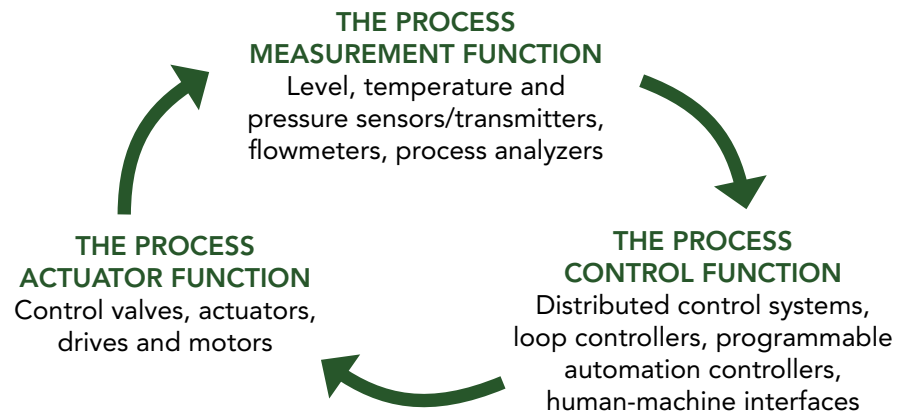
THE PROCESS AUTOMATION MARKET

The end-use market *Control* serves includes the classically defined process industries—chemicals, oil and gas, food, paper, plastics, metals, and textiles—as well as power generation and water/wastewater treatment utilities. Engineering design firms and systems integrators, which play an increasingly important role in the process industries' capital spending decisions, also are represented.

Our stated editorial mission is to serve the information needs of engineering, operations and management personnel whose job it is to design, commission, maintain and optimize the process industries' significant and growing investment in automation technology.

Key product categories include instrumentation for measuring "the big four" primary process variables—flow, level, temperature and pressure—as well as devices for measuring and transmitting other physical properties such as vibration, density and weight. Process analyzers designed to infer the chemical composition of process streams or ambient gas analyzers for detecting the presence of noxious gases also play a primary role in many process industries.

The Process Control Loop



Process vs. Discrete Manufacturing

Because of the fundamental differences in what they produce, there are fundamental differences between process plants and discrete manufacturing factories. And these differences are reflected in the types of instruments and control systems each requires.

- The Process Industries convert raw materials such as crude petroleum, wood chips and iron ore into finished materials such as gasoline, paper and steel. The emphasis is on continuous or batch mixing, reaction and separation of materials to produce other materials of higher value. Chemical reactions often are involved, and the materials often are changed on a fundamental level.
- The Discrete Manufacturing Industries, on the other hand, assemble finished components such as transistors, tires and sheet metal into more valuable configurations such as cell phones, cars and file cabinets. The emphasis is on physical manipulation of discrete entities, and the components themselves typically remain unchanged on a fundamental level.

Control valves play a key role because controlling the flow of liquids and gases is central to many process operations. Electric motors and drives, for controlling pump speed or coordinating roller speeds in web applications, also are used extensively.

At the control level, the process industries employ a wide variety of microprocessor-based devices and systems. Purpose-built loop controllers, logic controllers, recorders, graphical displays and other panel instruments for smaller, stand-alone applications complement systems based increasingly on commercial computer and software technology for larger, networked applications.

Software applications for aggregating, visualizing, archiving and integrating process data flows play a central role in managing increasingly complex and interconnected manufacturing and business processes.

Beyond these fundamental process automation functions, a wide variety of infrastructure and peripheral devices are essential. These include housings and enclosures for sheltering electronic devices in often harsh industrial environments, input/output and networking systems for reliable translation and communication of process information, and calibration devices for ensuring accurate, consistent instrument performance. Miles of wire, cable and tubing, together with termination systems and instrument fittings, work to bring everything together.