

High Level application with SYSTEM302

Characteristics:

- Use of OPC standard as integration standard
- Use of plant floor data to enable manufacturing intelligence
- External application to maximize the economic performance of your plant
- Auto Tuning for smooth operation
- Modelbased predictive controller (MPC) for Advanced Controls

SMAR SYSTEM302 control system integration with 3rd party software is easily achieved due to its high openness to industrial automation market standards for integration networks, such as OPC, HSE, DNP3 and Modbus. Such protocols are compatible with most of the applications, providing reliable data exchange between plant floor and corporate network.

Moreover, data collected by control system shall be also available in an open database format, such as MS-SQL, so data mining techniques can be used to obtain valuable management information from data generated on plant floor.

SYSTEM302 scalable architecture allows plant managers to size it according to organizational strategic needs. Small architectures can directly deploy real-time data directly on OPC to other applications, or raw data can be logged on dedicated redundant data servers, where other applications can be connected using open relational database techniques.

Manufacturers recognize that each and every process provides a vital link to real-time data for the enterprise as a whole, which is especially critical with the move towards Real-time Performance Management (RPM) that uses dynamic performance targets to drive an enterprise to its optimum potential and competitive advantage. This is leading manufacturers toward real-time-based solutions at the manufacturing and enterprise level, a category known as Manufacturing Intelligence, which is an indispensable component of Collaborative Production Management systems.

Manufacturing Intelligence provides a common basis for using manufacturing information from the plant floor to enterprise systems and business partners.

Supporting the enterprise's information and visualization require-

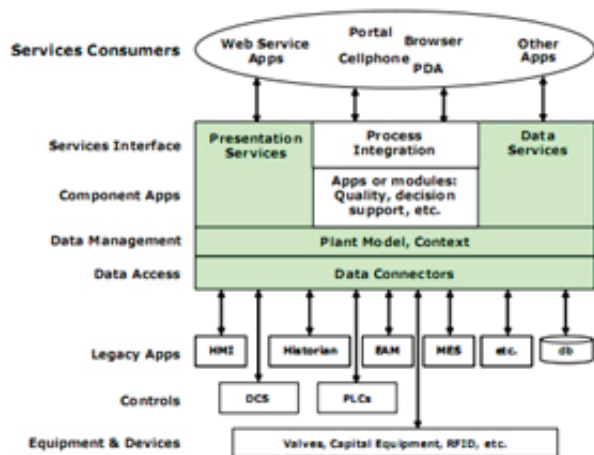
ments goes beyond HMI. This places new demands on Manufacturing Management Systems, where MES (Manufacturing Execution Systems) and PIMS (Process Information Management Systems) are the most know systems, and typically requires the coordination of disparate sources and platforms, where easy integration of different parts is vital.

Manufacturers also recognize that connectivity of each and every process is essential for an enterprise to achieve Operational Excellence. Fact-based analysis drives consensus and Improvement, which is impossible without the real-time connectivity of both enterprise Systems and the plant floor.

To address this, products such as BizViz .NET suite of real-time performance management and manufacturing intelligence products are designed to bridge the gap between manufacturing and corporate business information systems.

The core of BizViz suite is in its data-mining and Web portal technologies, with FrameWorX providing an underlining unified foundation for all common functionalities. BizViz is completely written from the ground up using C#, Microsoft .NET, Windows 2003 Server, and SharePoint technology integration.

The BizViz suite enables the bridging of real-time industrial or corporate databases. Integrated information from different data sources includes Microsoft SQL Server, Oracle, SAP, OPC HDA (Historical Data Access), OPC AE (Alarm and Events), and OPC real-time information. The BizViz suite provides downtime analysis, KPIs, and OEE through manufacturing portals and digital dashboards.



Manufacturing Intelligence Connects to Plant Data Sources, Establishes the Context, Serves Up Information to People, Applications, and Processes, and Enables Performance Solutions

Manufacturing Intelligence provides the foundation for manufacturers to run their business using an RPM strategy from the bottom up. As a plant-centered enterprise component, Manufacturing Intelligence should tap into all operational areas, including production, planning, quality, engineering, maintenance, asset management, inventory, and materials management applications.

These solutions typically scale to work across multiple plants and locations. Benefits can include higher levels of production, better asset utilization, reduced production cost, improved local decision-making, and improved service to customers.

A role-based, personalized view of this information is available to distributed users through a portal, Web browser, or wireless device. Plant managers, operators, manufacturing executives, process engineers, IT professionals, maintenance personnel and business partners need to see the plant and production information they need to make the best decisions in real time with current data.

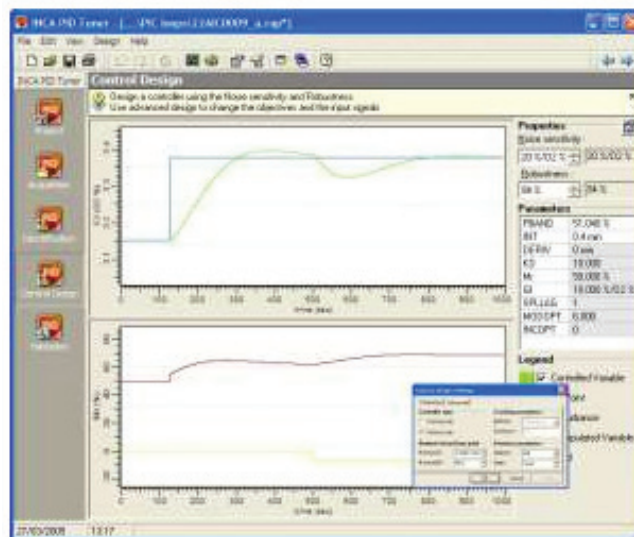
To address this, BizViz is based on Microsoft's SharePoint Server .NET technology. It allows users to create and manage custom manufacturing and business portals along with visualization dashboards that provide single sign-on and collaboration for optimization of Key Performance Indicators (KPIs). It provides tools to create a portal for real-time, historical plant and business information.

OPC integration can also be used to interface control system with expert systems, such as Auto Tuning software and MPC (Model-based Predictive Controllers).

Some functions on control systems rely on complex mathematical calculations, so PLC and DCS most times does not have proper hardware do deal with it. In such cases, it is desirable that some Process Data is sent to computers with higher processing power, so these machines can perform calculations and leave results available for any interested node on the network.

Advanced Process Control (APC) is undoubtedly the control phi-

losophy of the future. However, currently about 95% of all controllers in the process industry are still of the PID-type, simply because they are so easy to implement in a DCS or PLC. Consequently, even if you have installed an APC (Advanced Process Control) system, it will continue to act on the plant via the underlying PID control loops. You therefore need to have your PID loops optimally tuned, which is where an Auto Tuning software can be handy.



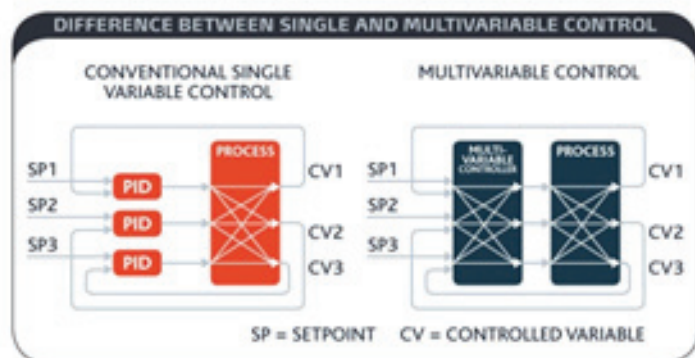
Auto Tuning software can be very useful in a process plant for some reasons, as:

- Increase plant stability and safety: PID Tuner offers you stable operation in all operating points.
- Earn more money: Companies can gain more money simply by fine-tuning their primary loops.
- Cut back on downtime: PID Tuner takes into account the wear of actuators during the fine-tuning process, allowing you to find a balance between plant performance and actuator wear. And less actuator use means less downtime.
- Reduce energy consumption: Oscillating processes consume more energy than stable systems.
- Get a grip on raw material consumption: PID Tuner reduces the use of raw material.
- Ensure better quality control: A better controlled process means less blending.
- Reduce manual operation: In many plants about 30% of control loops are manual, so plant operators have to spend too much time keeping the plant running.
- Reduce transition times between operating points.

The process industry is facing more intense competition and increased pressure to cut costs. The imperative is to reduce cycle times, keep tied-up capital to a minimum, improve quality and optimize processes. MPC is a modelbased predictive controller that allows companies to reduce fluctuations in process variables, minimize scrap and increase throughput. It enables companies to leverage real flexibility and efficiency gains from their processes.

Main advantages of a MPC are:

- Multivariable controller: Takes maximum advantage of the interaction of all relevant process variables.



- Model-based: Handles complex plant dynamics, including long dead times and non-minimum phase behavior.
- Constraint handling: Explicit inclusion of plant constraints on relevant process variables.
- Hierarchical and weighted optimization: Supports complex operation and process management strategies.
- Predictive: Early correction of disturbances. Compensate for outside temperature variations or feed variations before their influence becomes felt.
- As SYSTEM302 is based on Open Standards, integration with several protocols and external software is easy, especially for those based on OPC technology.

Integration Method	SYSTEM302 Availability
Modbus-TCP/IP	Yes
Modbus-RTU	Yes
DNP3 serial	Yes
DNP3 TCP/UDP	Yes
OPC support	Yes
Foundation Fieldbus HSE	Yes
Foundation Fieldbus HI	Yes
Profibus	Yes
DeviceNet	Yes
AS-i Bus	Yes
Foundation Fieldbus HSE	Yes
OPC support	Yes

Software Tools	SYSTEM302 Integration
PID Auto Tuning	Yes
MPC	Yes
Batch	Yes
Performance Monitoring	Yes
MES	Yes
PIMS	Yes
Leak Detection	Yes

For additional information please contact us.