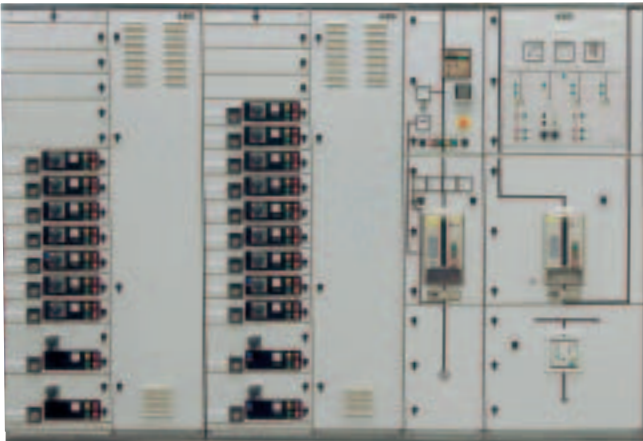


GE Consumer & Industrial
Power Protection

SEK / SEV 32

The complete equipment system
for complex applications

The heart of your business



GE imagination at work



Applications

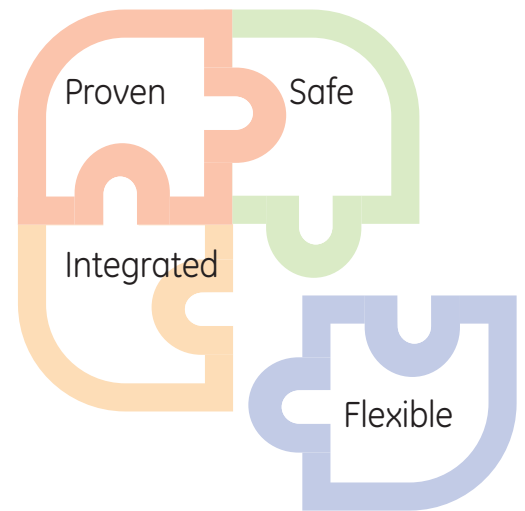
- Power plants
- Chemical, petro-chemical industry
- Steel industry
- Paper mills, printing plants
- Water treatment, filter plants
- Oil platforms
- Universities and hospitals
- Airports



The switchboard system type SEK / SEV 32

Is the standardized and type tested low voltage power distribution system from GE. The switchboard assemblies leave the manufacturing plant fully tested and ready for installation & commissioning. Their main advantages are

- Ease of use in projects and planning
- Compact design
- High level of operational and working safety
- Can be easily interconnected with each other
- Easily integrated with the process control system



The system includes the following components:

Standard Switchboard type SEK

Main power distribution, modular construction, for currents **up to 6300A**.

Motor Control Centre type SEV 32

Motor control centre with fully withdrawable modules. All switching, control and protection devices are mounted as one functional unit within one module.

Each cubicle can house up to 32 withdrawable units from a range of 7 standard module sizes.

Field bus communication

SEK / SEV 32 cubicles can be supplied with an optional integrated field bus system utilizing specially developed motor control devices and air circuit breakers with communication features.

Power factor correction panel type SEBK

Plug-in technology using low power loss capacitors. Can be fully integrated in the installation or supplied as a stand alone panel.

Busbar interconnections

For optimized connection to a transformer and between the switchboards.

Technical data

Tests and standards

Type-tested low voltage switchgear and controlgear combinations (TTA)		IEC 60439-1, DIN EN 60439-1 VDE 0660 part 500
Arc fault protection (Protection against internal faults)		IEC 61641 supplementary sheet 2 to DIN EN 60439-1

Electrical data

Rated operational voltage	U_e	AC 690 V, DC 600 V
Rated current	I_e	up to 6300 A
Rated insulation voltage	U_i	up to 1000 V
Rated short-time withstand current	I_{cw}	up to 100 kA (SEK) / up to 80 kA (SEV 32)
Rated peak withstand	I_{pk}	up to 220 kA (SEK) / up to 176 kA (SEV 32)
Air and creepage distance		according to DIN VDE 0110
Rated impulse withstand voltage	U_{imp}	8 kV
Over voltage category		III
Pollution degree		3

Mechanical data

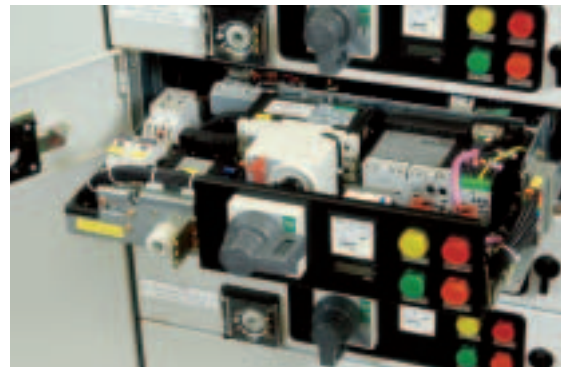
Protection degree according to IEC 60529		IP20 up to IP54
Dimensions	Height	2200 mm
	Depth	600, 800, 1000 and 1200 mm (SEK) 600 mm (SEV 32 Simplex) and 1000 mm (SEV 32 Duplex)
	Width	400, 500, 600, 800, 1000 and 1200 mm (SEK) 800, 1000 and 1200 mm (SEV 32)
Form of internal separation		Form 1 up to Form 4b



SEK / SEV 32 offers the maximum operator protection

Power circuits using withdrawable technology

- The panel busbar is constructed with finger proof protection and they can be optionally covered with additional shutters.
- Extensive interlocking features provide the maximum safety. Switches can only be operated when the doors are closed.
- Isolating incoming electrical contacts provide high safety levels.
- Test position when door is closed.
- The electronic control module ESS-DP is ATEX certified and can be used to protect motors in explosive areas.
- SEK / SEV 32 has overall finger proof protection allowing it to be installed in general switch rooms.
- Because of the rigid construction the SEK / SEV 32 switch board system is seismically rated for use in earthquake zones.



and operational safety

Prevention of fault arcs

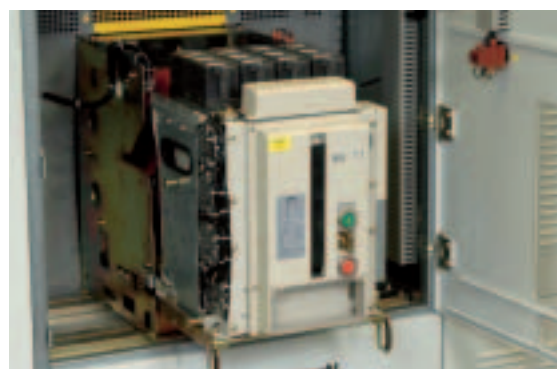
- All busbars and their connections are arc proof coated.
- The vertical busbars in SEV 32 are completely encapsulated with insulating material. This provides the highest level of arc protection available.

Limitation of consequences from possible arc faults

- SEK / SEV 32 is characterized by its high arc withstand times.
- Compartmentalization of the functional areas and other unique constructional features limit the arc fault to the point of origin.
- The arc resistance is certified by testing in accordance to IEC 61641

Power circuits using withdrawable technology

- Due to the use of withdrawable technology, safe and easy maintenance of air circuit breakers is possible
- The highest accessibility is provided.



SEK / SEV 32 in the communication network

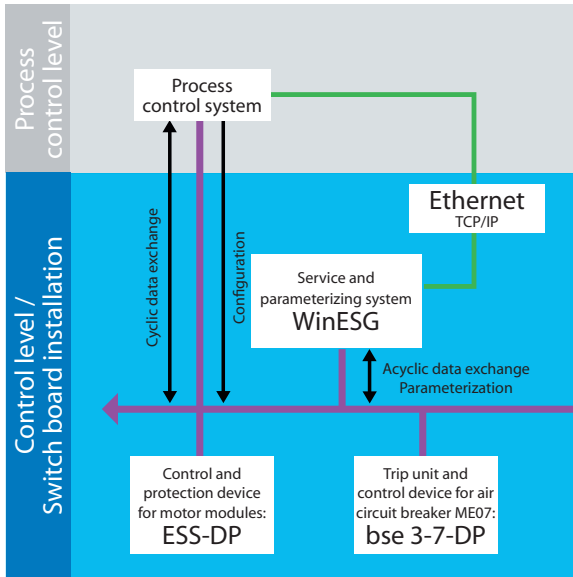
Instead of the conventional switchboard technology with customary wiring, all SEK / SEV 32-low voltage switchboards are also available with intelligent technology.

The withdrawable units and circuit breakers include intelligent electronic controls that communicate with the process control via a serial field bus and take control and protection functions independently.

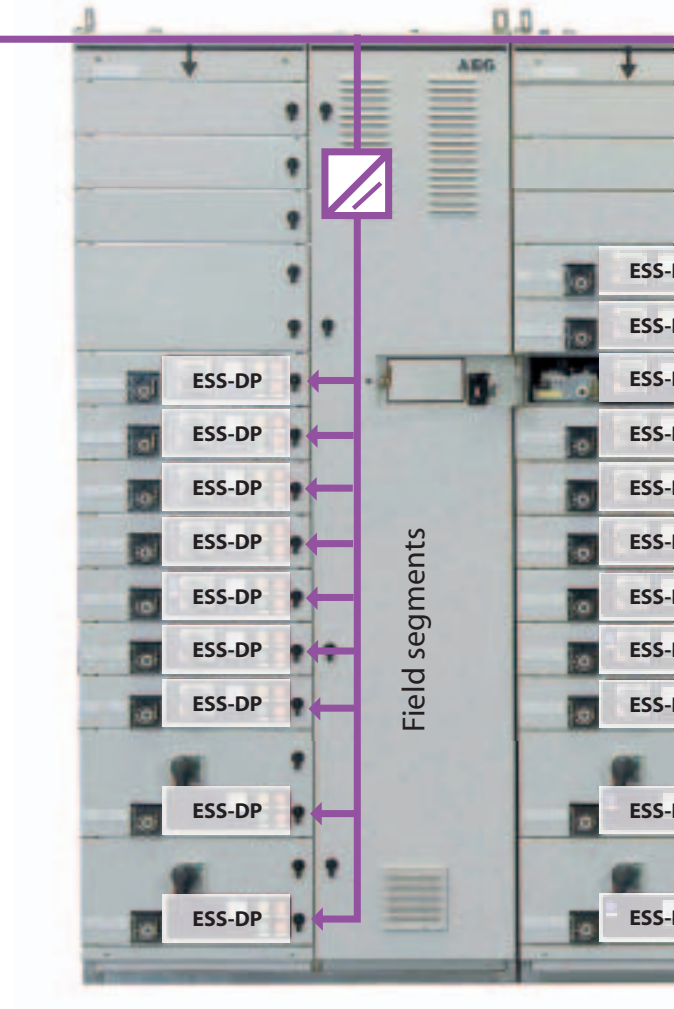
EPOS (Electronic Protection & Object Control System) is an intelligent control and protection system for motor-modules and circuit breakers, that was developed especially for the requirements of the SEK / SEV 32 switchboard. It is also possible to use other intelligent systems with or without communication.

EPOS communicates via the standardized and widely-used field bus Profibus-DP. All available data from the drawer control and the breaker are available in the GSE-File. With this the data of a new field bus device can quickly and easily be integrated into a control system.

By using the EPOS system components it is possible to build up the drawer module in a compact and standardized way. The functionality from different typical drawers is stored in a customer specific logic-program. The required function is selected manually or by the system. This can happen automatically when a drawer module is plugged in.



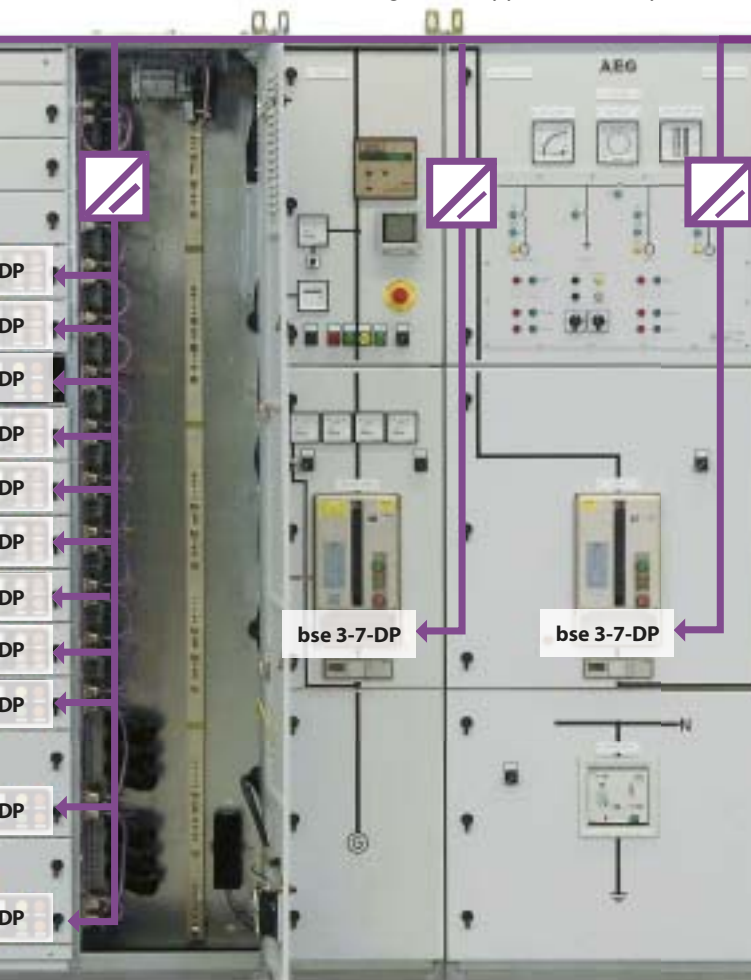
- Trip unit and control device for air circuit breaker ME07: bse 3-7-DP
- Control and protection device for motor modules: ESS-DP



- In case of a failure, detailed information out of the switchboard is immediately available at a central point. For this reason the failure cause can be located very quickly and the down time can be shortened.
- Routine maintenance is supported at all times by the available diagnostics. Maintenance times can be reduced and a high availability of the installation is achieved.

- Remote control with EPOS field devices makes the processes safe and fast.
- The communication bus is divided in segments. This makes the communication more efficient. A potential short circuit affects only one segment. The communication in other segments is not influenced.

Profibus-DP: Horizontal segment copper or fiber optic cable

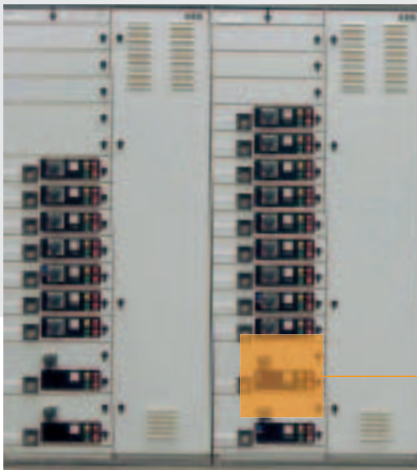
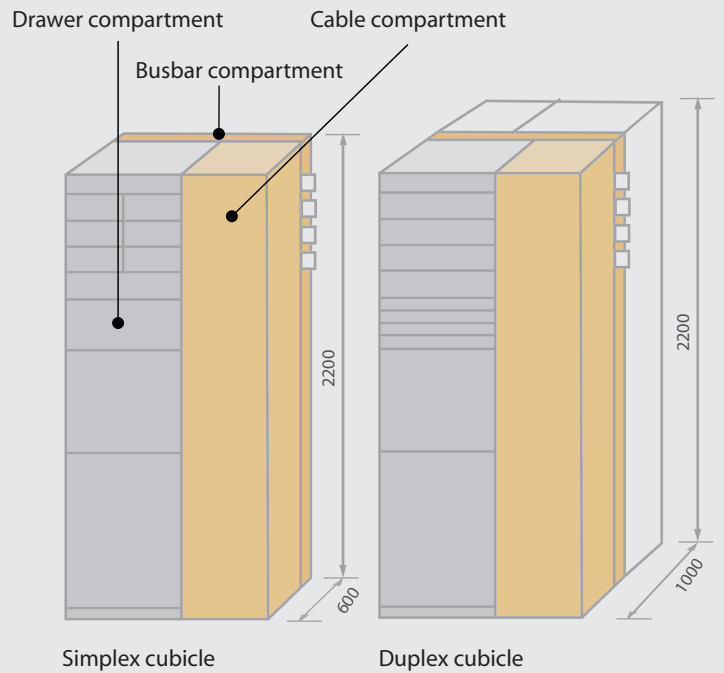


WinESG user software is needed for easy handling of parameterization, for visualization of measurements and alarms and also for providing manual control.

SEK / SEV 32 is flexible in planning and application

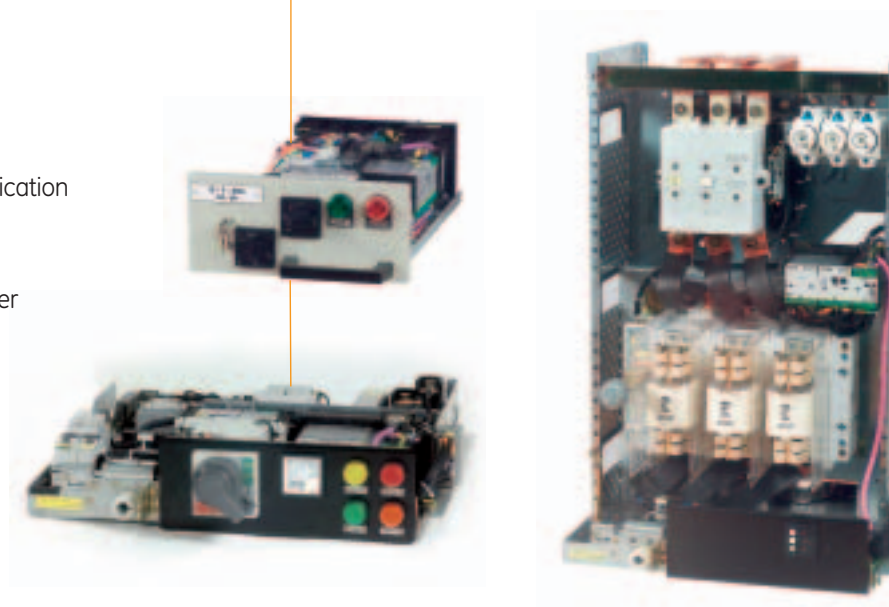
SEV 32 versions

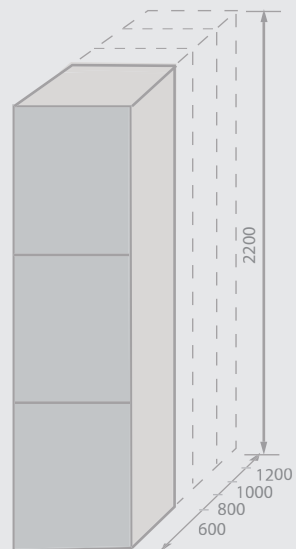
- Cubicle width: 800, 1000, 1200 mm
- Cubicle depth: 600 mm
(Duplex-cubicle 1000 mm)
- Up to 32 draw out units possible per cubicle.
- Optional single side operated using simplex cubicle or on both sides when supplied as a duplex cubicle.



Draw out units

- With fuses or with circuit breakers.
- Intelligent module control with communication or conventional control.
- Customer specific circuitry.
- 7 different drawer sizes suitable for power up to 450 kW.





Simplex cubicle

SEK versions

- Cubicle width: 400, 500, 600, 800, 1000 and 1200 mm
- Cubicle depth: 600, 800, 1000 and 1200 mm
- Variable cubicle separation.
- Variable position of busbars.
- Air circuit breakers in fixed or withdrawable pattern



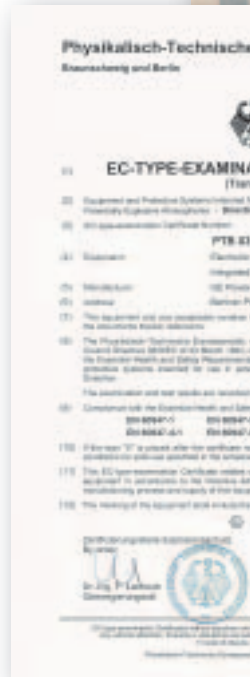
- Cable entry from the top and bottom.
- Reduced control wiring because of vertical control bars in SEV 32.
- Integrating with other switchboard types is possible by using adaptor compartments.
- Special compartments possible.
- By the use of the intelligent module control (EPOS) the functionality of the module is easily and quickly inter changed.
- SEV 32 compartments are modular and inter changeable.
- Changeover of SEV 32 compartments is possible under normal operation.

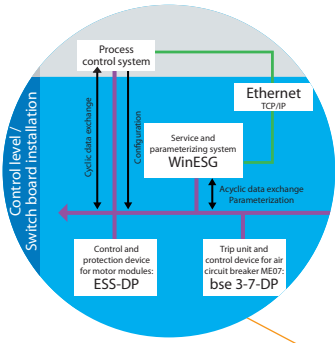
The SEK / SEV 32 system is based on more than 50 years of experience in building low voltage switchboards.

The SEK / SEV 32 system offers unrivalled quality and safety because of its industrial application and type testing in accordance with international standards.

Each module and each cubicle leaves the factory routinely tested and ready for installation on site.

Because of the experience of many years in the planning and manufacturing of switchboards for worldwide use in all applications, we guarantee we are that competent partner for the planning and realization of your low voltage solution.

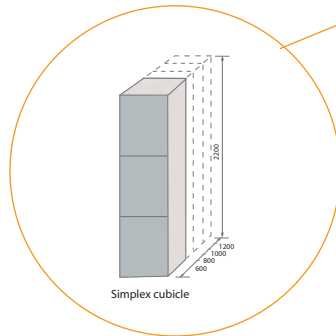
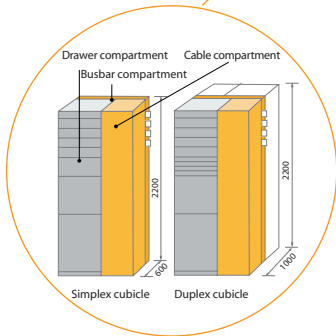
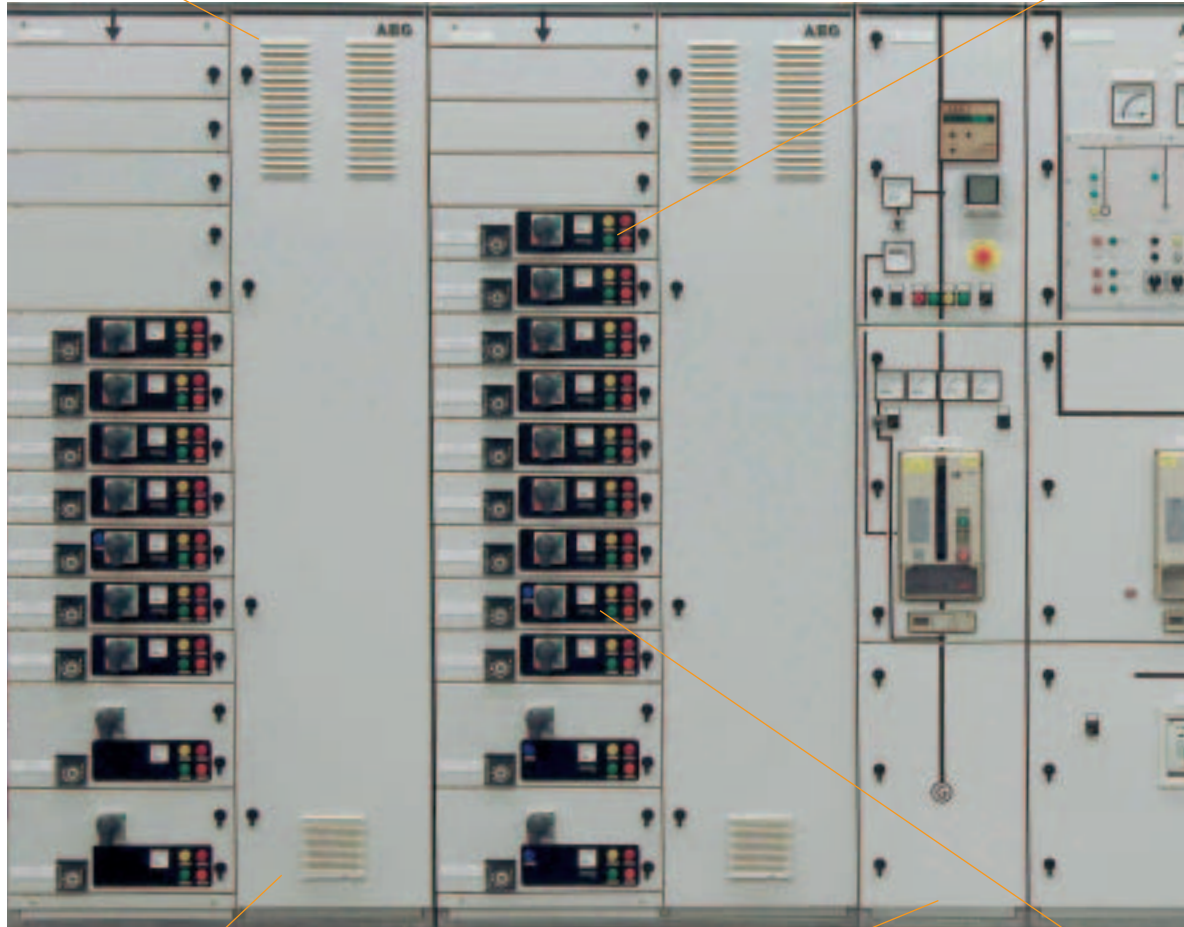




Communication via the standardized and widely used Profibus-DP: Easy handling of field bus devices by use of GSE-file. WinESG user software: Easy handling in switchboard installation room. Automatically drawer functionality setting via parameterising.



The SEK / SEV 32 system offers unrivalled quality and safety because of its industrial application and type testing in accordance with international standards.



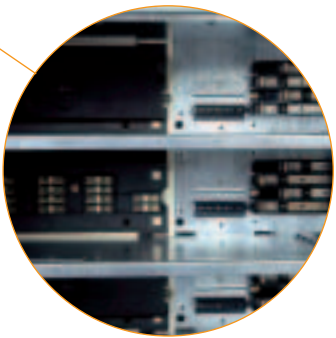
Simplex and duplex cubicle available, variable cubical width and cubical depth possible.



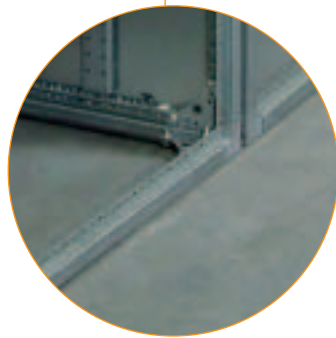
Withdrawable technology: 7 different drawer sizes suitable for power up to 450 kW. Intelligent module control with or without communication. Customer specific circuitry: by the use of the intelligent modules the functionality is easily and quickly inter-changed.



All busbars and their connections are arc proof coated.



SEV 32 compartments are modular and interchangeable also under normal operation.



Because of the rigid construction the SEK / SEV 32 switch board system is seismically rated for use in earthquake zones.



Air circuit breaker using withdrawable technology. Safe and easy maintenance possible. Highest accessibility.

GE Consumer & Industrial Power Protection

Power Protection (formerly GE Power Controls), a division of GE Consumer & Industrial, is a first class European supplier of low-voltage products including wiring devices, residential and industrial electrical distribution components, automation products, enclosures and switchboards. Demand for the company's products comes from, wholesalers, installers, panel-board builders, contractors, OEMs and utilities worldwide.


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