

# Industrial Automation Playbook

## Glossary

This reference document defines terminology and general terms used throughout this training module. It's recommended that you **print this glossary before beginning the module** to help guide your understanding of key concepts introduced.

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**Assemble to Order:** when products are ordered by customers and then quickly produced and customized to a certain extent. Typically, the basic parts of the product are already manufactured but not yet assembled. Example: computers

**Automation:** the creation and application of technologies to produce and deliver goods and services with minimal human intervention.

**Automation control:** the use of various controls and sensors to operate equipment such as machinery and processes in factories, with minimal or reduced human intervention.

**Artificial Intelligence (AI):** the ability for a digital computer or computer-controlled robot to perform tasks commonly performed by human intelligence.

**Batch Manufacturing:** the production of moderate volumes of goods which have high variety, such as baked goods or clothing.

**Bill of Materials:** the complete list of all parts and components that are required to build to construct, manufacture or repair a product or service.

**Business Intelligence:** leverages software and services to transform data into actionable insights that inform an organization's business decisions.

**Certification Bodies:** these industry players ensure that products and systems operate as per their intended design. Certification occurs at multiple stages, including the product or component design stage, the system design stage, and at the commissioning or start-up stage.

**Commissioning:** the process of assuring all systems and components in an industrial plant are designed, installed and tested according to the operational requirements of the owner.

**Cybersecurity:** the application of technologies, processes and controls to protect systems, networks, programs, devices and data from cyber attacks.

**Digital Transformation:** the integration of digital technology into all areas of a business, fundamentally changing how a company operates and delivers value to customers.

**Digitization:** enabling, improving or transforming business functions by applying digital technologies and digitized data to create insight and knowledge for businesses to take action.

**Discreet Manufacturing:** a method of production that assembles parts and components along a routing, such as cars.

**Distributors:** industry partners that buy electrical and/or automation products from suppliers and sell them to installers and manufacturer end users. These channel partners also offer a wide range of other services ranging from technical training, transportation, delivery, material handling and more. There are several types of distributors that service the industrial automation market, including:

- **Automation Distributors** who are focused on the industrial market and automation solutions.
- **Full-line Distributors** who are hybrid because they focus on electrical and automation products for the construction and automation markets.
- **Process Control Distributors** who focus on instrumentation and process control products.
- **Value Added Resellers** who are companies that add features or services to an existing product, then resell it as an integrated product or solution
- **Online distributors** who strictly sell online, such as Amazon and eBay

**EBITDA:** stands for 'Earnings Before Interest, Taxes, Depreciation and Amortization' (or Net Profit) and represents a measure of company profitability. Manufacturer and distributor partners will have regular financial discussions that centre on EBITDA, sales growth, improving gross margins, maximizing inventory turnover and lowering operating costs.

**Electronic Data Interchange (EDI):** a system that enables the electronic transmission of orders from distributors to manufacturers.

**Energy Monitoring Solutions:** Measures the generation, transmission and consumption of industrial equipment in a plant. Measures the flow and use of water, air, gas, electricity and steam.

**Engineer to Order:** involves manufacturing a fully-customized product that meets the desired specifications of a customer. Example: defense aircrafts

**Engineers and Consultants:** these industry players are responsible for designing safe and operable production lines and machines for the factory floor to meet the manufacturer end users' production requirements.

**Engineering / Procurement / Construction (EPC) Firms:** hybrid service providers that offer specification and installation services to manufacturer end users. A single entity for "one-stop" engineering, procurement and build work.

**Field Service Contractors:** these industry players are responsible for installing, commissioning and maintaining industrial automation systems.

**Flexible Manufacturing Systems (FMS):** a production method designed to easily adapt to changes in the type and quantity of products being manufactured.

**Industrial Automation:** the use of systems and technologies to monitor and control the production of goods on assembly lines in manufacturing facilities.

**Job Shop Manufacturing:** the production of custom goods in small quantities, which have very large varieties, such as tools.

**Machine Line Builders:** This industry player is responsible for designing and building machinery and equipment in a manufacturing facility. They may also play a role in installing and maintaining the machines that they build.

**Machine Learning:** an application of Artificial Intelligence that enables systems to learn and improve from experience without being explicitly programmed.

**Maintenance, Repair & Operations (MRO) Technicians:** these industry players are responsible for the physical maintenance of the factory floor and repair equipment used on the production line. They also ensure stockrooms are adequately stocked with tools, personal protection equipment, cleaning supplies, and other materials.

**Machine Safety Solutions:** equipment that prevents hazardous areas of a machine from having contact with body parts. Examples: fencing and guarding, machine stop devices, safety relays.

**Maintenance:** The ability to safely reduce maintenance on a system will save costs and time. Scheduled maintenance is recommended as a risk mitigation strategy.

**Made to Order:** when products are standardized but customers can customize parts of the product in specific ways (size options, decorative components or upgraded materials). Example: cars

**Made to Stock:** when products are manufactured based on anticipated customer demand. Some products are put onto shelves for customers to purchase, while the rest is stored in inventory. Examples: clothing, toys, books, non-perishable food.

**Manufacturer End Users:** these industry players are the 'ultimate customer' because they are the final link in a value chain. End users drive the demand for goods and services and are the adopters who use the electrical or automation products in their factory environment. End users span all manufacturing sectors, including food & beverage, automotive, pharmaceutical, electrical & automation and others.

**Manufacturers' Representatives (Reps):** third-party sales agencies that partner with suppliers to sell electrical and automation products in an assigned region or market.

**Mass Manufacturing:** the production of large volumes of goods which have limited varieties, such as beer production.

**Motion Control Solutions:** A sub-field of automation that allows systems involved in moving parts to operate machines in a controlled manner. Examples: gear boxes, conveyors.

**Panel Builders:** an industry player that is responsible for constructing control panels as components for machine builders and manufacturer end user to use in a facility.

**Plant Engineer & Manufacturing Engineer:** these engineers commonly work in Industrial plants and are responsible for designing safe and operable production lines and machines for the factory floor.

**Pneumatics:** a machine that uses pressurized air to control movements such as holding, moving and forming materials together. Pneumatic equipment relies on large amounts of compressed air to perform. Examples: actuators, sensors & switches, connectors.

**Power Control & Energy Management Solutions:** systems that monitor and improve power reliability, availability and quality and monitor and measure energy use, reduce energy waste and improve energy efficiency. Examples: variable speed drives, AC/DC drives and motors.

**Process Control Solutions:** uses fluid, air and gas and industrial systems to facilitate continuous, consistent, economical and safe production of goods on the factory floor. Examples: valves, instrumentation (analyzers, sensors & transmitters, meters and gauges).

**Process Manufacturing:** a method of production that mixes ingredients together according to specific formulas or recipes, such as food and beverages.

**Project Manufacturing:** a method of production that involves the construction of highly-customized, very complex and expensive products that require a long time to complete and are managed like a project. Example: airplanes

**Robotics:** technology that deals with the design, construction, operation and application of robots.

**Sensors & Switches:** sensors are devices that detect and measure variations in motion, light, sound, heat and magnetic and send signals to switches to generate a response. Switches are components or devices that connect or disconnect power supply. Examples: acceleration sensors, pressure sensors, limit switches.

**Specification (Spec):** a list of products that are needed for a project. Also referred to as a Bill of Materials. There are different types of specifications:

- **Specified alone** ('sole spec'): a single manufacturer with a specific catalogue number is identified. No other products qualify.
- **As 'equal with alternates'**: specifiers have included more than one manufacturer's catalogue number, listing several brands as acceptable options.
- **Generic spec:** when a spec has no products listed at all but lists general requirements.

**Stock-and-flow Business:** represents products that are physically stocked in a warehouse for direct access by installers for day-to-day needs. This includes products such as automation and robotics equipment to motion control, pneumatics, machine safety and industrial-grade computer hardware and software.

**Suppliers:** Also referred to as brand owners, these industry players manufacture a range of electrical and automation equipment and are fully responsible for the design, production, service, warranty and performance of products that are installed in a production plant.

**System Integrators:** a person or a firm that specializes in bringing together component subsystems into a whole and ensuring that everything functions together in a manufacturing environment. Systems integrators may also install the systems they create. System Integrators are a hybrid service provider because of their involvement in designing and building assembly lines and machines within a factory.

**Time-to-Market:** reflects the speed and lead times associated with getting products to market – from design to the production floor to customers.

**Vendor Managed Inventory (VMI):** a system that allows manufacturers to account for inventory in their distributor's locations. VMI also lets manufacturers access product consumption data from distributors, allowing them to replenish products as needed and gain more insight into inventory levels to provide better responses.