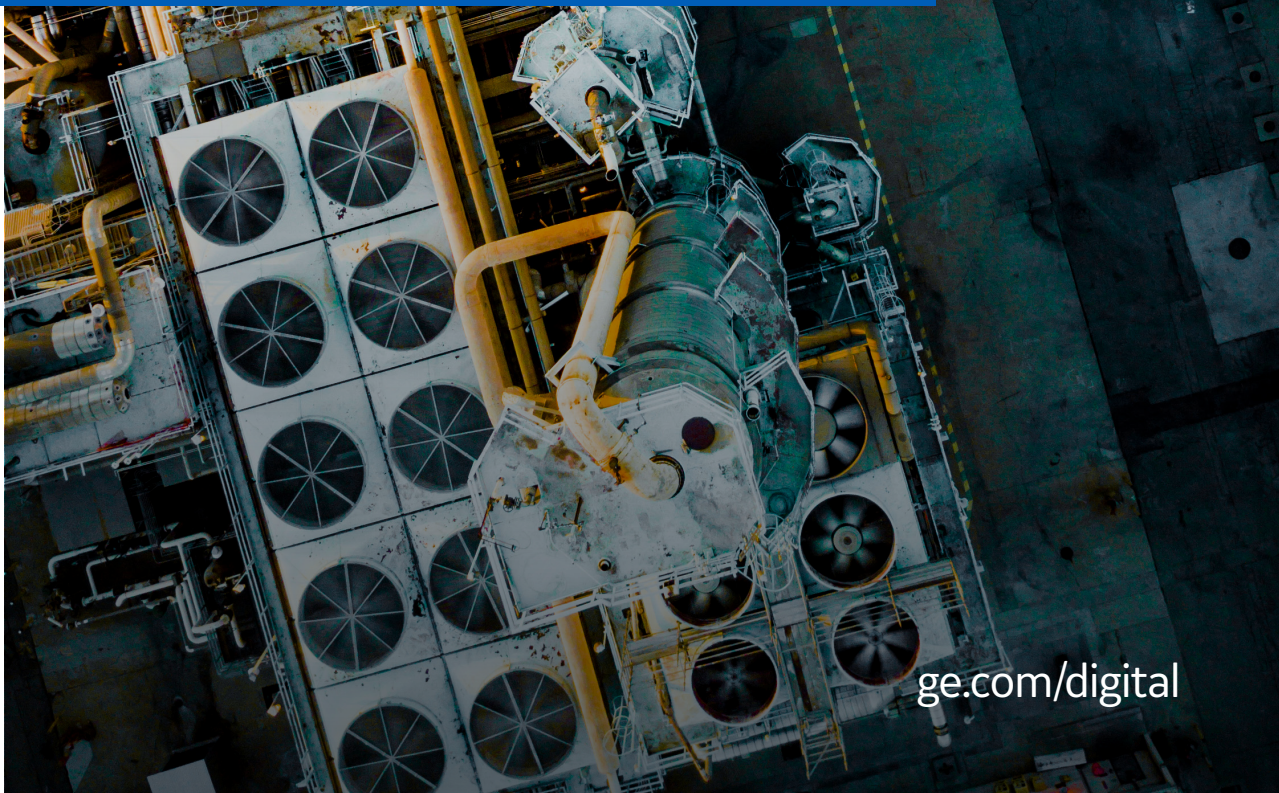




How software
modernization helped
Astron Energy accelerate
its energy transition



[ge.com/digital](https://www.ge.com/digital)



As asset intensive organizations undergo digital transformation initiatives, it becomes increasingly difficult to keep software solutions modern and highly performant. Over the course of the last few major industry shifts, and now in Industry 4.0, organizations have combined innovation alongside legacy software to help solve critical business challenges. For large energy producers, having the most updated software that can synthesize and action data more effectively directly impacts risk, reliability, and revenue yield.

Astron Energy is one example of an oil and gas firm digitalizing to optimize its production. Astron is one of South Africa's top two petroleum corporations with a network of 850 Caltrex-branded service stations. Its Cape Town refinery, with a capacity of 100,000 barrels a day, is the country's third-largest crude oil refinery. Ensuring the refinery is operating at capacity is critical in an environment where access to reliable, affordable energy is ever challenged.

With such an expansive operation and vast number of assets to manage, Astron deployed two of GE Digital's [Asset Performance Management](#) (APM) applications: [APM Strategy](#) and [APM Integrity](#). However, reconciling data across systems became error-prone, time-consuming, and siloed over the years. An opportunity emerged to fix this when Astron became its own operating company. In 2022, Astron decided to upgrade its on-premises APM applications to the latest version.

The upgrade would help resolve data challenges, standardize Astron's asset strategy and mechanical integrity management processes, and put the team on the best path forward. This included developing an integration with SAP and training to ensure the adoption of the software.

This upgrade has now enabled Astron Energy to:

- Deploy APM Strategy across 2,100 assets, reinforcing the usage of the Asset Strategy Management (ASM), Asset Strategy Optimization (ASO), and Asset Strategy Implementation (ASI) capabilities within APM.
- Use APM Integrity's Risk-Based Inspection (RBI) feature to perform 2,900+ equipment analyses, provide 2,400+ inspection recommendations, and monitor 3,400+ piping damage mechanisms.
- Implement APM Integrity across more than 50,000 unique equipment tags for 11,000 inspection tasks that resulted in over 6,700 recommendations.
- Utilize APM Integrity's Thickness Monitoring (TM) feature to load more than 67,000 corrosion monitoring location (CML) tasks and implement 17,000+ thickness monitoring location (TML) groups.

CHALLENGES:



Data Silos, Customization, and Bi-Directional SAP Integration

An upgrade of this magnitude was not without its challenges, highlighting the need for organizations to keep their software up to date.

CHALLENGE

01

Data Silos Disrupted Optimal Plant Operations

Data is the lifeblood of operational decisions and is also incredibly challenging to organize and manage in complex organizations. Over time, manual data processes had been created at Astron Energy to reconcile data across the APM and SAP systems, increasing the risk of data duplication. Astron Energy needed a solution that was easier to maintain and better aligned with user needs.

CHALLENGE

02

Customization Challenges that Slowed Innovation

With the change in operations, it was evident that users at the former parent company had heavily customized their APM instance. Now, with a new operating model, Astron had to identify areas of customization and determine whether it was viable within the current operation or should be removed. This task was a combined effort of all the Reliability and Maintenance Departments to determine Functional Specification and the required value-adding processes of the newly implemented APM.

CHALLENGE

03

The Requirement of Bi-Directional SAP Integration to Streamline Work Orders

Energy organizations like Astron rely on multiple systems to reliably maintain assets, ensure sustainability, and maximize efficiency. To eliminate data siloes, Astron implemented seamless integration with SAP. This included maintaining a master asset register across the two systems, importing work orders from SAP, and automating the work order notification process from APM. With more than 500 users expected to be active in GE Digital's APM, the ability to address work orders with APM data was hugely important.



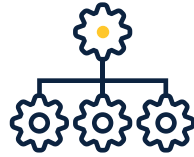
Upgrading to V4.5, Integrating APM Connect with SAP and Specified Configuration



STEP 1

Implementation of an Upgraded Version Within Time & Budget

The upgrade from V3.6 to V4.5 required close collaboration between Astron Energy and the GE Digital team. GE Digital engaged early with APM end users to ensure high adoption, garner feedback, and train on functionality.



STEP 2

Reconciliation of Information Across Multiple Systems & Deployment of a Master Asset Register

Astron Energy utilized APM Connect, part of GE Digital's core technology that enables easy integration setup between SAP and other EAM / CMMS / ERP systems. As the upgrade for V4.5 was completed, inspection tasks and recommendations from APM were automatically loaded into SAP via APM Connect, while all relevant data from SAP was also integrated into APM (taxonomy, asset hierarchy, work history, functional location, and more).

This allowed Astron to get time-based actions for work orders in SAP, removed a major silo for their data, and delivered maximum risk reduction and equipment reliability at the lowest sustainable cost. Additionally, the ability to have a single asset register provided enhanced visibility and enabled better decision-making.



STEP 3

System Integration and Configuration

Astron also gained the ability to configure APM Strategy and APM Integrity to fit its needs and innovate its processes. While the system had initially been an "inspection only" system using APM Integrity for fixed equipment and inspection programs, the company is now utilizing the recommendation and history briefs for its rotating equipment assets.

FUTURE STEPS

Astron also plans to utilize APM Strategy's Failure Modes and Effects Analysis to create asset strategies for coverage of rotating equipment. Due to GE Digital's configurability, Astron was able to generate dashboards, alerts, and strategies that were specific to unique assets.



THE RESULTS:



Enhancing Asset Reliability, Increased User Adoption and Cost Reduction

With greater integration, configuration (rather than customization), and new functionality, Astron team members realized the value of APM. Prior to the upgrade, user adoption was at 30%. During implementation and with the incorporation of rotating equipment, user adoption increased to 50%. In 2022, user adoption climbed to 80% with the full implementation of Integrity threat recommendation processes.

To strengthen its position as one of South Africa's leading energy producers, Astron underwent a major transformation of APM, recognizing the software's ability to provide immense value to the operation. Now, as the world continues down the path of energy transition, Astron is well equipped to add new energy sources and processes into the current APM ecosystem to meet evolving needs.

“I was impressed with the level of professionalism and skill provided by the GE Digital team. They were always available to answer all questions and deal with any issues. In addition to completing the project on time and on budget, the working relationship between the Astron Energy and GE Digital teams made it a very enjoyable experience.”

Peter Saunders

Project Manager, Astron Energy

ADDITIONALLY

Astron was able to:

- Increase productivity and collaboration across multi-disciplinary teams.
- Improve decision-making with high-quality data and through enhanced visualization and reporting on a dashboard.
- Integrate two stand-alone systems and consolidate information to streamline Operations & Maintenance activities and accelerate enterprise goals.



Implement enterprise-wide mechanical integrity and compliance programs with Asset Performance Management.

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