

# GINO AG

Elektrotechnische Fabrik



INDUSTRY

PRODUCT CATALOGUE

## LOAD- AND TEST RESISTORS

Load and test resistors are used to check, maintain and test energy sources such as generators. In addition, it is often a legal requirement that emergency power systems are subject to a monthly test run to ensure smooth operation in the event of an emergency. An effective EPS is of essential importance in public facilities and high-security

installations. Whether in data centers, shopping centers, prisons or hospitals - EPS are indispensable. This places high demands on reliability, easy handling, spacesaving dimensions and the possibility of mobile use. Our series products have been designed precisely for these areas of application.

### STANDARD RESISTORS

#### Load Compact 100 (GLC 100)

System Voltage: 3~ 400 V  
Auxiliary voltage: 1~ 230 V  
Frequency: 50/60 Hz  
Power: 100 kW  
Steps: 2 kW

Dimensions: (L x W x H): 650 x 310 x 720 mm  
Volume level: ~ 85 dB  
Protection class: IP 21  
Weight: 30 kg  
Features: - Easy connection via Powerlock  
- Display for reading electrical parameters  
- Low weight for maximum flexibility



#### Load Compact 300 (GLC 300)

System Voltage: 3~ 400 V  
Auxiliary voltage: 1~ 230 V  
Frequency: 50/60 Hz  
Power: 300 kW  
Steps: 1 kW

Dimensions: (L x W x H): 1038 x 800 x 1500 mm  
Volume level: ~ 75 dB  
Protection class: IP 21  
Weight: 300 kg  
Features: - Forklift lugs for easy transportation  
- Small increments possible  
- Master-slave operation with up to six devices (control unit must be purchased separately)



## Modular Compact 19 (GMC 19)

System Voltage: 3~ 400 V  
Auxiliary voltage: 1 ~ 230 V  
Frequency: 50/60 Hz  
Power: 19 - 159 kW  
Steps: 2 kW

Dimensions: (L x W x H): 650 x 310 x XXX mm  
(depending on the number of modules)

Noise level: ~78 dB (depending on modules)

Protection class: IP 21

Weight: < 50 kg

Features:

- Modular design up to 159 kW possible
- Freely selectable load connection
- Mobile/ compact design
- Simple / clear operation
- Safe / simple load connection

## Mobile Loadbank 300 kW

Load voltage: 3~ 400 V  
Auxiliary voltage: 1 ~ 230 V  
Frequency: 50/60 Hz  
Total output: 300 kW  
Graduation: 1 kW  
Dimensions: (L x W x H): 1720 x 1720 x 1640 mm  
Protection class: IP 23  
Features:

- Control via a touch display
- Road approval
- Storage space for cables and tools
- Measurement of electrical variables
- Automatic power control



## CUSTOMIZED SYSTEMS

The requirements for technology, safety, flexibility and documentation are all the more important when it comes to customer-specific systems. Thanks to its many years of experience and its KNOW-HOW, GINO AG is able to manufacture wind turbines for a wide range of applications: Whether medium or low voltage, large outputs of several

megawatts (MW) or the absorption of large amounts of energy, complex measurement and switching technology or mobile and flexible solutions. In order to meet these requirements, the design, production and service departments have been expanded so that special solutions can be implemented in the shortest possible time.

### Load resistor in 40 foot container

Load voltage: 1500 VDC  
Auxiliary voltage: 400 V  
Total power: 2500 kW

Protection class: IP 23  
Special features: - Operation via touch display or switch/button  
- Various gradation options



### Load resistor in 20 foot container

Load voltage: Up to 25 kV depending on the type of connection  
Auxiliary voltage: 3~ 400 V  
Total power: 3x 240 kW

Protection class: IP 23  
Special features: - Star and delta connection, parallel operation and serial operation possible  
- Automatic detection of the type of connection



## Battery test station

Load voltage: 500 VDC  
Auxiliary voltage: 110 V  
Total power: 110 kW

Protection class: IP 20 and IP 54  
Special features: - Resistance adjustment from 1.5 - 95 m $\Omega$   
- Control via remote control

## Test resistor

Operating voltage: 950 VDC  
Current: max. 4000 A  
Time: 120 s  
Resistance value: 0.1  $\Omega$

Protection class: IP 00  
Features: Resistance taps from 0.01- 0.1  $\Omega$



## EARTHING RESISTORS

Our earthing resistors are indispensable components for earthing the neutral point in medium-voltage networks. They enable both low-impedance and high-impedance earthing and limit the fault current. They reduce the over-voltage and the active component of the current, which facilitates fault location and at the same time protects electrical components such as transformers, motors and other systems.

GINO AG offers customers standard resistors in insulation classes 7.2 kV-36 kV with and without current transformers. At the same time, customized earthing resistors with different protection types, insulation classes as well as current transformers, voltage transformers, load-break switches and earthing transformers are offered.

### STANDARD RESISTORS

#### Steel grid resistor

Resistor system: BEG

System voltage: 10 kV

Operating voltage: 5.77 kV

Insulation class: 12/28/75 kV

Residual current: 40 A for 10 s

Resistance value: 145  $\Omega$

Protection class: IP 23

Accessories: Medium-voltage current transformer



#### Steel grid resistor

Resistor system: GHR

System voltage: 33 kV

Operating voltage: 19.05 kV

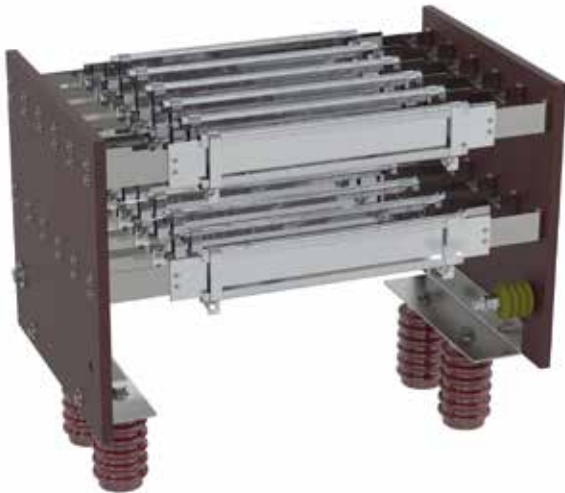
Insulation class: 36/70/170 kV

Fault current: 500 A for 10 s

Resistance value: 38.1  $\Omega$

Protection class: IP 23

Accessories: Medium-voltage current transformer



## Wirewound resistor

System voltage: 6.35 kV  
Operating voltage: 3.66 kV  
Insulation class: 12/28/75 kV  
Residual current: 25 A for 10 s  
Resistance value: 255  $\Omega$   
Protection class: IP 00

## CUSTOMER-ORIENTED SYSTEMS

### Steel grid resistor

Resistor system: GHR

System voltage: 20 kV  
Operating voltage: 11.5 kV  
Insulation class: 24/50/125 kV  
Fault current: 1000 A for 5 s  
Resistance value: 12.7  $\Omega$   
Protection class: IP 33

Accessories: Disconnecter, vacuum circuit breaker,  
medium-voltage current transformer



## Wirewound resistor

Resistor system: DEZ

System voltage: 10.5 kV  
Operating voltage: 6.06 kV  
Insulation class: 12/28/75 kV  
Residual current: 10 A for 10 s  
Resistance value: 610  $\Omega$   
Protection class: IP 54

Accessories: Current transformer, voltage transformer,  
excitation transformer

## FILTER RESISTORS

Filter resistors play a crucial role in energy systems to prevent grid perturbations. The operation of large industrial machines generates harmonics that can influence the grid frequency. In order to ensure the stability of the supply network and guarantee operational safety, interfering influences are eliminated or reduced by suitable measures such as medium-voltage filter circuits. An absorption circuit at the input of the medium-voltage supply, consisting of a series connection of capacitors and inductors, helps to attenuate harmonics. In order to avoid dangerous swit-

ching overvoltages at the choke and to increase the bandwidth of the absorption circuit, the choke is damped by a resistor. Our filter resistors are designed according to customer-specific requirements and manufactured in accordance with current standards. They are designed for voltage ranges of 7.2/ 12/ 24/ 36/ 52 kV, enable single-phase and three-phase applications and offer various degrees of protection. They also require minimal maintenance and are characterized by their high overload capacity.

### APPLICATION EXAMPLES



#### 3-phase

Design: Steel grid resistor

Insulation: BIL 170 kV

Power: 20 kW

Current: 4.71 A

Resistance value: 875  $\Omega$

Protection class: IP 01

#### 1-phase

Design: Steel grid resistor

Insulation: BIL 170 kV

Power: 10 kW and 45 kW

Current: 70 A and 56 A

Resistance value: 2  $\Omega$  and 12  $\Omega$

Protection class: IP 01







## C-type

Type: Steel grid resistor

Insulation: BIL 550 kV

Power: 2 x 45.37 kW

Current: 2 x 7.1 A

Resistance value: 2 x 844  $\Omega$

Protection class: IP 23

## C-type

Steel grid resistor

Insulation: BIL 950 kV

Power: 2 x 211.5 kW

Current: 2 x 10.45 A

Resistance value: 2 x 1936  $\Omega$

Protection class: IP 23



## STARTER RESISTORS

Starter resistors are used to start slip ring motors. To start an asynchronous motor from standstill, the torque generated by the current must be higher than the moment of inertia of the application. The required starting torque always depends on the application.

A smooth starting process is important to protect the drive system from excessive mechanical stress and to protect the mains from peak currents. Without a starting resistor, the starting current could reach more than seven times the rated motor current. This leads to serious effects on

the supply network and can cause damage to the electrical and mechanical components of the entire drive train. Starters are used in various applications such as ball mills, cement mills, SAG mills, crushers and shredders. Whether air-, liquid- or oil-cooled, GINO AG offers its customers reliable and established products.

Special solutions such as dynamic slip regulation, recooling systems or dual resistance stages can also be implemented.

## APPLICATION EXAMPLES



### Liquid starter

Starter motor type: AK / MAK

Industries: Cement, mining

Application: Ball and vertical mills, crushers, conveyor belts, fans

Power range: up to 10 MW

Rotor voltage: up to 4 kV

Rotor current: up to 3 kA

Protection class: IP 54, outdoor installation

Accessories: PLC control, agitator, short-circuit contactor, spindle gear, temperature and fill level monitors

Special feature: Triangular electrode position, feed-throughs above max. electrolyte level



## Oil starter

- Starter motor type: 3PA3  
Industries: Cement, mining, water supply  
Application: Crushers, conveyor belts, pumps, fans, ball and vertical mills
- Power range: up to 5 MW  
Rotor voltage: up to 3 kV  
Rotor current: up to 2 kA  
Protection class: IP 54, outdoor installation
- Accessories: PLC control, step contactors, short-circuit contactor, temperature and fill level monitors
- Special feature: Cooling fins, dual resistance staging



## Air-cooled starter motor

- Starter motor type: LSG  
Industries: Mining  
Application: Conveyor belts
- Power range: up to 2.5 MW  
Rotor voltage: up to 3 kV  
Rotor current: up to 2 kA  
Protection class: IP 23 (resistors, IP 54 control cabinet)
- Accessories: PLC control, step contactors, short-circuit contactor, temperature monitoring
- Special feature: Dual resistance staging

## BRAKING RESISTORS

GINO AG braking resistors are used in cranes, elevator drives, conveyors and in all drives that require rapid speed changes due to control or regulation. The excess kinetic energy is absorbed by the resistors and converted into thermal energy.

In low power ranges where a high degree of protection is required, the encapsulated VPR-DEG wirewound resistors from GINO AG are an optimum solution. Different require-

ments need special customer-specific solutions. Encapsulated resistor profiles are also available in three-phase versions and equipped with an integrated star bridge or shielded connection cable. Project-specific assemblies and substructure housings for direct mounting under the frequency inverter round off the flexible application options. The steel grid design is suitable for intermittent operation, as the elements cool down quickly due to their large surface area.

### APPLICATION EXAMPLES



#### Wirewound resistor

Resistor system: DEG

Operating voltage: max. 1000 V

Power: 1.2 kW

Resistance value: 47 Ω

Protection class: IP 20

Accessories: Thermal contact

3 meter connection cable

Special feature: UL version

VPR profile with protection class IP 65

#### Steel grid resistor

Resistor system: BEG

Operating voltage: max. 1000 V

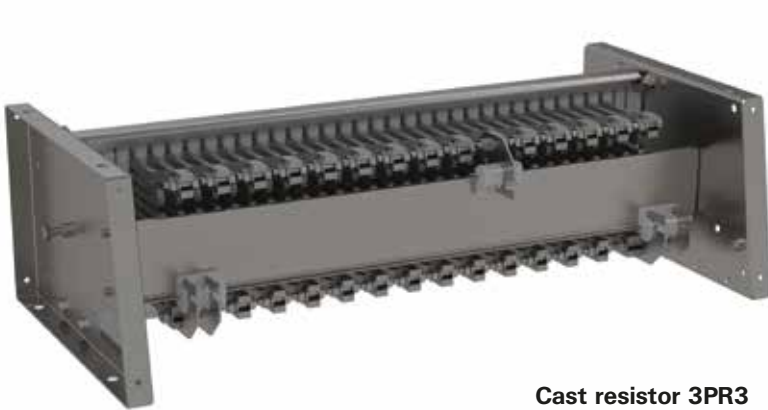
Power: max. 50 kW

Resistance value: 6 Ω

Protection class: IP 20

Accessories: Thermal contact, cable glands





### Cast resistor 3PR3

Resistor system: 3PR3, Siemens system  
Resistor material: Siliconized cast iron

Operating voltage: 1800 V  
Current: 1670 A for 2 s  
Resistance value: 0.9  $\Omega$   
Protection class: IP 00

### Steel grid resistor

Resistor system: BEG

Operating voltage: max. 1000 V  
Power: 4.5 kW  
Max. Power: 24 kW for 13 s in 120 s cycle  
Resistance value: 8  $\Omega$   
Protection class: IP 20

Accessories: Thermal contact, cable glands



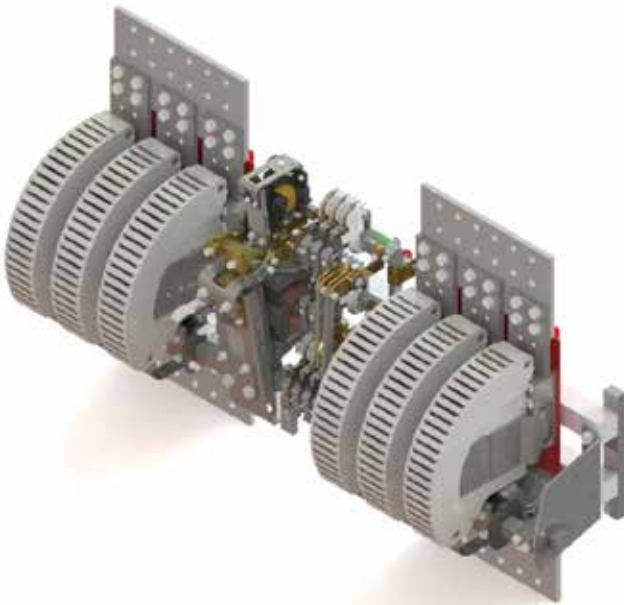
## EXTENDED PORTFOLIO

In addition to the broad product portfolio, GINO AG also sells other products for industrial applications.

### CONTRACTORS

Contactors are circuit-breakers for high-power, low-voltage and heavy-duty applications. They can also be used to control motors with the aid of their control board. Thanks

to their flexible design, the contactors can control any voltage class. The R series from GINO AG offers customized bar contactors that are suitable for switching AC and DC current in power applications from 63 A to 5000 A. They are characterized by a variable number of poles, a combination of normally open and normally closed poles and expandable auxiliary contacts. Their robust design and high number of switching cycles of up to 5 million make them ideal for various industrial applications, including substations, the iron and steel industry, mining and power distribution.



### WATER-COOLED RESISTORS

During braking, the electrical drive energy is converted into thermal energy. This thermal energy is absorbed by the cooling water and can thus be reused. The compact, water-cooled high-power resistors are available in modular design and can be loaded with up to 25 kW per module. Up to five modules can be connected together to form a block. The range of applications extends from passenger cars to buses and trucks.



## TRANSIENT OVERVOLTAGE PROTECTION

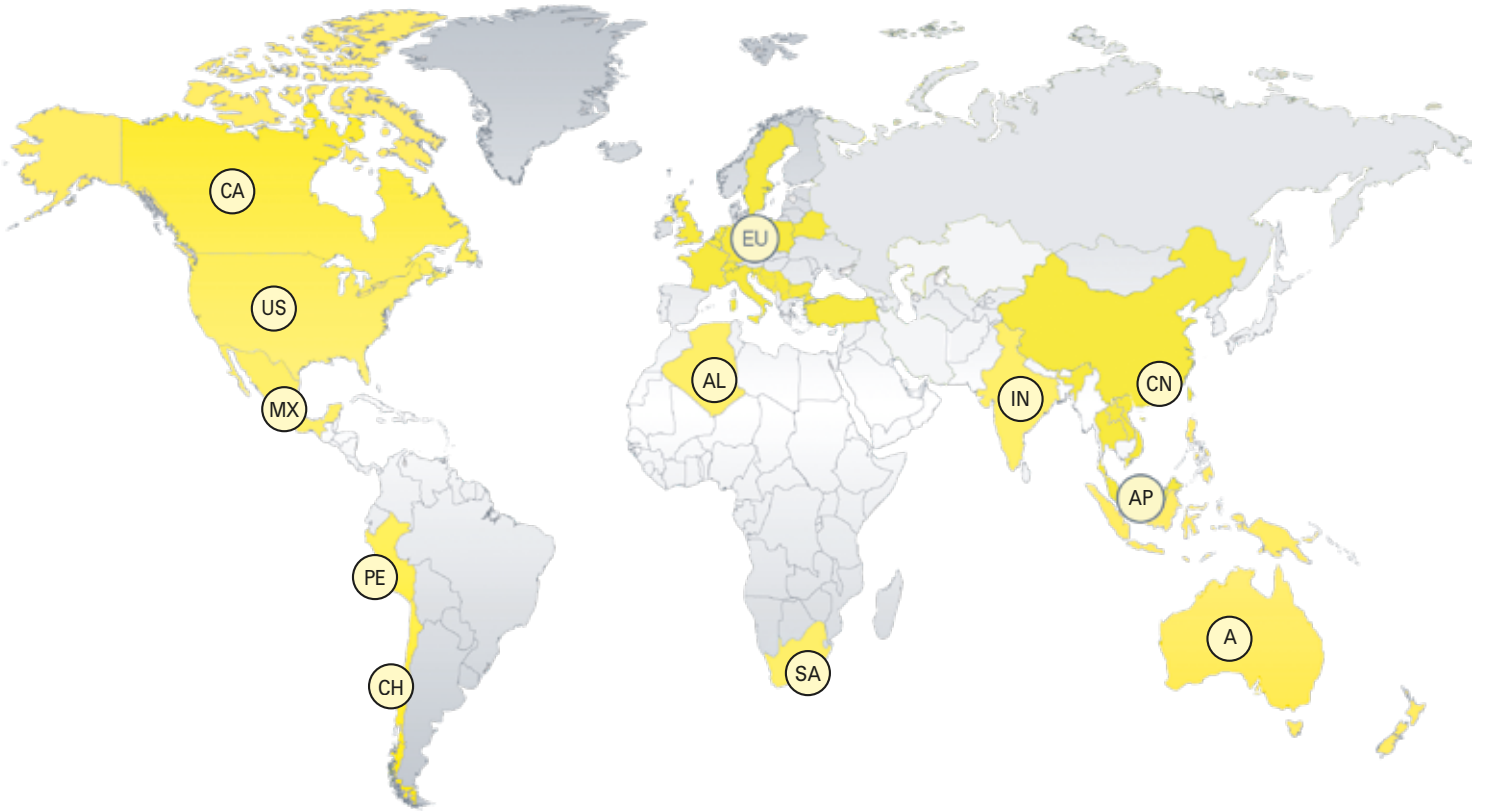
ZORC™ is a unique high-frequency surge protector designed to protect motors, transformers, generators and filter banks from steep wavefronts, short rise times, high magnitudes, spikes, surges and other transient voltages generated by switching and other sources.



ZORC™ protection characteristics provide comprehensive insulation coordination with both CIGRÉ and IEEE motor surge withstand characteristics at all practical overvoltage levels and rise times.

The ZORC surge arrester eliminates multiple pre- and restrikes associated with vacuum interrupters and other switching devices. However, they should not be confused with surge arresters for protection against overvoltages caused by lightning strikes. The compact dimensions and the large application range of 400 V to 40 kV in particular make these components an indispensable product.

# GINO AG – OUR REPRESENTATIVES



Algeria		Australia		Austria		Belgium		Bulgaria	
Canada		Chile		China		Croatia		Czech Republic	
United Kingdom		France		India		Indonesia		Italy	
Jordan		Laos		Luxembourg		Malaysia		Mexico	
Netherlands		New Zealand		N. Macedonia		Peru		Philippines	
Serbia		Slovenia		South Africa		Sweden		Switzerland	
Taiwan		Thailand		Turkey		USA		Vietnam	



Certified to ISO 9001, ISO 14001, IRIS

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