

Rio Tinto Alcan Optimizes Production with Honeywell's Advanced Process Control Solutions



“With Honeywell’s Profit Suite advanced control and optimization solutions, Rio Tinto Alcan’s Yarwun refinery was able to ramp up production times, check for constraints during normal operation and continuously optimize performance. Our operator load has also been reduced.”

Rudy Tio, Specialist Advanced Control, Rio Tinto Alcan

Benefits

As the Rio Tinto Alcan (RTA) Yarwun Refinery continues to look for business and operations improvements, the company wanted to find the best possible way to compete and grow with profitable and sustainable results.

To ensure a successful optimization project for its digestion unit, RTA Yarwun commissioned a pilot study to evaluate the effectiveness of installing new advanced control and optimization solutions. In particular, RTA wanted to test Honeywell’s Profit Suite™ solutions and implement Profit® Controller, a multivariable control and optimization application for complex and highly interactive industrial processes.

On its digestion pilot project, RTA Yarwun recognized the following benefits:

- Reduced load on refinery operators
- Optimized production without compromising safety limits
- Faster ramp-up times after pump changes with well-managed constraints
- Effective training enabling engineers to build their own controllers when needed
- Faster and more efficient project execution with a very short project payback



RTA Yarwun completed a pilot project with Honeywell’s Profit Controller, which is designed to help drive optimization and sustain growth.

Background

Rio Tinto Alcan is a leading international mining group headquartered in the UK. RTA combines Rio Tinto plc, a London-listed company, and Rio Tinto Limited, which is listed on the Australian Securities Exchange.

Rio Tinto Alcan’s business is finding, mining and processing mineral resources. Its primary products include aluminium, copper, diamonds, energy (coal and uranium), gold, industrial minerals (borax, titanium dioxide, salt, talc) and iron ore. RTA’s activities span the world but are strongly represented in Australia and North America with significant businesses in South America, Asia, Europe and southern Africa.

The Rio Tinto Alcan Yarwun refinery is situated 10 kilometers northwest of the central Queensland port city of Gladstone, Australia.

The first stage of the refinery has the capacity to provide 1.4 million tons of smelter-grade alumina each year. Alumina is the material used in the smelting process to produce aluminium. The refinery design allows for further expansion, which could see production increased to more than 4 million tons per annum.

Challenge

Rio Tinto Alcan's Yarwun refinery required the latest technologies to help take advantage of its resources and ultimately optimize its business performance.

"We decided that the best way to build our case for an optimization and advanced control solution was to conduct a pilot project on our digestion unit and evaluate any success at the end of that test period," said Rudy Tio, Specialist Advanced Control, Rio Tinto Alcan.

Reasons for the pilot study included the ability to manage the risk of technology introduction, control the change in operating principles and showcase the success of the project – ultimately building refinery acceptance with this one case study.

Solution

In order to meet the pilot study requirements, RTA Yarwun turned to Honeywell, a longstanding partner of Rio Tinto Alcan. Having already installed Honeywell's Experion® Process Knowledge System (PKS) and UniSim® simulation solutions, it was a natural extension to embark on another project with the company.

"Honeywell offered us a very low-risk project plan, and having already established local support and simulation that could be used to help test the success of the project, we opted to once again expand our partnership," said Tio.

More Information

For more information on Honeywell's advanced process control solutions, visit www.honeywell.com/ps or contact your Honeywell account manager.

Automation & Control Solutions

Process Solutions
Honeywell
2500 W. Union Hills Dr.
Phoenix, AZ 85027
Tel: 800-822-7673
www.honeywell.com/ps

Criteria for the pilot case study included:

- Process must be well understood
- Project must demonstrate tangible benefit
- Must be able to handle multiple solution scenarios
- Not complicated with field instrument issues
- Expected high chance of success

Honeywell's Profit Controller is a multivariable control and optimization application for complex and highly interactive industrial processes. The digestion unit at the RTA Yarwun refinery has several control loops that interact. Due to the process design, some responses have an inherent lag, which is difficult to control with normal control schemes. Model predictive control technology, as employed by Honeywell's Profit Controller, is ideally suited to address this issue.

In addition, the panel operators at the Yarwun facility have a high workload due to regular pump changes. They have to monitor and adjust several variables while under pressure to maximize production. With the help of Profit Controller, ramp-up/down after pump changes is completed faster with the same amount of work and less operator intervention.

Profit Controller is an integrated component of Honeywell's Profit Suite. This comprehensive collection of advanced applications delivers solutions that address every aspect of modern process plant operations, from regulatory control to plant-wide optimization. As the foundation of Honeywell's layered optimization approach, Profit Controller provides the base for increasing economic benefits from industrial processes.

"Our project payback period was very short and the benefits are sustainable. We look forward to additional implementations," concluded Tio.

Experion®, UniSim® and Profit® are registered trademarks of Honeywell International Inc. Profit Suite™ is a trademark of Honeywell International Inc.

