



TUBE EXPANSION

Optimizing Water Treatment Efficiency and Reducing Additive Consumption In Large-Diameter Pipe Manufacturing



A leading manufacturer of large-diameter steel pipes for the oil and gas sector sought to enhance the efficiency of their water treatment system. The company employs a cold-forming expansion process to shape steel pipes, during which WEDOLiT™ expander oil with easy-splitting (ES) technology is used to lubricate metal-to-metal contact. At the same time, this latest generation, mineral oil-based expander oil facilitates the separation of oil from water with minimal chemical input. WEDOLiT expander oil technology is generally known for its efficiency in reducing the amount of chemicals needed to support the process. Despite the advanced properties of WEDOLiT ES technology, the manufacturer experienced excessive consumption of splitting additives, signaling inefficiencies in their water treatment process.

THE CHALLENGE

A high consumption of splitting additives observed by the tube manufacturer prompted WEDOLiT experts to conduct a detailed investigation. The goal was to optimize oil-water separation, reduce additive usage, and enable water recovery for post-expansion cleaning operations, ensuring both cost reduction and environmental sustainability.

APPROACH

Master Fluid Solutions collaborated closely with the pipe manufacturer to address the challenge through a combined offering of high-performance lubricants, additives and technical support services:

System Assessment and Process Review:

A Master Fluid Solutions expert, together with a water treatment plant engineer, conducted an on-site evaluation of the existing oil-water separation system. The team analyzed the dosing system, additive compatibility, and separation efficiency to identify areas for improvement.

Tailored Jar Testing and Dosage Optimization:

Jar tests were performed to determine the optimal combination and concentration of splitting additives required to maximize oil separation with WEDOLiT ES technology. Based on test results, precise adjustments to the pump rates and additive dosing levels were implemented to achieve effective separation at the lowest chemical input.

System Upgrade and Automation:

Obsolete dosing pumps were replaced with a modern variable-speed dosing system with signal output, ensuring accurate and responsive chemical dosing. A new control panel with data logging and cloud connectivity was recommended to install, enabling real-time monitoring and remote access to critical system parameters.

Operator Training:

On-site training was provided to the company's technical staff on performing jar tests and interpreting results, empowering the team to monitor and fine-tune additive usage independently.

TECHNICAL PROFILE

The technical solution in place is a combined approach of high-performance lubricant and process optimization – it delivered multiple operational benefits:

Expansion Performance:

The customer was already using the most advanced WEDOLiT expander oil technology, which demonstrates superior slip-stick properties. This allows for the reduction of temperature peaks in the expander head during challenging expansions. Stable hydraulic pressure was maintained throughout expansion steps, supporting smooth operations. Precise lubricant dosage control ensured efficient lubrication without over-application, contributing to improved expander output and increased daily pipe production.

Efficient Water Treatment:

In general, the easy-splitting technology facilitates rapid and complete oil separation, minimizing the need for splitting additives. After the process review and analysis, the customer was able to enjoy the full benefits of this technology. The water can be recovered and reused for post-expansion pipe washing, reducing freshwater consumption and improving overall process sustainability. Chemical consumption can be reduced by over three times compared to conventional solutions, leading to cleaner filtrate water and improved separation performance.

CONCLUSION

By leveraging the synergy between advanced WEDOLiT lubrication technology and technical support services, the manufacturer achieved significant efficiency gains in both the pipe expansion process and water treatment operations. This integrated approach not only reduced chemical consumption but also enhanced production stability and water reuse capabilities, positioning the company for long-term operational excellence and cost efficiency.

RESULTS AT A GLANCE

Easy-Splitting Expander Oil Technology provided valuable benefits:

- 33% Reduction in Splitting Additive Consumption
- Lower chemical usage directly reduced operational expenses.
- Improved Water Treatment Efficiency supporting water reuse and reducing environmental impact.
- Improving water quality enhances the cleaning process, as the reused water contains less oil, keeping the pipes cleaner.
- Empowered Technical Team ensuring ongoing process stability and cost control.
- Lubrication performance contributes to a more stable and efficient pipe expansion process.



With our ES technology, we reduce the additive consumption more than 3 times, improving the clearness of the purification-separation plant.

Contact our expert

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