

CUSTOMER CASE STUDY

Astron Energy Transforms Crude Assay Management Process and Reduces Assay Creation Time by 50%

Astron Energy - www.astronenergy.co.za
Industry - Oil & Gas

Goals

- Quickly transform crude assay management process from reliance on super major parent to independent capability, without disruption to the business.
- Increase accuracy of flow rates and material properties, allowing teams to push operational limits and maximize profitability.
- Improve crude assay data management to easily share information across users and to automate workflows for efficient refinery operations and decision support.

Challenges

- Predicting characteristics of refinery feed from a central tank, that receives various crudes with limited mixing – inaccurate predictions result in \$10,000 - \$15,000 per day cost to the business.
- Managing additional assay management work and activities using existing refinery headcount.
- Building technology and processes to operate as an independent refiner.

Results

- Complete re-design of crude assay management business process in less than three months with seamless transition for users.
- Over 50% reduction in time to create assays from laboratory samples with easy sharing to the planning team for LP modeling.
- Improved refinery margin through more accurate prediction of crude oil properties.
- Reduction in IT costs and faster software updates using AVEVA-hosted cloud solution.

Cloud-based AVEVA Unified Supply Chain solution deployed in three months, bringing flexibility and agility to the business.



From Super Major to Independent Refiner

Astron Energy was formed as a result of a majority acquisition of the former Chevron South Africa Pty (Ltd). At the center of Astron Energy's operations is its Cape Town Refinery, the country's third-largest crude oil refinery at a capacity of 100,000 barrels a day, producing a range of fuels for distribution across Africa.

As part of Chevron's global network, the Cape Town Refinery previously relied on Chevron's data, processes, and corporate teams for crude characterization and analysis. When Chevron announced plans to sell its majority shareholding in the South African business, including the refinery, the operations team faced the challenge of taking over the processes previously held by Chevron as well as choosing and implementing a technology to support their long-term strategy and operations as an independent refiner.

In three months, Astron Energy's Cape Town Refinery team successfully transformed one of the refinery's most fundamental business processes, crude assay management – from characterization and blend analysis to sharing data for planning models and reliability assessments, all without disruption to the business.

“Our Oils Planning team are empowered with accurate crude assay predictions, easy knowledge sharing, and improved data management, giving us confidence to push operational limits and drive more profitable operations. We not only transformed our crude management processes without disruption to the business, we are now 50% faster.”

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Louisa Botha
Refinery Planner

Architecting Enterprise Crude Knowledge Management

Astron Energy recognized AVEVA Unified Supply Chain's value as a single platform to solve a broader set of challenges beyond just crude assay management: identification of layering in the central feedstock tank, accurate prediction and characterization of the tank blend, generating assay data for the LP model, and being easily accessible by planners and process engineers. This unified approach creates Enterprise Crude Knowledge Management (see Figure 1).

Crude assay information is also shared with mechanical and reliability engineers, that can easily assess feed composition in terms of metals, to prevent corrosion problems and unexpected breakdowns, or to simply provide the confidence to the operation team to push the plant for a more profitable operational point.

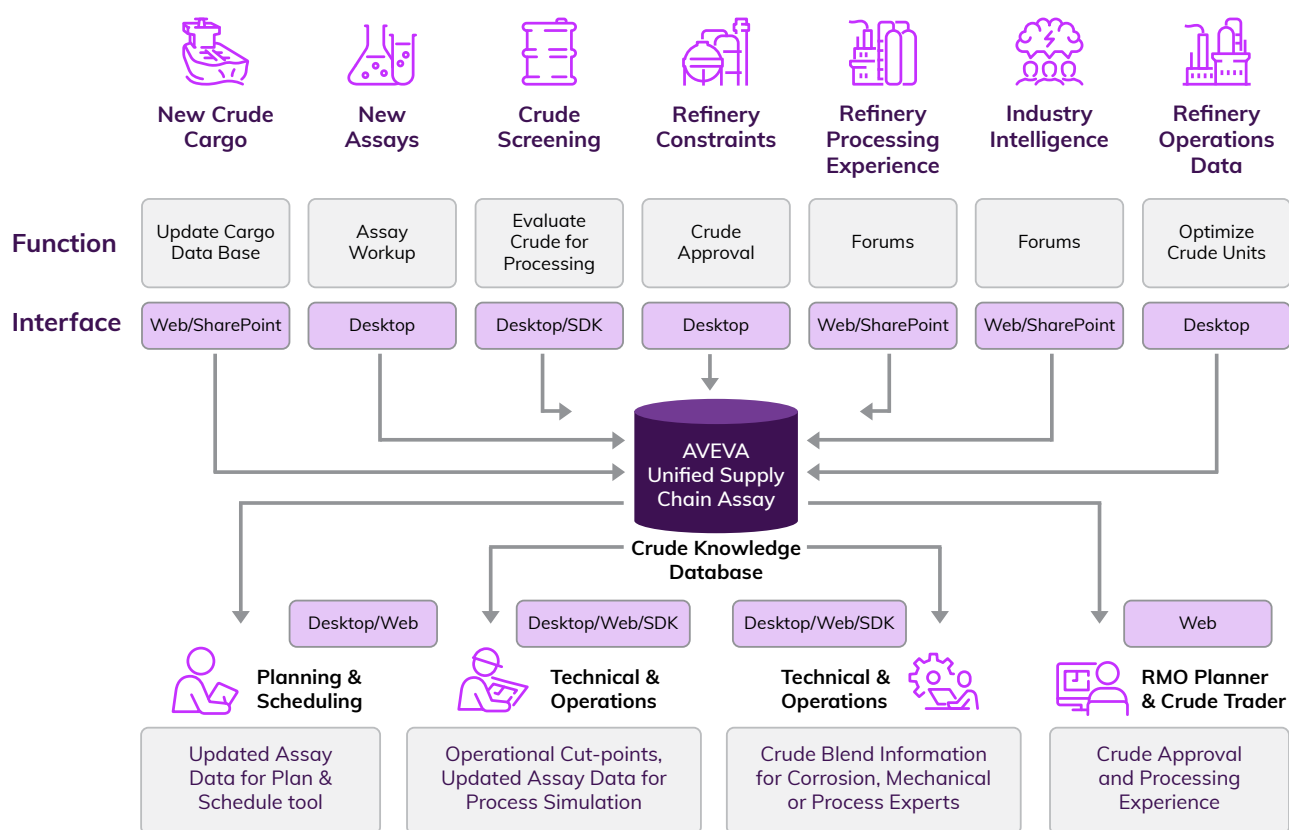


Figure 1: Cape Town's Refinery Enterprise Crude Knowledge Management

Diverse teams across the refinery have access to a single source of crude information and can perform their activities using desktop or web interfaces and connect to other systems using the SDK (software development kit) within the platform. This flexibility increases collaboration, improves data consistency, and makes decision-making more agile. Refinery planners are more confident to push the operational limits of the plant, while minimizing the risk of operations running into unexpected issues, which results in refinery margin improvement.

“Being a standalone refinery, you worry about where you would get all your information from. AVEVA Unified Supply Chain helps us to do what we need to do, even without the support of a larger organization.”

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Louisa Botha
Refinery Planner



Cape Town Refinery's Crude Assay Management Transformation

The team at Cape Town Refinery identified a set of core functional requirements for the new technology to support the crude assay management process:

Powerful Predictive Modelling for Crude Assays

The Cape Town Refinery team was looking for a solution with predictive capabilities to accurately characterize crude assays from limited measurement data. As an independent refinery with limited resources to perform their own testing, it was critical to have software with advanced algorithms to predict the missing information.

Blend Analysis to Predict Tank Composition

The team faced the challenge of understanding the composition of their central tank and creating accurate blend assays for the LP model. The refinery receives different crude types discharged to its central tank without segregation, with limited mixing by a bottom mixer, and is otherwise left to settle naturally via API difference. The team turned to AVEVA Unified Supply Chain's Blend Analysis tool to understand layering in the tank, to create blend assays and load assay data into the LP planning system, increasing collaboration with Planning and Engineering teams.

"We want to enable our users to focus solely on crude assay management – not have to become tool experts to figure out how their software works. AVEVA Unified Supply Chain allowed our LP analyst, LP Planners and process engineers to ramp up quickly."

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Louisa Botha
Refinery Planner

New Workflows

Using the system's flexibility, the team put crude assay data and common models at the center of automated workflows, with reporting and alerts sent to Engineering, Planning, and Trading, and integration to third-party systems such as ERP and productivity tools. The software's intuitive user interface made the solution easy to learn and use.

Cloud Deployment Delivers Agility, Scale, and Lower IT Cost

For fast deployment and long-term management, the Cape Town Refinery team deployed AVEVA Unified Supply Chain in the cloud with an AVEVA-hosted configuration. Benefits of the AVEVA cloud deployment included:

- Cloud set-up and deployment in less than 6 weeks.
- Ability to easily scale and add users.
- Less specialized application and database knowledge required by refinery IT.
- No additional local hardware for hosting.
- Fewer IT resources required for administration.
- Faster software updates and easy access to assay data.

Fast Deployment and Seamless Transition to AVEVA Unified Supply Chain

In three months, the Cape Town Refinery team completed the rollout and implementation of Enterprise Crude Knowledge Management with AVEVA Unified Supply Chain, including:

- IT infrastructure set up.
- Cape Town Refinery data extracted from Chevron global database.
- Creation of development environment for training and user acceptance testing.
- Development of a parallel network on AVEVA Unified Supply Chain to run alongside previous Chevron network.
- Training of users on AVEVA Unified Supply Chain across different interfaces (desktop, SDK, and web).
- Rollout to users in production environment following business acceptance.

“After only three months we completed the deployment of AVEVA Unified Supply Chain, and everything was working, including essential extensions like our Excel interfaces. In the face of a significant transformation of our processes, we were able to continue operations with little if any disruption to the business.”

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Louisa Botha
Refinery Planner

New Business Process Creates Efficiency, Profit Opportunity

Following the deployment of the new crude assay management technology and associated business processes, Cape Town Refinery identified the following benefits:

- Over 50% reduction in time to create assays from laboratory samples.
- Improvement in refinery margin as a result of more accurate prediction of crude properties.
- Reduction in IT costs and more agile deployment of software updates by using the cloud solution hosted by AVEVA.
- Ability to predict tank blend accurately and create blend assays for immediate sharing with planners, process engineers, and mechanical and reliability engineers.

To learn more about AVEVA Unified Supply Chain solution, visit: sw.aveva.com/plan-and-schedule