Patti Perspective

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Greetings!

Fall brings lots of changes. The weather is geting colder, colorful leaves are falling, the days are getting shorter, and Football is in full swing.

This month we are looking at the evolution of technology and how the lines have blurred between the Programmable Logic Controller (PLC) and Distributed Control Systems (DCS), and what that may mean to your business. We will take a closer look Siemens SIMATIC PCS 7 and evaluate if you can really consider it a true DCS.

We always love your feedback. Let us know if there is a specific automation topic you are interested in or if you have comments on what we have covered here.

Thank you for your interest in Patti Engineering!

Best regards,

Georgia H. Whalen

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DCS vs PLC
Siemens SIMATIC PCS 7 - Is it a true DCS?

With the advancement of the microprocessor and automation technology, the lines have blurred between the Programmable Logic Controller (PLC) and Distributed Control Systems (DCS). It is more challenging than ever for process manufacturers to select the best technology for their application.

With most discrete automation applications, the PLC is the heart of the system. It contains the logic to move the products through the machining or assembly line. The PLC can handle high-speed applications that require scan rates of 10 milliseconds or less, including operations involving motion control, high-speed interlocking, or control of motors and drives. Fast scan rates are necessary to

be able to effectively control these devices. The Human Machine Interface (HMI) provides the operator with supplemental information or exception data.

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In process automation where the environment can be volatile and dangerous and where operators can't see the actual product, the HMI is considered the heart of the system. It provides a window into the process and operators play a more active role utilizing the HMI to monitor and control the process. The DCS is not designed to handle high-speed applications like the PLC can. The regulatory control loops normally scan in the 100 to 500 millisecond range. To have the control logic execute faster could cause excessive wear on final control elements such as valves, resulting in premature maintenance and process issues.

PLC's high level programming languages allow for creating custom logic. The PLC comes with an extensive variety of functions and elemental building blocks that can be custom developed and chained together. Creation of the custom code from scratch allows for integration of functions and products into a seamless architecture.

A traditional DCS does not have PLC like flexibility. The traditional DCS has pre-engineered solutions consisting of standards, templates, and extensive libraries "out-of-the-box". A DCS trades unlimited functionality and customization for repeatability and dependability. The system is expected to function as a complete solution with standard functions.

The PLC has flexibility and open architecture whereas the DCS has an intuitive programming platform, which utilizes predefined and pretested functions to save time and drive repeatability. The PLC's ladder logic is best for discrete control applications. The DCS's function block diagram is preferred for continuous control and implementing alarming schemes.

If your application would be best served using both PLC and DCS you may need a process control system for hybrid applications. In the old days if you chose to go with a DCS you were locked into that company and the flexibility of integration of the PLC open architecture world was not an option. Not true today, as we look at the Siemens SIMATIC PCS 7.

Siemens SIMATIC PCS 7 is more than a DCS, it gives you both PLC and DCS functionality. The open architecture of SIMATIC PCS 7 process control system enables full integration of all the automation systems in your plant: process, batch, discrete and safety, and all the field devices; instrumentation, analytics, motors, drives, and safety into a single platform, with common tools for engineering, visualization, and facility-wide asset and maintenance management.

The PCS7 platform is essentially software extensions for the Siemens S7-400 PLC and Siemens HMI running WinCC. These software extensions come in the form of function libraries and software tools that are used to create a high level software solution that when compiled runs on the same hardware platform as a traditional PLC. The controller software and HMI software are closely integrated and much of the HMI functionality is automatically generated based on the content of the controller program.

From a development standpoint, there is an extensive and comprehensive software library that is used to develop the overall software solution. Very little, if any, lower level programming is required. Development time is reduced because of the software library and the fact that much of the HMI functionality is automatically generated. From a safety standpoint, hardware and software redundancy is fully supported by PCS7.

The standardization of much of the control logic may reduce the time/cost of a new engineer picking up an existing project and understanding it. There could be significant cost savings from systems with heavy redundancy or duplicate hardware and process.

PCS7 was developed specifically for process control applications. The PCS7 is not used in place of a PLC, but it is a tool or programming method for using a PLC. A PLC is still used in conjunction with the process control system, but PCS7 is used to build the control software and interrelations. PCS7 is more likely to replace a system HMI than the PLC. PCS7 uses Win CC to provide a SCADA solution for supervisory control and the acquisition of data for a process environment. In general the types of projects you would use PCS7 would be Chemical, Energy, Utilities, Food and Beverage, and Pharmaceutical.

As a Siemens Solution Partner, Patti Engineering has the expertise to help you evaluate the automation technologies available to help you determine the best solution for your business to operate at peak efficiency. The right solution can make all the difference to your return on investment and bottom line profits.

Patti Engineering
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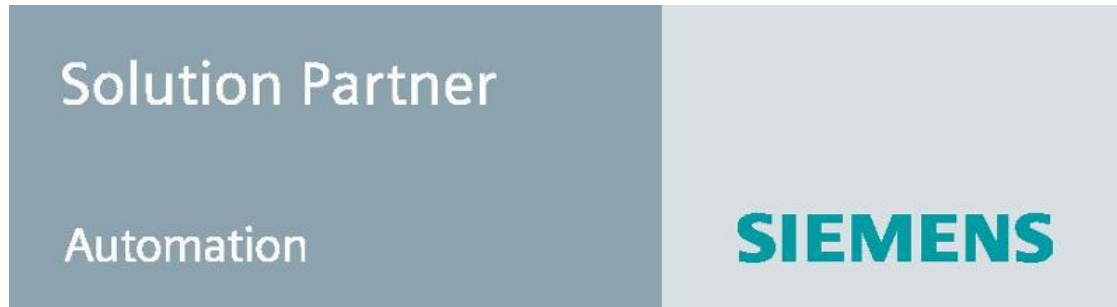
Patti Personnel - Georgia H. Whalen

Georgia H. Whalen

As the Director of Marketing at Patti Engineering, Georgia is dedicated to communicating the unique contribution, value and strengths Patti Engineering brings to their customers and partners as a control systems integrator. Georgia plans and executes all of our marketing activities including traditional marketing initiatives and inbound marketing initiatives using the web and social media. In describing her role at Patti Engineering, Georgia noted, "I am proud to be part of a dynamic company whose management and engineering team strives to embrace their strengths and prides themselves on bringing real value in terms of talent, dedication and commitment to their partners and clients."

Georgia earned her degree in Business Administration with a concentration in Marketing from Susquehanna University in Selinsgrove, Pennsylvania. Prior to joining Patti Engineering in the fall of 2009, she worked with a number of fortune 500 companies, including Kraft and Nestle in a sales and marketing capacity. In addition to marketing responsibilities here at Patti Engineering, Georgia also leads the marketing efforts for our sister company LEID Products (www.LEIDProducts.com). LEID Products offers biometric and controlled access systems for the

secure storage and tracking of weapons, evidence, intellectual property (data), and pharmaceuticals.

Georgia and her husband Scott have three children, Scottie, Caroline, and Brendon. Georgia enjoys watching her children play sports, coaching middle school field hockey, oil painting, running, skiing, boating and spending time at Newfound Lake with family and friends.

Georgia & Scott

Brendon, Scottie & Caroline

Family dog 'Marshal'

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