NOVEMBER/DECEMBER 2014 | VOL.67 NO.10

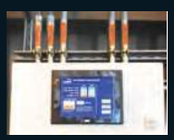
www.pacetoday.com.au

PACE

PROCESS & CONTROL ENGINEERING

PACE ZENITH AWARDS 2015

INSIDE PACE



Integration
Micro PLCs control massive doors at airplane hangar

Motors
How to benefit from VSD electric motors

Maintenance
Extract value by implementing asset optimisation

Benefits of adaptive process control

PACE
PROCESS & CONTROL ENGINEERING

Publisher: Martin Sinclair
Email: martin.sinclair@cirrusmedia.com.au

Editor: Kevin Gomez
Tel: (02) 8484 0976
Fax: (02) 8484 0722
Email: kevin.gomez@cirrusmedia.com.au

Group Sales Manager: Tim Richards
Tel: (02) 8484 0829
Mobile: 0420 550 799
Email: tim.richards@cirrusmedia.com.au

QLD Sales Manager: Sharon R. Amos
PO Box 3136, Bracken Ridge, QLD 4017
Tel: (07) 3261 8857
Fax: (07) 3261 8347
Mobile: 0417 072 625
Email: sharon.amos@cirrusmedia.com.au

Graphic Designer: Dave Ashley
Email: david.ashley@cirrusmedia.com.au

Production Co-ordinator: Tracy Engle
Tel: (02) 8484 0707
Fax: (02) 8484 0722
Email: tracy.engle@cirrusmedia.com.au

MIX
Paper from responsible sources
FSC® C017685

SUBSCRIPTION: $99 pa incl GST
OVERSEAS SUBSCRIPTIONS:
NZ: $A109 pa & OS: $A119 pa

CUSTOMER SERVICE: 1300 360 126

CIRRUS MEDIA

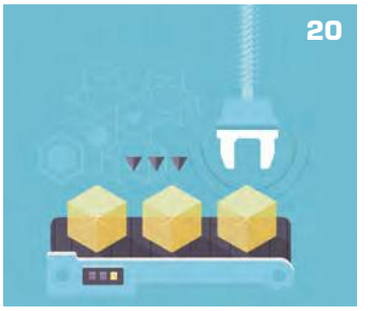
Cirrus Media
Tower 2, Level 3, 475 Victoria Ave,
Chatswood, NSW 2067, Australia
Locked Bag 4700,
Chatswood Delivery Centre,
NSW 2067, Australia
Phone: 02 8484 0888
Fax: 02 8484 0633
ABN 80 132 719 861
ISSN 1329-6221
www.cirrusmedia.com.au

OFFICIAL MAGAZINE OF:
PI Australia
PROFIBUS • PROFINET

cab CIRCULATIONS AUDIT BOARD

Average Net Distribution
Period ending Sept '14
5,725

IN THIS ISSUE



ON THE COVER

Switch to Adaptive Process Control delivers benefits

APC engineers need to exert tighter control of operations to squeeze out more production at lower cost from complex and demanding processes. Standard APC applications are typically built with an underlying assumption that the as-built model developed by the engineer will always be accurate and properly structured.

However, as process plant performance and economic objectives change, this may cease to be the case as the behaviour of the process changes over time. The causes for these changes could be normal equipment wear and tear, fouling, a reduction in operator experience, resulting in additional pressure on the engineers to keep the plant operating optimally.

Qenos has realised the limitations of conventional APC and committed to upgrade to the new Adaptive Process Control environment.

(*See page 8*)

Qenos makes a step change

In seeking greater plant optimisation and a greater return on investment, Qenos moved from an Advanced Process Control centric strategy to an adaptive process control environment with Aspen DMC3 software.

QENOS, Australia's leading manufacturer of polyethylene (PE), is focused on increasing commitment to further plant optimisation, reduced pressure on skilled operators and a greater return on investment for all stakeholders.

This is made possible with the upgrade from an Advanced Process Control (APC) centric strategy to the adoption of an adaptive process control environment with AspenTech's new Aspen DMC3 software.

According to Richard Wawrzon, Process Engineering and Control Team Leader, at the Qenos Altona plant, "There are that many disturbance variables in a typical refinery or chemical plant, such as changing environmental conditions (temperature, humidity), changing product demand, changing feedstock composition, and more, that it is virtually impossible to drive the process at optimum productivity without the use of an advanced process control tool such as AspenTech's DMCplus."

Wawrzon reiterated that, "Optimising a process plant often requires the operators to drive the process variables close to the plant equipment limits which can result in process instability. Operators are expected to operate away from plant alarms, and possible shut down, due to the shutdown cost, inconsistency of product quality, and loss of reputation."

"But the bottom-line is that conventional APC has limitations that make meeting the new challenges unsustainable over the long term," he added.

Today, APC engineers need to exert even tighter control of operations in order to squeeze out more production at lower cost from complex and demanding processes. Standard APC applications are typically built with an underlying assumption that the as-built model developed by the engineer will always be accurate and properly structured.

However, as process plant performance and economic objectives change, this may cease to be the case as the behaviour of the process changes over time. The causes for these changes could be normal equipment wear and tear, fouling, and a reduction in operator skills and experience, resulting in additional pressure on the engineers to keep the plant operating at optimum performance.

Understanding these issues, Qenos has realised the limitations of conventional APC and committed to upgrade from AspenTech's DMCplus to the new Adaptive Process Control environment, Aspen DMC3.

According to Peter Caro, Director at AspenTech Australia, "Qenos has been an active user of DMCplus for many years, and we believe that this latest upgrade to DMC3 will release further opportunities to optimise the service factor and increase profitability for all stakeholders."

Qenos, contributes more than $1 billion a year to the local economy, employs over 750 people, and has operations in Melbourne and Sydney. The Qenos Altona site was originally part of the Altona Chemical Complex which was established in the early 1960s and is the largest production centre for petrochemicals and plastics in Australia.

Their products support a range of industries, including food packaging, water conservation, waste management, mining and agriculture, and they also supply a diverse range of specialty polymers.

Richard Wawrzon (L) along with an operator, analyse the impact of recent process variable adjustments.

Conventional Advanced Process Control

At Qenos, as in most chemical plants, it is mission critical to operate the plants safely and prevent disruptions to production, but at the same time to optimise operations to stay competitive and maximise profit. Change occurs every minute as feedstock composition and ambient conditions alter. Each change that occurs has an effect and the aim is to control and manage the variables to achieve the quality and the amount of product that is required. Only if they know the predicted behaviour of the plant can the operators counteract on time to keep the plant at the optimal target.

Plant operators are not in a position to manually react to such changes and conduct corrective actions on a minute-by-minute basis and in an optimal way. APC gives manufacturers, like Qenos, the solution to solve these issues since the software automatically improves operational efficiency, maximises process profitability and business competitiveness. It reduces cost, maintenance time and disruption through real-time asset optimisation, delivering improved visibility and decision support.

Advanced Process Control (APC) has been a crucial innovation for process industries in the past few years, delivering the necessary plant

optimisations – pushing through-put to the maximum while saving energy costs, meeting operational constraints, addressing the depleting skilled operator pool, increasing plant utilisation, and, in fact, maximising plant profitability.

For more than 20 years AspenTech's Aspen DMCplus has been the industry standard for advanced process control software, although today there are many other versions of APC on the market. DMCplus, a conventional APC, has been Qenos's chosen tool to control and optimise their plants for many years.

Why Adaptive Process Control?

As process plants age, many of the underlying assumptions about the control strategies become redundant, or ineffective. The consequence is reduced efficiency, productivity, and profitability.

Wear and tear, fouling, reduced skills pool, aging workforce, changing financial modelling, are some of the factors that are not considered in the as-built controller setup. Although a controller (PLC, DCS, SCADA) may be accurate enough when implemented, at some point in the future it may not be, so the aim should be to automatically detect this occurrence and correct it on a continuous basis.

When issues with controller model fidelity are detected, the tuning of the controller should also change to mitigate the potential negative impact. So, it is important that the engineer is equipped with valuable insight into process behaviour and understanding of process characteristics.

Now, with a completely redesigned modelling environment and the introduction of AspenTech's Adaptive Process Control, the chemical plant operators have a powerful new tool to manage their operation with greater control that will deliver greater operational profitability. Aspen DMC3 provides a complete range of economic trade-offs for managing step testing and model construction.

Essentially, that eliminates the need to approach APC maintenance as a project, usually requiring a plant shut, and creates a continuous background process of assessing model quality, collecting current data and generating new models as the behaviour of the plant changes over time.

The Adaptive Process Control initiative was born from a need to address the current problems associated with building and maintaining control applications. This smart software can detect, isolate and correct problems without increasing the burden on engineering staff.

The key advantages of Adaptive Process Control, over traditional (sustained value) approaches, are that it incorporates features that ensure the controller model is continually analysed for accuracy, poorly performing areas of the model are identified, non-disruptive background testing collects new process data while the unit is being optimised and new data is monitored in real time and bad data is automatically identified and removed.

By making it easier to generate data, manage step tests and produce results, APC becomes more accessible and efficient. The need to assemble skilled resources to rebuild controllers is significantly reduced and this enables the operators to focus on more added value optimisation.

Richard explained, "There is a crucial difference between the traditional approach to controller maintenance (sustained value) and Adaptive Process Control. With sustained value, revamping the controller is typically carried out as part of a lengthy and costly project, with planned operations disruption. Under Adaptive Process Control, however, the clever controller is modified over time in a background process that is not disruptive to plant operations. Adaptive Process Control improves the service factor and as a consequence, long-term profitability by reducing process variability and allows plants to be operated optimally."

"We know that the implementation of Adaptive Process Control will significantly reduce APC downtime, release our skilled operators to focus on higher value add processes to increase efficiency, create opportunities for operators at all experience levels to get involved without risk to the plant, and drive the plant at even higher levels of productivity and product quality," concluded Richard.

Qenos
www.qenos.com
03 9258 7333

AspenTech
www.aspentech.com
03 9869 7140