

TOPGUARD real-time overhead analyzer

Mitigate overhead corrosion risks with real-time, actionable data

As new types of feedstocks are discovered, the quality of crude continues to decline, causing overhead corrosion to be more of a challenge than ever before. With the majority of refineries designed to process crude slates from the 1950s, many are operating above design limits to meet these new crude challenges, leading to an increase in corrosion problems. Conditions that lead to aggressive corrosion can occur over a relatively short time period, and may go unnoticed by traditional monitoring programs that only collect data samples once per shift or even as infrequently as a few times per week.

Proactive risk mitigation

Recognizing a need for increased monitoring frequency to better identify the magnitude and duration of these corrosion risks, Baker Hughes developed the **TOPGUARD™ real-time overhead analyzer**. Regardless of the crudes being processed, the analyzer helps refiners proactively control overhead unit corrosion, extend unit run time, and improve system reliability.

The TOPGUARD analyzer monitors and obtains real-time data for pH, chlorides, ammonia, and/or iron levels in overhead waters—offering a modular solution that can be tailored to fit each refinery's specific needs. The analyzer can also make real-time changes to the chemical feed based on the data received to catch any sudden short-term swings caused by changes in feedstock.

The analyzer features a proprietary sample pre-conditioning system that removes oil and solids contamination to ensure long-term reliability and accuracy. It can be housed in a weather-proof enclosure to protect against harsh conditions, ensure uninterrupted operations, and provide required containment for electrically-classified areas. The analyzer also allows for customized alarms, providing a detailed view of conditions and data points. Installing a TOPGUARD real-time analyzer enables refiners to optimize allocation of resources, reducing lab sampling and analysis costs. This also lowers HSE concerns via reduced personnel exposure.

Applications

Crude unit tower overhead corrosion

Benefits

- Optimize allocation of resources, reducing lab sampling and analysis costs
- Minimize HSE risks and personnel exposure
- Gain 24/7 feedback on unit operations
- Optimize chemical usage and costs
- Avoid episodic pH swings that would otherwise go unnoticed

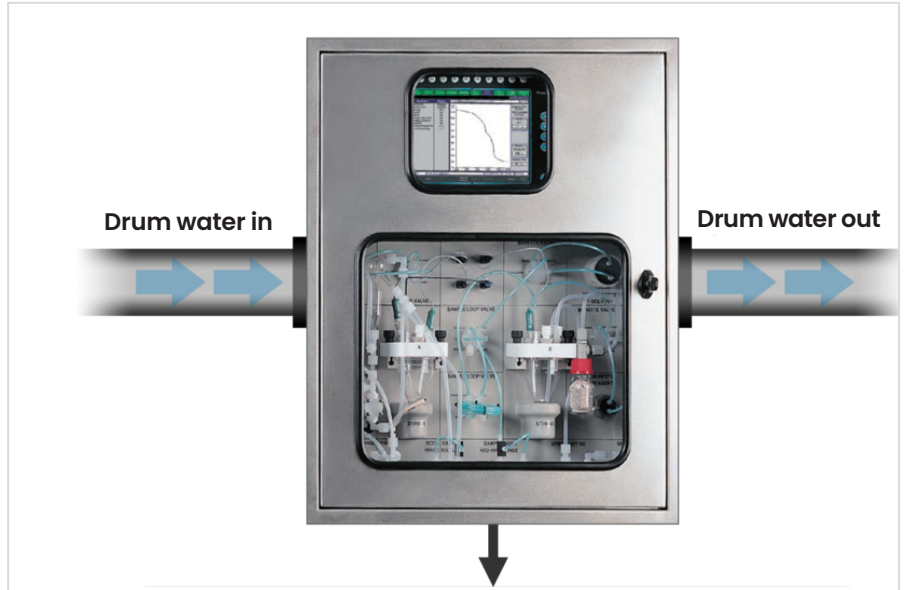
Unmatched value

While real-time monitoring is critical to capturing proper data and understanding your system, it is even more important to convert that data into actionable information to help mitigate overhead corrosion. Research shows that more than 90% of overhead corrosion is caused by amine and ammonia HCl salt formation. To obtain a true understanding of salt formation risk, the data collected by the TOPGUARD real-time analyzer is fed directly into the industry-leading **TOPGUARD™ corrosion risk monitor (CRM)**. The TOPGUARD CRM accurately determines the salt formation temperatures, allowing refiners to avoid under-salt corrosion risks by taking actions such as:

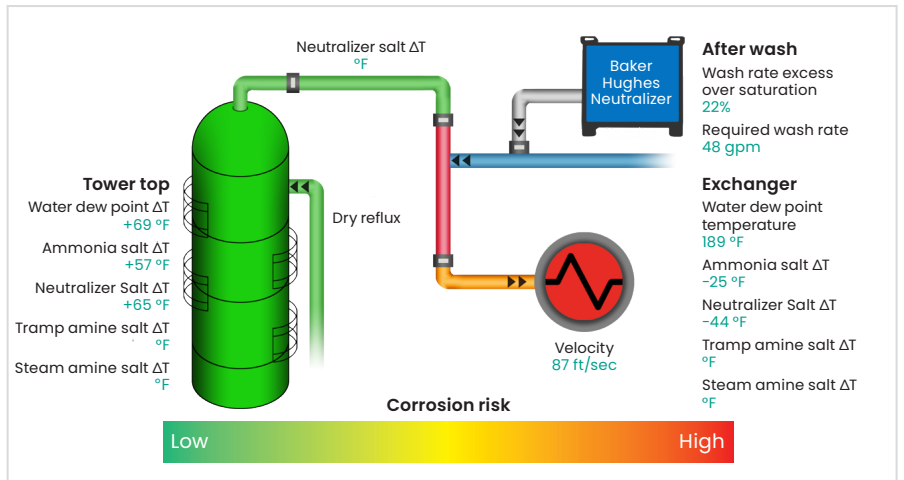
- Adjusting caustic to control chloride
- Modifying tower overhead operations
- Fine-tuning desalter pH to remove tramp amines and ammonia
- Improving wash water system design and injection with TOPGUARD spray model technology
- Altering boiler neutralizer type or rate

Utilizing real-time data, rather than infrequent monitoring, in conjunction with the TOPGUARD CRM provides a much better understanding of overhead corrosion risks and the actions needed to mitigate that risk. Combining these two technologies, Baker Hughes applies a comprehensive approach to overhead corrosion control by diagnosing the root cause, implementing the appropriate mitigation program, and providing continuous monitoring and optimization—helping you stay ahead of potential overhead corrosion problems.

To learn how the TOPGUARD real-time overhead analyzer and TOPGUARD CRM can help proactively control overhead unit corrosion, extend unit run time, and improve system reliability contact your Baker Hughes representative.



The TOPGUARD real-time overhead analyzer monitors and obtains real-time data for pH, chlorides, ammonia, and/or iron levels in overhead waters.



Using inputs from the TOPGUARD real-time analyzer, the TOPGUARD CRM provides refiners with a colorized dashboard that identifies corrosion risk areas.