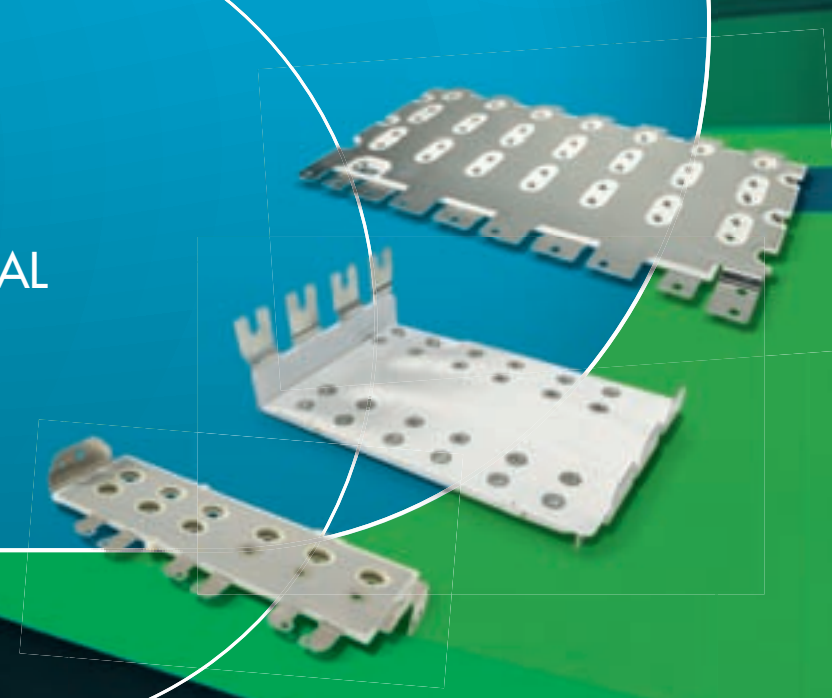


**IT'S ESSENTIAL ...  
... TO EMPOWER YOUR ENERGY!**

## Busbars

RO-LINX®  
EASY - PERFORMANCE - THERMAL

The world runs better with Rogers.®



Power Distribution Systems Division

## IT'S ESSENTIAL TO US:

- ▶ To be innovative
- ▶ To make you successful
- ▶ To develop tailor made solutions for you
- ▶ To create Power Distributions Systems that meet your specific needs
- ▶ To be flexible
- ▶ To test the Power Distributions Systems extensively before delivery
- ▶ To anticipate new and changing requirements in the market to explore and develop applications
- ▶ To give engineering support from the earliest stages to create the most economical solutions
- ▶ To provide the best customer service
- ▶ To serve customers worldwide through manufacturing in both Europe and Asia

That's how we empower your energy!

### The world runs better with Rogers.®

Rogers Corporation is a global technology leader in the development and manufacture of high performance specialty materials and components for a variety of applications in a wide range of markets including:

- ▶ Communication infrastructure
- ▶ Consumer products
- ▶ Ground transportation (Mass transit)
- ▶ Renewable Energy
- ▶ Computer and office equipment
- ▶ Industrial
- ▶ Aerospace and defense
- ▶ Portable communication devices



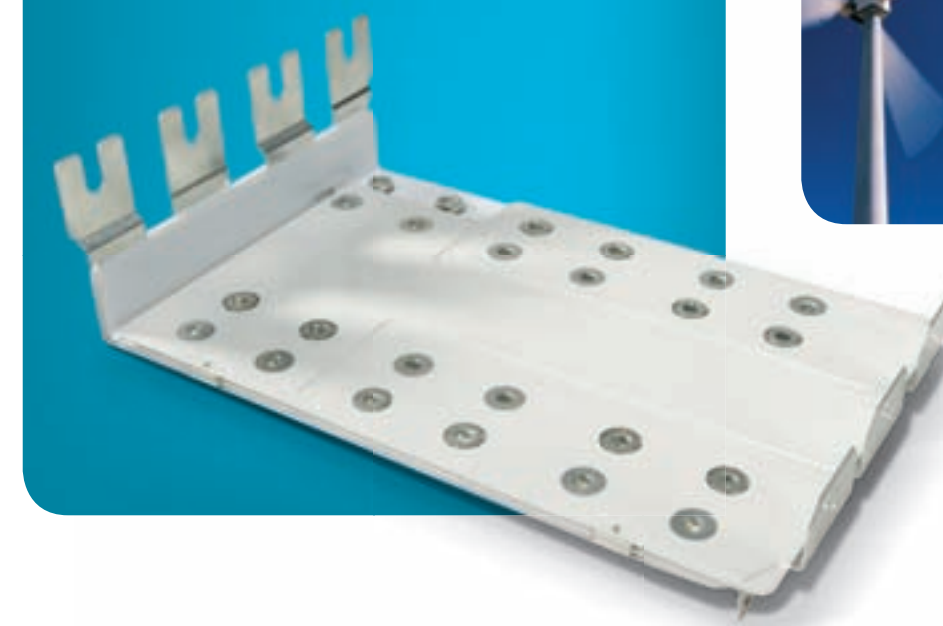
▶ Ground transportation (Mass Transit)



▶ Industrial applications



▶ Renewable energy



# Power Distribution Systems Division

## RELIABILITY

- ▶ Low inductance
- ▶ Design for controlling partial discharge
- ▶ Optimized thermal characteristics
- ▶ Increased EMI shielding
- ▶ Long standing experience in laminated busbars manufacturing

## LOW INSTALLATION COST

- ▶ Error-free wiring
- ▶ Compact design saves space
- ▶ Reduced installation time
- ▶ Designed to last

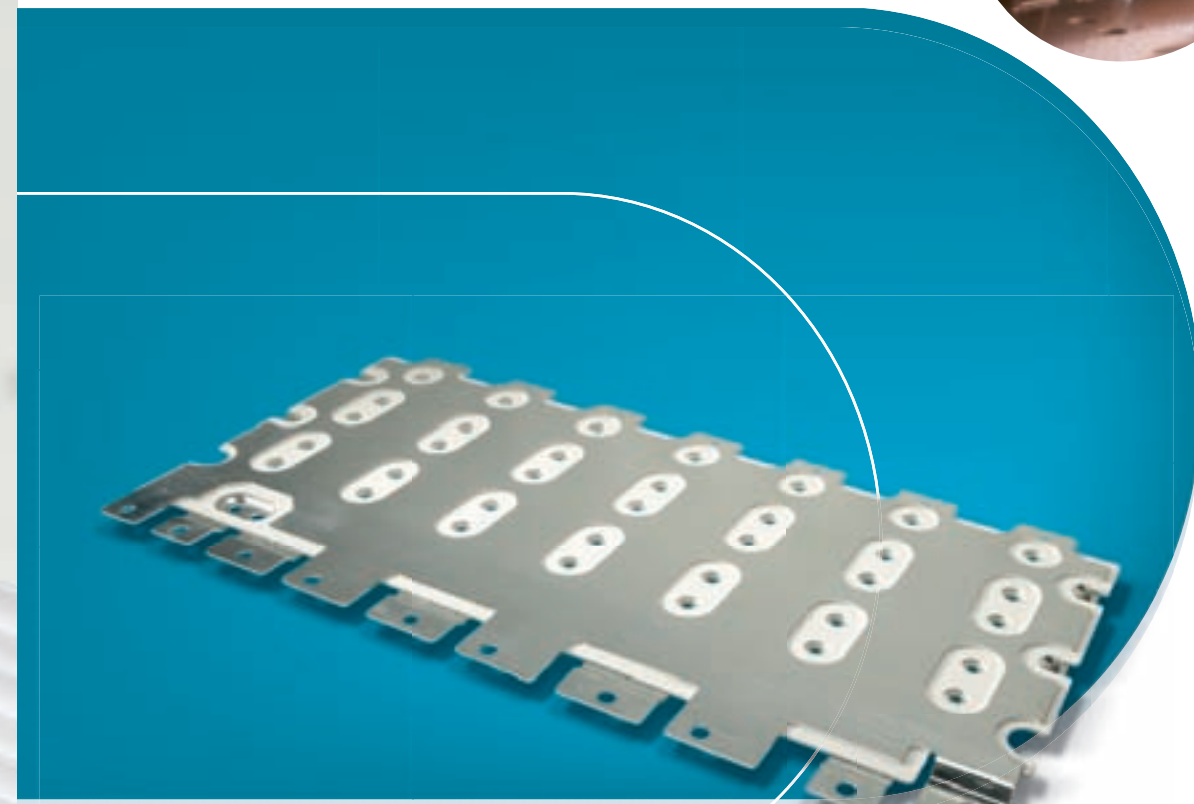
## CUSTOMER SPECIFIC

- ▶ Engineering support from the early stages
- ▶ Multitude of connection possibilities
- ▶ Optimized inductance
- ▶ Shaped to fit your equipment
- ▶ 100% partial discharge tested if necessary
- ▶ Busbars integrated into sub-assemblies

## SERVING THE CUSTOMER WORLDWIDE

- ▶ Manufacturing in both Europe and Asia
- ▶ Multi-lingual support
- ▶ Dedicated support

# POWER DISTRIBUTION SYSTEMS division



Rogers aims to grow its position by becoming the preferred innovative designer and supplier of power distribution solutions that enhance our customers' value proposition.

Rogers' Power Distribution Systems division specializes in designing and manufacturing laminated multi-layer busbars and is dedicated to providing high performance power solutions to customers worldwide. To accomplish this we continuously search for innovations to answer customer needs.

We ensure a high quality level by providing an extensive range of tests during and after production in order to meet your specifications and exceed your expectations in quality, service and co-operation.

- ▶ Manufacturing units in Europe and China
- ▶ Experienced engineering team
- ▶ Global sales force
- ▶ ISO 9001-2000 certified

# RO-LINX® BUSBARS

## Power Distribution Systems RO-LINX® BUSBARS

Rogers' Power Distribution Systems division provides a wide product range, addressing an answer to most of the customer needs. The RO-LINX® Busbar is our promise to continue providing power distribution systems which are a result of performance excellence and customer confidence. We create added-value for our customers by extensive engineering support in the early stage of the product development resulting in the most economical design right from the start.

The main market segments for busbars are industry, electric traction, industrial power supplies, renewable energy and telecommunication.

### CUSTOMIZED BUSBARS

Our 3D busbars, fulfill the function of a high current PCB in power electronic modules. They are used in traction propulsion systems for railway applications, industrial frequency inverters and large UPS systems or other power supplies. In any type of application, special shapes can be made to fit into the smallest possible space. For busbars used in traction systems, the working voltage can be several thousands of volts combined with currents of over 1000 amps. Conductors can be up to 4mm thick and be as large as 2 meters by 1 meter. Parts can be 100% tested in production to address partial discharge requirements.

### CONNECTION TECHNIQUES

Our busbars can be designed with an unlimited number of conductors and a variety of connection techniques. A combination of the traditional busbar with incorporated wiring harness and connectors limits the number of piece parts to be ordered by the customer. As such the customer gets a completely tested sub-assembly from one vendor, ready to plug in.

### PRODUCTION

Through our production facilities in the center of Europe and Asia (China), we can serve our customers worldwide. At both sites, we apply similar controlled production processes, machinery and equipment which are essential to guarantee an identical quality standard and to avoid mutual transfer issues.

### RO-LINX® BUSBAR PRODUCT RANGE

#### ▶ RO-LINX® Easy

Designed as an economical alternative for stacked busbars for easy installation and reduced logistics.



#### ▶ RO-LINX® Performance

Our state-of-the-art laminated busbar for medium and high power applications.



#### ▶ RO-LINX® Thermal

Meets future high power requirements with a temperature rating of 125 °C (vs 105°C), essential for upgrading your existing power modules.



## Power Distribution Systems PROPULSION MARKET

Propulsion systems for ground transportation, marine or other heavy equipment are important applications with integrated busbars. Since these applications require high power capabilities, a busbar becomes almost inevitable for answering to high standards and performance requirements.

Rogers, experienced in manufacturing laminated busbars, creates added value into the busbar design, and thinks ahead with the customers to respond to future needs. Essential products in the propulsion market are RO-LINX® Performance & RO-LINX® Thermal.

### TRACTION CONVERTERS

Used in propulsion systems with specific electrical requirements for voltage, current and partial discharge.

Essential products:  
RO-LINX® Performance & RO-LINX® Thermal.

This applies for:

- ▶ Mass transit
- ▶ Ship propulsion
- ▶ Heavy equipment

### AUXILIARY CONVERTERS

Converters used for air conditioning, lighting etc. in railway equipment.

Essential products:  
RO-LINX® Performance & RO-LINX® Thermal.



#### MASS TRANSIT

- ▶ Electric locomotives
- ▶ Metro
- ▶ Trams



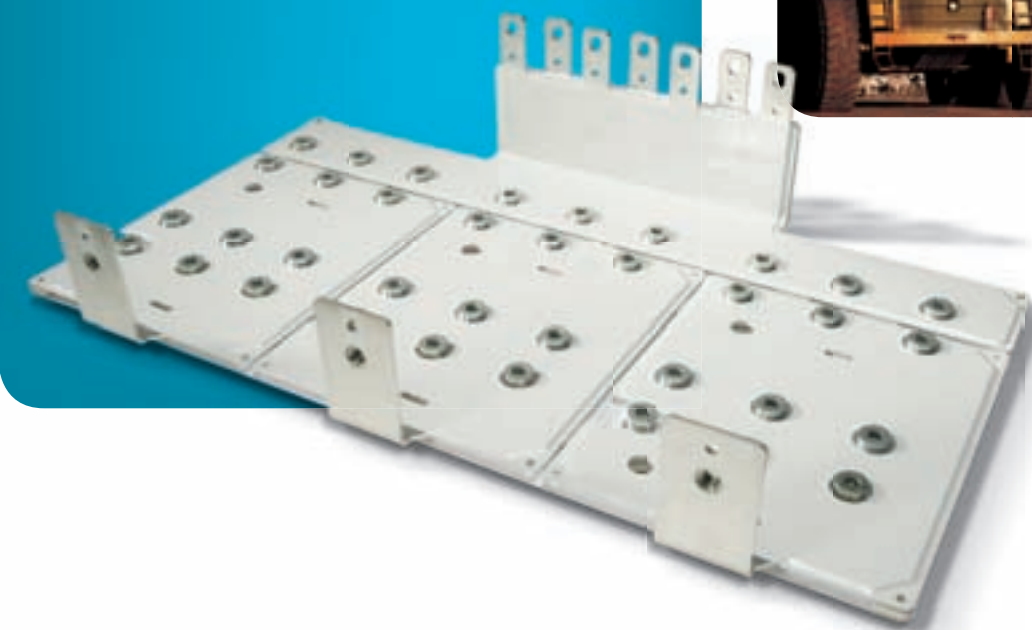
#### SHIP PROPULSION

- ▶ Passenger ships (cruise liners)
- ▶ Bulk carriers



#### HEAVY EQUIPMENT

- ▶ Mining vehicles
- ▶ Heavy off road trucks



## Power Distribution Systems INDUSTRIAL MARKET

Rogers has a lot of experience within the industrial market where our RO-LINX® busbars find their way in a wide range of different medium to high power applications. Our presence in the renewable energy market is growing, with typical solutions for power converters in wind, but also solar, tidal, hydro and geothermal applications. We maintain and extend our presence and knowledge in the more classic industrial market which can be divided into different applications; from typical data and telecom applications to more generic power supplies. Essential products in the non-propulsion market are RO-LINX® Performance & RO-LINX® Easy.

### POWER INVERTERS / GENERATORS FOR RENEWABLE ENERGY

- ▶ Ranging from hundreds of kilowatts to several megawatts
- ▶ Essential products: RO-LINX® Performance and RO-LINX® Easy

This applies for:

- ▶ Wind turbines
- ▶ Solar fields

### STATIC CONVERTERS

- ▶ Ranging from a few kilowatts to several megawatts
- ▶ Type of drives: frequency drives or voltage drives
- ▶ Essential products: RO-LINX® Performance & RO-LINX® Easy



**RENEWABLE ENERGY**  
▶ Inverters for solar



**INDUSTRIAL APPLICATIONS**  
▶ Drive systems for high speed elevators  
▶ Static converters



**RENEWABLE ENERGY**  
▶ Inverters for wind turbines

### TELECOM AND DATACOM APPLICATIONS

Where busbars can be designed with a variety of connection techniques, providing space saving and optimal electrical characteristics:

- ▶ Large telecom switching systems
- ▶ Mobile phone base stations
- ▶ ADSL racks
- ▶ Data storage servers

### INDUSTRIAL APPLICATIONS

Where busbars provide space saving, mechanical rigidity and optimal electrical characteristics:

- ▶ UPS systems
- ▶ Welding robots
- ▶ Medical equipment
- ▶ Elevator
- ▶ Other

## DESIGN AND ENGINEERING CAPABILITIES

### Power Distribution Systems RO-LINX® BUSBARS

Essentially from design to busbar

Being a pioneer in the busbar industry, our engineering team has many years of experience in designing new busbars for different power system applications.

We are convinced that engineering support from the earliest phase in the development cycle of a power module results in an optimal design. Investing in optimal design and support is essential for the future.

#### DESIGN & ENGINEERING CAPABILITIES

We utilize our experience to support you during the development of your busbars to meet your particular requirements. Our engineers can assist you during the whole design process: starting from a blank sheet of paper to the optimal 3D design that meets all your requirements. During this design phase, our R&D department will support you with an extensive knowledge of electrical, chemical and mechanical behavior of a busbar in a high power environment.

Even when a busbar has already been designed, we will support your engineering team to make it ready for production in the most economical way, without compromising on the technical requirements.

Our engineering team works with state-of-the-art development tools and testing measuring equipment to assist your team in achieving the best design and quality. We can provide you when required, with easy transferable files enabling a smoother co-operation with your engineering department.

#### PROTOTYPING

For every new busbar design that will go in production, it is essential to first manufacture a prototype. A specialized and experienced in-house team is involved in making the prototypes to ensure that:

- ▶ the busbar design is physically fitting into the customer's device/system
- ▶ all technical/electrical requirements are met
- ▶ the complete production process is validated
- ▶ the production tooling is correct
- ▶ the machine programming is according to the latest designs/plans.

#### TESTING CAPABILITIES:

##### ELECTRICAL

- ▶ Inductivity measurement
- ▶ Static self heating and hot spot detection
- ▶ Partial discharge testing
- ▶ High voltage test

##### MECHANICAL

- ▶ 2 and 3 dimensional measurements
- ▶ Climatic tests
- ▶ Peel, cleavage, SAFT test



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