

Digitalization of Heat Transfer Fluid Systems

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The spread of COVID-19 opened the world's eyes to the weakness of much of its infrastructure and drove home the important role operators and engineers play in keeping manufacturing plants running. These unsung heroes were challenged with the difficult logistics of meeting production schedules and maintenance requirements while mitigating the spread of the coronavirus.

The pandemic also highlighted the need for digitally connected plants and operations. By digitally enhancing heat transfer fluid (HTF) systems, operation managers and engineers can be equipped with richer data to manage their production and maintenance more effectively and safely. In this way, they can monitor and forecast fluid testing issues related to acid number, moisture, viscosity and other parameters — all of which can impact production schedules and maintenance operations.

Despite the challenges of COVID-19, strict quarantine practices and modified work schedules allowed plants to continue normal operation by having essential workers on-site. But plants would have benefited from technology platforms that enabled productivity from afar. Not only are digitally enabled tools more convenient to monitor and track systems, they also give plant managers the ability to look across systems at various locations, fluids and applications to gain more insights. They enable managers to answer key questions like: “Are we operating most efficiently?” and “Are we maximizing the life of our fluid?”

The functions listed below are among the expectations plant managers and engineers struggled with when monitoring and tracking heat transfer systems during the unconventional operating conditions of the pandemic.

Production schedules. Digital tools that gather data and compile a dashboard of metrics and alerts for any subsystem within the plant help ensure production schedules are met, even when daily routines are disrupted.

Maintenance schedules. Ensuring efficient maintenance and having a view of future performance trends is also critical to productivity. Organized knowledge of past actions and results is important to understand how to resolve future challenges more efficiently.

Plant and system efficiency. Regardless of markets and global conditions, driving efficiency is critical to remaining competitive. Digital tools can allow operators to easily understand systems' conditions at a glance.

Training. Teams have experienced various shifts in roles and responsibilities to maintain operations. For this reason, there is a need for in-depth training materials to quickly bring your team up to speed.

Safety. Safety in manufacturing is critical to ensure an engaged workforce but also allows for the best overall productivity. Insights that proactively highlight potential safety challenges are invaluable.

HTF maintenance

When it comes to digitally connected HTF systems, the lessons learned from operating during the pandemic can



be applied as normal operations resume to further improve day-to-day operations. Furthermore, all critical decisions involving heat transfer fluids have daily consequences for operators and engineers. The items listed below are some key best practices and recommendations to help ensure optimal performance of your HTF systems.

Improvements to digital monitoring capabilities. Production operations are likely already digitally enabled with programmable logic controllers (PLCs), distributed control systems (DCSs) and so on. To remain competitive, all companies should continue to explore and deploy more advanced digital tools to drive continued efficiency when it comes to monitoring viscosity, acid numbers, moisture content, flash point and more.

Annual fluid testing. Performing yearly fluid analysis offers a baseline for your system's performance. Digitally prompted or scheduled reminders facilitate compliance.

Actionable recommendations. Test results are valuable, but recommendations based on the results from experienced partners are even more valuable. Artificial intelligence and machine learning supported by vendor partners can help facilities receive the best recommendations for optimal fluid performance. For example, by analyzing moisture content trends, facilities can identify potential issues, such as heat exchanger pinhole leaks, that could result in an unplanned shutdown.

Easy-to-read sample analysis reports. Adopting a digitally enabled platform that provides easier-to-read sample analysis reports allows users to quickly scan key system performance metrics and know if action is required.

Sample analysis historical data. Data and digital trends can help quickly identify systematic or recurring issues based on current system performance compared to past performance. This includes trend recognition of viscosity and moisture content, inconsistent temperature or accelerated degradation.

Maintenance tracking and troubleshooting. Along with historical data, access to past maintenance activities allows engineers and operators to repeat actions, correct issues, or spot new issues. Also, tagging maintenance activities with the personnel who took action provides new employees with a network to discuss current activities. Preventive maintenance systems can begin to do this, but inclusive digital HTF maintenance systems that couple data and maintenance history with actionable recommendations are also available. ■ **Sponsored by**

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