

Soft Automation News

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With RSSql, Plant Data and Enterprise Software Work as One

By Brandon Ekberg, RSSql Product Manager, Rockwell Software

It's only natural that much of today's information technology discussion focuses on databases. This is not to say that the debates over hardware, networks, and operating systems is over, but when you get right down to it, what good is the computer or the network without a place to store, share, and retrieve data? Most forward-looking manufacturing firms have recognized that the factory floor is a vital producer of data for running the rest of the company. Likewise, the plant floor needs to feed on data that is generated by other parts of the firm in order to be part of an end-to-end integrated enterprise.

In the manufacturing world, whether in process or discrete applications, people want and need a bi-directional link to bridge the gap between the control system and the enterprise database system. Until now, a "brick wall" has separated the plant floor and Information Systems departments. However, a secure, bi-directional link between these two environments now exists, allowing the manipulation of accurate

and timely data. RSSql Version 2.0 is that link and provides guaranteed data delivery, including closing the loop between the PLC and the database. This level of reliability has never before been obtained, and the result is a true control system-to-enterprise link.

Today there are many databases, or Enterprise-level transaction managers that are used everyday to link multiple databases together to act as one. They coordinate multiple actions and ensure the

reliability of the entire "transaction" between the different databases. RSSql works in much the same way, except instead of linking multiple database systems, it links the controls systems to the database.

The bi-directional capabilities of RSSql Version 2.0 allow it to send data both up to the relational database and down to the plant floor. Take for example an automotive air-bag inflator manufacturer that needs to maintain complete documentation on every product it makes. RSSql sends the relational database a message

With RSSql's bi-directional functionalities, the user can get validation back from the controller that the data is safe in the database.



CONTENTS

Cover Story

- Linking the enterprise with RSSql

Product News

- ControlPak
- RSView32 AOA
- RSLogix 5000

Viewpoint

- Open Software

Applications

- Regional Application Story

Events/Seminars

- See what's happening around the globe



Bringing Together Leading Brands in Industrial Automation

telling it an assembly operation was performed. It also sends a message from the database back to the plant floor confirming that the inflator is Ok'd to move onto the next operation. Or in the case of BMW, RSSql is used as a "traffic cop" to store and retrieve in-process auto bodies based upon the needs of the manufacturing scheduling system.

With RSSql's bi-directional functionalities, the user can get validation back from the controller that the data is safe in the database or to directly query the database for information and write results to the controller.



BMW uses RSSql to store and retrieve cars based on their scheduling system.

Another key strength of RSSql Version 2.0 is its scalable architecture. As your system grows, you still have the ease of use provided by a single intuitive interface into the entire system.

RSSql Version 2.0 is a distributed, scaleable application for use on a single PC or for distribution over an entire enterprise. Centralized configuration and operation help simplify administration even in highly complex system architectures, and additional computing resources can be added as the need for transaction processing power increases. The package has four primary components. The Graphical User Interface provides the means to link your shop floor to your database, while letting you configure and operate the RSSql Version 2.0 system. The real work, however, is done by three NT services.

The Transaction Manager, the brains of the system, executes transactions, while controlling the collection, manipulation and

storage of data. The Control Connection is the interface to the process control system. RSSql's connections for RSLinx and RSView32 are tightly integrated with RSSql and RSLogix to provide the level of interoperability you expect. The Control Connection also supports connections to AdvancedDDE servers and OPC servers. The Enterprise Connection is the interface to the relational database management system. RSSql includes Enterprise Connections for ODBC-compliant databases including Microsoft SQL Server, Sybase, Informix and Oracle. A new native connection to Oracle, called the Oracle Callable Interface (OCI) provides the fastest way to connect to the Oracle engine or its remote client connection, SQL*Net. It stores data and acts as a bi-directional connection to the database. While the Enterprise Connection services run on NT, RSSql can connect to databases on many operating systems including UNIX, OpenVMS and AS-400. The ODBC drivers provided by the database vendors can connect across TCP/IP-based networks to most remote databases.

Whether your solution requires a simple link to support logging of data to a database or a bi-directional super highway to tightly link the world of Control to the world of Data, RSSql's flexible architecture can meet your needs. **EN**

Additional functionality to be included in RSSql soon:

- **Support for OPC using generic OPC servers, RSView32, and RSLinx.**
- **Support for integrated RSWho for navigation of Rockwell Automation networks.**
- **Support for OLE-DB, the native interface for SQL Server 7.0.**
- **A new Verify function, which checks all transactions for validity and reports on possible configuration problems.**
- **A new Report function, which provides a detailed analysis of a RSSql configuration.**
- **A new Configuration checklist helps you get RSSql up and running for the first time.**

Product News

Rockwell Software ControlPak

An Integrated Software Solution for Development of Advanced PC-Based Control Applications



The Rockwell Software ControlPak™ solution is an integrated development and runtime environment that offers customizable tools for building advanced PC-based control systems. ControlPak is also an important element within the Rockwell Software

SoftAutomation solutions strategy, focused on developing open integrated software solutions for control and integration with the rest of the enterprise.

ControlPak takes the best of Allen-Bradley control and Rockwell Software development tools and combined them with Microsoft technologies to create a complete open systems architecture for PC-based control.

Some of ControlPak's features include:

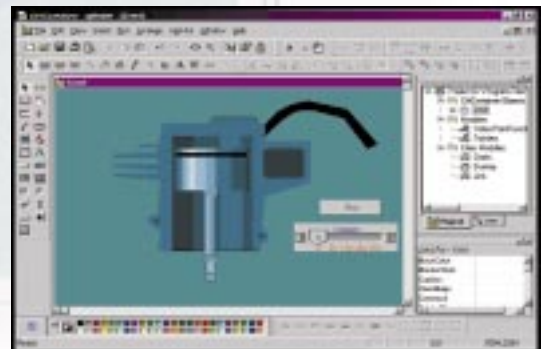
Soft Control Engine: This SoftLogix control engine runs on Windows NT(r), and is upwardly compatible with I/O, networks and application software developed for Allen-Bradley controllers.

Network Support and Open Connectivity Options: Native ControlNet(tm) and DeviceNet(tm) I/O systems support provide users with a greater selection of flexible I/O devices and superior I/O update speed.

Control Language Editors: RSLogix SL5, a new control language editor for the SoftLogix 5, combines in one package: advanced ladder logic, IEC-compatible structured text and sequential function chart (SFC) language editing tools.

Open Systems Technologies and CtrlContainer: ControlPak is built using open system technologies from Microsoft, including COM™, ActiveX controls and Visual Basic for Applications (VBA).

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RSLogix 5000 Programming Software

To Improve Programming, Support, and Diagnostic Capabilities of the ControlLogix System

RSLogix 5000 is a Windows NT and Windows 95/98-based programming software package for the Logix5000 processors. The RSLogix 5000 programming package is the next addition to the RSLogix family of 32-bit programming

packages designed for Microsoft's 32-bit operating systems. RSLogix 5000 supports the Allen-Bradley ControlLogix architecture and Logix5550 processor. Based on IEC1131-3 standards, RSLogix 5000 includes advanced controller features



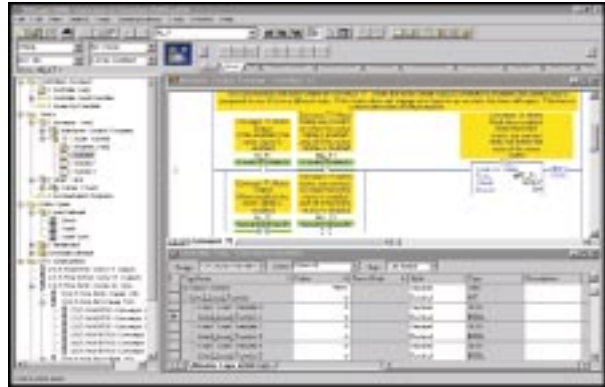
such as custom user-defined structures and symbolic addressing to provide the flexibility needed for complex applications. The software also includes motion tools which provide a highly integrated motion and logic solution.

RSLogix 5000 can also re-use existing PLC-5 and SLC 500 projects.

The primary features included in this release include: program upload merge and application database, forcing of I/O, operand comment creation, intelligent search and replace, CSV database

import/export and programmatic access to the processor clock.

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RSView32 Add-On Architecture (AOA)

Expands Functionality and Interoperability



RSView32 has now been enhanced with the introduction of Add-On Architecture (AOA). The AOA features expand the visualization capabilities of RSView32 by embedding TrendX, RecipePro, and statistical process control (SPC) features directly into the soft-

ware without altering any core components of the HMI, allowing customers to use these features only when they are required for an application.

With AOA technology, powerful features, enhancements and extensions can be quickly deployed. Some of these features include:

The RSView32 TrendX add-on, based on AOA architecture, is an ActiveX control for monitoring real-time and historical process data. TrendX also provides a strip chart recorder display as it collects data. With TrendX, users can plot variables against each other (x-y plotting), add or delete pens during runtime and change pen colors, markers, and axis scaling during runtime.

The RSView32 Recipe Pro add-on, also based on the AOA

architecture, provides enhanced recipe management features. Users can create multiple recipe project files in each RSView32 project and configure multiple recipe files, each containing sets of RSView32 tags and sets of data.

The Statistical Process Control (SPC) add-on extends the functionality of RSView32 by providing real-time SPC analysis. With RSView32 SPC, users can configure multiple SPC products each with its own characteristics. EN



For more information on these or other RSI products, visit www.software.rockwell.com.

ViewPoints

Open Systems in Software

When we ask software users around the world if open systems are important to them, the answer is always yes, but their definitions of open differ a lot, from "plug and play" to a strict adherence to a standard. Opinions vary within the enterprise as well. A plant supervisor might define it differently compared with the vice president of Marketing.

To really understand openness from a software perspective, you need to take a look at the underlying technology enablers that create the environment for open applications and tools.

A few years ago, Microsoft began developing open products - products that exposed their properties to each other. The company's earliest "open" development began with OLE and ActiveX controls. ActiveX became a standard for integrated technologies that enables software components, written in different languages, to work together in networked environments. ActiveX helped make it easier to integrate a system by using different components from different vendors. Since then, we've seen several additional enablers for open systems. The Component Object Model and the distributed version allow for better sharing of resources in a distributed computing environment.

The OLE for Process Control (OPC) Foundation, a group of the industry's leading manufacturing software suppliers, developed a



set of specifications designed to provide seamless, open, enterprise-wide communications between systems and devices,

from plant floor to MIS and beyond. The widespread adoption of the OPC specification will reduce the cost and quality hurdles of multiple proprietary servers, drivers and interfaces needed in the past.

Instead of applying software that only allows for connection to proprietary databases, many users are utilizing tools that allow connections to any database. Rockwell Software RSSql, for instance, allows a user to integrate his or her Human Machine Interface (HMI) software with virtually any ODBC-compliant database, allowing for more flexibility and ease of use.

Visual Basic for Applications (VBA), Microsoft's integrated development environment, allows not only for customization of the off-the-shelf application you're using, but also better



integration with other software using VBA. Rockwell Software RSView32 was the first industrial Human Machine Interface to integrate VBA, which provided its users with much more flexibility and interoperability. ControlPak also includes a feature which allows a graphical interface to be programmed and customized using VBA providing a sense of "openness" for that user.

Several factors go into choosing the right software for your unique needs: performance, ease of use, life cycle cost, flexibility, reliability, ability to upgrade. All of these would describe "open" in its finest sense, and as the customers demand more, this presents that customer with the ability to extend their reach - and develop customized software solutions. **EN**

Applications

Kwikset uses RSSql on Assembly Operations

Kwikset Corporation, a Black & Decker company, is the largest manufacturer of residential locksets in the US. Its use of PLC, PC, and software technologies demonstrate the value of integrating the plant floor with the rest of the enterprise.



Kwikset uses RSSql for bi-directional communication via Ethernet between engines and a SQL database.

The company's newest facility in Waynesboro, Georgia, US, has a data acquisition system called OPTIMIS (Online Performance Tracking and Improvement Information System) linked by Rockwell Software acquisition software, HMI software and the Allen-Bradley SoftLogix5 software-based controller. The system allows plant and office floor access to real-time data from any of the facility's manufacturing operations - ensuring accurate production tracking, enhanced machine downtime analysis capabilities and, ultimately, a better quality product.

"Our goal was to put a new manufacturing culture in place for Kwikset," explained Chris Werner, Kwikset Corporation plant manager. "The focus of the new site was on process integration, automation where it made sense, and on developing a data

acquisition system driven by performance of the process."

When the Waynesboro facility first started production in January 1997, the installed control system consisted of a mix of more than 70 Allen-Bradley programmable controllers on the plant floor linked via three established network lines. To collect trend data, shift supervisors would manually gather figures such as parts in and out, downtime, and part efficiency from each individual machine. The information wasn't real-time and couldn't always be considered accurate or up-to-date. Machine data wouldn't be unavailable until 24 hours later, during which time problems were missed, and scrap or downtime could build.

One of the first tasks at the new facility was to team Kwikset's information systems specialist, Karla Gibson, with the plant's control engineer, Leslie Cooper. Together, they set three goals for the new data acquisition system - Kwikset wanted immediate access to data from the plant floor, they wanted a system that could simply integrate with the existing one, and they wanted to be sure staff could easily adapt with minor training.

"As a new facility, we started out in an experimentation mode, looking at a series of options starting with which operating system to adopt," explained Gibson. "We looked at our needs from an IS standpoint, in terms of the flexibility we wanted, the data we might need, and how we would want to use it."

At the same time, Cooper considered needs from a controls standpoint. "Reliability is a top priority for us in controls," he said. "Each discrete assembly operation hinges on the success of several others, so we couldn't sacrifice reliability for the sake of information sharing."

Putting both controls and information needs together, Kwikset chose to base the OPTIMIS system on Microsoft Windows NT.

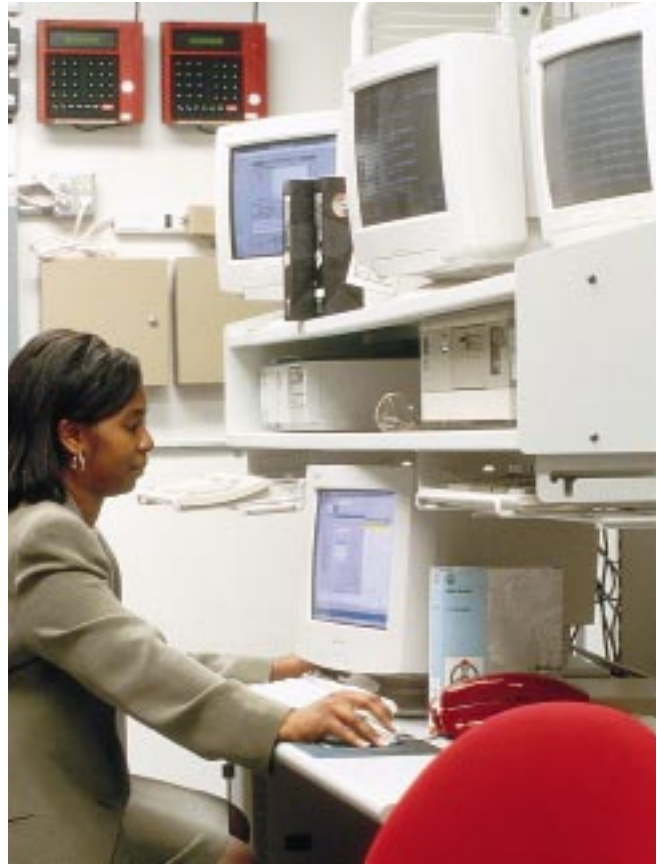
Working with ICE Engineering Group, who helped assemble the new data architecture, Kwikset identified five priority data pieces they hoped to immediately glean from the system on a machine-by-machine and system-wide level.

Englewood Electrical Supply worked with ICE Engineering to install three Allen-Bradley SoftLogix5 systems to serve as supervisory controllers. Because it runs on standard Windows NT, SoftLogix 5 was easily integrated into the system. "We insisted on a software-based controller that ran on standard Windows NT because we wanted assurance that it would integrate with our existing environment," said Leslie Cooper, the plant's control engineer.

With SoftLogix 5, Kwikset leverages the information handling capabilities inherent with PC-based control by using it as the system supervisor - the three SoftLogix engines handle the normal data polling of plant floor controllers, then supply that data to a Microsoft SQL Server(tm) database using Rockwell Software RSSql™ transaction manager and Rockwell Software's RSView 32™ man-machine interface software. This data sharing allows requests for information like uptime, downtime, and parts in and out, to be handled from the information level, rather than needing to go out through the gateway to the PLC and potentially clogging the network.

Rockwell Software's RSSql is used for efficient bi-directional communication via Ethernet between the engines and the Microsoft SQL Server database. It allows for communication from and to the engines so that information can be recorded only when needed - for example, at the end of a shift or when production type changes. This allows only qualified data to be stored, reducing the overall database size and increasing the speed of queries. In fact, data gathered per day at Kwikset went from tens of thousands of records down to about 200 records.

Kwikset extended their RSView32 to the RSView32 Active Display System, a client/server software package to round out the system's functionality, and provide a powerful yet user-friendly interface to allow access to production area-specific information. Supervisors and operators can access real-time data



on a machine-by-machine basis, speeding the process of problem identification to solution.

Kwikset's staff has easily adapted to the familiar NT system. This together with OPTIMIS and Rockwell Automation products from Rockwell Software and Allen Bradley has helped Kwikset's Waynesboro facility break the rules in terms of most new plants, by breaking even in its first year. **EN**

To read more application stories, visit:
www.software.rockwell.com/navigation.solutions.

World Events and Seminars

2nd. Annual Soft Automation Awards Contest

Showcase your application and WIN some outstanding prizes. Look for application forms and rules & regulations on the Rockwell Software homepage, or e-mail a request to awards@software.rockwell.com

What's Happening in...

Latin America:

Software Blitzes: These are one-day seminars for anyone in the industry and include product presentations, lunch with a Microsoft guest speaker, and hands-on-lab sessions. These seminars are free of charge. For more information contact your local Rockwell Automation / Allen Bradley Distributor or Henry Petersen at (787) 834-0161 or henry.petersen@software.rockwell.com

Upcoming Schedule for Software Blitzes:

Apr.	6 - 9	Chile (Tentative)
Apr.	19 - 23	Mexico
May	17 - 18	Ecuador
May	20 - 21	Peru

Please direct comments or contributions regarding Soft Automation Newsletter to:
softautomation@software.rockwell.com

North America:

IMS EXPO 1999: International Manufacturing Software EXPO Orlando, Florida. April 26-29. For more information visit www.isa.org/imsexpo/index.html

Europe:

Portugal: Endiel Trade Show- This Bi-annual trade show focuses on the electric, electronic, and automation industries. Date: May 26-30.

Spain: In the months of April or May, offices throughout Spain will be hosting presentations for RSVIEW32 and RSVIEW32 Active Display System focusing on the new features of this product.

European DNA/RNA Events

Rockwell Automation is teaming with Microsoft to stage events that showcase DNA/RNA for manufacturing. The events being held across Europe will include a Microsoft presentation called "The Digital Nervous System for the Industry." Rockwell Software will highlight its RNA for manufacturing and provide a presentation on SAP connectivity with a customer on hand to provide a real-life case of a DNA application.

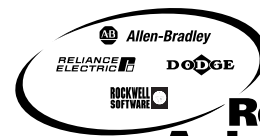
For more information about any of these events contact your local Allen-Bradley/Rockwell Automation office.

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