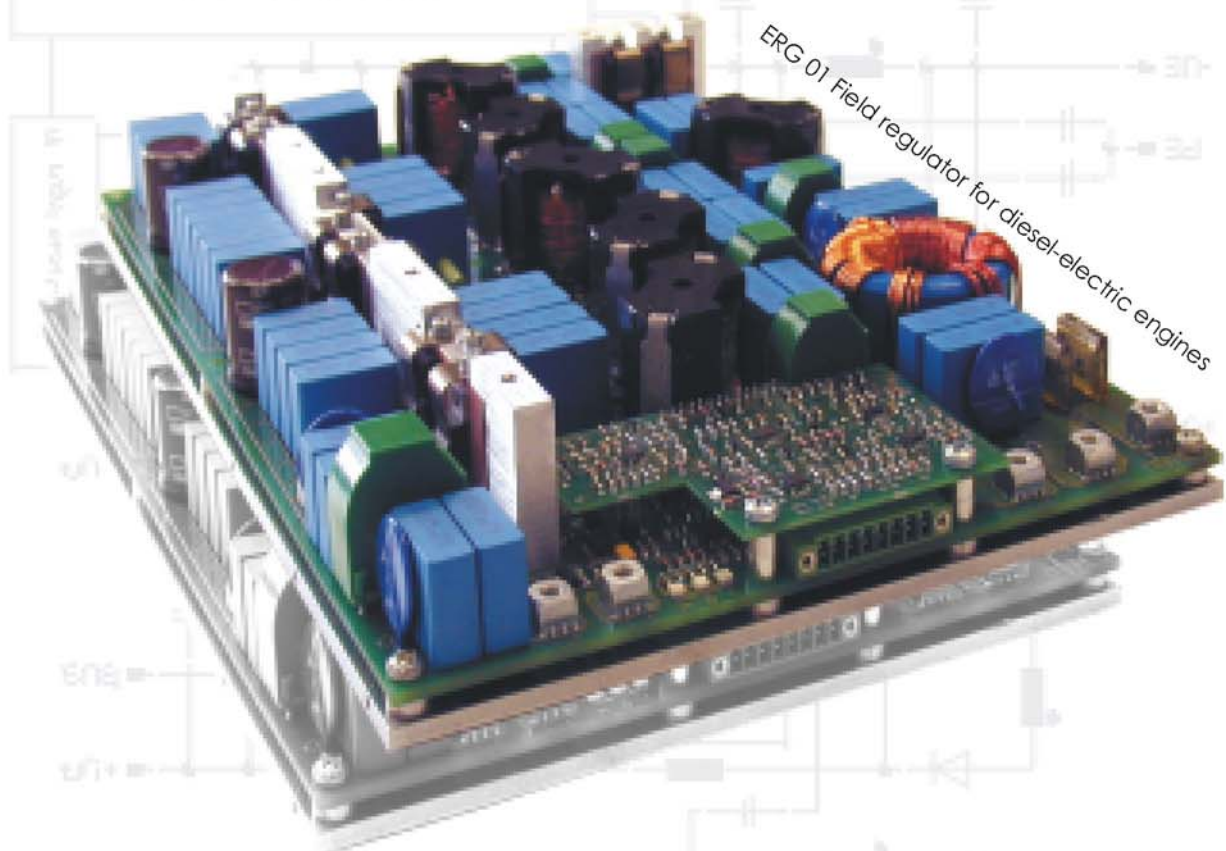
Our current

**Power Supply Program**

# What we control becomes standard!

SYKO was founded in Mainhausen, Germany in 1973 by the electrical engineer Reinhard Kalfhaus. Since the very beginning, the company has focused on the development and manufacture of switch-mode power supplies.

SYKO today offers a comprehensive product range of superior-quality custom-tailored and standard components, including switching regulators, regenerators, DC/DC converters, power supply units, and power inverters. SYKO's products are characterized by extremely wide input voltage and temperature ranges, excellent interference suppression, multiple outputs, and mechanical robustness. They are compliant with the relevant standards, such as EN 60950, EN 55022.B, EN 50155/121, EN 61000-4-4/5, RIA 12, UIC 550, IEC- high voltage and the military standards VG and MIL.



Based on standardized circuit topologies, SYKO can deal with customer-specific modifications and custom development as easily as with standard technology. In most cases, a fully functional serial prototype can be delivered within 7-9 weeks. SYKO features one of today's most expansive and standard-compliant ranges of power supply products in

**railway technology, automotive industry, aircraft engineering, measurement instrumentation, industrial systems engineering, automation, custom equipment, transportation engineering, shipbuilding, and telecommunication market segments.**

SYKO-POWER will continue its stable growth in 2003 and the following years. This is based on 70 employees in R&D, manufacturing and sales departments, the new 3.200 m<sup>2</sup> company site, and current sales of more than 6 million Euro.

SYKO delivers standard-compliant products for railways worldwide

# Innovative Topologies and Patents

## About us



Exhibition stand

## Sales

DC/DC, AC/DC, DC/AC  
System converters and modules  
Customized solutions according to specification  
Project management and coordination  
Technical support



SMD assembly

## Manufacturing

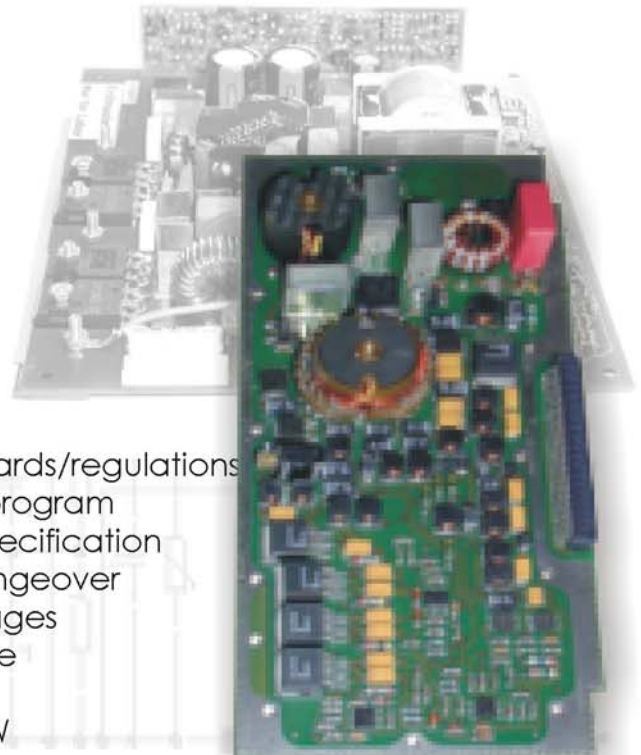
In accordance with DIN ISO 9001  
Small and large batches  
Automated SMD assembly  
CE-conformity verification possible  
100% verification, documented verification  
Burn-in testing, cycle testing



Measurement lab

## Development

In accordance with current standards/regulations  
Customer-specific and standard program  
Circuit topologies according to specification  
Vin ranges up to 1:20 without changeover  
Multiple independent output voltages  
Industry requirements or even more  
demanding specifications  
Vin up to 5 kV / Outputs up to 3 kW



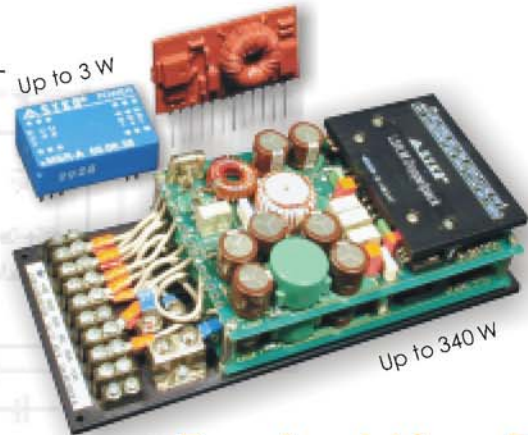
15 independent outputs

" What we control becomes standard! "

# DC/DC Converters, Switching Regulators, Regenerators

## Product Line A

Secondary switching regulators without isolation  
(3 - 340) W, uni-/bi-/tripolar or current-controlled  
Vin range up to > 1:10  
Option: temperature range -40/+85°C



US Pat.Nr. 5.991.166/6.094.366 D Pat.Nr. 195 15 210/195 05 417

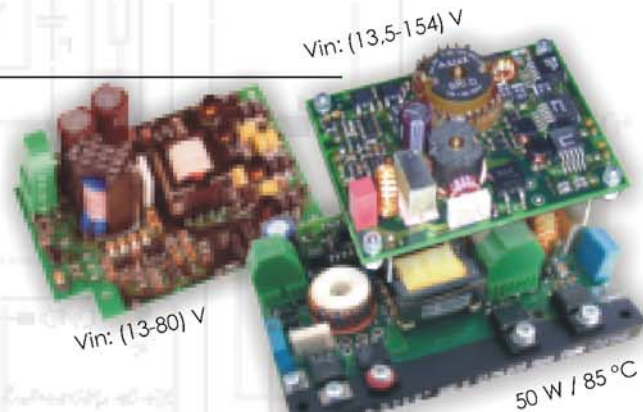
## Product Line B

Regenerators (buck/boost) without isolation  
Modules or chassismountable up to 2000 W  
Unipolar, Vin range up to > 1:10  
Vin lower than, same as, or higher than Vout  
Voltage and current cascading  
Option: temperature range -40/+85°C

Special: **Field regulators** for diesel-electric engines

## Product Line C

DC/DC modules, isolated  
(3-50) W, uni-/bi-/tri-/quadpolar  
Vin range up to > 1:10  
Long-term transient-proof  
Option:  
temperature range -40/+85°C



## Product Line D

Supplementary regulator, isolated  
(3-10) W, uni-/bipolar  
Vin range up to  $\pm 15\%$   
Option: temperature range -40/+85°C



## Product Line E

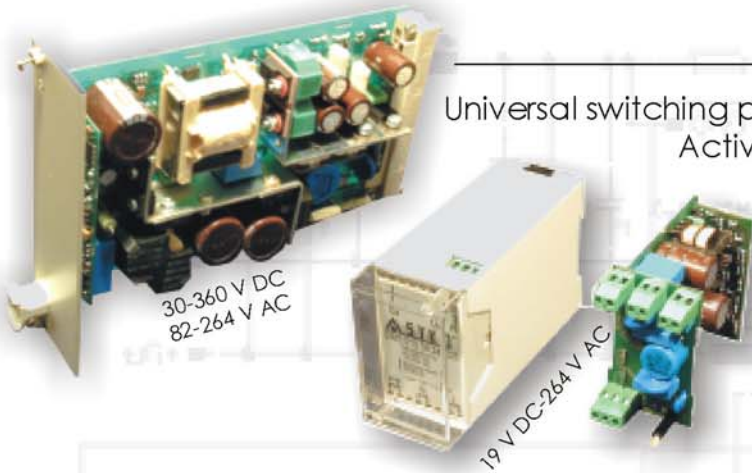
DC/DC system converters, 19" rack systems,  
isolated, also in high voltage range  
(20-500) W, uni-/bi-/tri-/quadpolar  
Vin range up to > 1:10  
(14,4 - 154)V / (9 - 60)V up to 80W  
Option: temperature range -40/+85°C

All converters optionally with extended temperature range: (-40...+85)°C

# System converters, Single-phase and three-phase inverters, Filters

## Product Line F

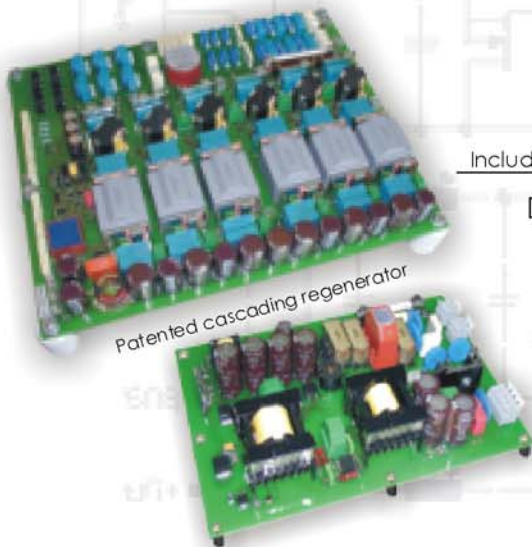
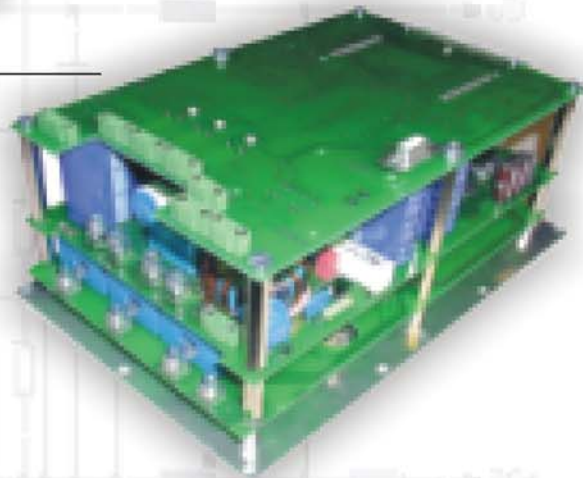
Universal switching power supply units with AC&DC input  
 Active power loss ride-through up to > 1 s  
 Also for high voltage range  
 10-250 W, uni-/bi-/tripolar  
 AC and DC inputs  
 Vin range up to > 1:20  
 Option:  
 temperature range -40°C/+85°C



## Product Line G

Patent pending

Single-phase/three-phase inverters  
 Distortion factor < 0.5 %  
 Inrush current limited  
 Output up to 3,5 kVA (on 110 V input)  
 Vin range up to > 1:3  
 Option: temperature range -40°C/+85°C



Includes all railway standards and transients

## Product Line H

DC/DC High-voltage converters with isolation, unipolar  
**Series UIC** 250W - 2000 W System power supply  
 for UIC voltages for rail traffic throughout Europe.  
 Vin: 1000V / 1500V / 3000V DC/sine/square wave

**Series ABS** 50W - 500W Overhead cable power supply  
 For static loads or start-up operation  
 Vin: 450V / 600V / 750V / 1200V

## Product Line K

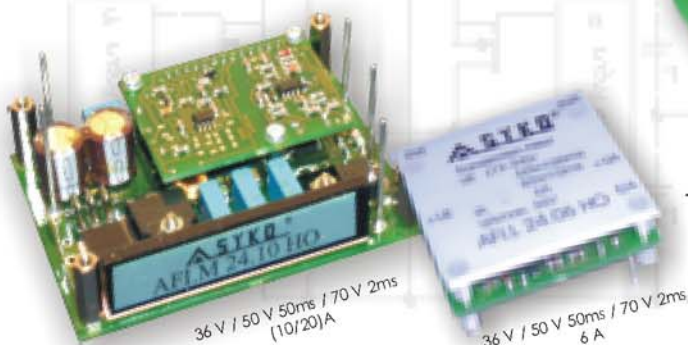
Customer-specific power supplies  
 On land, on water, and in the air  
 Individual, according to specification



## Product Line L

D Pat.Nr. 3804074/0402367

Long-term transient-filter with  
 inrush current limiting and transient kill  
 also active switch





Gesellschaft für Leistungselektronik mbH

Tel: +49(0)6182/9352-0

Fax: +49(0)6182/9352-15

Email: [info@syko-power.de](mailto:info@syko-power.de)

<http://www.syko-power.de>

### Power supplies

Outputs up to 3 kW

DC/DC converters

Regenerators / Field regulators

Universal power supply units

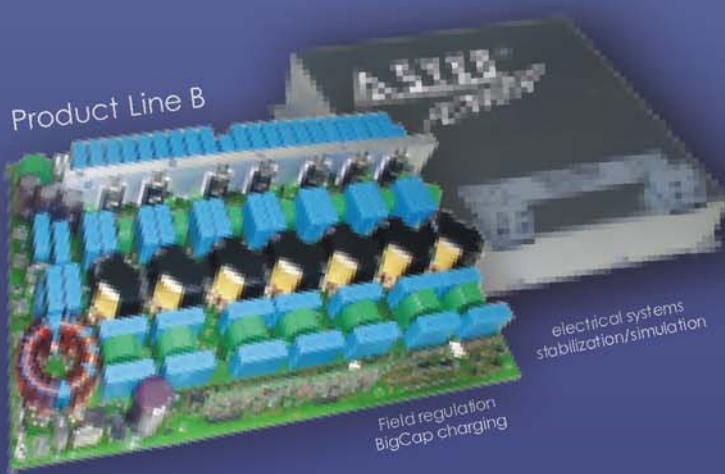
Single- and three-phase inverters

Units with high voltage input and PFC

Customer-specific solutions

for

### Low-voltage and high-voltage ranges



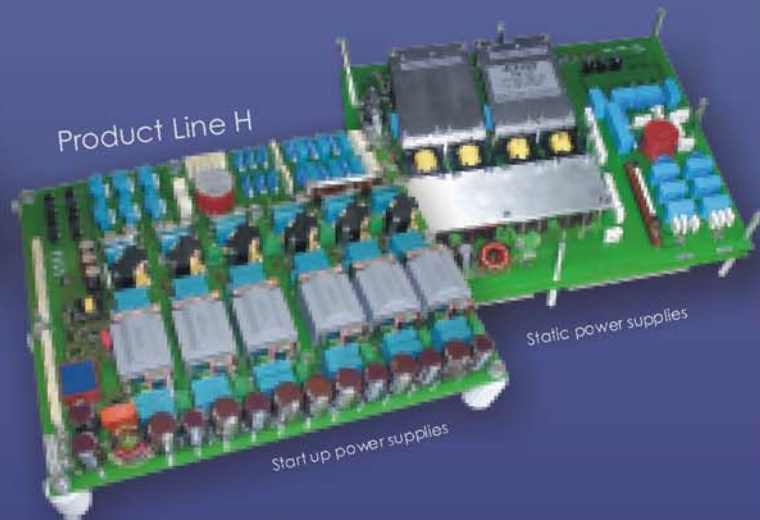
(12-24-42)V

automotive vehicle electrical systems

(24 - 110)V

railway vehicle electrical systems

Cascading 400W/750W/1.5 kW/>2 kW



1000 V / 1500 V sine/square wave

750 V / 1500 V / 3000 V DC

railway vehicle UIC-electrical systems

(emergency) start-up power supplies

Cascading 50 W to 3000 W



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**POWER**

“ Your customer specification is our standard ”