GINO AG

Elektrotechnische Fabrik

LOAD AND TEST RESISTORS

PRODUCT CATALOGUE

GINO ESE

TYPICAL APPLICATIONS
OF LOAD AND TEST RESISTORS

Load and test resistors are used for checking and maintenance and to test energy sources such as generators. In addition, it is often legally required run a monthly trial on emergency power systems, in order to ensure smooth operation in an emergency. A functioning emergency power system, specifically in public buildings or high security installations, is essential. So, all computer centers, shopping centers, prisons and also hospitals (to name a few) will have an emergency power system. Specifically public buildings or computer centers require a compact, highly flexible, mobile version.

- Generator maintenance
- Trouble free power supplies
- Computer centers
- Renewable energy
- Test facilities
- Military use

We have an appropriate solution for each of these applications. Either by using one of our standard power banks, which are sometimes available ex stock, or by a custom made power bank for a specific application.

- Standard power banks optimized for use in computer centers or other fixed/mobile application areas.
- Custom made power banks for low and medium voltage systems
- Load resistors for public road traffic including approval
- Test resistors for electronic components and batteries
- Load resistors to test generators on locomotives

STANDARD LOAD BANKS
OPTIMIZED FOR USE IN COMPUTER CENTERS OR OTHER FIXED/MOBILE APPLICATION AREAS

Due to ever increasing digitalization, the necessity for larger and more powerful computer centers has become important. Even currently, a computer center is seen as a strategic installation, where loss of power could lead to sensitive damage or security risks. It is most important to have a functional safety system with UPS, emergency generators or batteries which need regular testing. Load banks are used in order to test the efficiency of these safety components.

In addition to the safety system, the proper functioning of the servers with their electronics very important. Therefore, prior to each installation of the servers, (electronic components), a comprehensive building test must be carried out. For this, the installation as well as the air conditioning will be checked. Overheating of electronic components can lead to severe damage later. Here too, load banks are used to simulate future server performance (waste heat).

Load resistors installed in standard ventilation ducts

Load resistors in the exhaust air ducts are part of GINO AG's standard program and are readily mounted in emergency power generator exhaust air ducts. They are used more frequently in data centers. We can supply these resistors with short delivery times, longer lifespan and custom built options. This is possible, as we manufacture our own steel housings. In addition to high quality workmanship, a ventilated control cabinet and temperature switch are part of our standard supply.

Since there are space limitations in customer systems, the size of load resistors becomes important. Therefore many customers now opt for a solution which integrates the load resistor into the exhaust air duct of the emergency generator already on site. As the air speed in ducts is often very high the load on the resistors can be increased many times over, which reduces both size and cost. Another advantage is that the resistor exhaust air is discharged in a targeted and controlled manner.

100KW LOAD BANK
(GINO LOAD COMPACT 100)

The compact power banks of the GINO LOAD COMPACT 100 (GLC 100) series, are designed for ratings up to 100kW. The resistors have a carry handle at the top of the housing. Due to its light weight of about 30kg it can be moved easily between various locations within a factory. The compact dimensions (565 x 308 x 718 mm) mean it can fit through any standard door and can easily be moved to other locations by car. A robust transport box is also available as an accessory, for secure and easy transport.

It is operated via a simple toggle switch. With these switches (2kW gradation), it can be set up to 100kW. 3 phase measurement of current, voltage and power are shown on the multi-function display.

Power connection is by means of a standard plug system. This ensures quick and safe connection to the load bank. It must be noted that no tools are needed to connect the power cable. Ready-made connection cables can also be obtained in different lengths.

Some highlights of the 100 kW power bank (3 phase 400V)

- Low noise due to sound attenuated fans
- Almost constant performance range due to low temperature coefficient of the resistor material.
- The controls and fans can be powered entirely by the load voltage
- Current, voltage and power measured over 3 phases
- Compact size and low weight // 565 x 308 x 718 mm (L x B x H) // 31 kg

300KW LOAD BANK

(GINO LOAD COMPACT 300)

The compact load banks of the GINO LOAD COMPACT 300 (GLC 300) series, are designed for ratings up to 300 kW. The resistors have a frame fitted with fixed and castor wheels. So, it can be moved easily between various locations within a factory. Due to its compact size it fits through any standard door. Using additional eye bolts, the load resistor can also be quickly and easily lifted onto a car trailer and easily transported to more distant locations.

Several resistors can be connected to each other on the control side quickly and without tools by means of plugs/sockets. User friendly operation via a touch panel. Performance range can quickly and easily be doubled or even tripled by linking several power banks. In theory this linking could make power ranges up to MW possible.

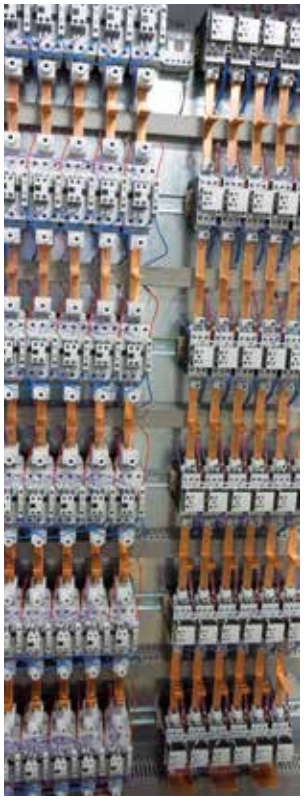
The power bank can be operated by using the touch panel on the resistor or via remote panel. Optional cable extensions in various lengths are available for this. The power can be preselected in 1 kW stages and transferred to the test subject via load transfer. The power setting as well as error messages are shown on the display.

Power connection is by means of a standard plug system. This ensures quick and safe connection to the power bank. It must be noted that no tools are needed to connect the power cable. Ready-made connection cables in different lengths, can also be obtained.

Some highlights of the 300 kW power bank (3 phase 400V)

- Low noise due to sound attenuated fans
- Almost constant performance range due to low temperature coefficient of the resistor material.
- Robust construction using riveted and extra stiffeners in steel housing
- 1 phase 230V auxiliary supply connection for controls and fans available
- The controls and fans can be powered entirely by the load voltage
- Low operating temperatures ensure safe and long term operation
- Compact size and low weight // 1038 x 800 x 1500 mm (L x B x H) // 250 kg

CUSTOM MADE LOAD BANKS FOR LOW AND MEDIUM VOLTAGE SYSTEMS



For customer specific systems, the requirements in technology, safety, flexibility as well as documentation become more important. In order to meet these requirements, we have expanded our design, production and after sales service so that custom solutions can be implemented quickly. Due to ever increasing demand, more and more medium voltage systems are being used. The resistors are often equipped with type tested switchgear or step down transformers.

Load container (40 foot) to test turbines

- Load voltage 3 kV (DC)
- Total capacity 2.5 MW
- Including DC switching system
- Control by means of Siemens S7
- Communication by means of remote touch display.

GINO LOAD AND TEST RESISTORS

Load container (40 foot) to test turbines

- Load voltage up to 36 kV (DC)
- Total capacity 1 MW
- Including breadboard to simulate/configure various circuits (series/parallel/star/delta)
- Temperature dependent fan control to reduce sound level

Customer optimized 3 phase power bank for mobile use

- Locking of connector plug
- Low operating temperatures ensure safe and long term operation
- Current, voltage, power, and frequency measured
- Safe power connection by means of plug system

LOAD RESISTOR FOR PUBLIC ROAD TRAFFIC INCLUDING ROAD APPROVAL

Mobile load resistors which can be mounted on low or high loaders have become increasingly important for service, maintenance and commissioning. The mobility and public road approval, simplifies using power banks at various installation locations, for the monthly test run of the units. Therefore, it is no longer necessary to purchase several expensive stationary power banks.

Some highlights of our mobile 300 kW load bank

- 1 phase 230V auxiliary supply connection for controls and fans available
- The controls and fans can be powered entirely by the load voltage
- Low operating temperatures ensure safe and long term operation
- Current, voltage, power, and frequency measured
- Automatic power control
- Trailer including road approval
- Storage for connection cable and tools
- Safe power connection by means of plug system

TEST RESISTORS FOR ELECTRONIC COMPONENTS AND BATTERIES

The projected performance data in the development phase of contact based and electronic switching devices, needs to be checked frequently. The demand for test resistors has risen further due to the increased importance of electro mobility. So, test resistors are necessary in order to test batteries and power packs. These battery test resistors serve to test the specified capacities and load /discharge. A number of different connections as well as some very high currents are important here.

Battery test resistor

- Highly flexible due to manual interconnection by means of copper rails
- Resistance values in a range from 0.4 mΩ to 112 mΩ possible

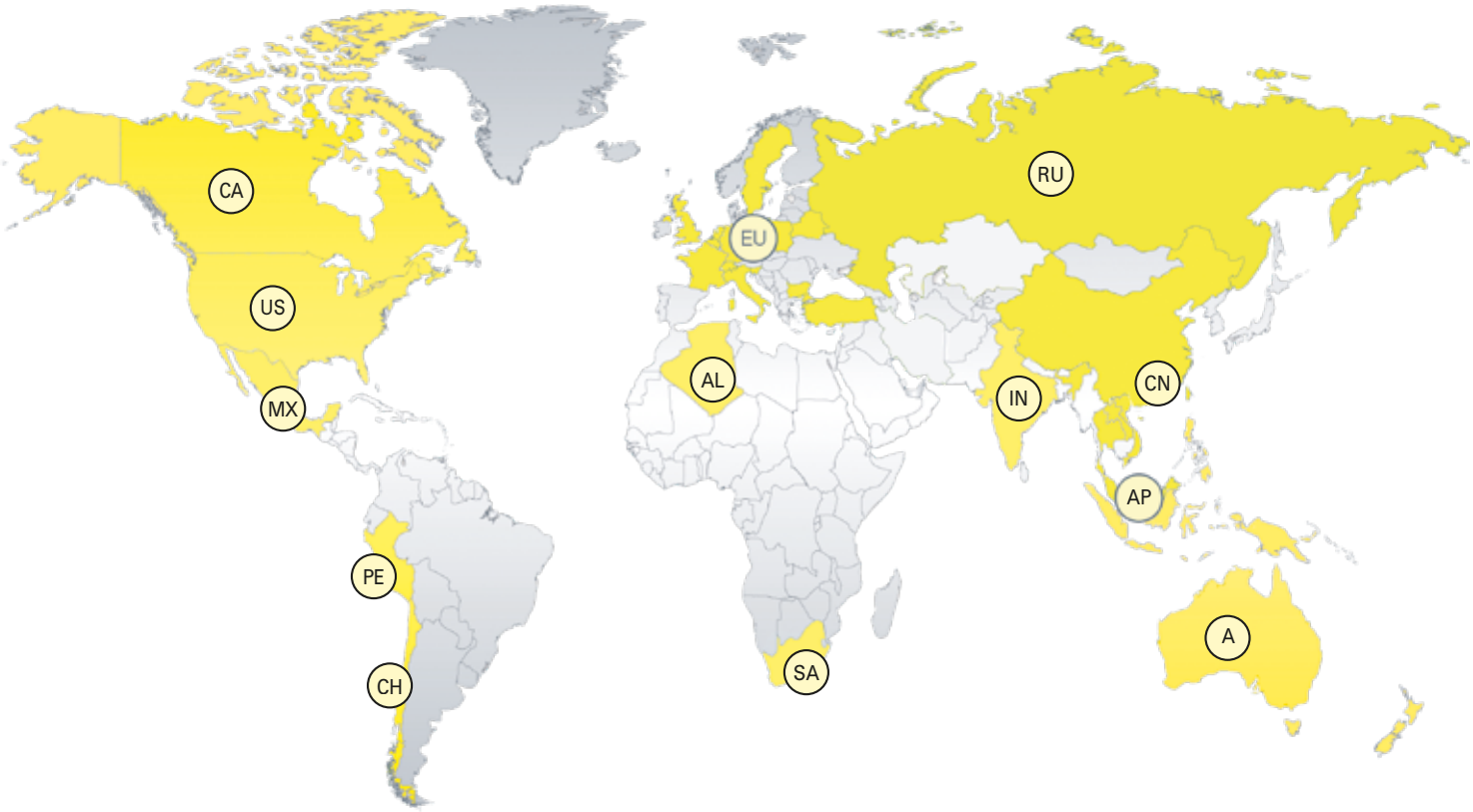
LOAD RESISTORS TO TEST GENERATORS OF LOCOMOTIVES

High power, DC voltage and compact design are often important properties in load resistors for performance testing of generators on locomotives, Load resistors in container design are often used in these power ranges (> 2 MW). As there is often not enough space between the rails, we use flexible resistors in this sector. These have the advantage of withstanding extremely high load in spite of their compact design.

Load resistor 2.5 MW

- High power
- Remote operation (to operate the load bank directly from the locomotive)
- Mobile version
- Fan control

GINO AG – OUR REPRESENTATIVES



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