MatrikonOPC

With or without you?

OPC connectivity is finally integrating the Honeywell DCS into the rest of our plant's operation

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If the Process Control vendor world was one great big outdoor rock concert, Honeywell would have to be U2. Both are absolutely huge and supremely confident, almost everyone is familiar with their line-up, most people take a liking to them, but not everyone cares for their bold strut or their particular brand of politics. The enduring parallel between the two, however, is that both redefine themselves through constant innovation to stay relevant within rapidly changing industries.

U2 has created ground-breaking music over a generation, while Honeywell has engineered exceptional control systems for decades. The flip side of this popularity is that for all of the positives of Honeywell's popular DCS, their hardware tends to get along with other vendor's hardware about as well as Bono gets along with the World Trade Organization. Thankfully, in the past year, a solution has emerged for tightly integrating the Honeywell DCS into a broader control architecture. Matrikon OPC Server connectivity now provides the link for those who 'still haven't found what we're looking for'.

The prominence of the Honeywell DCS is one of the enduring success stories of the Worldwide process control industry. From its earliest days of closed loop controllers through to the more organized circa-1970's TDC 2000 which evolved into the TotalPlant Solution (TPS)/TDC 3000 and beyond with the introduction of Experion PKS in the past few years, Honeywell hardware is the cornerstone of control strategy for as many as 13,000 industrial sites around the world. With the Experion system, Honeywell has proven that they can create a robust, scalable, universal connectivity platform using OPC. Their connectivity legacy is another matter all together.

Throughout its life cycle, the complexity of Honeywell DCS hardware has been a double-edged sword. On the one hand, it was so all encompassing and self contained that it was capable of performing a wide array of tasks extremely well without outside interference. On the other hand, because it wanted to go it alone, other control systems running in a plant could not interact with it very well. Integrating separate control hardware and software assets with a Honeywell system became a frustratingly futile exercise.

SHE MOVES IN MYSTERIOUS WAYS

The Honeywell TDC 3000 and its predecessor the TDC 2000 were a distributed control system made up of a wild herd of component modules. An array of VMS boxes, Network interface modules, Hiway gateways, distributed databases, AxM application modules and other flavours of UNIX-driven Universal Stations dotted its hardware landscape.

Each component was a proprietary black box that did not give up its secrets easily. All of them floated around on a nebulous, proprietary backbone called the Local Control Network (LCN), which was off limits to any external connections. When Windows began to emerge as a universal computing platform, the controlling software migrated to PCs in the form of Global User Stations (GUS), which were no less mysterious. Each of these new GUS machines powered by Windows NT and then Windows 2000 housed Honeywell software and a specialized communication card to hook them into the LCN. Honeywell placed strict controls on what could be run on the GUS and how the LCN could be accessed, with offenders facing daunting penalties for any violations along the way.

As engineers worked with the assortment of DCSs of that era, they came to realize that as good as any of them were on their own, there was no single, independent system that could do everything a plant required. As companies began selecting best-of-breed applications external to the DCS, the broadened control structure had to be a lot more flexible in the way that it shared information. In any given refinery, chemical plant or mine site, completely unrelated vendors could be selected for PLCs, Historians, Alarm Systems, Advanced Control, Planning and Scheduling, Safety Systems, Loop Tuning and any other control task under the sun. In an era when multinational corporations acquired more and more sites with wildly differing control systems and management structures, the demand was that all of these systems must work together without ripping out hardware they had already paid good money for.

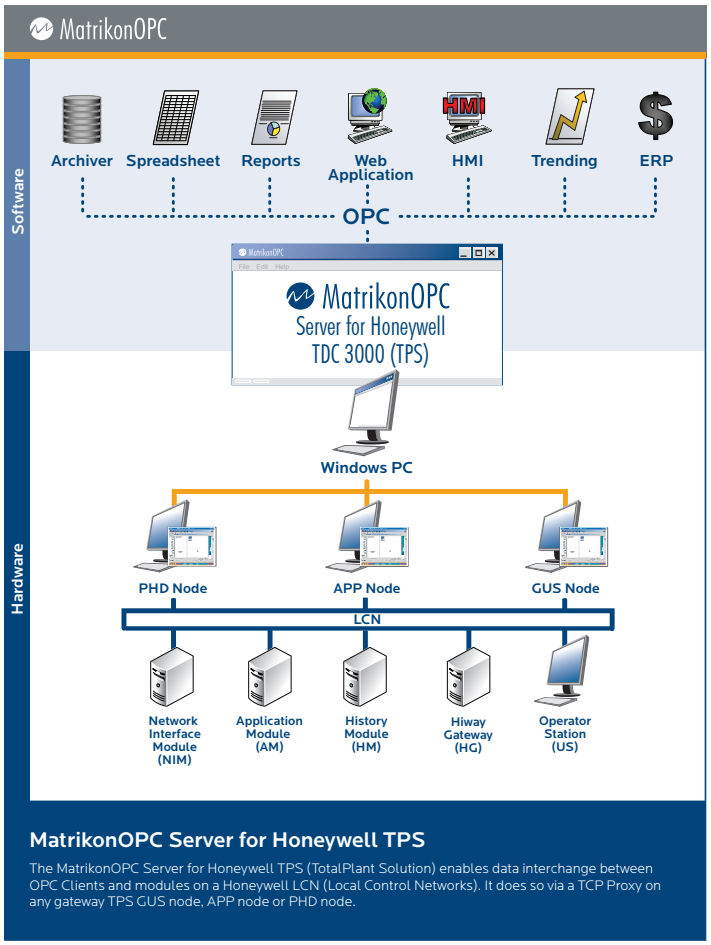
Along the way, people began asking their control system vendors why all of these systems couldn't interoperate as a unified system to streamline a plant-wide operation. When this control technology revolution began giving power to the people who demanded productivity through interconnectivity, Honeywell acquiesced by offering a TPS Server on a Honeywell Application Processing Platform. This offered a tantalizingly limited view into the machinations of the TDC 3000 world below. The trickle of information did little to establish a platform for integrated optimization or create a base for informed business decisions.

EVEN BETTER THAN THE REAL THING

In the last year, a Matrikon OPC solution has emerged that has enabled the Honeywell DCS to take its rightful place as the cornerstone of a unified plant control structure. The universal connectivity of the OPC communication standard has become the de-facto answer to the question of moving data between control hardware and software applications. Once a hardware system is fitted with a properly written, optimized, and standards-compliant OPC Server deployed using proper engineering practices, the myriad of applications that boast OPC Client connectivity have the DCS data at their finger tips, ready to be accessed. Having standard and open communication to the Honeywell hardware has opened a whole new realm of improved functionality.

There are a number of reasons why the Matrikon OPC Server for TotalPlant Solution (TPS) is emerging as the communication standard of choice for the TDC 3000. When a site uses the Matrikon OPC Server connected to the Honeywell GUS, all of the strange proprietary wirings, single paths of failure, museum piece computers and weird network cards go away.

The site can operate its Honeywell communication on the plant network: a stable, speedy, well known Ethernet base. It brings with it the full benefit of pre-installed firewalls, redundant Ethernet cards, redundant networks and can dictate access using Windows authentication.



MatrikonOPC Server for Honeywell TPS

The MatrikonOPC Server for Honeywell TPS (TotalPlant Solution) enables data interchange between OPC Clients and modules on a Honeywell LCN (Local Control Networks). It does so via a TCP Proxy on any gateway TPS GUS node, APP node or PHD node.

Using Windows security as opposed to a number of aging UNIX access methods, the system can lock down its access permissions, keeping the system safely under an engineering group's control. In addition, established IT tools from people like HP and Cisco can be used to monitor network traffic, and there are a number of utilities to make sure that the Windows PCs have a manageable load and redundancy through clustering and redundant hardware. Systems that were installed 10 years ago can now have all the benefits that exist in the most up-to-date systems.

IT'S A BEAUTIFUL DAY

By opening the doors to the closed system through universal OPC Server connectivity, companies have already seen the benefits of this information availability.

When a chemical processing facility in Malaysia noticed an abnormally high failure rate and unscheduled down time with their continuous distillation equipment, they purchased an analysis package with the aim of providing rationalization of the large volume of alarms they were seeing. A reliable connection was required to their Honeywell DCS where the alarms and events were held.

The Matrikon OPC Server for Honeywell TPS was employed to provide access to those alarms which

already existed in the DCS. Once that information path was established and the system began providing real benefits, they looked around to other areas that they could also improve.

An enterprise historian was providing real-time event management, retrieval and deep archiving of their volumes of data. The data was used for scalable management of relevant variables and events. Because the process historian resided on a separate network from the plant process control network, archiving TDC 3000 data had always been a frustrating exercise that required reading data through an archaic VAX collector. Using the new OPC communication capability, the Ethernet network domains were securely bridged, allowing the historian to make safe and encrypted reads into the DCS.

At a large mine site in Australia, two coal washing areas in a preparation plant were each being controlled by a Honeywell LCN. When a decision was made to unite the information of the areas to increase the accuracy of raw material inventory calculations, a solution was sought out to establish that connection. The data sharing needed to be accomplished without a complicated equipment change. The site engineers were loathe to add another chunk of communication hardware or additional computers to a system that was stable and in production.

The site chose two Matrikon OPC Servers for TPS and an OPC Data Manager to provide secure read and write access between the two. The applications were run on existing computers and handled the complete data transfer without any adverse effects on loading. In addition, a number of benefits, both expected and unexpected, were realized.

The tags in the OPC Servers on both LCNs did not need to be configured manually. The tag database was configured automatically using the existing Honeywell tag configuration service. This updated whenever either of the TDC 3000 LCN databases changed. Beyond the technical economies, the standardized OPC communication also provided visibility at the site management level. A selection of TDC 3000 data could be accessed by the Process Information Network through existing firewalls using OPC Tunnelling technology.

The result was that planning and scheduling activities that had previously been done by a slow, painstakingly manual exercise could be automated and populated with real-time DCS data. The savings to the organization was significant, and all of it was done by leveraging the control systems that the mine site already had.

We've seen rock bands and process control systems come and go. The best of both tend to survive by adapting and improving over time to stay relevant. U2 stays popular by updating their sound so that it attracts new fans and keeps their old fans happy with their consistent quality. Good control hardware vendors need to change with the times too, and must take care of their old customers while bringing in new ones.

By opening up the Honeywell DCS with OPC, it can be augmented with all of the new OPC-enabled historians, web clients, ERP, security and advanced process control applications available out there, extending the life of hardware already in production. In both cases, it's sweet music to the ears.

ABOUT THE AUTHOR

Bob Erickson, is a Senior OPC Solution Architect and electrical Engineer who manages the MatrikonOPC Asia-Pacific business Unit.

Bob is an electrical engineer with a control systems background and has worked at Matrikon for over 5 years within the OPC department. Bob started the OPC division in Australia and has worked with many companies to ensure that they have solid OPC communication infrastructures.

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ABOUT MATRIKONOPC

(a division of Matrikon Inc. [TSX:MTK])
With a collection of more than 500 OPC products and over 100,000 installations worldwide, Matrikon is the world's largest OPC company. MatrikonOPC is a charter member of the OPC Foundation, and has demonstrated a commitment to developing OPC as the industrial connectivity standard.

Matrikon's OPC international customer base includes a wide range of companies from process to discrete manufacturers in industrial, commercial and military applications. With offices throughout North America, Australia, Europe and the Middle East, Matrikon's reach is global. Visit our site at www.MatrikonOPC.com.

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