

## Alcoa and Honeywell Join Forces to Integrate Global Refineries



“Working with Honeywell under the QUASAR program has enabled Alcoa to consistently exceed all our benefit expectations. What took the combined team five to six years to accomplish would have taken us more than 20 internally. The people are a major factor in the success of this program.”

Dennis Mason, Process Systems Manager, Global Refining, Alcoa Inc.

### Benefits

To achieve significant enhancements in alumina production and raw material efficiencies across its refining business, Alcoa turned to Honeywell to provide standardized process control infrastructure and control solutions across multiple refineries in six countries. The partnership resulted in a strategic program known as Quality Automation Solutions in Alumina Refining (QUASAR). By improving Alcoa's plant efficiency, reducing raw materials consumption and lowering environmental emissions, QUASAR provides Alcoa with a sustainable, competitive advantage.

Key features of the QUASAR program include:

- Improved process performance by leveraging automation technology and combining best practices from each refinery
- Improved plant support through centralized monitoring of the system so Alcoa can analyze and rectify the process control system performance of each refinery from a single center, thus leveraging scarce expert resources
- Reduced downtime with integrated support and maintenance practices through a co-sourced support center
- Rapid deployment at each location by a dedicated implementation team that minimized costs, improved quality and minimized plant interruption
- No disruptions to continuous refinery production during implementation due to strong project management, excellent engineering practices and intensive communication with stakeholders
- Financial funding of the program via a lease, rather than increase capital expenditure, to facilitate approval of the program



Alcoa and Honeywell partnered to deliver business results at refineries around the world.

### Background

Alcoa is the world's leading producer and manager of primary aluminum, fabricated aluminum and alumina facilities, and is active in all major aspects of the industry. Alcoa serves the aerospace, automotive, packaging, building and construction, commercial transportation and industrial markets, bringing design, engineering, production and other capabilities of Alcoa's businesses to customers.

Alcoa also markets consumer brands including Reynolds Wrap<sup>®</sup> foils and plastic wraps, Alcoa<sup>®</sup> wheels and Baco<sup>®</sup> household wraps. Its other businesses include closures, fastening systems, precision castings and electrical distribution systems for cars and trucks. The company has 129,000 employees in 44 countries.

## Challenge

Controlling production in an alumina refinery is a complex task requiring the processing of large volumes of bauxite, caustic soda, lime and other raw materials by large plants to digest the alumina minerals from the bauxite, separate the remaining waste material, re-crystallize and then calcine the hydrate to produce the alumina product. As a world leader in alumina production, Alcoa wanted to take this production process one step further by installing a common process control system and advanced process control applications across its global refineries. This would be supported around the clock by remote monitoring from Phoenix and two support centers in Houston and Perth.

“In order to accomplish this never-before attempted feat, we needed to partner with someone that had the process control product and solutions expertise but also understood the cross-cultural challenges of seven different sites, multiple countries and cultures, and four different languages,” said Dennis Mason, Process Systems Manager, Global Refining, Alcoa Inc.

## Solution

Alcoa not only found a partner in Honeywell but also a company that would take ownership and help develop the QUASAR program. Six years later, the common platform has been successfully established and the shared benefits realized.

“Working with Honeywell under the QUASAR program, the benefits we expected to see were improved alumina production rates, reductions in our raw materials consumption and therefore costs, and increased technology transfer between our refineries,” continued Mason. “We’ve consistently exceeded expectations in those areas.”

QUASAR’s results are in part attributable to sound engineering practices. No production losses, no loss time injuries, no budget overruns and an aggregate customer satisfaction score of 4+ out of 5 meant that this program team met the stringent standards of both Alcoa and Honeywell.

One of the challenges faced by QUASAR was ensuring Alcoa’s IT security policies could be maintained in relation to data access from the process control network and for access for the global support teams. The program results needed to be at the highest level of network security possible considering the interoperability of the resource teams from Alcoa and Honeywell. In 2003, Honeywell and Alcoa jointly developed a sophisticated network management model that satisfied the needs of Alcoa’s security and audit requirements, and data integration needs. It included:

- Virtual private networking to protect the network from the outside world
- Firewalls between the commercial network and the process control network to prevent intrusion to and from the commercial domain
- Trust settings on the process control network to ensure correct authentication for Alcoa and Honeywell users
- Access protocols so that Honeywell can remotely monitor equipment on the process control network and direct site staff to implement changes

The value to Alcoa has been significant. While improvements in alumina production, raw materials usage and environmental emissions have an immediate impact on the bottom line, the ability to integrate reliable process information with the business has enabled the company to take a major step towards establishing global best practice benchmarks in process control.

## For More Information

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