CUSTOMER CASE STUDY

Talison Lithium Uses AVEVA™ Production Management to Transform its Operational Processes at Greenbushes, Western Australia

Talison Lithium Limited - www.talisonlithium.com
Industry -Mining, Minerals and Metals

Goals

- Shift “institutional knowledge” from a handful of team members to an accessible, real-time database
- Achieve ongoing measurement, analysis and reporting of production losses due to equipment utilization
- Automatically capture production stoppages and rate loss events, affecting product output at the plant level
- Provide the capability to perform root-cause analysis, identify process bottlenecks, enable process improvements and improve KPI logging
- Maximize plant uptime

Solution

- AVEVA Production Management system sourcing historical production data from AVEVA™ Historian
- AVEVA consulting services, project design, implementation, training and support

Challenges

- Achieving the appropriate level of automated data capture at the instrumentation and data collection layers
- Standardizing the Time Usage Model (TUM), equipment types, cause and effect classification model for the crushing, technical grade and chemical grade plants
- Standardizing KPI calculations, enabling consistent calculations across the three plants

Results

- Intuitive end-user experience blends contextual data from plant operators, engineers and metallurgists with historical performance information in a combined interface
- Exposes the process constraints (bottlenecks)
- Provides clear root cause analysis and through moving tags into AVEVA Production Management, the team accelerated analysis process by 50% and improved accuracy using automated digital systems
- AVEVA Production Management reports now form the basis of plant process and maintenance performance KPIs, which are used for daily reporting purposes

About Talison Lithium

Talison Lithium is the largest global supplier of lithium, accounting for nearly one third of the world's lithium supply. Based in Greenbushes, Western Australia, the company has both mining and processing operations. Its processing operations include two plants - a chemical grade plant that produces lithium concentrates used in products such as batteries (rechargeable and non-rechargeable), lubricants, and pharmaceuticals, and a technical grade plant that produces highly refined lithium for use in glass, ceramic, and metallurgic applications.

Over the years, the plants have been upgraded and expanded to increase production and incorporate new technologies, particularly as lithium demand has grown in recent years.

Talison Lithium's operational technology team, led by Chris Milford, contacted AVEVA as part of a broad plant modernization initiative, to streamline operating processes and reduce production losses. This was driven by an increasingly competitive lithium market globally and the need to manage an ageing workforce, with much of the plant information locked away in the minds of the experienced team, who were looking to transition to retirement.

Why Talison needed to improve operational performance

Talison came to AVEVA looking for ways to track and measure operational processes, including understanding the triggers and drivers for processing plant stoppages and under-production, and to accelerate slow running events which were impacting production. In addition, the team wanted to capture additional contextual data from plant operators, engineers and metallurgists in a unified format, as a knowledge base for the mining operations. The net result would be a database that included consolidated data from across the operation, which could deploy analytics to enable process improvements and to measure effectiveness, as well as identifying where bottlenecks exist within the production process.

The real value is when the KPIs are supported with an appropriate time usage model (TUM), and a governing hierarchy that identifies, captures and categorizes opportunities. This then becomes a powerful analysis tool into the specific opportunities that make up the overall improvement gap, and aligns the improvement focus with the constraint of the process for maximum net effect.

The resulting gains and losses could then be analysed by process and metallurgical engineers to determine where productivity improvements could be made to either the physical or process assets as part of a continuous improvement strategy to maximise plant uptime, process recovery and product yields.

Finding the right solution

The team wanted to develop an accounting system to measure production delays and losses, in order to replace a historic, excel-based logging mechanism. The AVEVA team worked with them to develop a proof of concept for their crushing plant, using the leading-edge AVEVA Production Management (formerly Ampla) performance solution which was a natural fit for their requirements. Talison Lithium already had in place AVEVA Historian, which connects natively via its purpose-built connector.

Upon successful completion of the Delay Accounting Loss solution four-month trial period, AVEVA extended the solution to include the Greenbushes technical and chemical plants.

> "The initial trial in our crushing plant worked well, the automatic logging of downtime events reduced data entry errors and relieved operators of the duty."
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> **Chris Milford,**
> Manager Operational Technology

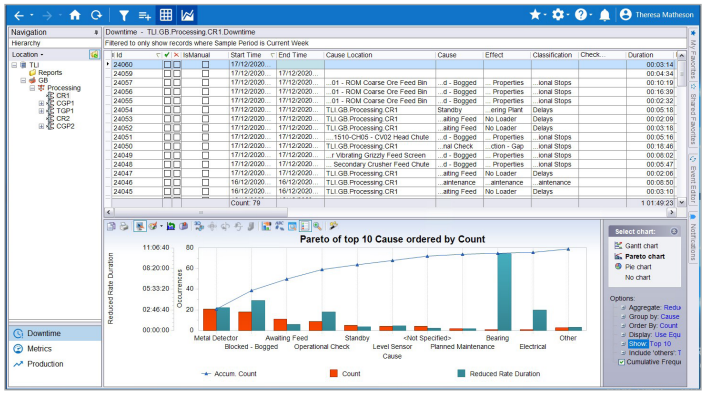
Solution implementation

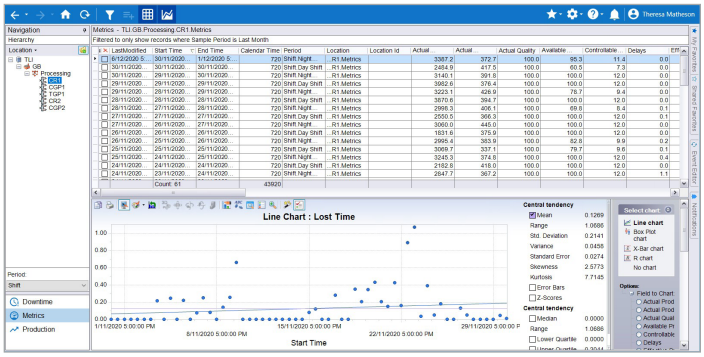
The solution delivered by AVEVA included everything from AVEVA Production Management software, licensing and support, through to business consulting, solution design, implementation services, documentation and user training.

The proof of concept was initially designed to build on to the implemented solution, without having to re-design the crushing plant and the need to disregard the data captured and calculated during the trial period.

The design focus for the entire solution was consistency, simplicity, and standardizing configuration. It used AVEVA Production Management's commercial off-the-shelf functionality, and incorporated Talison Lithium's planned future expansion projects. This included centralizing the standard KPI formulae within the Metrics module, which enabled re-use for the chemical grade and technical grade plants with little complexity.

AVEVA Production Management sources external data from an AVEVA Historian, also implemented at Talison Lithium.





"The two projects, the proof of concept and then the full implementation were a huge success. The project was delivered on time, within budget, working as per the design and acceptance by the end users."

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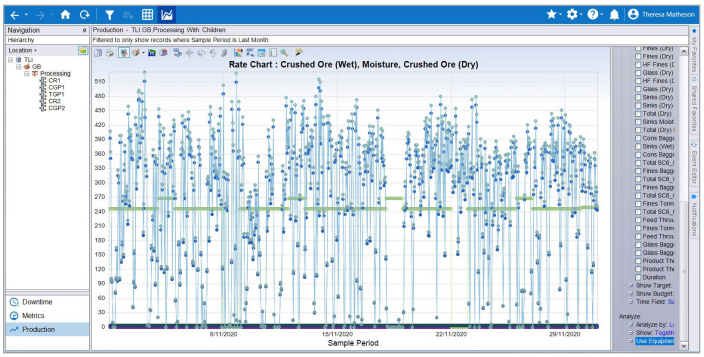
Chris Milford,
Manager – Operational Technology



Delivering information

AVEVA Production Management takes information captured at the instrumentation and data collection layers, and adds contextual data to allow easy comparison of periods of lower than expected performance. The solution provides a systemized method for capturing the causes of loss events and provide context surrounding these events, such as process variables, shift, crew, feed grade, etc.

The visualization layer provided by the application's user interface allows users to easily drill down and determine the root causes, categorizing via Pareto or pie charts, the frequency and duration of all production-related losses.

”The systemized method for capturing the causes of loss events was very useful as our previous system allowed for operators to insert any reason or equipment into the system as an explanation for a downtime event. This resulted in naming conventions, misspellings and approximations causing downtime to be misattributed and problems not given the priority they required, which is no longer an issue.”

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Chris Milford,
Manager – Operational Technology

Results

The AVEVA Production Management solution makes it possible to better understand constraints and the causes for losses, so that strategies can be initiated to improve, or even remove that constraint over time.

Not only does the system capture production losses, it also captures higher than expected performance. All this information becomes invaluable for the metallurgists, process and reliability engineers to diagnose root cause of constraints. The benefits of the solution are:

- Simpler end user experience, which captures additional contextual data from plant operators, engineers and metallurgists in a unified format. Operators can proactively pursue realistic operation targets in near real-time; reducing both the time to resolve problems and the amount of production loss experienced.
- Operators have a better understanding of their process, where the solution assists with minimizing downtime and improving throughput.
- Process constraints and bottlenecks were exposed, allowing key operations people to more effectively target their continuous improvement initiatives. The native drilldown capacity within the user interface allowed users to determine root-cause of any common plant stoppages or under-performing processes within the plant.
- Provides end users visibility to important production and maintenance KPIs such as Plant Availability, Equipment Utilisation, Overall Utilisation, Actual Production Achieved, Overall Equipment Effectiveness (OEE), Mean Time To Repair (MTTR) and Mean Time Between Failures (MTBF).

”AVEVA Production Management (formerly Ampla Operations Management) enabled us to optimize our entire plant performance. By identifying and analysing repeating small downtime events, we could build up a clear view of our daily and weekly performance and identify where we were losing production to delays or asset failures. With a clear view of the failing systems, we were able to identify solutions and swiftly resolve longstanding challenges, moving to secure production and performance of the whole plant.”

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Talison Executive

To learn more, please contact your AVEVA representative or visit us online at aveva.com