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Negmar – Muradiye

Machine Health and Monitoring Use Case – May 2022

Machine Learning based conditional monitoring solution for Engine Room Ventilation fans.

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Outline

INTRODUCTION

Negmar Lines is a prominent shipping company specializing in transportation and logistics services. Since 2006, they have been operating ferry lines between Eskihisar and Tavşanlı ports, offering convenient passenger ferry services and Ro-Ro operations in the Marmara region. With their unwavering commitment to innovation and operational excellence, Negmar Lines has become a trusted partner in the global shipping industry.

Recognizing the significant value of data-driven decision-making in the maritime sector, Negmar Lines made a strategic investment in digital transformation. By harnessing the power of advanced technologies and predictive analytics, the company aimed to revolutionize their maintenance practices and optimize vessel performance.

Negmar Lines equipped their fleet with a sophisticated system designed to capture real-time data on critical parameters such as engine health, vibration levels, temperature, and other relevant metrics. These sensors, in conjunction with integrated third-party systems and manual input, created a comprehensive and dynamic data ecosystem, forming the foundation for their conditional monitoring solutions.

By leveraging this vast volume of real-time and historical data, Negmar Lines took the crucial first step towards digital transformation. Their predictive maintenance solutions enabled them to proactively identify potential equipment failures, detect anomalies, and schedule maintenance activities more efficiently. This data-driven approach empowers Negmar Lines to consistently reduce downtime, optimize maintenance costs, and enhance overall operational reliability.

SUMMARY AND CHALLENGE

Challenge

Negmar Lines experienced a recurring issue with engine failures, specifically related to the Engine Room Ventilation fan. Over a period of six months, the fan malfunctioned and burned out twice, causing significant disruption to their operations. Despite their efforts, Negmar Lines was unable to pinpoint the exact cause of the problem, leading to frustration and uncertainty.

This ongoing challenge prompted Negmar Lines to seek a solution that could provide insight into the root cause of the engine failures. In their pursuit of a resolution, they turned to Gelectric and their expertise in conditional monitoring and predictive maintenance solutions.

Summary

Through the adoption of Gelectric's conditional monitoring solutions, Negmar Lines achieved real-time monitoring of critical parameters, empowering them to identify anomalies and proactively address issues before they escalated into catastrophic failures. The integration of predictive analytics and advanced sensor technologies provided actionable insights, enabling Negmar Lines to optimize their maintenance schedules, enhance operational efficiency, and significantly improve the reliability of their engine systems. By leveraging Gelectric's expertise in conditional monitoring, Negmar Lines transformed their approach to maintenance, ensuring smoother operations and reducing costly downtime, ultimately leading to increased customer satisfaction.

SOLUTION: Conditional Monitoring System for Engine Room Ventilation Fan Motor

Gelectric assisted Negmar Lines by providing predictive fault prediction and real-time data analysis capabilities. Through the analysis of real-time sensor data and historical data, Negmar Lines experienced significant improvements in their vessel's maintenance performance.

▪ Edge Computer

Designed to store and process all relevant data, such as vibration and temperature readings, directly from the motor. It serves as a central hub for collecting and analyzing real-time information, enabling accurate monitoring and assessment of motor performance.

▪ Dashboard

Designed to be used by technical managers, officers, or technicians, whether on shore or aboard vessels. It provides real-time and historical data tracking for selected electrical engines, enabling users to monitor their performance and make informed maintenance decisions.

▪ Report

Gelectric's Machine Learning model generates monthly reports that provide insights into the health and overall condition of motors. These reports are focused on monitoring and analyzing the data.

RESULTS AND KEY SUCCESSES

REDUCED DOWNTIME

Negmar Lines can effectively reduce downtime by monitoring potential failures and performing timely engine maintenance, minimizing operational disruptions.

EFFICIENCY

With precise timing of maintenance activities and health optimizations, Negmar Lines experiences improved efficiency in their electrical motors, leading to enhanced performance and reduced energy consumption.

SUSTAINABLE MAINTENANCE

By monitoring maintenance demands and optimizing maintenance periods, Negmar Lines can adopt a more sustainable approach to maintenance, ensuring efficient resource utilization.

DECARBONIZATION

Through well-maintained motors that experience fewer failures and increased efficiencies, Negmar Lines contributes to decarbonization efforts and progresses towards achieving net-zero goals.

CONTINUOUS REPORTING

Gelectric's automated reporting system eliminates human errors, providing accurate and consistent reports that enable informed decision-making.

COMPETITIVENESS

The efficient and cost-saving maintenance operations facilitated by Gelectric's solutions provide Negmar Lines with a competitive edge in the industry, allowing them to deliver reliable services while minimizing costs.

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