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Circuit breakers for equipment (CBE)

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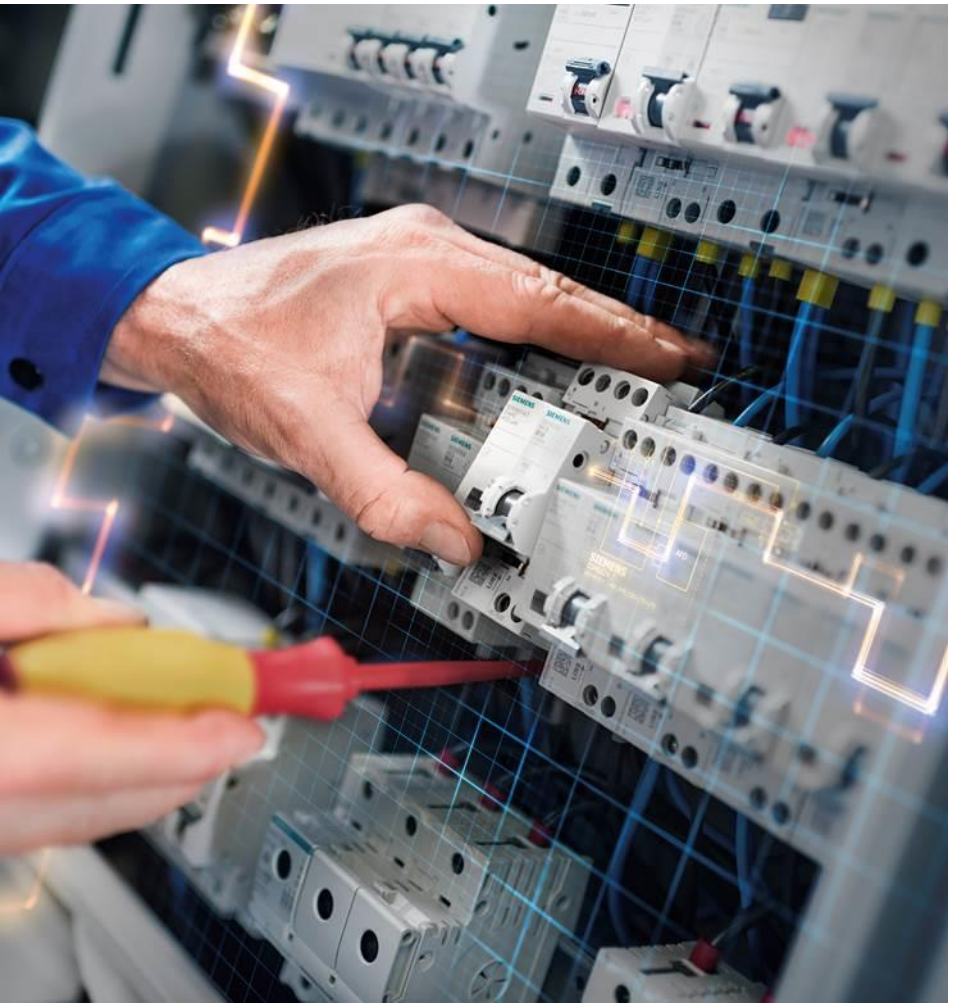
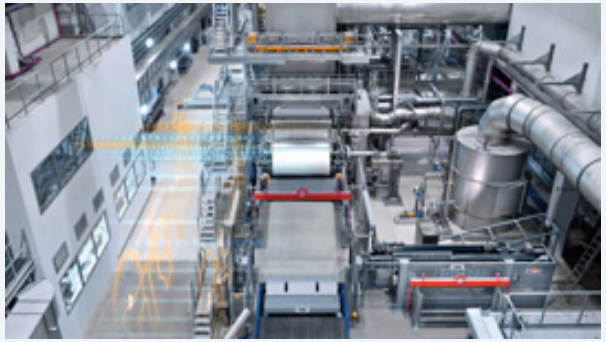
Agenda



- **Product overview**
- Application examples

Product overview and function



CBEs (Circuit breaker for equipment) are mainly used in DC applications. In addition, they can also be used in AC applications. Control circuits in which devices/ loads in electronic equipment must be protected from overload and short circuit.

Customers: OEMs and Industrial Automation

DC power supplies often have an internal short-circuit limitation, which is why rapid tripping characteristics are required for CBEs, so the limitation will not have any effect.

Standards

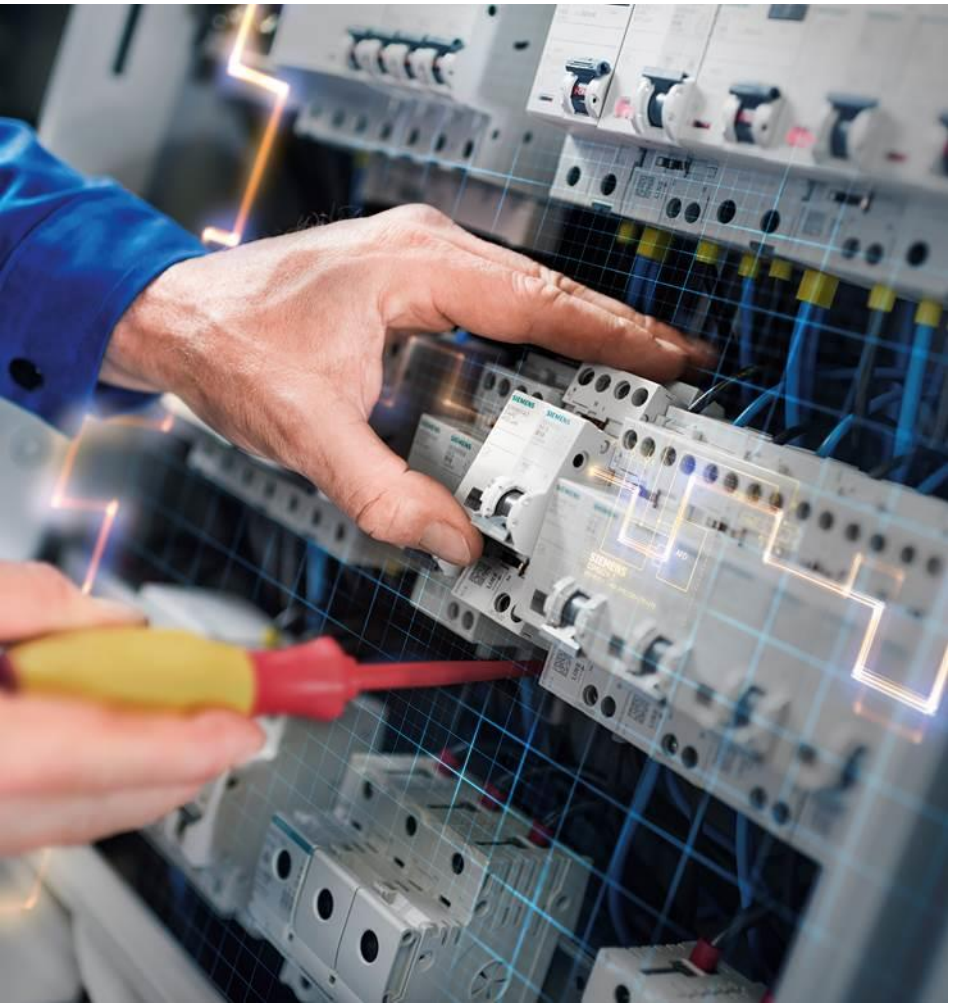
CBE according to IEC 60934
…mechanical switches developed as „circuit breakers for equipment“ (CBE), which serve as protection for electronic equipment…

UL1077:CSA 22.2:
"… additional protection for use as short-circuit protection in electrical devices …"

Features

- Circuit breakers for equipment electromechanical
- 1 MW wide (18mm)
- Single-phase with auxiliary switch with 1NO in 1MW saves 0.5MW in the distributor
- Integrated auxiliary switch saves installation time
- High short-circuit values
- Clear position indicator with handle (On / Off)
- Defined current ratings for more line safety
- Short circuit and overload detection in one unit
- Screw terminal with field wiring class FW=3 acc. to UL 1077
- Optimized for tripping in DC control circuit up to 60V
- Use of standard-busbars from MCB possible
- Extended function for railway application
- Robust design for industrial applications

Agenda



- Product overview
- **Application examples**

Circuit breakers for equipment (CBE) acc. to IEC 60934 Application

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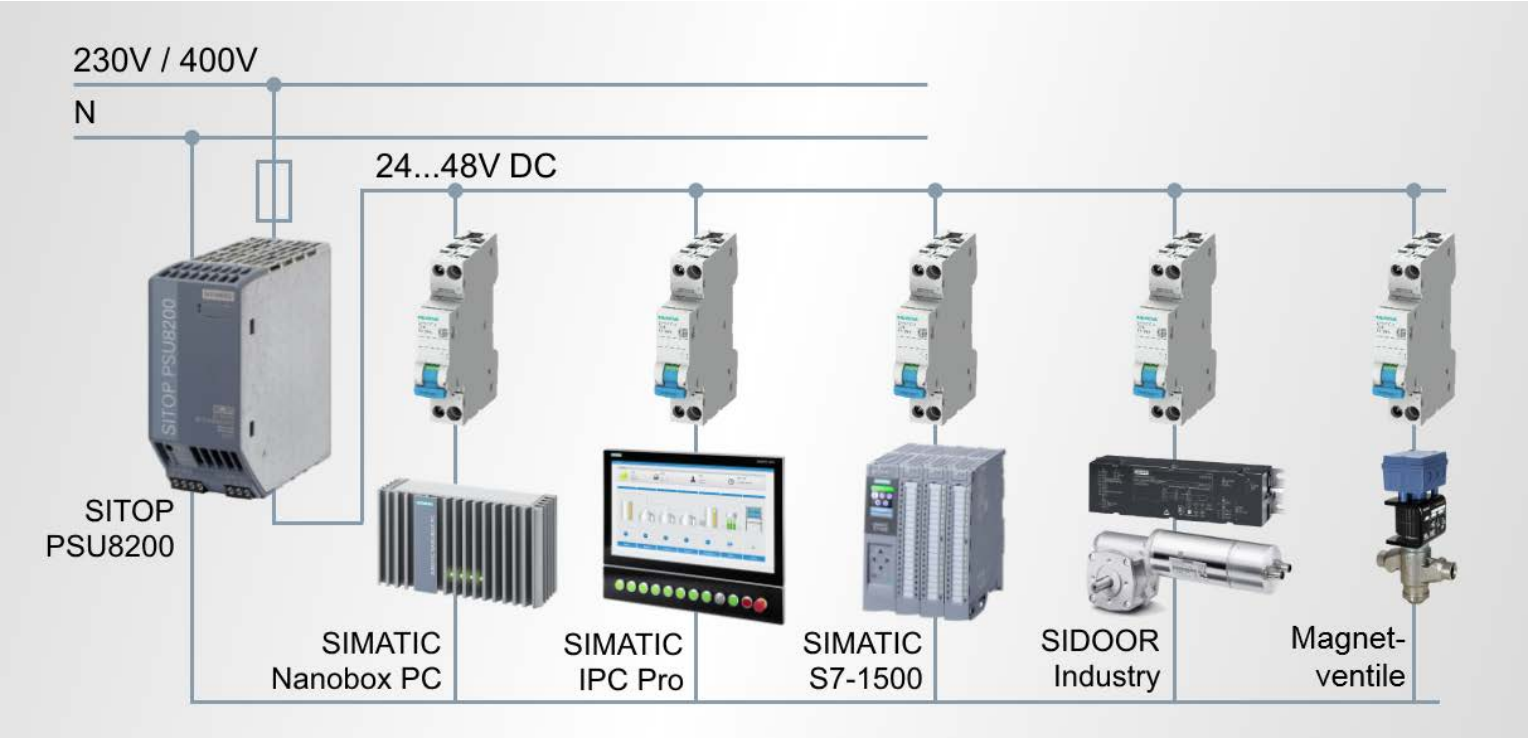
- The right choice of suitable protection devices for the protection of circuits and loads provides a safe and optimized operation of electrical installation, even in the event of a fault.
- When talking about circuit breakers, miniature circuit breaker and circuit breakers for equipment are to be distinguished:
- **Miniature circuit breakers** are deployed in the diversity area and are mainly protecting the power supply line in buildings or systems, which for example provides end devices as well as floors and building complexes with power
- **Circuit breakers for equipment** turn off quickly and are used to protect electrical loads. These should be installed readily accessible in the control cabinet so that they can be turned on fast and easily after triggering.



CBE electromechanical, New Siemens CBE 1P+AS

Meets IEC 60934, UL1077 additional protection (supplementary protector) and CSA 22.2 No. 235

Main contact:

(Short circuit current rating)

IEC 60934:	3,0 KA @AC 230V 3,5 KA @DC 60V
UL 1077 (SCCR=U3)	3,5kA@DC 60V 3,0kA@AC 277V 5,0kA@AC 120V

Auxiliary contact:

IEC 60934:	min. DC 24V/5mA max.DC 60V/1A AC-14 AC 230V/6A DC-13 DC 60V/1A
UL 1077:	AC 277V/1A DC 60V/6A

CBE electromechanical, New Siemens CBE 1P+AS

- **DC tripping**

- Magnetic:
  F1 2.5…4 x In
  F2 4…7 x In

- Thermal:
  1,05…1,35 x In (TC=3)

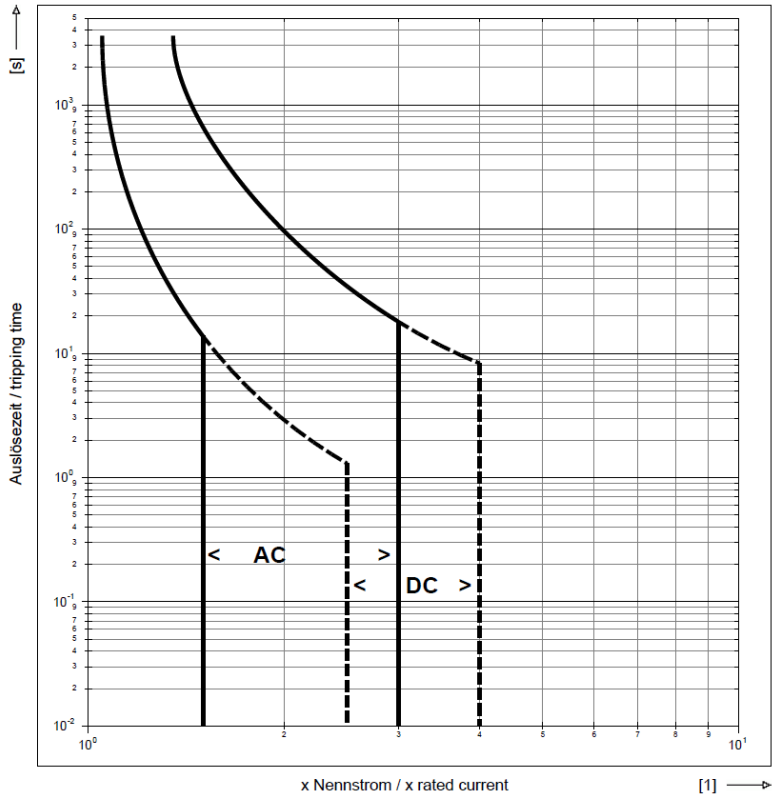
- Vibration/shock tested acc. to DIN EN 61373 Category 1, Class B → railway application
- Temperature during operation: -25 ... +60°C

Explanation F1 and F2 tripping characteristic

- Circuit breakers with F1-characteristic release quickly. Therefore, they react very fast to overloading situations.
- Circuit breakers with F2-characteristic release later than such with F1-characteristic and react time-lagged to error situations.
- The therminal tripping is by F1 and F2 the same

Characteristic curve F1, New Siemens CBE 1P+AS

Thermal:
AC/DC 1,05…. 1,35 x In

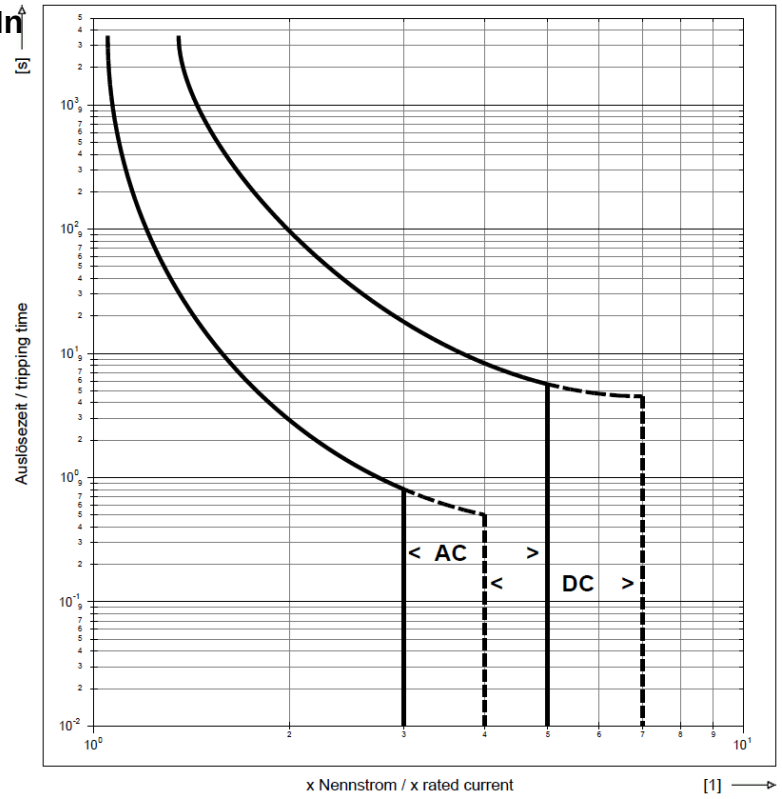


Magnetic: DC 2,5…4 x In
AC 1,5…3 x In

Application:
For semiconductor protection and protection of measuring circuits with converters, sensitive electronic equipment.
(Industrial PC, measuring instruments, controllers, etc.)

Characteristic curve F2, New Siemens CBE 1P+AS

Thermal:
AC/DC 1,05…. 1,35 x In



Magnetic: DC 4…7 x In
AC 3…5 x In

Application:
Motors, drives, heating elements, fans,
Magnetic valves, etc.

CBE acc. to IEC 60934
Bus mounting

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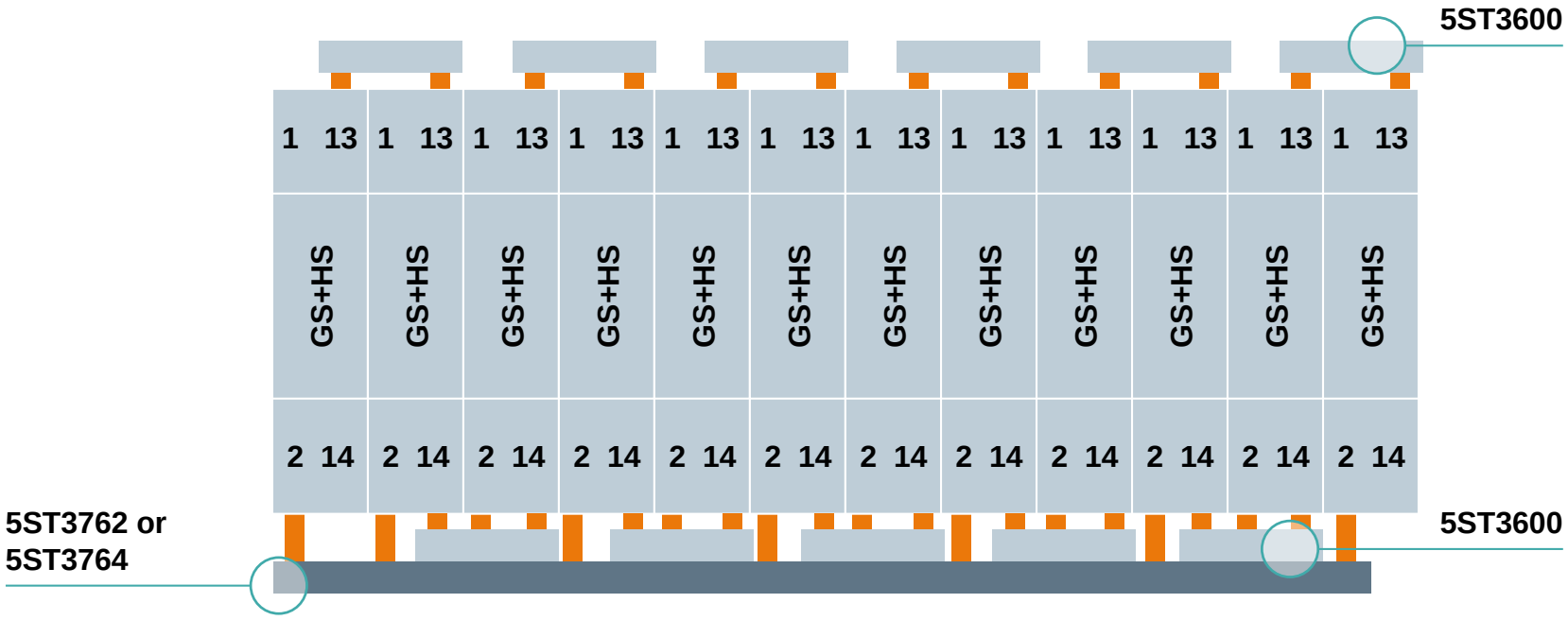
- Serial bus mounting of the auxiliary switch (sum notification) with 5ST3600
- Feed-in of the CBE with various busbars, e.g. single-phase 5ST3762 12MW or 5ST3764 1016mm separable



Order number overview

	Rated current [A]
MLFB	F1 curve (Fast 1)
5SY17052	0,5 A
5SY17012	1A
5SY17022	2A
5SY17042	4A
5SY17062	6A
5SY17082	8A
5SY17102	10A
5SY17162	16A

	Rated current [A]
MLFB	F2 curve (Fast 2)
5SY17054	0,5 A
5SY17014	1A
5SY17024	2A
5SY17044	4A
5SY17064	6A
5SY17084	8A
5SY17104	10A
5SY17164	16A

Thank you very much for your attention!

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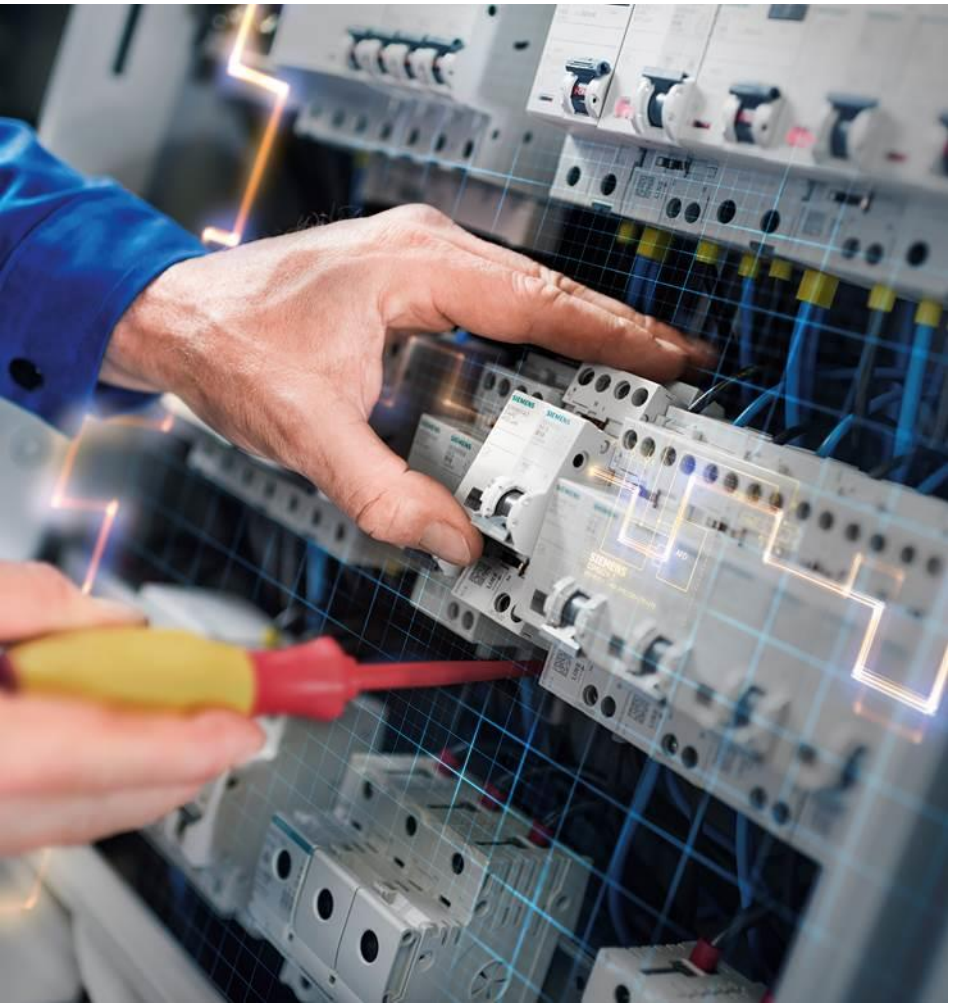

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