



Integrated Automation Solution for Powertrain Applications

Simplified architecture and
improved productivity

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Cost-effective management of production

FANUC

**Rockwell
Automation**

Integrating computer numerical controls (CNC) from FANUC and programmable automation controllers (PAC) from Rockwell Automation unites two world-class control environments for a fully integrated automation solution that is based on off-the-shelf standardized products. This allows for easy and cost-effective maintenance and management of production.





Challenges

Today, within a complex system, more sophisticated devices are being used that need to be connected, controlled and have the ability to communicate data over integrated control and information networks. Additionally, these systems need to be integrated across multiple suppliers' machines in continuously shorter project cycles.

To address the market challenges of the increasing complexity of machine systems, new safety and security requirements and the growing importance of information technologies, FANUC America and Rockwell Automation offer a pre-engineered integrated automation solution for powertrain applications. This solution integrates FANUC CNCs and robots to Rockwell Automation cell controllers so manufacturers can more easily manage operations across equipment controlled by the two systems. This provides cost efficiencies, reduced set-up, better part quality, safer work environments, usable manufacturing intelligence and overall increased productivity.

A pre-engineered integrated automation solution for powertrain applications

Benefit

- Reduced start-up time and cost at end user; simplified machining system architecture for end users to specify
- Less system engineering required for a machine tool builder to integrate multiple CNCs and robots with a cell controller, saving cost and time during design and engineering
- Integrated safety network provides simple diagnostics and coordinates machine tools, robots and cells for overall improvements including safety provisions for machining, material handling and guarding
- Improved quality, quantity and usability of manufacturing intelligence; production and machine information is easily transferred to enterprise IT systems enabling better decisionmaking and cost reductions

Solution

- Integrated or standalone solution
- Scalable machining cell controller architecture comprised of multiple FANUC CNCs, robots and Rockwell Automation devices
- Connections to FANUC CNCs and robots are included in Rockwell Automation RSLogix™ 5000 software to quickly configure a control and communication system
- EtherNet/IP is the only network needed to connect the cell controller to CNCs, robots and other devices



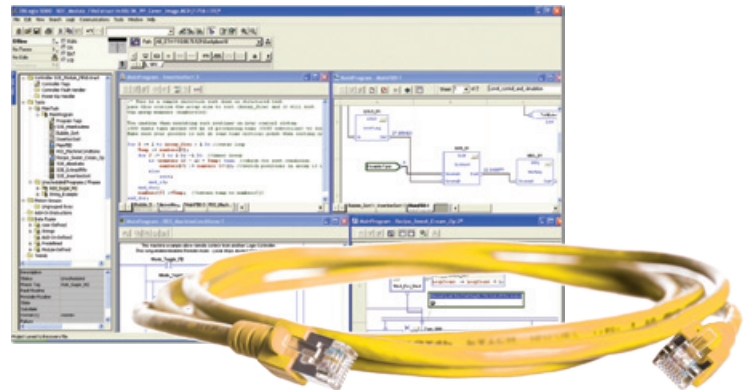
FANUC and Rockwell Automation design complementary solutions based on the Rockwell Automation Integrated Architecture™ with a complete hardware and software suite for your powertrain application. The Integrated Architecture production control and information system can help you improve productivity and reduce costs.

Solution

The FANUC and Rockwell Automation integrated automation powertrain solution provides engineering advantages and cost saving benefits for both end users and machine tool builders.

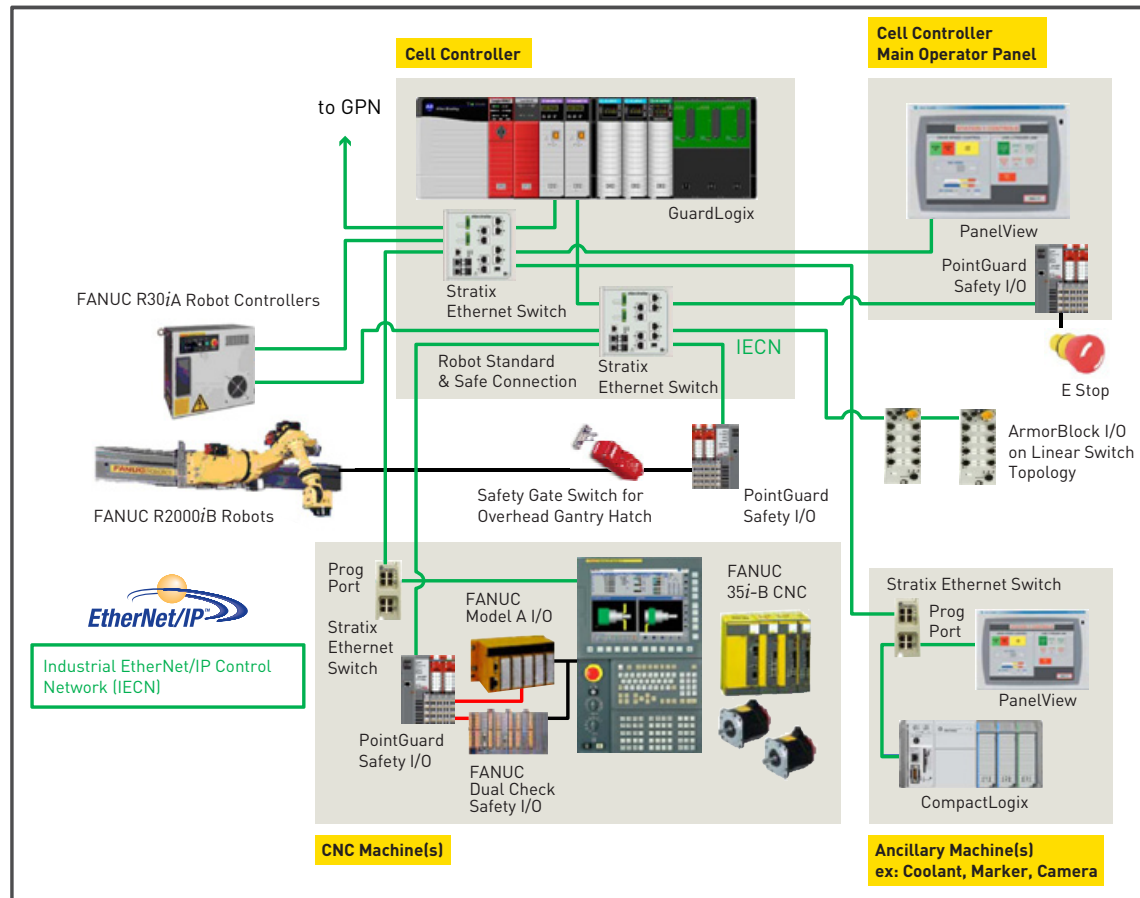
End users will be able to control and collect data from a wide variety of devices over a single industrial Ethernet/IP network. No single vendor makes every device necessary for complex machining, but more suppliers are offering EtherNet/IP connectivity for their machine tool devices and Rockwell Automation has pre-developed logic instructions and HMI faceplates for many of them. Even machine safety guarding and control is handled on the same EtherNet/IP network as standard I/O and data collection traffic. By using a common network topology, valuable machine status and part production data is available anywhere on the machining cell, plant floor and enterprise without the complexity and expense of custom engineered networking hardware and software. With pre-engineered integration between the CNCs, robots and the cell controller, end users minimize the time specifying these connections and then reviewing each machine builder's work for compliance.

Machine tool builders will benefit from reduced engineering time and cost savings with one network and one programming environment. Rockwell Automation RSLogix 5000 programming software has pre-defined connection profiles for FANUC CNCs and robots that can be quickly loaded. The programmer can simply choose a FANUC device by name from the connection menu and begin writing the application program; the integration work is already done. Benefits include: machine control programs become simpler to develop and troubleshoot; machine safety is in the same cell controller; operator diagnostic messages can be embedded; and data collection and reporting can use the same systems. Additionally, sending part data to IT systems becomes much easier with RSLogix 5000 exclusive tag-based addressing. Part information from the machining operations can go directly to IT servers, eliminating the need to collect it into a cumbersome memory map format. In fact, larger volumes of data can be transferred in a simple array.



Typical architectures

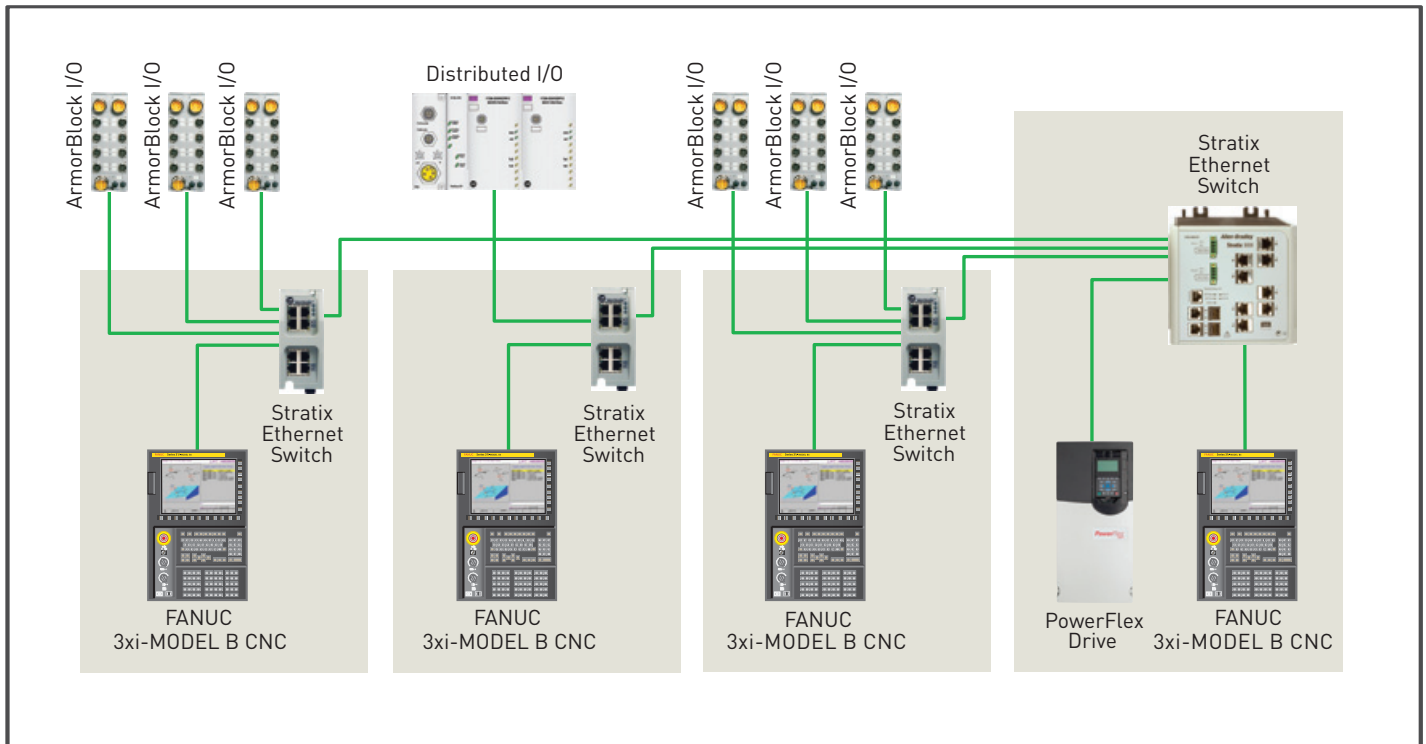
Integrated solution



- Allen-Bradley Programmable Automation Controller (PAC)
- FANUC CNCs
- FANUC robots
- EtherNet/IP network
- SIL 3 integration with modular Safety I/O
- PAC and CNC information available on Rockwell Automation HMI
- Simplified CNC and robot integration with RSLogix 5000 Add-on Profile (AOP) jointly developed by FANUC and Rockwell Automation

An integrated solution is ideal for a machining cell controller architecture comprised of several FANUC CNCs cutting parts and FANUC robots handling the loading and unloading. These architectures typically include coolant and chip removal systems, debur and wash machines, test operations, part marking, identification and inspections stations and more. Common connectivity to EtherNet/IP makes engineering and managing all of this integration much more simple, especially with those devices that are already profiled in the RSLogix programming software. This solution is very scalable, allowing you to choose the devices you need. Take advantage of the pre-developed tools and preferred integration to reduce engineering time.

Standalone solution



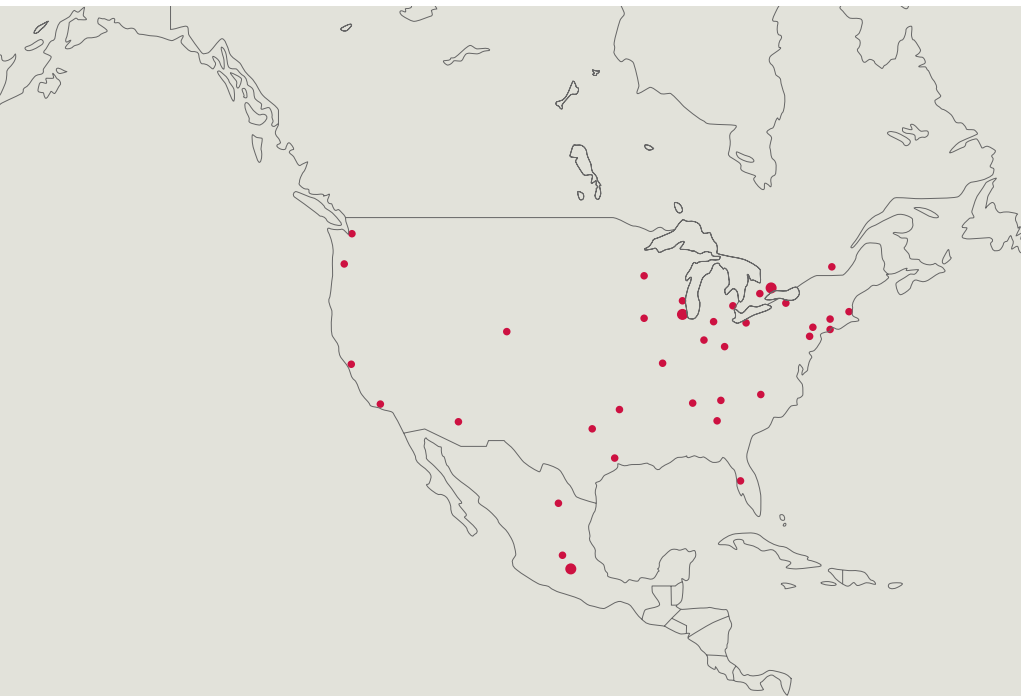
- FANUC CNCs
- Rockwell Automation I/O and devices controlled by FANUC CNC over EtherNet/IP
- Optional Rockwell Automation HMI for machine status and diagnostics

A standalone solution is ideal for lower volume/higher product mix applications where complete integration with PACs is not required. This solution is scalable to an integrated solution with minimal engineering effort.

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