CONDITION MONITORING LOCATION (CML) OPTIMIZATION

Improve operational reliability

Optimize inspection and maintenance costs

Streamline inspection planning

Visualize corrosion behavior

Examining every piping inspection point in a refinery is costly and time-consuming. With more than 150,000 points, you need to know:

- Which CMLs will provide the most value
- If you've identified all susceptible locations
- If you're actually inspecting the right locations

CorrSolutions will help you optimize your condition monitoring activities by strategically selecting the locations for monitoring. We use our patented technologies and data analysis to detect asset degradation and potential failures, giving you more time to intervene and improve your maintenance strategies. Plan your next inspection with confidence – use advanced thickness analysis to eliminate unnecessary inspection points, achieve safer facilities, and minimize inspection costs.

KNOW ***WHERE*** TO INSPECT

Confidently know which CMLs to inspect.

We assess your circuits and identify the magnitude and locality for your corrosion.

KNOW ***HOW*** TO INSPECT

Understand which NDE methodology is most appropriate.

We recommend the most practical inspection technique based on the results of the assessment.

KNOW ***WHEN*** TO INSPECT

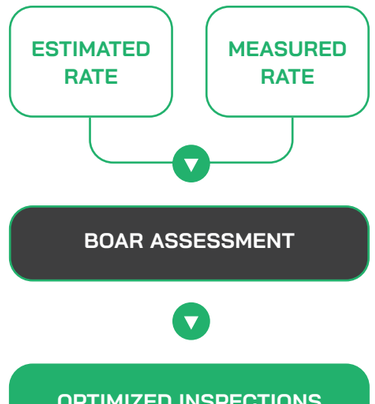
Schedule next piping circuit inspection based on rate of corrosion and thickness projections.

We use corrosion rates with appropriate levels of uncertainty based on the operating service or consequence of failure (COF).

BAYESIAN OPTIMIZED ASSET RELIABILITY (BOAR) ASSESSMENT

Our patented methodology combines historical thickness data, related inspection program information, and inspector experience to provide better and more predictive results. We use your thickness data to identify localized corrosion issues and recommend how to optimize inspection points and reduce maintenance costs.

- Optimize CML allocations, inspection dates, and locations
- Determine if current corrosion rates are over or underestimated
- Quality check circuitization and recommend changes if a circuit is experiencing multiple environments
- Quantify localized and generalized corrosion
- Identify corrosion "hot spots"
- Provide informed corrosion rates that can be added to any risk-based inspection (RBI) program



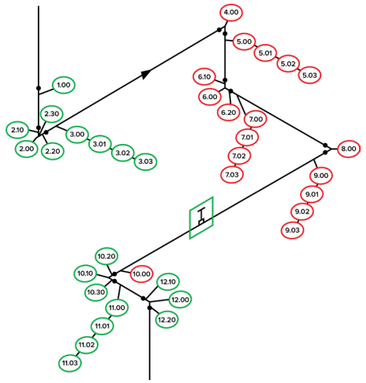
CASE STUDY: OPTIMIZE CMLS IN CRUDE UNIT FEED SYSTEM

We recently worked with a North American refinery to prioritize the CMLs on its piping circuit. Even though the CMLs were not causing any issues, the owner-user thought they may be spending unnecessary time and maintenance money inspecting each location.

To prioritize which CMLs were necessary, CorrSolutions conducted a proof-of-concept BOAR assessment on 16 circuits, including a crude preheat section and two overhead circuits. We found limited corrosion in the preheat sections; however, the BOAR assessment confirmed there was localized corrosion in the overhead circuits.

Using the BOAR assessment, we were able to identify areas of limited and higher localized corrosion. With this information, the client was able to reduce CMLs on 60% of the crude unit feed systems.

SYSTEM DESCRIPTION	ACTIVE	INACTIVE	VERIFY	TOTAL	% ARCHIVE
Crude Feed - Cold Preheat	45	86	2	133	65%
Crude Feed - Desalter	18	48	0	66	73%
Crude Feed - Hot Preheat	32	60	0	92	65%
Crude Feed - PSV Outlets	12	27	0	39	69%
Preflash Tower OH Piping	21	3	0	24	13%
Atmospheric Tower OH Piping	24	0	0	24	0%
TOTAL	**152**	**224**	**2**	**378**	**60%**



BOAR REPORTS AND RESULTS

We provide you with multiple analysis levels so all employees understand and support the streamlined inspection plan.

- Quickly identify the CMLs to inspect and determine which ones to deactivate with color-coded isometrics
- Project future thickness measurements for each CML
- Compare assets on a risk matrix and plot to the current, future turnaround, or plan dates

TOTAL ASSET SUPPORT