GNS 5.1
low-voltage switchgear and controlgear assembly

Overview

ESA ELEKTROSCHALTANLAGEN GRIMMA GmbH

Our expertise – Your benefit

Expertise in low-voltage switchgears

ESA Elektroschaltanlagen Grimma GmbH is an expanding medium-sized company in the electrical industry. Established in 1992, we started with the manufacture of low-voltage switchgears. Today we offer worldwide system solutions for safe power supply for railways, industry, buildings and hospitals.

- Own technical innovations,
- Continuous product development,
- Expertise and experience,
- Quality, reliability and
- Service

are the basis of future-oriented technical solutions and shape the corporate philosophy of ESA Elektroschaltanlagen Grimma GmbH.
The guiding principle of our action is always: The „Highest personnel and operational safety of our products!"

Our Products

- Low voltage switchgears in type-approved design according to IEC 61439 -1/-2 / DIN EN 61439 -1/-2
- Management and control system for the power supply in medically used areas according to DIN VDE 0100, Part 710 and IEC 60364-7-710
- Electrical point heating systems and special power supplies for railways
- Detection and control panels in foil technology
- Insulation, differential and operating current monitoring systems

Services

- Consultation on the preparation of concepts
- Implementation of line and load analysis
- Short-circuit and selectivity calculation
- Planning, configuration and project management
- Hotline service
- Maintenance and repairs service (e.g. for power switches)

Benefits

- The highest standard of quality by means of industrial production based on a certified quality management system according to DIN ISO 9001:2008
- Flexible expansion – no restrictions on the types of switching devices
- Individual solutions can also be implemented at short notice due to the nature of the system
- Duplex arrangement and corner installation
- High level of operating safety and optimum personnel protection
- Arc resistant design according to IEC/TR 61641 is possible
- Short throughput times - from planning through installation to commissioning

System Description

To ensure quality, the process must be in the hands of experts, from planning to production and up to the final inspection. Industrial production using CAD and CNC technology is thereby the basis for consistent product quality. This is the commitment of the technicians, engineers and highly skilled workers at ESA Elektroschaltanlagen Grimma GmbH.

ESA Grimma GmbH manufactures your special solution for all areas of application - the type-tested low-voltage assembly GNS 5.1 according to IEC 61439-1/-2 / DIN EN 61439-1/-2 and VDE 0660 -600-1/-2 up to 6,300 A rated current, also with Motor Control Center (MCC) in full-sized module technology. It always provides the ideal solution for all relevant energy distribution and control tasks.

Our production program includes control cabinet systems from our license partners Siemens SIVACON S8 and ABB/ Striebel&John FourLine and TriLine. We have technology and system partnerships for this. The control cabinet system (Rittal TS 8) is frequently used for automation and control systems.

Use in industry and infrastructure

System solution for the low-voltage power supply as well as automation and control system, e.g. in:

- Power plants
- Computing and data centres
- Hospitals
- Companies from all branches of industry
- Water treatment plants
- Office and administration buildings
- Airport and logistics areas

Your Benefits

- The highest standard of quality due to industrial production
- Type-tested version according to DIN EN 61439-1/-2
- Modular design of the distribution, and of functional systems and devices
- Individual planning, configuration and execution for every application
- Arc-resistant separation between busbar, devices and terminal compartment
- High level of operating safety, personnel safety and availability
- Optimization of maintenance and increase in operational and system safety by monitoring of differential and opera-ting current
- Consumption data acquisition for energy management

Control cabinet system GNS 5.1

Switchgear cabinet for open circuit breakers up to 6300 A

Benefits

- Arc-resistant design possible, based on the field
- Individual construction of door inclusions
- Operating safety of the main switching devices through operational, test and disconnected position
- Tested power rail link to different brands
- Freedom of choice between different switch manufacturers

Type of installation	Fixed installation / modular system
Type of application	Infeed / outgoing line / coupling
Performance range	Up to 6300 A (open switch)
Switch manufacturers	ABB Sace Emax 2 SIEMENS 3WL (in preparation)
Connection type	Cable connection from bottom / top Rail connection from bottom / top
Field widths (mm)	400 / 600 / 800 / 1000 / 1200
Internal division	To Form 4

Field types
GNS 5.1 – System Overview

Switchgear cabinet for compact circuit breakers up to 1600 A

Benefits

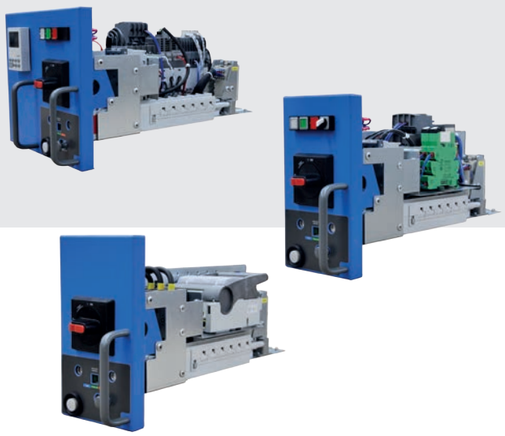
- Arc-resistant design possible, based on the field
- Individual construction of door inclusions
- Operating safety of the main switching devices through operational test and disconnected position
- Freedom of choice between different switch manufacturers

Type of installation	Fixed installation / plug-in / modular system
Type of application	Infeed / outgoing line / coupling
Performance range	Up to 1600 A
Switch manufacturers	ABB Sace Tmax SIEMENS 3VL
Connection type	Cable connection from bottom / top
Field widths (mm)	400 / 600
Internal division	To Form 4

MCC full-sized module up to 630 A

Motor Control Center (MCC) technology provides many advantages, especially in the process industry, in which incidents must be eliminated without interruption of operations (such as the chemical industry or in sewage -treatment plants).

- Easy to insert and retract the full-sized module – no overcoming of mechanical resistance of the plug contacts as required by conventional technology
- Safe and wear-free contacting, also in the event of a short-¬circuit, by a patented switching system with 3 or 4-pole contact switches up to 630 A with switchable control connectors
- Individual full-sized modules can be replaced or supplemented in running operation without shutting down the system
- Wear-free contact
- Safe contacting even after 500 switching cycles
- Full-sized modules can be locked in their retracted condition into positions „operation“, „test“ and „disconnected position“
- Protection against incorrect operation by means of secure locking mechanisms
- Full-sized modules in standard version, 3 or 4-pole, with rated currents of 32 A, 125 A, 315 A and 630 A
- Cost-effective due to compact contact module



Type of installation	Modular system
Type of application	Infeed / outgoing line
Performance range	1000 A (field distribution busbar) Up to 630 A (module)
Device manufacturers	Not bound to any
Connection type	Cable connection from bottom / top
Field widths (mm)	1000 / 1200
Internal division	To Form 4

Benefits of the switching principle

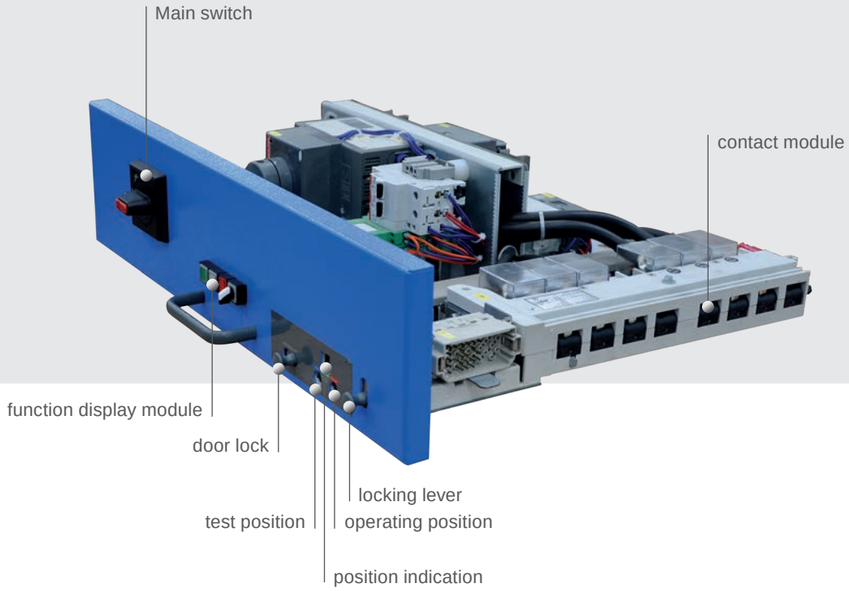
The technical principle of contact modules with regard to the power contacts is „switch“, and not the usual „plug“. There is no material fatigue as is the case with plug-in contacts. Significant advantages of the system are based on this.
In the „operating“ position with extended control connectors, the switch contacts of the contact module can contact with the field distribution busbar and the cable connection module.
In the „disconnected position“ with retracted control connectors, the switching contacts of the contact module are with drawn. The full-sized module can now be pulled out from the equipment room.

Protection against operator errors

Locking mechanisms protect against incorrect operation. For example, the operating slider for the contact module is locked against the main switch mechanically; the contact module can thus only be unlocked when not under load. The control cabinet door cannot be opened ¬when the contact module is switched on.

Intelligent design

- The field distribution busbar is integrated in the system wall between the equipment room and the cable room. Arc-resistance is achieved due to complete insulation and the additional subdivision of the individual conductors relative to each other, without any base points.
- Shutters only release the contact surfaces of the field distribution bus and the cable connection module for contacting after the full-sized module is retracted. Protection against contact up to IP20 is therefore always ensured, irrespective of the module configuration.
- In accordance with the project requirements, any size of full-sized module can be combined in any required function. Retrofitting is also possible without shutdown during ongoing operation. Two 6 E full-sized modules can be replaced, e.g. by a 12 E full-sized module.



Switchgear cabinet for LV HRC fuse switch disconnectors and module plates in fixed-mounted and plug-in design up to 630 A

- Infeeds / outgoing lines
- Cable connection from bottom / top
- Cable connection compartment with 400 mm or 600 mm width is possible
- Strips or modules are contacted on vertical field distribution bars
- For module plates there is no restriction to certain brands of built-in devices
- Prepared for switch rails for the inclusion of devices from ABB, Jean Müller and Siemens
- Modules are available in the standard sizes for the height grid according to DIN 43660 at 6, 9, 12, 15, 24 and 36 E (1 E E = 25 mm)

Benefits

- Flexible, modular configuration and thus cost-efficient space utilisation of the outgoing sections
- Combination of fuse switch disconnectors and module plates allows optimum matching of the devices to the respective application case

The output terminals of the power and control cables are connected directly to the devices. The internal division in the field can be implemented to Form 4, as is the case in full-sized module technology.

Standard types for the areas of energy distribution, e.g. with switch variants and Motor Con¬trol Center (MCC) are available for expansion. Customized expansion of the modules is possible for special technological requirements.

Type of installation	Fixed installation / plug-in
Type of application	Infeed / outgoing line
Performance range	Up to 1900 A (field distribution busbar) Up to 630 A (outgoing lines) Up to 800 A (compact switch)
Device manufacturers	ABB Slimeline XR ABB Sace Tmax JEAN MÜLLER Sasil Plus SIEMENS 3NJ62 SIEMENS 3VL
Connection type	Cable entry from the bottom / top
Field widths (mm)	1000 / 1200
Internal division	To Form 4

ABB Slimeline XR switch rail

- Integrated transformer measurement possible (4p)
- Optional additional functions
  - Motor drive
  - Intelligent bar (ITS)
  - Fuse monitoring device (EFM)
- Can be inserted / pulled out under voltage
- Low maintenance

JEAN MÜLLER Sasil Plus switch rail

- Integrated transformer measurement possible (4p)
- Optional additional functions
  - Motor drive
  - Intelligent bar (EE07)
  - Fuse monitoring device (ES07)
- Can be inserted / pulled out under voltage
- Low maintenance

Module plates for compact circuit breakers and free expansion

- Prepared for attachment of compact switches up to 630 A
- Optional operation of the switches via
  - Motor drive
  - Rotary lever on the module door
- Integrated current and differential current measurement possible for integration into an energy management system
- Both as fixed installation and plug-in

Switchgear cabinet for vertical LV HRC fuse switch disconnectors up to 1250 A

- Infeeds / outgoing lines
- Cable connection from bottom / top
- Bars are mounted on horizontal field busbar
- No restriction to certain brands of built-in devices

Benefits

- Economically-efficient integration of large protected circuits in the switchgear
- Flexibility of operation by 1- and 3-pole switchable installation devices
- Simple cable connection from below or above through utilization of the entire field width
- Installation of up to 18 NH 00 switching devices per field possible

Type of installation	Fixed installation
Type of application	Infeed / outgoing line
Performance range	Up to 1900 A (field distribution busbar) Up to 630 A (outgoing lines)
Device manufacturers	ABB Inline 2 EFEN E3 JEAN MÜLLER SL SIEMENS 3NJ4
Connection type	Cable entry from the bottom / top
Field widths (mm)	400 / 600 / 800 / 1000
Internal division	Up to Form 2b

Overall field width	Equipment width
400 mm	300 mm
600 mm	500 mm
800 mm	700 mm
1000 mm	900 mm

Field types
GNS 5.1 – System Overview

Example: LV HRC fuse switch disconnectors InLine 2, ZUBM/ZLBM/ZHBM, make ABB

- Available types: at 160 A, 250 A, 400 A and 630 A
- 1- and 3-pole switchable variants
- Suitable for 185 mm phase rail spacing
- Degree of protection IP30 on the front side - padlock in open and closed position
- Park position with the possibility of locking with padlock
- Wide range of accessories and cable connections

Example: LV HRC fuse switch disconnectors TYPE SL00-3X-185, make JEAN MÜLLER

- Safe voltage measurement by inspection holes on the fuse gauges
- Large viewing window to view the backup data
- Minimal installation depth by means of retractable handle
- Safe operation due to uniform handling for all sizes
- Individual labelling option for each phase

Reactive power compensation

In the GNS 5.1 system, fields can be configured using standardized modules with unchoked or choked capacitors and a control module.
The fields can be configured, and the modules can be installed, either as fixed installations or using plug-in technology.
The field distribution bus is supplied via cable or through a direct contact with the main busbar.

You can optionally configure the compensation fields to ensure an arc-resistant barrier between the busbar and the equipment room.

For higher degrees of compensation, the fields are fitted with a temperature-controlled fan. The fan is controlled by the control module.

Compensation modules are available for cabinet widths 600 mm and 800 mm.

Type of installation	Fixed installation / plug-in
Performance range	max. 400 kvar per field
Device manufacturers	Frako KBR
Connection type	Directly to main busbar Cable connection from bottom / top
Field widths (mm)	600 / 800
Internal division	To Form 2

Field types
GNS 5.1 – System Overview

Switchgear cabinet for customized configuration

With the GNS 5.1 system, customized control panels for special requirements and areas of application in -different expansion variants can be planned and manufactured.

Control panels for measuring and control systems can easily be integrated into the system. Expansion¬ using 19“ swivel frame or mounting¬ plates can be used for this.

For power distribution, these panels can be expanded, e.g. with LV HRC and D fuses, circuit breakers, and other switching and protection devices. Here also, when configuring the field, there are no limits regarding the ability to use¬ switching devices from all renowned manufacturers.

The following applies for the cable connections: these are possible for all configuration variants¬ from below and above.

Type of installation	Fixed installation
Performance range	Up to 1600 A
Device manufacturers	Freely selectable
Connection type	Cable connection from bottom / top
Field widths (mm)	400 / 600 / 800
Internal division	To Form 2

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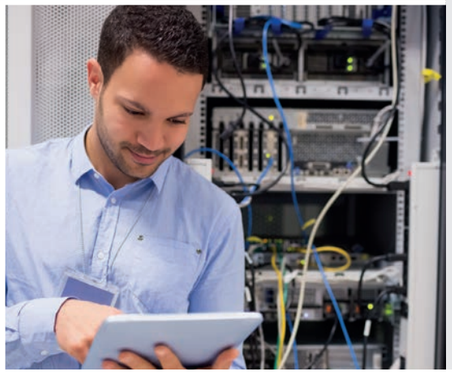

Our services for you

If you have any questions or require personal advice, please contact us. We will help you quickly and easily!

- Hotline service
- Technical information and advice
- Short-term and individual help

Service Team

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Range of services

- Consultation on the preparation of concepts
- Planning, configuration and project management
- Implementation of line and load analysis
- Maintenance and repair service
- Commissioning
- System acceptance test with experts
- Training of your operating personnel
- On-site training
- Fault-clearing service
- Short-circuit current and selectivity calculations
- Plant modernization
- Repeat tests/inspections
- Insulation fault search
- Spare part deliveries
- Maintenance, maintenance contracts
- Documentation and the upgrade of existing installations

Your Benefits

- Take advantage of our many years of experience from numerous projects on the topic of low-voltage switchgear.

Our sales office in your area

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