

Rio Tinto Alcan

Case Study

Rio Tinto Alcan has rolled out a RFID solution from Ramp RFID to improve workflow management at the company's Yarwun chemical laboratory.

Background

One of the world's largest producers of bauxite, alumina and aluminium, Rio Tinto Alcan operates a large alumina refinery in Yarwun in Central Queensland. Every day up to 600 plastic bottles containing alumina samples are taken from the refinery for testing at the Yarwun laboratory. The lab runs on a 24 hour rotation system, with containers coming in at scheduled times throughout the day.

Problem

One of the day-to-day challenges for the lab had always been in tracking container arrival times. All too frequently, samples would arrive before or after the scheduled times, creating problems for refinery personnel who need to know when the results of the sample testing will be available. If the lab technicians don't know when the samples arrived, it can be difficult to know when the testing will be completed.

The lack of a process for tracking container drop off times was also making workflow management at the lab something of a chore.

Without a process to track when containers came in, the lab technicians had no reliable way to determine what their workload would be on any given day and how best to handle the workflow. Some days there would be too much work coming in and on other days their resources would be under utilised. What was required were the tools to help the lab balance the workload throughout the day and effectively manage the peaks and troughs.

Solution

To meet the above challenges Rio Tinto Alcan set about finding a technology solution that would capture the times at which containers arrived at the lab to begin the testing process.

Rio Tinto Alcan explored the viability of an RFID-based solution. After assessing various RFID solution providers the company decided to engage Ramp RFID initially for a proof of concept project followed, if successful, by a full implementation.

The RFID solution Ramp developed involves the application of an adhesive backed RFID label tag to each bottle container arriving at the laboratory for processing. A table top RFID reader captures the tag's data which is automatically entered into the laboratory's Laboratory Information Management System (LIMS) database. A text label is also placed on top of each container so that the operator can read it. The tagged container then proceeds to a sign in station where it gets re scanned; that container's ID is matched to its sample type.

Rather than scan one container at a time, Ramp's solution allows for the scanning of multiple containers simultaneously. At the point of processing, batches of tagged container bottles – typically ten to 12 at a time – are placed in a sample rack and scanned all at once.

The data entered into LIMS includes each container's ID, a timestamp indicating its arrival time and identification of the contents of the sample and where in the refinery it came from. Once processing is complete, all testing results are fed into LIMS.

To arrive at an effective RFID solution for the Rio Tinto Alcan Yarwun laboratory Ramp had to overcome a few obstacles along the way. One of these was that when a container came into the lab that was filled up with aluminium ore a high RF signal would be required to read the container's tag. Unless the antennas are run at a high level for the scanning of full containers they may not get recorded. This would produce a situation where other container bottles located near the target containers but not designated for scanning – mainly empty ones which can more easily absorb an RF signal - would also get read.

Working alongside the laboratory's technicians, Ramp's solution was to build a metal enclosure that would isolate the RF signal. After a little trial and error, the solution worked. Only containers that have been placed in the enclosure get picked up by the RFID reader; containers outside the enclosure do not.

Outcome

The Yarwun chemical laboratory's RFID solution has been operational since 2013 and has delivered on its promises.

Lab technicians can now measure their container processing cycle times and deliver on important KPIs. Workflow management has been enhanced and when it comes to reporting to, and advising on, expected turnaround times for container processing, the lab is in a much improved position.

