CASE STUDY

NEW MAINTENANCE STRATEGY BOOSTS BATTERY MANUFACTURER'S PRODUCTION BY 27% AND SPURS RAPID GROWTH

This manufacturer stands at the forefront as a producer and distributor of silicon battery technology. The company started as a research facility to test their pioneering battery solutions which are now setting the standard for future locations. There are plans for two more production facilities. The company asked MaxGrip to help with the development of foundational data to enable growth and establish reliability best practices and supporting policies. The goal was to implement and sustain an optimized maintenance strategy.

AMBITIONS: MEETING GROWING DEMAND

The company focuses on enhancing the energy performance of lithium-ion batteries which can have a transformative impact on devices and vehicles, potentially leading to longer battery life and more efficient energy consumption. Therefore, the company's advanced silicon-carbon technology is pivotal for the future of electrification, especially in the context of the growing demand for efficient batteries in various sectors. The manufacturer is in a transition phase of going from research to production. They want to be set up for success from the start, meaning that they get the foundational structure and way of working established in such a way that it allows the company to sustain rapid growth.

APPROACH: ESSENTIAL FOCUS AREAS

MaxGrip consultants have singled out essential focus areas to come to a robust maintenance strategy. For all of these focus areas, the consultants follow these steps:

- Validate: prepare, scope, check and analyze setup;
- Establish: organize stakeholder workshops to discuss the established strategies and processes, introduce best practices and test in Proof of Concepts;
- Deploy: apply established standard to a pilot area;
- Sustain: enable sustainment of best way of working. This includes the creation of standards and policies. In addition, if applicable, data is uploaded to the CMMS system. MaxGrip worked hand-in-hand with the CMMS provider to ensure a seamless adaption to their environment.

Focus 1: Master Data

This first area is crucial to ensure the accuracy, consistency, and usability of data within the organization. A consistent and repeatable foundational data management model across all sites will improve maintenance and reliability efficiency and is sustainable for future sites. The model also covers all aspects of asset database management such as asset hierarchy, asset characteristics and naming or numbering conventions. This involves the creation of a structured system that categorizes and organizes assets based on their function and relation to other assets, including: asset hierarchy, naming conventions and equipment attributes. In a pilot, data collection, preparation, extraction, and review processes were implemented to validate and refine the data. After a successful Proof of Concept, the asset register was built with a clear definition of taxonomy levels and asset structure.

Focus 2: Equipment Criticality Assessment

This establishes a uniform process for a consistent approach when assessing equipment criticality. The criticality indicators are important to determine priority throughout key business processes. A risk matrix is used as a tool to assess risk during multidisciplinary workshops. This process was deployed to a key area of the production process to ensure its functionality and empower the organization with a solid start to deploy across the HQ facility and future locations. Based on a successful run, the team populated load files tailored to the CMMS system, ensuring seamless integration and functionality.

Focus 3: Maintenance Strategy

The Reliability-Centered Maintenance (RCM) strategy establishes and revises maintenance strategies based on criticality, which ultimately increases performance, creates a pro-active maintenance culture (instead of reactive) and keeps maintenance execution cost under control. RCM focuses on identifying and preventing equipment failures before they occur. The way of working includes applying Failure Modes, Effects and Criticality Analysis (FMECA), for which the client team was trained by MaxGrip consultants.

After the training and FMECA workshops, our team conducted a gap analysis. Based on the findings, the equipment maintenance strategies were updated. Implementation is key to fully realizing the impact of an optimized maintenance strategy and MaxGrip worked with the CMMS vendor and the client to test the interface before deploying the strategy into the system.

Focus 4: Planning, Scheduling and Spares

A work management workshop ensured that all stakeholders were aligned with the overarching goals and methodologies. Our consultants created templates for the PM model and job plans to streamline and standardize task allocations and workflows. To ensure the effective implementation of these templates, our team spearheaded maintenance planning sessions, focusing on the roll-out and training of the job plan and PM model templates. This ensures that the team is well-equipped to utilize these tools effectively. Our consultants provided the optimized PM schedule for import in the CMMS system. This approach guarantees optimized scheduling, preventing resource over-allocation and ensuring timely maintenance.

The MaxGrip consultants also created a spare parts strategy. Using the insights from the FMECA, our team identified critical spares, ensuring that these vital components are prioritized and available. A significant enhancement to the original scope was the establishment of minimum and maximum levels based on the maintenance strategy. This ensures that stock levels are optimized, preventing overstocking while ensuring that the spares required to execute the optimized PM strategies are available.

"We are really happy with what MaxGrip did. One year later, the facility is running way better than it was before. It is much more reliable and quality has improved."

- The Manufacturer's Engineering Manager

BENEFITS

27% PRODUCTION INCREASE AND LARGE SAVINGS

MaxGrip's consultants have created a justified proactive maintenance strategy for the manufacturer. The strategy is scalable to other locations and serves as a foundational blueprint for best practice maintenance and reliability. This ensures a sustainable way of working that can handle growing demand and rapid growth across sites.

The maintenance strategy results in a projected 27% annual increase in production with a corresponding 30% annual savings. Success factors:

- Enhanced informed decision making across all operational levels: The comprehensive master data framework has provided the client with consistent, accurate, and actionable data.
- Equipment criticality assessments have been instrumental in establishing prioritized maintenance schedules, ensuring that essential equipment remains in optimal working condition.
- Proactive maintenance culture: Supported by FMECA insights, a proactive maintenance culture has been fostered, leading to a reduction in unplanned downtimes and an increase in overall efficiency. Resource allocation has been optimized through meticulous planning and scheduling, allowing the maintenance team to operate at peak efficiency.
- A revised spare parts strategy ensures the ready availability of critical components, striking an effective balance between inventory costs and operational readiness.

maxgrip

MaxGrip is a global Asset Performance Management consultancy that enables asset-intensive organizations to improve their bottom line by optimizing asset performance and accelerating digital transformation. Our experts work with leaders in a broad range of industries, including Oil & Gas, FMCG, Power Generation & Distribution, Water and Wastewater, Infrastructure and Metals and Mining.

Learn more about our solutions and clients at maxgrip.com. Or contact us via info@maxgrip.com.