SOLUTION CASE STUDY:

The Path to Predictive Maintenance

COSOL

CLIENT	Brisbane Airport Corporation (BAC)
REGION	Asia Pacific
INDUSTRY	Infrastructure and Transport
SOLUTIONS DELIVERED	• Integration of IBM MAS Monitor and Health. • Predictive maintenance planning

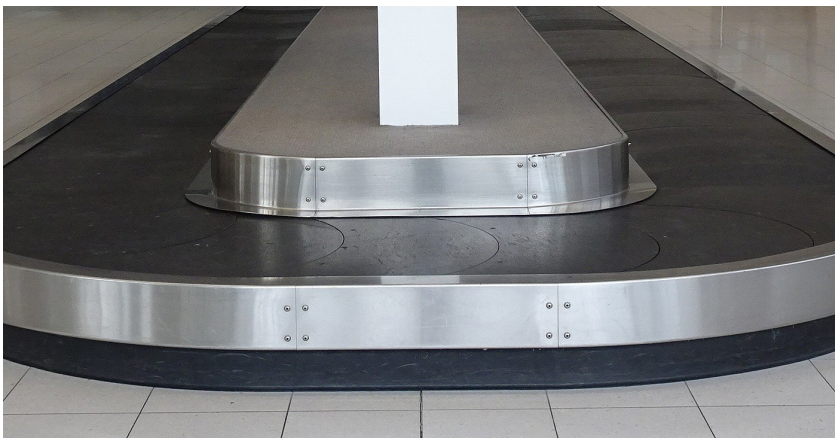
ABOUT BAC

Brisbane Airport Corporation (BAC), the operator of Brisbane Airport (BNE), proudly takes on the challenge of connecting Australia to the rest of the world every day and building a place where our community can work and play.

They are creating Queensland's future, helping employ thousands of people and fostering cultural and economic growth, contributing more than $4 billion annually to the state's economy.

IBM Maximo has been used to maintain Brisbane Airport facilities and passenger management assets since the early 2000s, together with a variety of IoT devices capturing data on asset condition and performance.

BRISBANE AIRPORT AUSTRALIA BNE



THE CLIENT CHALLENGE

An innovative culture coupled with the ongoing impact of the COVID pandemic on domestic and international travel means Brisbane Airport is always alert for opportunities to run its business more efficiently and improve the customer experience. For the Asset Optimisation team, that means looking for ways to achieve more timely and precise maintenance interventions, as well as reducing delays or disruption caused by critical asset outages.

Interest in predictive maintenance to address these challenges is growing rapidly across a range of asset-intensive industries, driven by readily available (and reasonably priced) sensors, higher data availability, increased processing power and emerging advanced-analytics talent. Predictive maintenance refers to data-driven, proactive maintenance methods designed to analyse the condition of equipment and help predict when maintenance should be performed. The goal is to better plan or even avoid downtime, increasing uptime while reducing unnecessary preventive and corrective maintenance costs.

Despire strong growth forecasts over the coming decade, there are still many barriers to successylly implementing a predictive maintenance approach including:

- insufficient, inaccessible, or low quality data.
- inadequate technology, with too few sensors or poor IT infrastructure.
- poor prioritisation, as companies lack a clear view of which assets to include in their predictive maintenance programs.

Brisbane Airport's Asset Optimisation Team were keen to identify how IBM Maximo Application Suite could harness the data already being collected by their existing PLC/SCADA devices as the foundation of a predictive maintenance practice. Although a variety of data streams were available, analysis was completed in many different toolsets, resulting in a fragmented picture of overall asset health, and acting on any insight generated required manual intervention.

A Proof of Concept (PoC) was established to assess the capability, feasibility and potential use cases for IBM Maximo Application Suite (MAS) Health and Monitor as an interim step towards predictive maintenance. Using a single asset class, the project served to validate the value of a consolidated view of performance data in business processes and assess the expected risks and effort required to move forward with a broader scale implementation.

SOLUTION APPROACH

Baggage handling conveyors were selected by the project team as the asset class best suited to addressing the objectives of the project. COSOL established the PoC environment, using:

- **MAS Manage 8.2** - core Maximo functions, asset register and maintenance records
- **MAS Health 8.4** - asset information + asset maintenance + sensor data = asset scoring to facilitate maintenance actions and asset replacement planning
- **MAS Monitor 8.6** - provides a path for sensor data collection.

Data was sourced from the airport's existing IBM Maximo database to establish Locations, Assets & PMs within the PoC. Brisbane Airport provided access to accumulated alert data for their baggage handling system. The parameters from this source were used as the basis for configuring data simulator devices. The data simulator devices sent transactions to Monitor via RESTful API calls and allowed BAC to visualise real-time data feeds.

BAC were able to assess the health of each specific conveyor asset through a health score aggregated from their critical performance indicators (in this case age, belt condition and structural condition), as well as criticality, remaining useful life and a selection of performance metrics.They could drill down into the individual components that determine performance, view asset history and visualise changes in asset health over time through a single dashboard.

Performance monitoring on select metrics triggered alerts when anomalies were detected and allowed maintenance managers to interrogate data and initiate action in one place.

KEY OUTCOMES

Historically, IBM Maximo focused on asset management and maintenance, offering significant value to those teams. The project showed how IBM MAS Health and Monitor could consolidate data, linking work orders and cost history into a unified system, providing a comprehensive view of asset performance.

This expanded Maximo's value by allowing operations teams to:

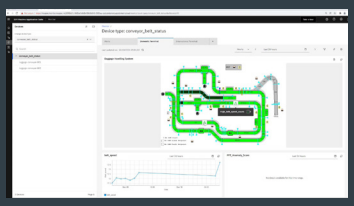
- Monitor performance,
- Supplying data for replacement planning, and
- Driving the evolution of maintenance strategies and SAMP.

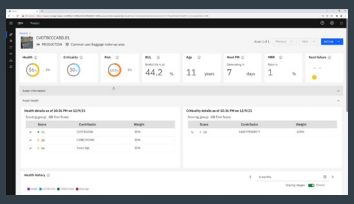
Additionally, the ability to track trends and receive alerts before reaching performance thresholds offered a key advantage over the existing Maximo system, which only issued alerts after thresholds were exceeded.

MAXIMO APPLICATION SUITE

Health scoring parameters include:

- **Health %** - provides an overall health score allowing users to compare similar assets within an asset class cohort. Scoring parameters are configurable to the asset class providing exceptional flexiblity. Score history is maintained to show the trend over time.
- **Criticality %** - importance of asset.
- **Risk %** - risk score calculated from attribute information.
- **RUL** - remaining usefyl life.
- **Age** - asset age since installation.
- **Next PM** - days until next PM.
- **MRR %** - maintenance repair costs relative to replacement cost.
- **Next failure** - date predicted when next failure will occur.





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LEVERAGE OUR EXPERTISE

We are a global provider of asset management solutions for asset-intensive organisations that span across people, process, systems and data elements of the asset management framework to drive quantifiable business improvements.

We work collaboratively with clients from across the natural resources, energy and water, infrastructure, government and defence sectors to help them to achieve economic and sustainable improvements in their operations and supply chain.

We do this by utilising our signature solutions and proprietary software in combination with best-of-breed technologies and 24+ years industry, technical and functional expertise.

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