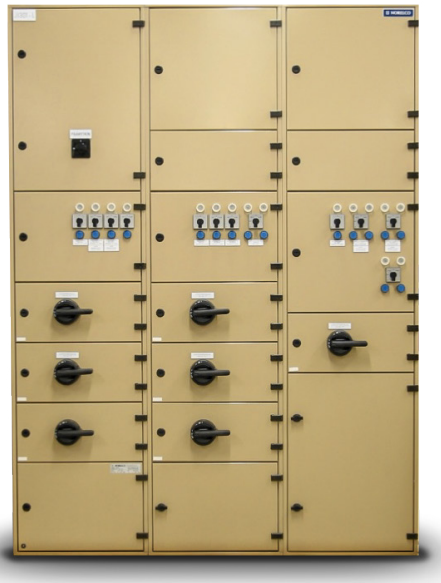
Metal Enclosed LV Switchboard System

# NorPower® 1250



EHR

EHR-C

NORELCO

Nordic Electric Company

# NorPower® 1250

## Metal enclosed LV switchboard system

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*A small EHR switchboard with one section*

### Versatile system for industrial and real estate use

**NorPower 1250 system is suitable for use for various purposes:**

- main switchboard
- motor control center
- distribution switchboard
- ventilation switchboard

**NorPower 1250 system consists of two different types of construction:**

- EHRC-type is always mounted freely on the floor on it´s own pedestal
- EHR-type is suitable for wall or column mounting

### NorPower® equipment is reliable and safe

- switchboards are manufactured in accordance with EN, IEC and SFS standards, attention is paid to electrical safety matters
- special attention has been paid to operational safety
- metal parts are produced from corrosion resistant galvanized steel plate. EHR types can also be manufactured from stainless steel
- non-painted components are made of galvanized and AFP-aftertreated steel plate, thus ensuring excellent grounding characteristics and smooth surface
- painted components are rinsed in alkaline solution and epoxy powder painted.

### Easy to install and service

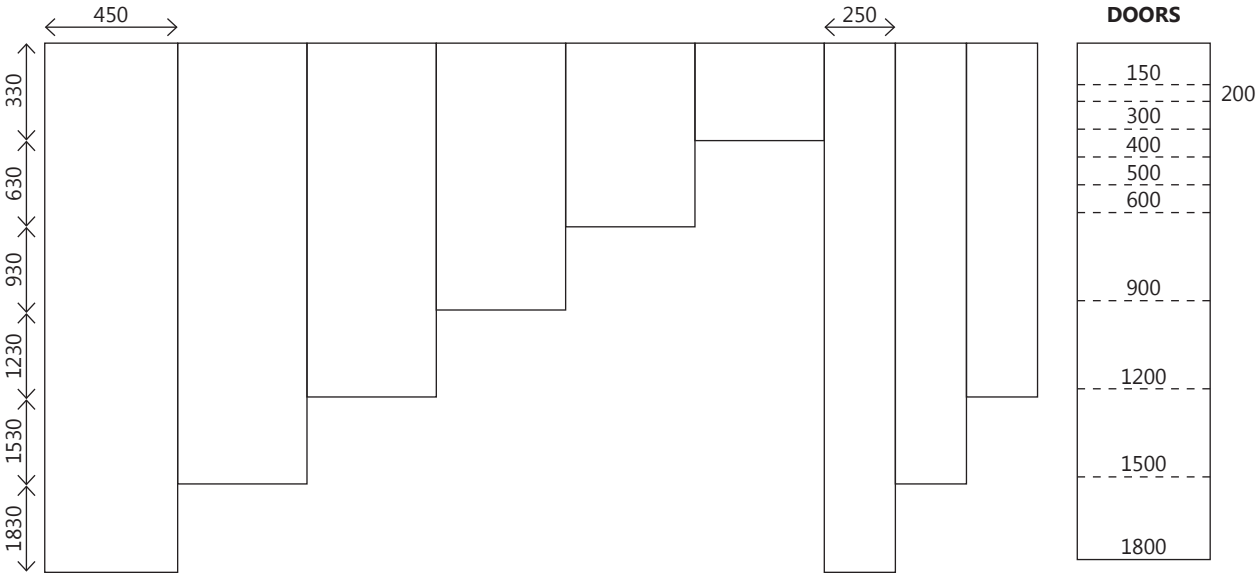
- switchboards are designed in co-operation with customers to provide easy installation
- cable tunnels have ample connection space

### Versatile and durable construction

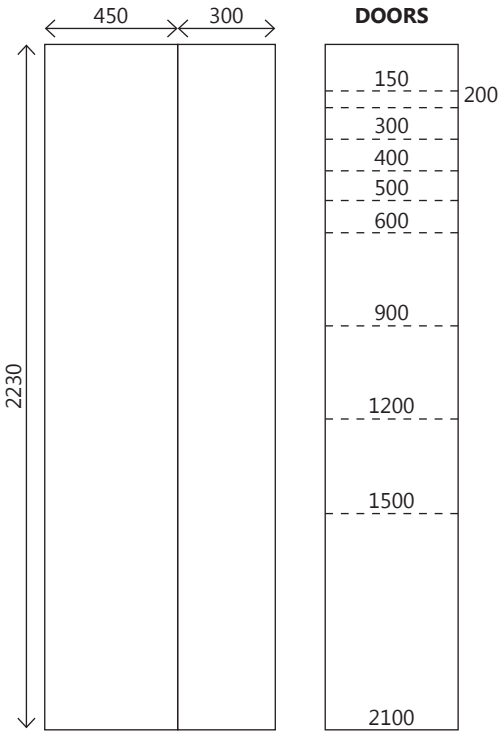
- all doors are equipped with hinges and gaskets in accordance with the respective protection class
- profile-based frame structure is durable for outgoing units from form 1 to form 4
- NorPower 1250 system consists of 7 modules of different height; their space width is 450 mm by default:
    - EHR-types are available in 6 different heights (330 – 1830 mm); their depth is always 220 mm
    - EHRC-types are always of standard height (2230 mm), their depth is 330 mm and they are always equipped with a pedestal
    - in addition to standard space width, the system includes cabling section for easy cabling

# Technical Information

## EHR -module sizes and unit module dimensions




## EHRC -module sizes and unit module dimensions




*EHR switchboard with two sections*

# Technical Specification

| | |
|---|---|
| **Rated voltages** | 400V, 690V |
| **Rated currents** | EHR: 25-800 A, EHRC: 125-1250 A |
| **Standards** | IEC/SFS-EN 61439-1, IEC/SFS-EN 61439-2, IEC/SFS-EN 61439-3, SFS 6000 |
| **AC test voltage** | 2000V |
| **Short-circuit currents** | EHR: rated short-time withstand current Icw max. 20 kA (1s)<br>rated peak withstand current Ipk max. 40 kA<br>EHRC: rated short-time current Icw max. 31,5 kA (1s)<br>rated peak withstand current Ipk max. 66 kA |
| **Enclosure class** | EHR: IP 44 by default, IP 54 if necessary, EHRC: IP 20...IP 54 |
| **Surface treatment** | multiphase pretreatment and epoxy powder coating 220 °C |
| **Standard colour** | EHR Norelco Beige 9280, other colours on special request<br>EHRC: doors Norelco Beige 9280, pedestal and end plate graphite grey, IP54 casing Norelco Beige 9280 |
| **Protection class** | protection Class I |

## Unit Modules

Unit module heights for different field widths have been provided in the following table and pictures on the next page.

| MODULE HEIGHT | NORMAL MODULE | CABLING SECTION |
|---|---|---|
| 150 mm | EHR, EHRC | - |
| 200 mm | EHR, EHRC | - |
| 300 mm | EHR, EHRC | - |
| 400 mm | EHR, EHRC | - |
| 500 mm | EHR, EHRC | - |
| 600 mm | EHR, EHRC | - |
| 900 mm | EHR, EHRC | - |
| 1200 mm | EHR, EHRC | EHR |
| 1500 mm | EHR, EHRC | EHR |
| 1800 mm | - | EHR |
| 2100 mm | EHR, EHRC | EHRC |

The doors are always equipped with hand-, groove- or triangle latches or with Assa-latches (option).

## Frame construction

The modules of NorPower 1250 system are assembled of steel components using bolt connections and sealed in accordance with IP class requirements. The selection of standard metal parts is wide, allowing a wide selection of structural solutions.

**NorPower 1250 system consists of 7 modules of different height:**

- EHR–modules are available in 6 different heights (330 – 1830 mm); the depth is always 220 mm
- EHRC–modules are always of standard height (2230 mm), their depth is 330 mm and they are always equipped with a pedestal

**Module width is always 450 mm. Cabling section (cable tunnel) width is:**

- EHR 250 mm
- EHRC 300 mm

See the table for more detailed specification of the module widths.

# Structure of the System

### Busbars

Current busbars are manufactured from flat aluminium (standard) or copper busbars. No holes are made in the busbars. Either 4 or 5-busbar systems can be used. In EHRC-modules, there are equipment-sized horizontal busbars and vertical busbars in each cable tunnel space, where branching is performed from terminals to equipment. In the cable tunnels, there is a PE busbar, to which the PE output conductors are connected.

### Other components

The cabling between sections is done using special plastic flanges, so that the cable isolations are not in contact with metal frame. Between the units (vertical direction) comb-like fall guards made of PVC plastic are installed; these increase operational safety without preventing the installation work. Each space of the switchboard is equipped with reliable alloy hinges and, where necessary with rubber sealing. EHRC-modules are equipped with a pedestal by default.

### Vertical beams and mounting rails (EHR)

Vertical beams are used on the top and bottom of the switchboard when the width is at least 900mm and height at least 1530 mm. For switchboards with more than 1700 mm width there is an additional vertical beam in the middle. All large EHR switchboards are equipped with mounting rails..

Vertical beams add 40 mm to depth. Footing beams (height either 500 mm or 800 mm) can be installed under the vertical beams, in which case the lower edge of the centre rises accordingly in comparison with the floor level. High single section switchboards are equipped with keyholed hook cramps or mounting rails in order to facilitate installation. Switchboards with less than 900 width and lower than 1530 mm are equipped with mounting rails. For safety reasons the settings of the circuit breakers have been set to minimum values. Before commissioning please check the values and set them when necessary.

# Transport and storage

### Transport of the switchboard

The switchboards are always packed in as low packages as possible, in order to facilitate their handling in construction site conditions. Footing beams, for example, are delivered separately, in order to minimize the required height of passageways. Switchboards are delivered in several parts generally if the overall length of the equipment exceeds 2.5 metres. When planning transport, the space required by external handles etc. have to be taken into consideration as well.

### Storage of the switchboard on the site

If the switchboard is not taken in use on arrival at the site, it should be stored in the plastic packing. If it is stored for several days, you should make ventilation holes into the bottom of the plastic packing, so that the humidity does not cause corrosion in the switcboard or in the components.

# Installation and service

## Installation characteristics are always designed

The switchboards are manufactured according to the information provided by the customer defining e.g. the enclosure class, the numbers of incoming and outgoing cables and their types. The switchboards are equipped with feeder gaskets and cable terminals, based on this information. The cable type is always considered when dimensioning, so even an aluminum cable will have enough room for easy connection.

Cabling can be done from upside or from downside. To make installation and maintenance easier, NorPower 1250 devices can be cabled with fixed unit outputs or cable vaults. A cable channel can be used to lead the cables easily straight to the connectors.
The switchboards are equipped with the safe comb-like PVC plastic dropping protection plates that add to safety, even when maintenance is needed in a live switchboard.

## Several installation possibilities

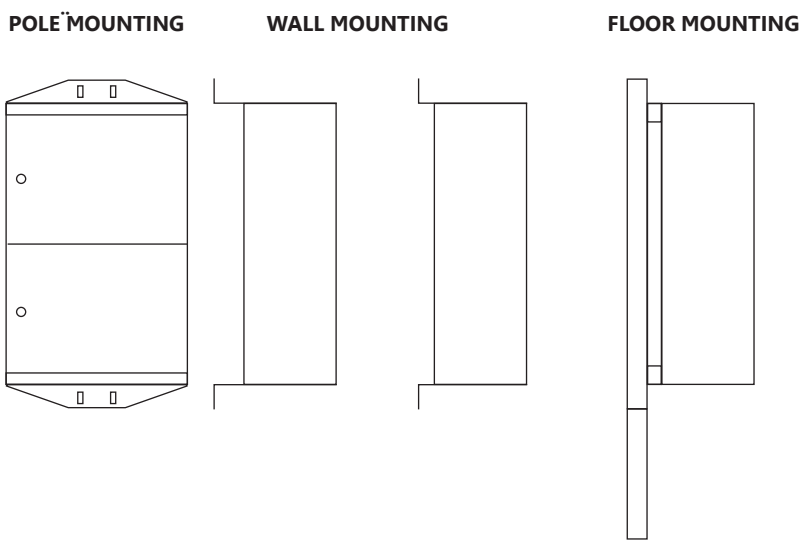
NorPower 1250 –switchboard installation solution depends on installation site, size of the equipment, and module type (EHR/EHRC). Possible installation methods include:

- direct wall installation, using the standard hook cramps or mounting rails
- wall surface installation, supported by vertical beams and footing beams
- column installation, using the column fastenings
- floor installation using the pedestal (EHRC modules only)

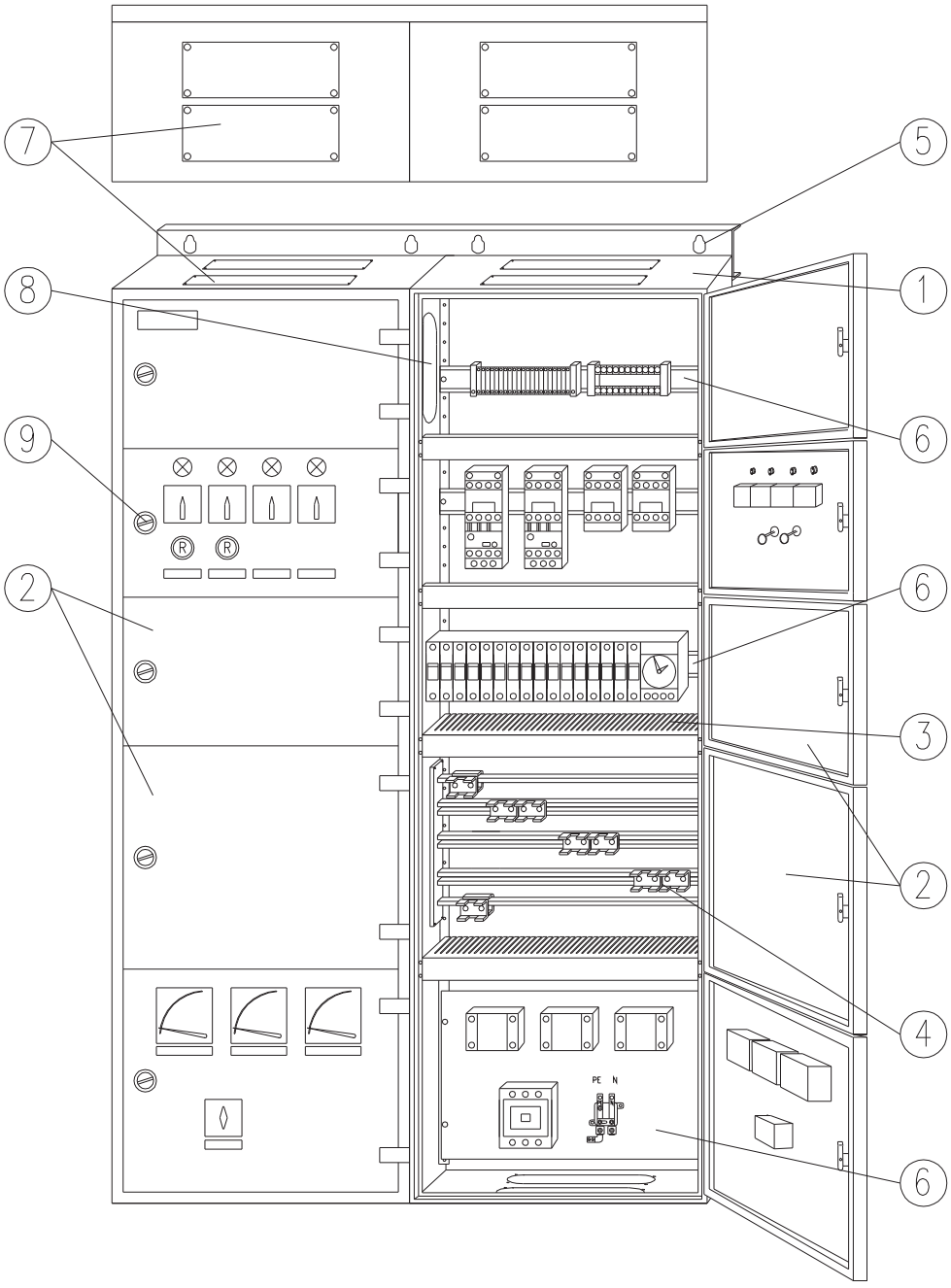
Floor installation is performed with the help of outer mounting flanges of the module. This is an easy way for fastening the switchboard to the floor.

## Connecting of components disassembled for transport purposes

Components disassembled for transport purposes are reassembled at the construction site. In order to ensure successful component assembly, the floor has to be at sufficient level (allowed deviation +-1 mm/m). The assembly is easy to perform, but specific assembly instructions should be followed in order to avoid problems. The transported components are fastened mechanically to each other, from the upper edge (with transport disassembly connection detail) and lower part (with floor mounting). The busbars are reconnected in free space in the module. The equipment area installation plate and the PVC busbar covers are removed first. Transported switchboard parts are placed next to each other so that the busbar heads are level. Busbar heads are connected using the connection instructions, fastenings, and bolt sets that came along with the switchboard. After making the connection, the PVC-covers and the installation plates are reinstalled. The empty equipment areas may be used as spare spaces after the connection.



# Basic structure of EHR-switchboard




**This drawing presents the structure of an EHR-type switchboard with two identical sections.**

**1.** The body is assembled using modular metal parts, which are bolted together. The material is corrosion-proof hot dip zinc coated steel plate.

**2.** The doors have always hinges and rubber sealings and can optionally be equipped with plexi-windows.

**3.** Comb-like fall guard plates ease the cabling and add to the safety.

**4.** Busbars are made of aluminium or copper bar.

**5.** Mounting rail.

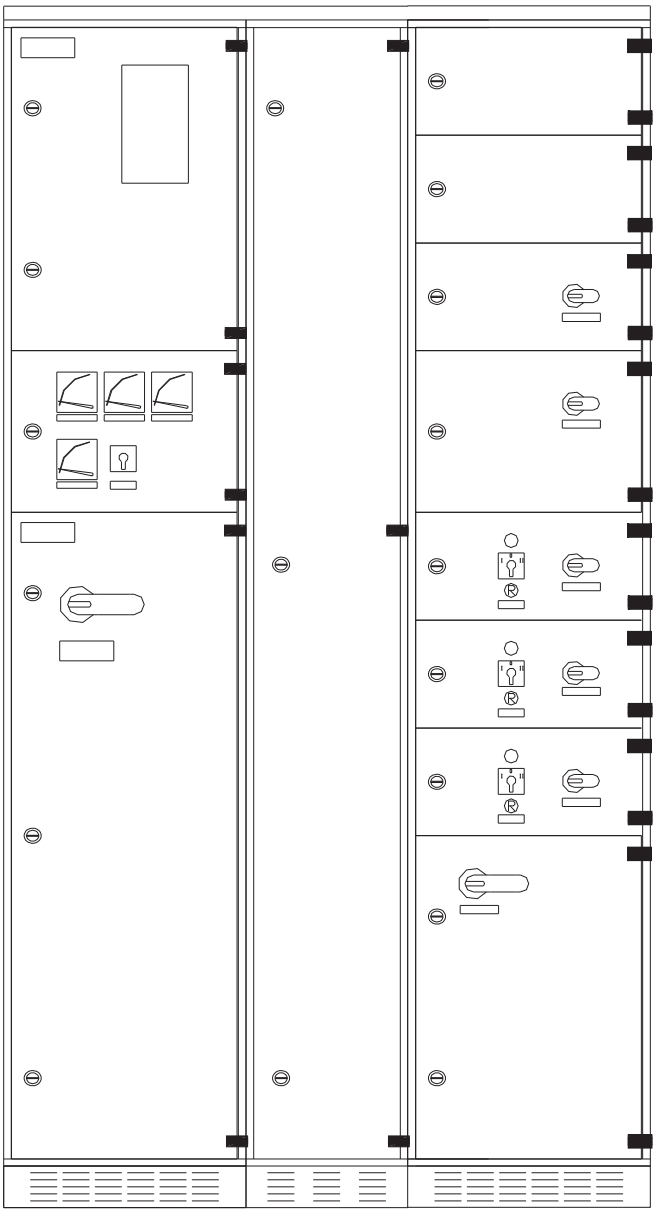
**6.** Components either DIN-sized (mounted on a DIN-rail) or mounted on an installation plates.

**7.** Incoming and outgoing cabling using pre-punched metal/rubber flanges (C-type). Either through the bottom or the tops. Two flanges per section on the top & bottom.

**8.** Inter-sectional cabling through plastic flanges (NEC-flanges).

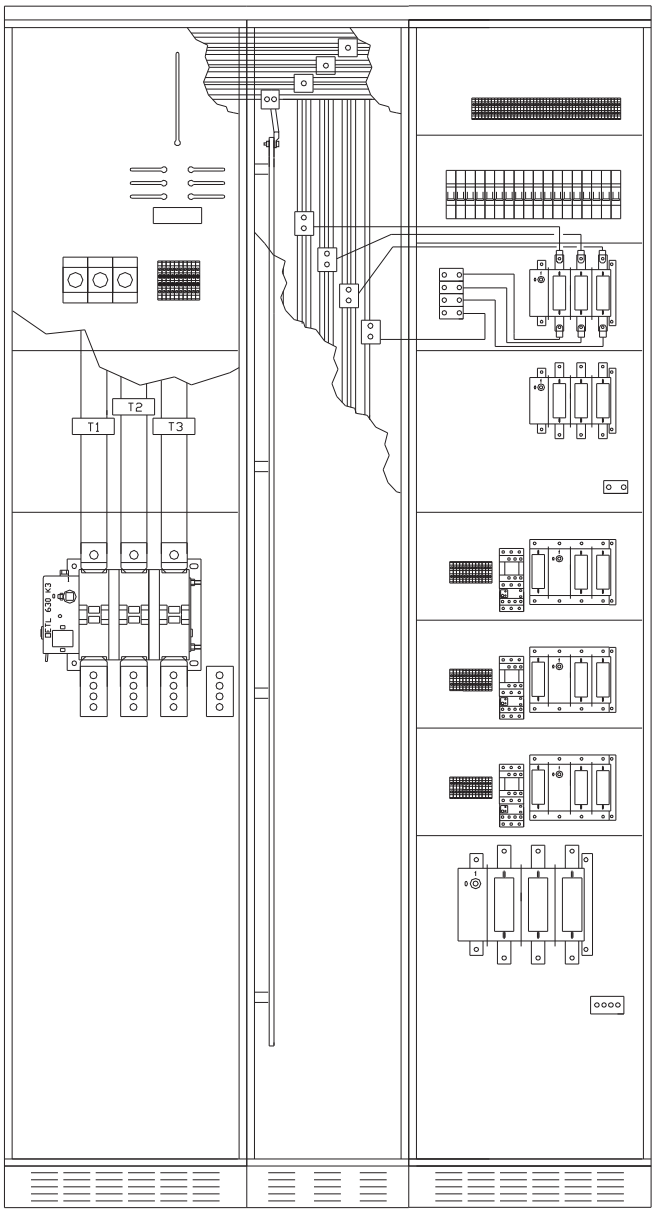
**9.** Hand-, triangle or tool latches or key operated locking devices.

# Basic structure of EHR-C switchboard



**EHRC -switchboard doors closed**

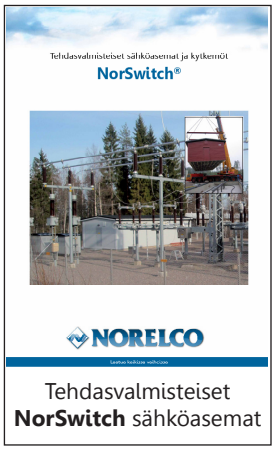
# Basic structure of EHR-C switchboard




**EHRC -switchboard doors open**

# Large selection of high quality LV and MV switchboards and substations

The main products of Norelco include:




Tehdasvalmisteiset **NorSwitch** sähköasemat


**NorMega** vaunukatkaisijakojeisto

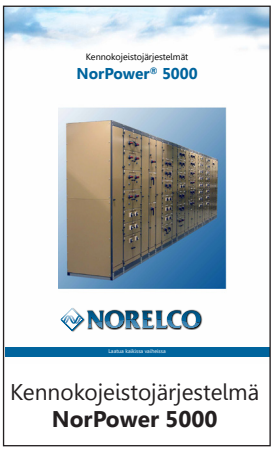

Modulaarinen keski-jännitekojeisto **NorMax**


Modulaarinen puisto-muuntamo **NPM 200**

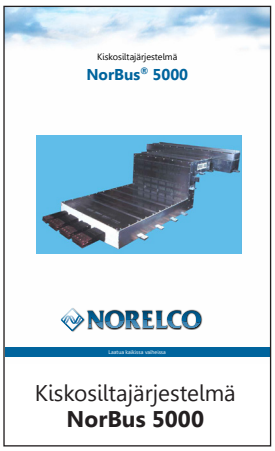

Vakiopuistomuuntamo **NPM 300**


Maaseutumuuntamo **NPM 400**


Loistehon kompensointi-järjestelmät **NACB**




Kennokojeistojärjestelmä **NorPower 5000**




Kiskosiltajärjestelmä **NorBus 5000**


Roiskevesitiivis kojeistojär-jestelmä **NorPower 1250**


Modulaarinen keskusjär-jestelmä **NorLine 800**

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