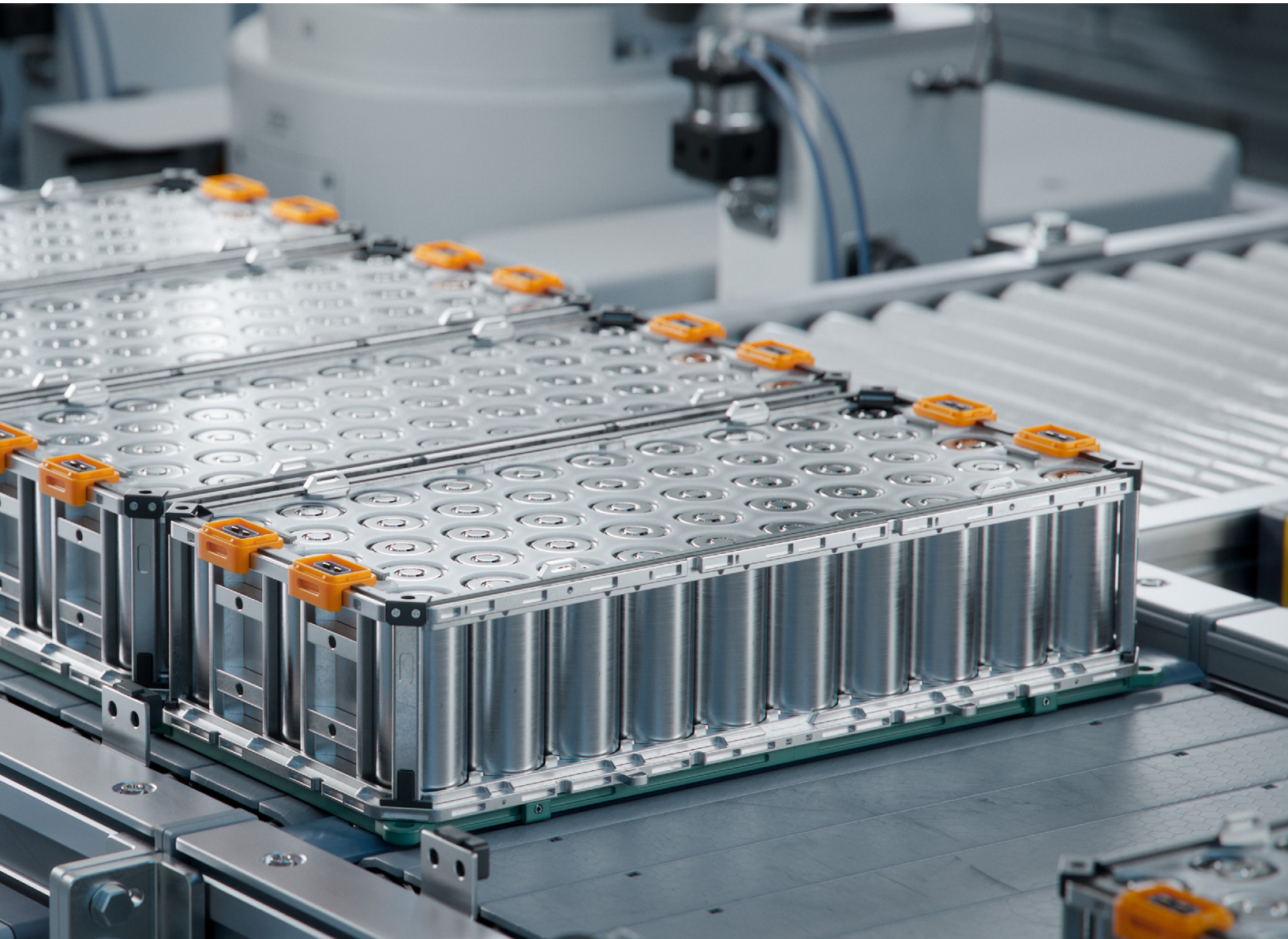
PRODUCT PORTFOLIO

BATTERY MANUFACTURING SOLUTIONS

For cell and pack manufacturers

ENGINEERED
TO OUTRUN



With industries like electric vehicles, energy storage, industrial equipment, medical devices, and consumer electronics driving demand, our electrical products help optimize your manufacturing processes.

Discover how ABB solutions can help elevate your performance in this pivotal industry.

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PROCESS OVERVIEW

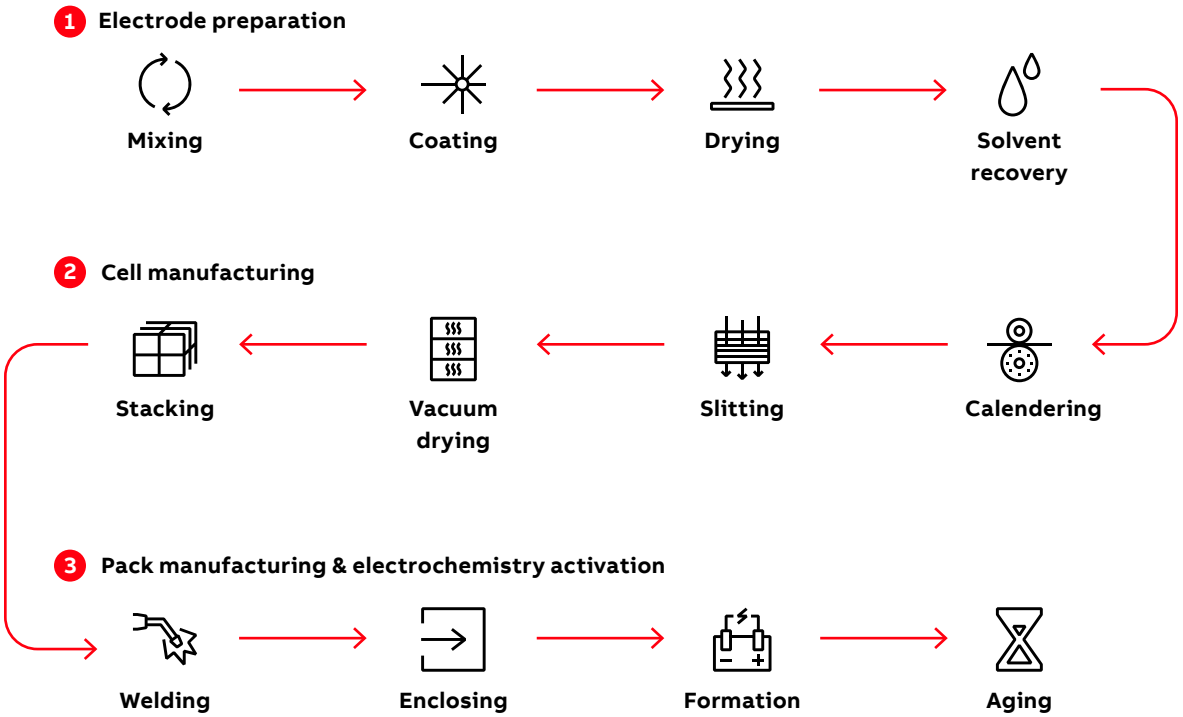
Lithium-ion battery manufacturing

The current battery manufacturing process includes three major parts:

1. **Electrode preparation**
Coating and drying are the key processes of electrode fabrication.

2. **Cell manufacturing**
Calendering and slitting (which includes unwinding and rewinding) are the conventional processes used to define the electrodes physical properties, increase the bonding strength, and determine electrode width.

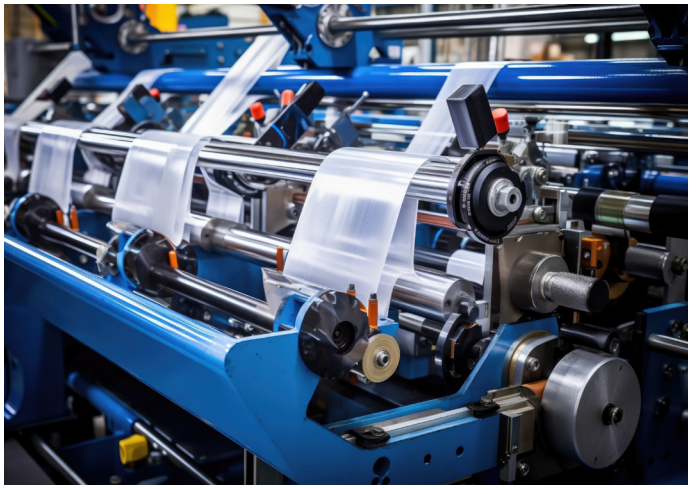
3. **Pack manufacturing & battery electrochemistry activation**
The formation and aging process is important for battery manufacturing because they are closely related to battery degradation and safety issues.



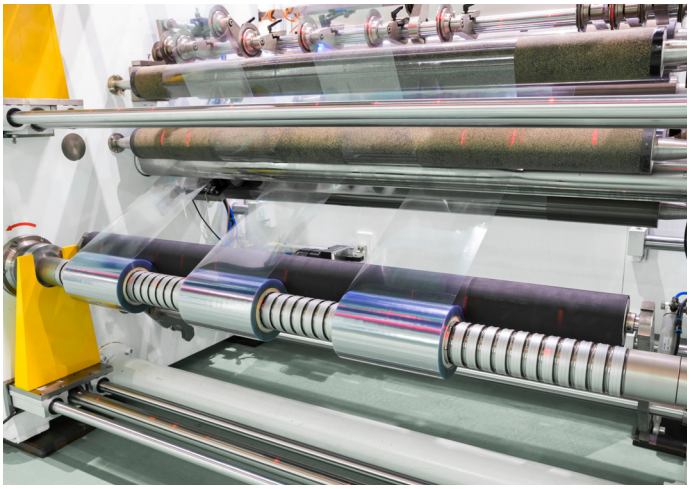
APPLICATION OVERVIEW

Calendering, slitting, stacking, and welding

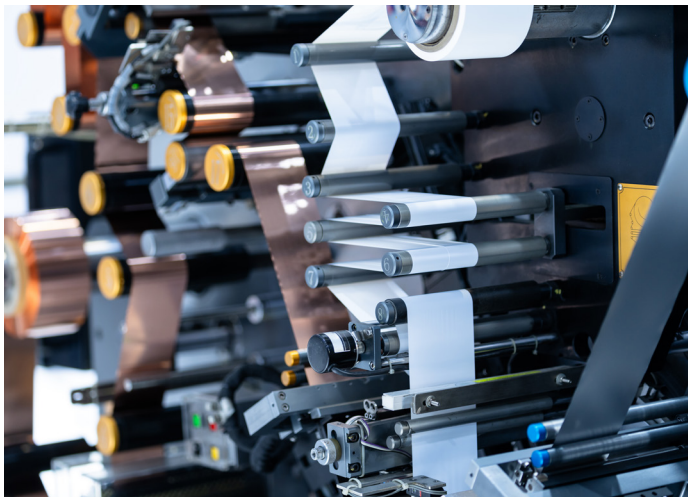
Calendering
Calendering is the process of the web being passed through multiple rollers to increase the bonding strength between the electrode and the current collector.



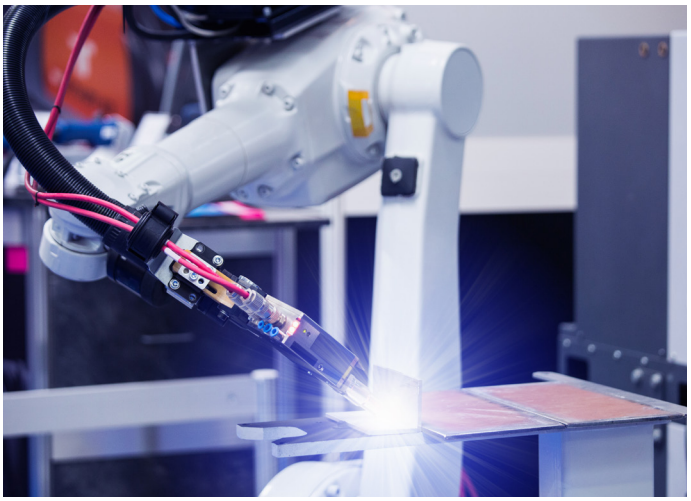
Slitting
This is a separation process where a wider role from the calendering process is 'slit' into smaller width rolls.



Stacking
The smaller rolls from slitting are then unwound, cut into anode and cathode sheets, and stacked with separator sheets between them.



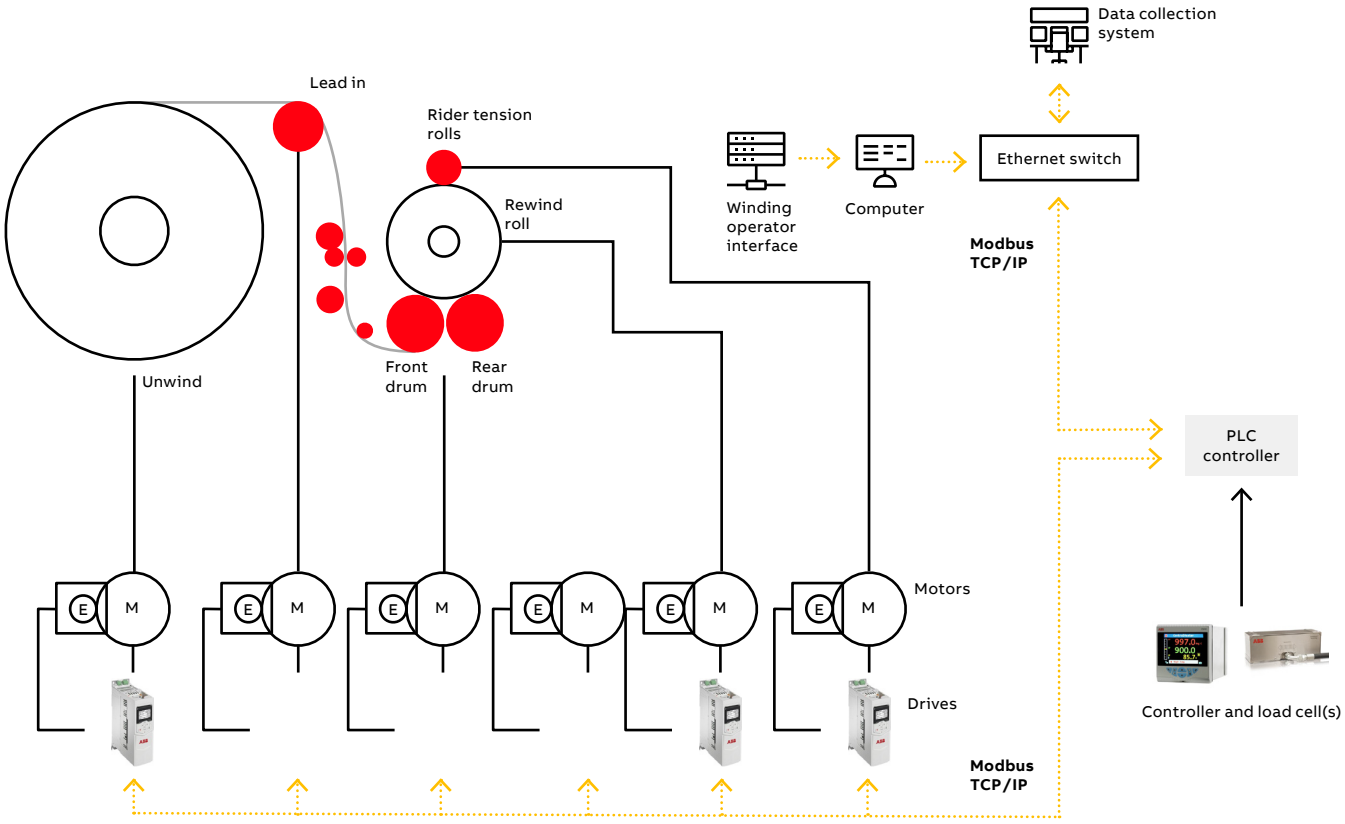
Welding
This is a packaging process in which the anode and cathode stacked sheets are placed in a foil pouch and either laser or ultrasonically welded on three of the four sides.



APPLICATION OVERVIEW

Calendering and slitting

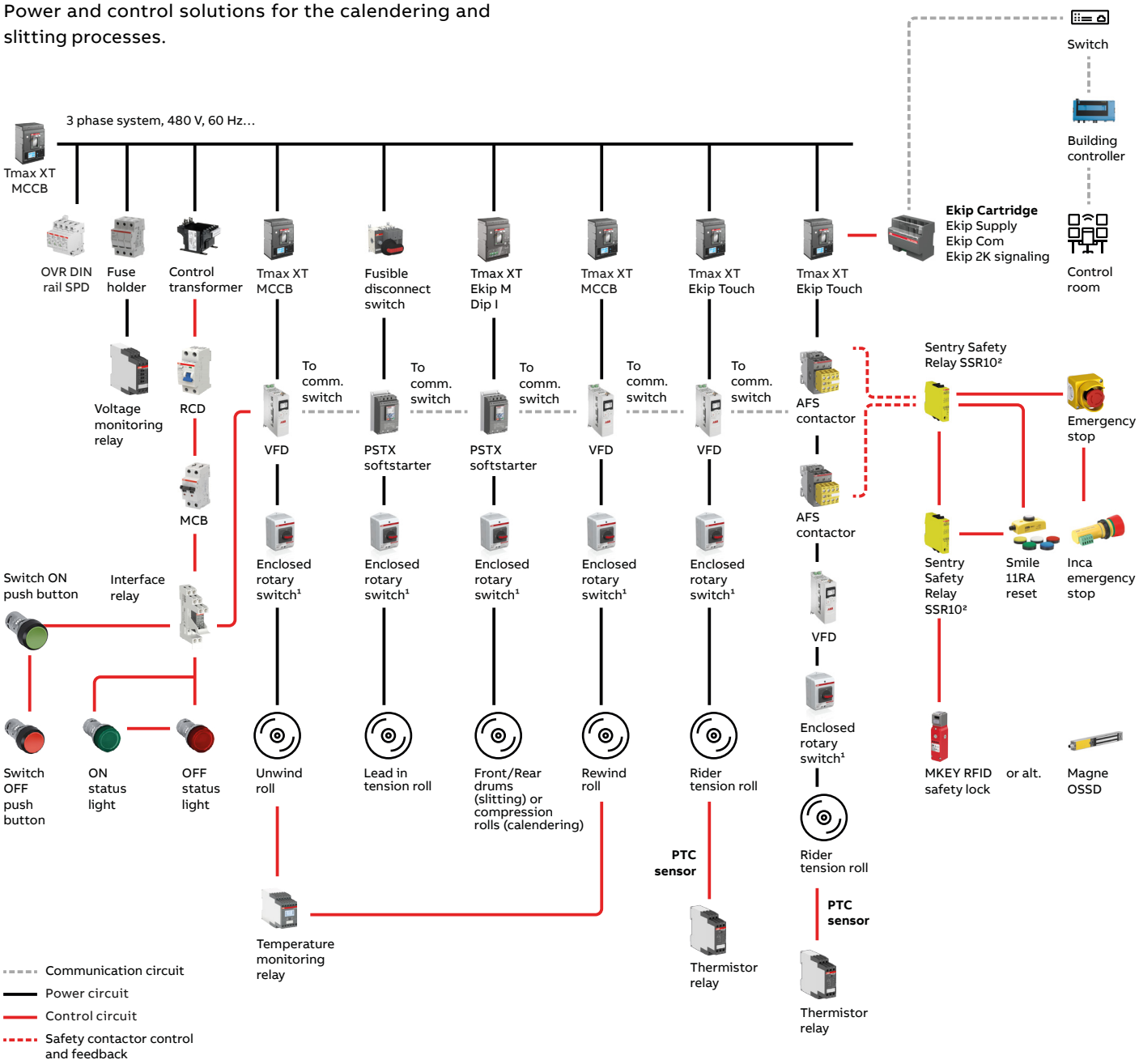
The figure includes the technologies for the application steps of calendering, unwinding, slitting and rewinding within the cell assembly area.



APPLICATION OVERVIEW

Calendering and slitting

Power and control solutions for the calendering and slitting processes.

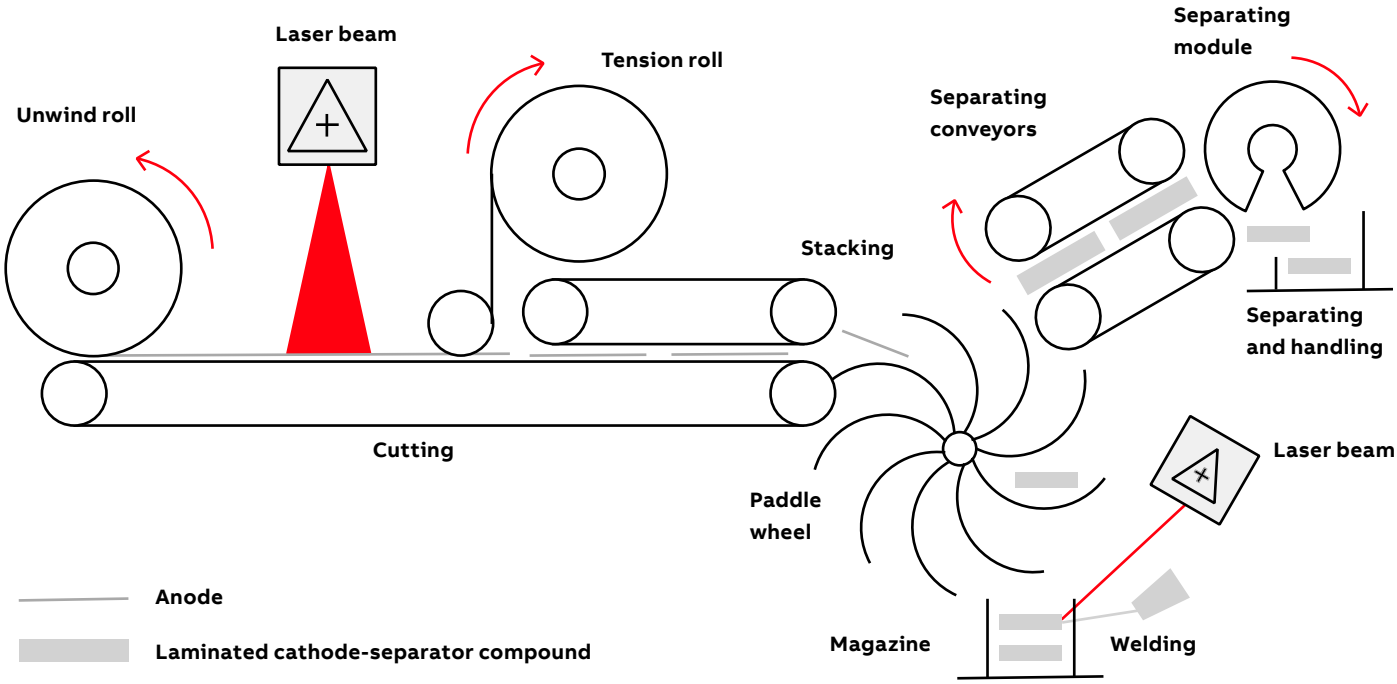


Note: This configuration is for a generic system and is not representative of existing manufacturers.
¹ The type of enclosed switch used depends on the application and environment.
² The safety circuit can be used to stop multiple motors in a machine. For advanced safety protection, a Pluto PLC can be used instead of the Sentry Safety Relays.

APPLICATION OVERVIEW

Stacking and welding

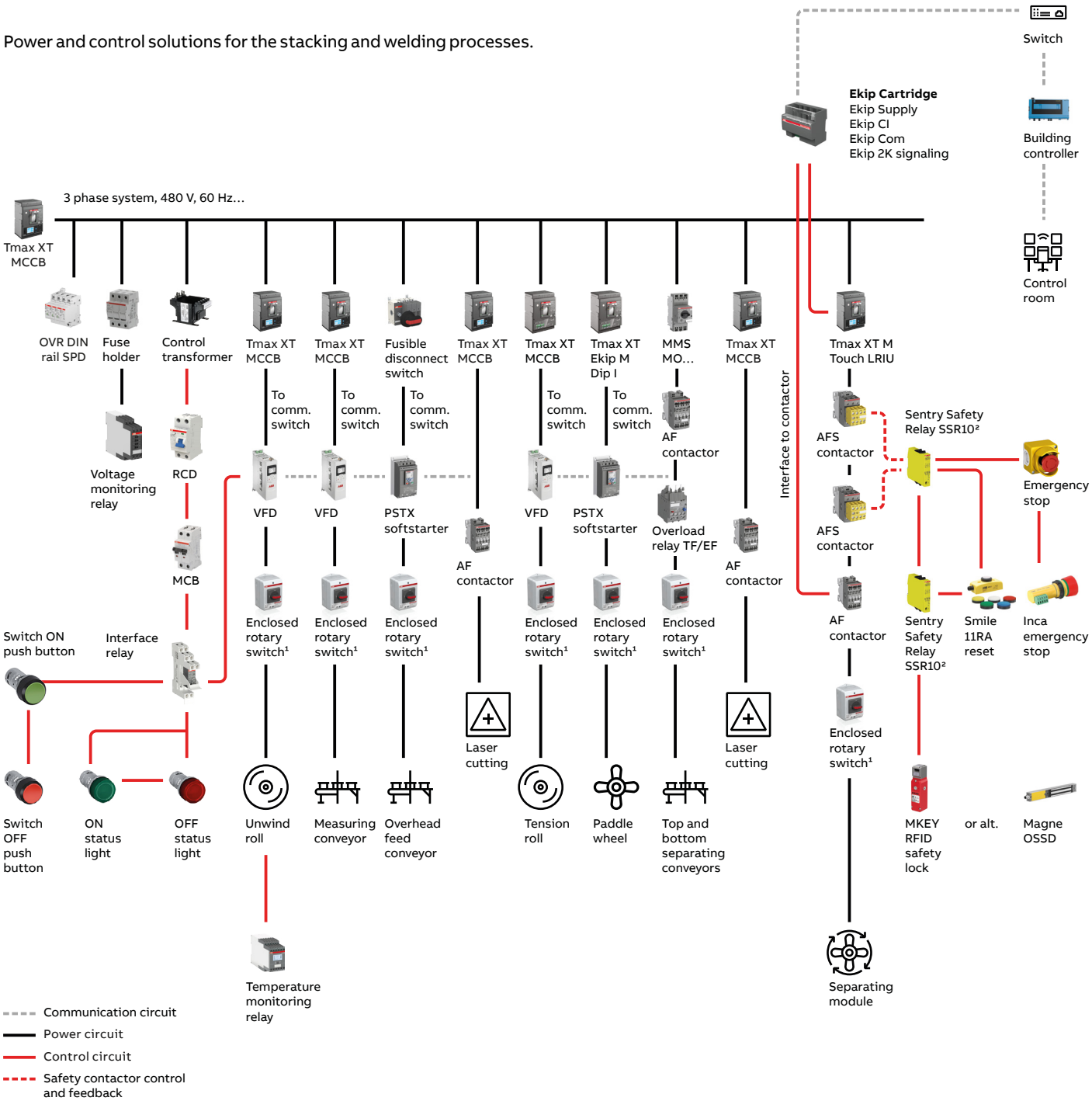
The figure includes the technologies for the process steps of cutting, handling, stacking, and welding within the cell and pack manufacturing area.



APPLICATION OVERVIEW

Stacking and welding

Power and control solutions for the stacking and welding processes.



Note: This configuration is for a generic system and is not representative of existing manufacturers.
¹ The type of enclosed switch used depends on the application and environment.
² The safety circuit can be used to stop multiple motors in a machine. For advanced safety protection, a Pluto PLC can be used instead of the Sentry Safety Relays.

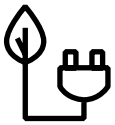
KEY VALUES

01

Continuous operation

Equip your system with circuit breakers featuring advanced trip units or contactors with smart modules to detect voltage instabilities, enhancing system.

02



Energy-efficient system

Boost control panel energy efficiency with our AF coil technology, which reduces energy consumption and dissipates less heat, leading to a reduction in temperature rise and increasing panel density.

03

Compact and easy to install

Save space in the control panel, thanks to narrower designs in MCCBs, mini circuit breakers, and contactors. Simplify installation using our starter connection kits, push-in spring terminals, and snap-in accessories for compact, efficient connections.

04

Safety and protection

Enhance safety and thermal management, reduce hazards and fires, and prevent downtime using circuit breakers, surge protection devices, relays, or Jokab safety components.

FEATURED PRODUCTS

SACE® TMAX® XT MOLDED CASE CIRCUIT BREAKERS (MCCBs)

Product range
This circuit breaker portfolio helps ensure extreme performance and protection features up to 1200 A.
Performance & protection
It sets the standards when extreme breaking capacity is needed, sharing the same logic, interfaces, and features regardless of operating voltage or environmental conditions.
Data & connectivity
Provide advanced metering features and access, monitor, and control information remotely, improving efficiency and saving energy.

CATALOG WEBSITE

SOFTSTARTERS

Secure motor reliability
Help increase your motor's lifetime by protecting it from electrical stress and optimizing your load, application, and motor size.
Improve installation efficiency
Reduce your installation time and panel size by having all the features you need built into your softstarter, such as a built-in bypass or overload protection.
Increase application productivity
Reduce the mechanical stress on your motor application, which will increase your uptime, by using torque control, pump cleaning, motor brake, and many other features.

CATALOG WEBSITE

AF CONTACTORS

Product range
UL 508 and UL 60947-4-1 contactors certified for up to 900 hp – 480 V and 2850 A – general use.
Installation
Comes in screw, push-in spring and ring tongue connection types. The push-in spring terminals offer only one push for extremely fast wiring.
Energy efficient
A reduction of the coil's energy consumption lets customers save energy.

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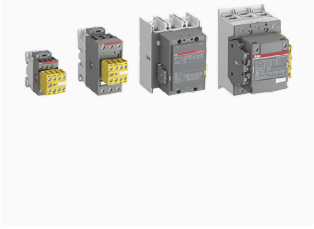

AFS SAFETY CONTACTORS

Safety & protection
Complies with main standards EN ISO 13849 and EN 62061 and has easily identifiable yellow low-energy contact block to provide the status feedback circuits required in machine safety applications.
Continuous operation
Featuring ABB's tested and proven AF technology, AFS contactors are reliable and have direct control by safety PLCs or safety relays to help ensure the required safety performance.
Speed up your projects
Wide voltage range coils and easily available safety data simplifies product selection.

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JOKAB SAFETY PRODUCTS

Safety & protection
ABB offers an extensive range of innovative products and solutions for machine safety systems to help protect single machines or entire production lines.
Product range
Jokab includes a large portfolio of safety products such as safety relays, safety controllers, emergency stops, light curtains, safety locks, sensors, and more.
Ease of use
Easily integrated into existing systems with flexible mounting and plug-and-play connectivity to simplify installation and help ensure compliance with safety regulations.

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DIN-RAIL SURGE PROTECTIVE DEVICES (SPDs)

Product range
UL 1449 and has options for voltages up to 600 V AC and 1500 V DC.
Durability
Safety reserve system with two varistors per line extends protection lifetime.
Installation
Pluggable and replaceable cartridges for easy replacement during maintenance.

CATALOG WEBSITE

FEATURED PRODUCTS

MINIATURE CIRCUIT BREAKERS (MCBs)

Product range
Largest selection of current-limiting, compact, DIN-rail mounted MCBs for AC and DC applications with ratings of 0.2 to 100 A, up to 600 V AC/DC and 50 kA short circuit protection.
Safety
Thermal and magnetic trips are provided to cover both over-current and short-circuit faults.
Compliance
UL 489 and UL 1077 approved.

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RESIDUAL CURRENT DEVICES (RCDs)

Product range
This product trips when the system leaks a significant current to ground and it is rated up to 125 A, 120–277 V AC (2-pole) and 120–480Y V AC (4-pole).
Innovation
The contact position indicator (CPI) always indicates the status of the contacts (red = closed contacts; green = open contacts) independent of the toggle position.
Compliance
The ground-fault sensing and relaying equipment components are UL 1053 approved.

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FUSE HOLDERS

Durability and reliability
They offer venting grooves and cooling chambers to improve heat dissipation.
Product range
UL approved IP20 fuse holders with ratings up to 60 A at 600 V AC/DC.
Installation
Ergonomic flip hinge makes fuse replacement easier in small spaces, even while wearing gloves.

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MEASURING AND MONITORING RELAYS

Design
Wide range of products from single- and three-phase monitors to temperature monitoring relays.
Technology
Easy Connect Technology with push-in terminals allows the product to be wired much more quickly and easily – without the need for tools.
Product range
Comes in value devices (CM-E range) and advanced solutions (CM-S and CM-N range) to meet customer's needs.

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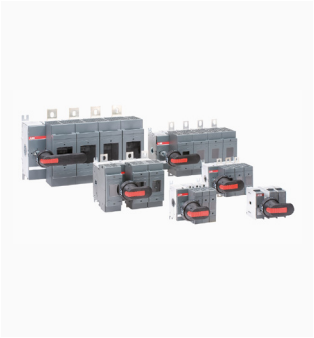
COMPLEMENTARY PRODUCTS



OS FUSIBLE DISCONNECT SWITCHES

Safety and protection
Designed for personal safety as well as for reliable process protection.
Reliability and performance
The knife contact design, in combination with the fuse link, enables rapid fault clearance and maintains a protection level even after a fault occurs.
Installation
Its accessories create considerable savings in terms of installation time and costs. For example, the shaft can be adjusted to various installation depths, which eliminates the need for special cutting tools.

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OT NON-FUSIBLE DISCONNECT SWITCHES

Product range
UL 508 and UL 98 approved portfolio of switches with ratings between 16 and 2000 A for AC.
Installation
Their modular design and smaller dimensions enable installation into even the smallest enclosures, saving space and significantly reducing material, handling and installation costs.
Reliability
Designed to be virtually maintenance free across their entire extended lifespan.

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ENCLOSED ROTARY SWITCHES

Product range
UL 508 and UL 98 approved portfolio of enclosed switches 16 to 100 A and UL / NEMA 1, 3R / 12, 4 / 4X enclosure options.
Harsh conditions
Suitable for wet and corrosive environments housed in thermoplastic / polycarbonate, steel sheet, or stainless steel sheet enclosures.
Continuous operation
Maximize uptime with a switch rated for a minimum of 6,000 operations under load and 20,000 operations mechanical endurance.

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SAFETY SWITCHES

Product range
Full range of safety switches (general duty, heavy duty, double-throw switches, and emergency power transfer switches) from 30 to 1200 A, along with field installable accessory kits.
Safety
Switches are fully factory assembled and tested, ready to install.
Installation
All switches meet or exceed cULus requirements and are fully tested at the factory before shipment.

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E150 THERMAL-MAGNETIC MOLDED CASE CIRCUIT BREAKERS

Product range
Range of breakers from 10 to 150 A with multiple short circuit tiers, in 1, 2, or 3 poles, and rated up to 600 V AC or 500 V DC.
High performance
Reliable operation and protection enabling seamless management of power distribution networks with efficiency and minimized downtime.
Installation
Non-interchangeable trip breakers can be accessorized with various signaling and controlling functions as well as add on UL listed current limiters.

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TEY CIRCUIT BREAKERS

Product range
Range of breakers from 15 to 125 A with multiple short circuit tiers (TEY 14 kA, TEYF 18 kA, TEYD 25 kA, TEYH 35 kA and TEYL 65 kA at 480/277 V) allow the most cost-effective ratings for the application.
High performance
Dependable and effective thermal-magnetic trip units with time-current curves designed for easy coordination with upstream main devices.
Installation
Flexible installation with a mounting base for unit mount/lug-lug type installations and 1 inch per pole spacing.

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COMPLEMENTARY PRODUCTS

SACE® FORMULA CIRCUIT BREAKERS

Product range
Range consists of two frames, A1 and A2, which reach up to 100 A and 250 A, respectively, are rated up to 240 V AC or 125 V DC, and are 1, 2, or 3 poles.
Ready to use
Protection trip unit has fixed thermal and magnetic threshold values to put the circuit-breaker into service more rapidly.
Space savings
Compact dimensions and coordinated depths mean standardized dimensions and savings in panel design.

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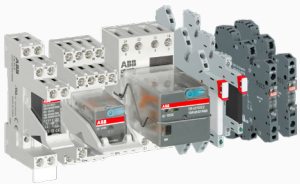

INTERFACE RELAYS AND OPTOCOUPLERS

Continuous operation
Optocouplers allow for continuous operation without any mechanical wear-and-tear.
Installation
The interface relay includes both pluggable and non-pluggable relays. The pluggable relays allow for the easy and seamless exchange of relay modules.
Product rating
The wide variety of pluggable interface relays have coil voltages from 5 V DC to 230 V AC and are accompanied by standard or logic sockets that may be used for switching AC or DC loads.

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22 MM PILOT DEVICES

Product range
Modular plastic and metal ranges include flexible and adjustable products to meet your exact needs.
Reliability
Designed with a protection degree of up to 4X, guaranteeing reliability in extreme environments.
Installation
The compact range reduces installation space and saves time, and the modular range enables tool-free installation that is quick and simple.

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NEMA 30 MM HEAVY-DUTY OIL-TIGHT PILOT DEVICES

Product range
NEMA types 1, 3, 3R, 4, 4X, 12 and 13 to meet a wide range of applications.
Durability
Due to the octagonal locking nut design, greater torque can be applied during assembly and installation to provide a water- and oil-tight fit.
Installation
Ease of assembly with one-screw contact block mounting and easy wiring with 45° angled wire terminals.

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POWER SUPPLIES

Product range
Wide range of AC or DC supply voltages with output voltage of up to 48 V DC, output current of up to 20 A and output power of up to 480 W.
Durability
Coated (PCBA) and ATEX certification available for hazardous locations. It has overload protection, active power factor correction and a broad certified AC and DC input range.
Efficiency
These power supplies have a 150% integrated power reserve and operate at an efficiency of up to 94%.

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MANUAL MOTOR STARTERS

Protection and control
Protection and control in almost every situation, including hazardous areas, protecting installations from short-circuits, overloads and phase failures while also controlling the current flow through a simple ON / OFF switch.
Speed up your projects
The main range of accessories is shared across multiple starters (both with screw and push-in spring terminals available), making logistics and planning simpler.
Continuous operation
Fuseless motor protection reduces maintenance costs and downtimes by avoiding fuse replacement after faults.

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COMPLEMENTARY PRODUCTS

OVERLOAD RELAYS

Product range
Thermal overload relays cover a current range from 0.1 A to 200 A, while electronic overload relays cover an even larger current range from 0.1 A to 1250 A.
Energy-efficient
Electronic overload relays combine high accuracy with an energy-efficient design that does not need an extra external supply.
Continuous operation
The selectable automatic reset mode allows for reduced downtimes and traveling costs for installation in dispersed locations.

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ELECTRONIC COMPACT STARTERS

Saving space
With a narrow width of 22.5 mm, this starter saves cabinet space, especially with group mounting, and yet still provides motor starting functionalities with motor protection and safety embedded.
Safety and protection
Protect your people with an emergency stop version that complies with SIL 3, PL e safety standards.
Easy to install
Wiring time during installation is cut to a minimum with motor protection, reversing function and emergency stop already integrated into the product.

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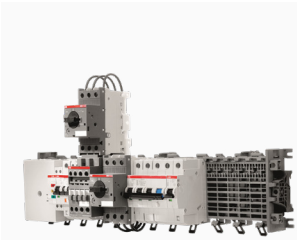

SMISSLINE TP POWER BAR SYSTEMS

Installation
Quick maintenance of the switchboard as the wiring is already integrated into the plug-in socket system.
Flexibility
Rapid replacement, easy expansion and mixed-pole layout possible and directly pluggable devices such as MCBs, RCDs, RCBOs, motor starters, and switch disconnectors.
Safety
Allows for load-free plugging in and unplugging under voltage without additional personal safety equipment for protection against electrical hazards.

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LIMIT SWITCHES

Reliable in extreme conditions
Plastic or metal casing limit switches are designed to operate in the most difficult environments.
Continuous operation
High mechanical durability can handle up to 30 million operations with contacts that are mechanically linked to actuators.
Easy to install
Satisfy design specifications with the flexibility of three different types of electrical connections and cable lengths.

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CONTROL POWER AND MACHINE TOOL TRANSFORMERS

Installation
Type IP transformers are lightweight, small, and designed for minimum mounting dimensions.
Safety
Finger-safe terminals offer added protection and safety.
Reliability
Pressure-plate terminals ensure secure connections.

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LEARN MORE

To learn more about ABB engineered products for battery manufacturing machinery, visit our website

CONTACT US

Do you have a similar project and are you searching for the right application configuration?
Contact us and talk to our experts!

Additional information
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