

# Tank Farm Health Review

Generated by Norda Stelo's  
New Collaborative Platform



## IN TIMES OF CRISIS, SOUND ASSET MANAGEMENT IS ABSOLUTELY ESSENTIAL

The COVID-19 pandemic has served as a catalyst for a number of movements that have emerged in recent years, including responsible consumption, eco-design, and the circular economy<sup>1</sup>. Looking to the future new reality, it's clear that industry will increasingly focus on asset durability, with the strengthening of environmental, social and governance (ESG) requirements being an integral part of sound asset management.



## WHAT ARE THE CHALLENGES OF MANAGING A TANK FARM?

Aging assets and ever-present risks mean that tank farm owners, managers and operators are faced with the ongoing challenge of monitoring deteriorating equipment, tracking operational resiliency and maximizing productivity, while maintaining safe operations, and avoiding the risk of accidents and spills in a reduced financial context.

In an increasingly competitive and challenging market, ensuring the best possible operating conditions for industrial equipment is paramount. Tank farm managers need to prioritize their actions on the basis of risk levels, the residual service life of the equipment and budget planning.

<sup>1</sup> Circular economy: economic model based on reducing the wasteful use of raw materials and non-renewable energy sources.

## A NEW DIGITAL TOOL FOR MANAGING ASSETS

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With decades of experience in brownfield<sup>2</sup> engineering, Norda Stelo has developed a smart approach to increasing the service life of assets, while promoting proactive risk management and dynamically monitoring the condition of the equipment.

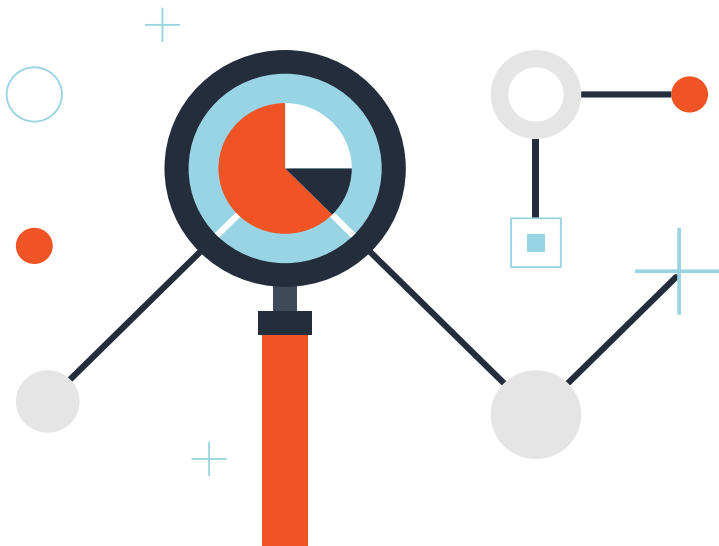
To address this challenge, Norda Stelo's Asset Integrity and Reliability Management Centre of Excellence has developed a collaborative asset management platform for all types of tank farms. This new tool harnesses smart technologies and is based on the cutting edge expertise Norda Stelo has acquired over many years in the field of asset integrity and reliability management.

The platform is used to track key performance indicators, such as residual service life and condition of the equipment, health and safety risk levels, reliability management, maintenance and reliability performance, and CAPEX projections.

The focus of this unique approach is asset durability, or extending the useful life of the equipment through preventive maintenance and optimal operating

conditions. The approach generates positive, direct impacts on productivity, occupational health and safety, the environment, local communities and the financial health of asset owners.

Designed for use by plant engineers, technical maintenance personnel and the company's management team with support from recognized asset management specialists, this collaborative platform closely monitors tank integrity and required maintenance work. Managers can in addition easily track the short, medium and long-term cost of operating the assets while prioritizing maintenance work.



What if you had ready access to all the information related to your tank farm?

<sup>2</sup> Brownfield: developing an existing site.



## COLLABORATIVE ASSET MANAGEMENT PLATFORM

### OUTSTANDING BENEFITS AND FEATURES

There are a number of software programs on the market that provide an overview of the health status of assets. However, they are often limited to a high-level overview of the asset and the asset-related data are rarely based on results from specialized expertise, but rather provide a brief assessment that does not take into consideration the specific features of the individual assets.

Norda Stelo's new collaborative platform provides both a high-level assessment of assets and a close look at the detailed engineering involved in producing the results. The platform is a powerful strategic planning tool, either for establishing long-term investments or planning short to medium-term operations and maintenance in the field. Complex decisions can be made with confidence.

The interactive platform is a user-friendly tool that offers the following benefits:

- / Reliability, residual service life and risk management
- / Reduced risk of failure (e.g., environmental spills) and work accidents
- / Integration and assessment of asset data throughout the entire life cycle of the equipment
- / Preventive maintenance of aging infrastructure greatly facilitated
- / Optimization of asset use and value maximization throughout the life cycle of the asset
- / More accurate planning of operating costs and maintenance budgets

## EXAMPLE OF A HEALTH ASSESSMENT OF A TANK FARM WITH 216 TANKS

The collaborative platform presents the results and key performance indicators in a single image along with an analysis of the data and an expert's analysis of the specific asset.



### Indicators for the entire asset base

- 1 Asset condition index presents the status of the equipment on the basis of their operating conditions.
- 2 Residual service life assessed on the basis of Norda Stelo's leading edge expertise in tank integrity, combined with data science (AI, machine learning).
- 3 Risk level for individual tanks includes operational, environmental and safety risks.
- 4 Since tank deterioration is a statistical phenomenon, average CAPEX forecasts are indicated with upper and lower limits.
- 5 The results of the reliability audit performed by a Norda Stelo specialist are divided into categories with an overall score indicated on the left, thereby providing a visual overview of opportunities for improvement.

One undeniable benefit of the platform is that it provides a clear, interactive visualization of the results, enabling users to correlate and analyze the data themselves.



Clicking on the equipment with a poor condition index (red) displays residual service life, risk level and CAPEX data for the specific equipment.



### Indicators of a group of assets in poor condition

Equipment in poor condition indicated here make up most of the CAPEX for the next five years. Results for a single sector or department can be displayed for comparison purposes.

What if you could access a list of all the tanks or equipment in critical condition, and see exactly when work will be required along with related costs?

With this overview, a more in-depth analysis can be generated to obtain details on the integrity of individual tanks and the technical analysis that led to the results. Maintenance engineers and operations personnel will find this feature very useful.

The screenshot displays the NORDA STELO software interface. The top navigation bar shows 'Group', 'Demo', and 'Montreal' with the NORDA STELO logo. Below this is a table titled 'Equipment group' with columns: Equipment number, Equipment name, Department, Condition, Risk level, and Remaining useful life. The table lists various process tanks, with 'B-024' highlighted in red. An arrow points from 'B-024' to a detailed view of the asset.

The detailed view for 'B-024' is titled 'Detail' and includes the following sections:

- CAPEX forecast:**

Period	Capex Min	Capex Med	Capex Max
2020-2024	0.90	1.00	1.10
<b>Total</b>	<b>0.90</b>	<b>1.00</b>	<b>1.10</b>
- Information:**

Equipment number	Equipment name	Department	Latitude	Longitude	Condition	Risk level	Residual life period	Residual life	Year of commissioning
B-024	Process tank B-024	Department B	45.52	-73.55	1-Bad	1-High	10-15	3	
- Actions:** Two buttons labeled 'Equipment sheet' and 'Inspection report' are visible on the right side.

### Detail of the integrity of a particular asset



Clicking on tanks with a poor condition index will generate a list and clicking an individual tank will display the summary sheet, analysis sheet and inspection reports.

## A DYNAMIC HEALTH CHECK TO DETERMINE ASSET DURABILITY

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This tool provides a clear image of the actual condition of the tank farm in addition to generating maximum data and information as part of the platform’s analytical tools and the engineers’ cutting edge expertise.

The platform delivers dynamic monitoring of the condition of the tanks over time. Risk levels, residual service life and CAPEX predictions are continually updated as new inspection data become available or operating parameters change.

The impact of improved maintenance practices on the residual service life of the equipment may also be integrated into the system. With access to continually updated, in-depth information, managers and engineers have the tools they need to make the right decisions and as a result enhance the service life of their tank farms.

What if you could have a comprehensive review that would justify short, medium and long-term costs for optimal management of your assets’ service life?



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Joël Fortin joined Norda Stelo in 2011 as a corrosion specialist for the Asset Integrity and Reliability Management Centre of Excellence. With more than 16 years experience in the metals industry, he is specialized in developing and setting up inspection programs and plant equipment ageing studies. He also has extensive experience in equipment reliability (failure analysis and improved availability) and operational reliability (multi-variable analysis and process optimization). He was actively involved in developing the asset durability concept and business model as well as the collaborative platform.