PROTECT

AIQ

CORROVISION

PROTECT WITH **AIQ**

THE CHALLENGE

Corrosion is a major issue for the oil and gas industry; and identifying and detecting corrosion has proved to be demanding in terms of labor and expenses. Left undetected, corrosion will lead to serious safety concerns and environmental damage.

Metals and alloys are the key construction materials used in the industry, making it especially prone to corrosion due to the extensive use of metal components like pipes, valves, and pressure vessels.

Industrial sites, such as those in the oil and gas sector, are therefore in need of regular corrosion inspections to maintain the integrity of the equipment and avoid costly downtime.

Currently, the industry addresses external corrosion by taking pictures of corroded equipment and sending images to a subject matter expert (SME) for evaluation. However, this process can be subjective, time-consuming, and can lead to inconsistent results due to differences in expertise and opinions among the SMEs.

Therefore, standardizing the results can be a challenge, given potentially differing interpretations and classifications of corrosion.

SMEs are also often faced with thousands of images to search through manually for problematic corroded spots. This process can be time-consuming.

THE SOLUTION

CORROVISION provides automatic, reliable, and accurate corrosion detection, and is capable of categorizing the type and severity of equipment degradation using AI and Computer Vision.

The application can process a large volume of images taken during routine inspections, planned maintenance, and at previously inaccessible or hazardous locations. CorroVision can then automatically detect corrosion, assigning categories of severity.

The AI-powered, data-driven cloud-based application is available as web-based or mobile for on-the-go analysis, providing support for proactive asset maintenance and optimized routine site inspection. This permits systematic and unbiased risk assessment.

The process utilized by CorroVision to build an AI model to standardize the evaluation of visual corrosion is divided into several stages, including data collection, data pre-processing, modeling, evaluation criteria, and results.

Each stage ensures the accuracy and effectiveness of the application.

VALUE & BENEFITS

CORROVISION

PROTECT WITH **AIQ**

Can process high volumes of images taken during routine inspections, planned maintenance, and at previously inaccessible or hazardous locations. Automatically detects corrosion, and assigning categories of severity

VALUE PROPOSITION

The AI-driven data analytics optimize inspection resources and logistics

PRE-EMPTIVE MEASURES

CORROVISION ensures that various plant assets are well maintained and regularly monitored, saving OPEX costs

OPTIMIZED INSPECTION

The web-based application allows real-time and accurate corrosion classification results, in a timely manner

DISCLAIMER

This booklet contains numerical data that has been sourced from our esteemed clients. It is important to note that these figures are provided in the context of their respective business operations and have been shared with us for the purpose of this booklet.

Please be aware that client-sourced data can be subject to various factors that may influence its interpretation.

PROTECT

AIQ

THE SOLUTION

01 DATA COLLECTION

Data collection is instrumental in building effective AI models, and works by combining large amounts of data with fast, iterative processing and algorithms, allowing the software to learn automatically from patterns or features in the data.

Collected images are annotated by multiple subject matter experts (SMEs) with classes of corrosion being assigned: Severity (low, moderate, severe) or type (pitting), and class when nothing is present (no corrosion).

02 DATA PROCESSING

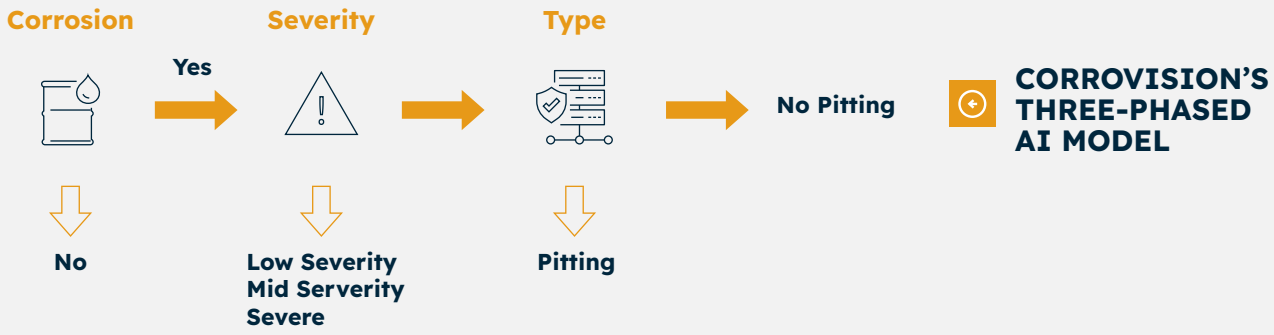
Before training the AI model, the collected images are pre-processed to improve the quality of the data and facilitate model training.

03 MODELING

To train the AI model to classify images, a three-stage approach is used.

- Focuses on determining whether corrosion is present or not,
- Classifies the severity of corrosion
- Identifies whether there is pitting

The model focuses on one task at a time, instead of trying to classify all features simultaneously.



04 EVALUATION CRITERIA

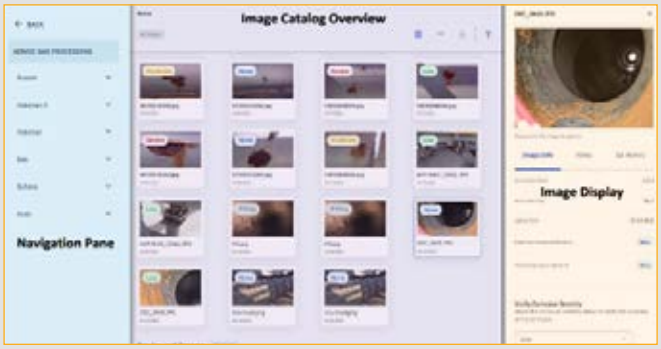
A benchmark accuracy outline is formulated for evaluating the model's performance. Several metrics are used to measure the performance of the overall and individual AI models during training and testing.

THE SOLUTION

Imaging information is presented on dynamic smart dashboards that make inspection data accessible, user-friendly, and most importantly, actionable. AI powered-alarms for proactive maintenance can also be generated, helping extend equipment life.

Providing objective, accurate and consistent image analytics, CorroVision lowers maintenance costs, optimizes equipment downtime, and minimizes failures, all while enhancing safety.

MAIN CORROVISION DASHBOARD



CORROSION SEVERITY ANALYSIS & STATISTICS DASHBOARD