

Yamatake DCS Life Extension Program

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Summary

Yamatake recently briefed ARC about the company's new program designed to enable users of the large number of legacy TDC 2000 distributed control systems installed and still operating in plants around the world to extend the useful life of their existing systems. The program includes both

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migration and modernization services and modernized electronics cards that retain the existing form factors and preserve valuable intellectual property, a key requirement in many industries.

The program objective is to provide these end users with additional options to the often costly and disruptive system migration or replacement approaches. According to a Yamatake executive, the

company's new program represents the first phase of a complete system support roadmap. The company designed the program to help DCS users protect their existing investments, avoid obsolescence, increase reliability, and take some of the time pressure off having to make decisions relative to ultimate DCS platform migration.

Migration, Replacement, or Life Extension?

Yamatake in Japan and Honeywell in the US introduced TDC 2000, arguably the world's first modern DCS, in 1975. While control system technology has evolved considerably in the interim, many thousands of the original TDC 2000 and evolutionary TDC 3000 systems are still installed and controlling industrial processes in plants around the world. This is especially true in the petroleum refining and petrochemicals industries. Many of these systems have been in operation for 25 years or more and, clearly, are beginning to show their age in terms of system reliability, "repairability," capability, and performance. The resulting combination of system-related production downtime, high repair costs, and lost opportunity costs can have a significant impact on a plant's bottom line. For most plants, this



creates an unsustainable situation; one that needs to be addressed sooner, rather than later.

But what to do about it? As ARC has written about extensively in the past, DCS migration can be extremely expensive and disruptive to operations, especially if multiple plants are involved. Available options include phased migration to a new system (either from the same supplier or one of its worthy competitors) or a total system replacement. Both approaches have their

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pros and cons, but both require careful consideration and planning to minimize costs, minimize disruptions, minimize engineering and training requirements, and ensure that the solution will be long lived, so the company doesn't have to face the same dilemma again in five to ten years.

Furthermore, compared to today's state-of-the-art systems, with legacy systems, it was often difficult to implement advanced control, production management, and asset management capabilities. They

also tended to be difficult to interface to enterprise-level business systems due to their inherently proprietary nature. Implementing these important capabilities represented a significant investment that many companies would prefer to preserve.

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With its new DCS life extension program, Yamatake offers a third option: a technology refresh for existing TDC 2000/3000 systems designed to address the most pressing reliability, performance, and support issues in a cost-effective manner and with minimal disruptions, while preserving much of the existing investment in hardware enclosures, field wiring, software, and intellectual property. Perhaps most importantly, with automation technology progressing at such a rapid pace today, this option provides owner-operators with an opportunity to observe these developments from the

“sidelines,” without having to commit to any particular platform until they absolutely are ready to do so.

Updated Electronics Will Plug into Existing TDC Racks

Electronic design has progressed significantly since TDC 2000 was first introduced in 1975. Unlike the analog electronic cards of the past, today’s digital electronic modules pack considerably more processing power, are more reliable, consume far less electricity, and – thanks to firmware and jumpers – can assume a variety of different “personalities,” significantly reducing the number of different modules required for any given system.

As part of its DCS life extension program, Yamatake has begun to offer newly designed electronics and analog I/O cards that utilize advanced components and circuit designs to reduce both the number of components on the card (to enhance reliability) and the number of different cards required (to reduce spare parts requirements). Compared to the original TDC 2000 electronics cards, the newly designed electronics will improve performance and reduce electrical requirements to a significant degree. However, since the basic form factor remains the same, the redesigned cards will slide right into the slots in users’ existing TDC 2000 system enclosures.

While the original TDC cards are no longer supported, Yamatake will offer a 15-year manufacturing guarantee after inception and 10 years of additional support after manufacturing completion for the redesigned cards. The company has also established a repair policy, including complete overhaul to the components level.

Yamatake’s new cards for TDC 2000 systems include a new, drift-free Versatile Regulator Card (VREG) that replaces nine older model numbers and is more than 85 percent efficient (compared to 70 percent efficient for the original voltage regulator cards). The company began shipping VREGs late in 2010 and has already shipped several thousand to customers around the world.

The company also plans to begin shipping a new Integrated Common Electronics (ICE) card early in 2012. This single card, which will replace 44 different cards in eight box types, uses 70 percent less electricity than the cards it will replace, allowing cabinets to stay cooler.

Specific Solution Based on Customer Requirements

According to Yamatake, the company will work with TDC 2000 users around the world to develop and implement a DCS life extension plan that best meets the specific requirements of their plant or plants, including considerations for long-range system migration planning, if needed. Depending on user requirements, this could just involve replacing hardware, or could include additional technical and consulting support, including site audits, upfront engineering, and long-term maintenance and spare parts support.

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According to Yamatake, the company finalized its first contract with a large global energy company last year. This 15-year contract includes not only hardware replacement and technical support, but also TDC2000 training for operators and engineers, plus guaranteed spare parts replacement.

Program Provides Yet Another Option for TDC 2000 Users

Due to the interesting historical relationship between Yamatake and Honeywell in which Yamatake established its own manufacturing capability for the original TDC 2000 system within the former Yamatake-Honeywell joint venture and shares ownership of some key intellectual property, Yamatake is in a unique position to provide TDC 2000/3000 users with a DCS life extension program. Clearly, while this will just represent an interim solution for most owner-operators, it does provide them with a practical option for maintaining the viability of their installed DCSs into the immediate future, without necessarily having to engage in a capital system migration or wholesale system replacement project. For other users, particularly those who want to avoid the cost and disruptions associated with automation system replacements and preserve their IP investments; this could represent a longer-term solution.

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