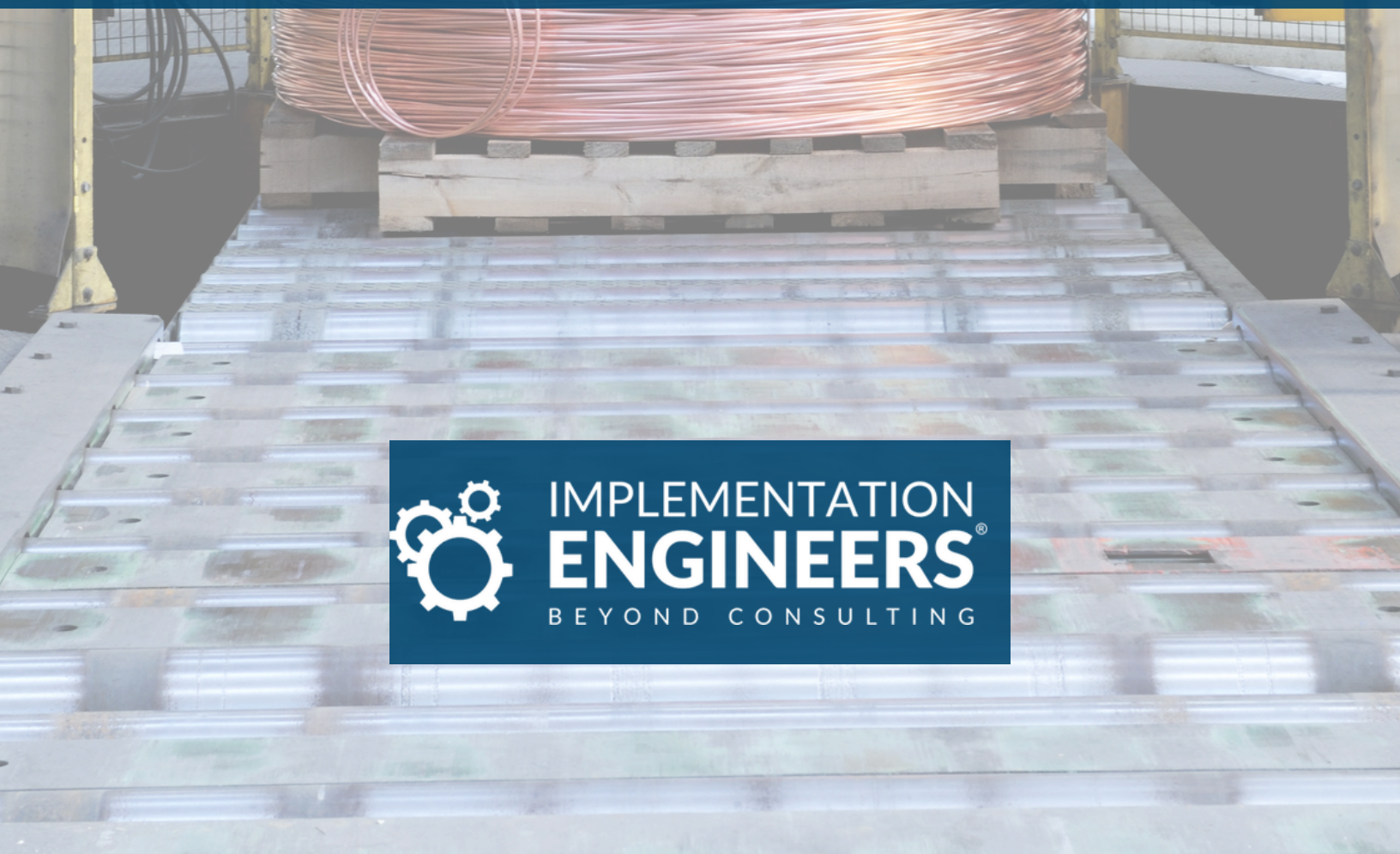




IX[®] Case Study

Implementation of Asset Performance Excellence
at Wire Manufacturing Client's Rod Mill Transition



IMPLEMENTATION
ENGINEERS[®]
BEYOND CONSULTING



Implementation Engineers partnered with a marketing leading wire manufacturing client to support the decommissioning of an aging rod mill and the simultaneous commissioning of a new rod mill facility located adjacent to the original site. The client faced significant operational and organizational challenges during this transition, necessitating a comprehensive approach to optimize maintenance and reliability processes. Implementation Engineers deployed our holistic Asset Performance Excellence program through our Maintenance & Reliability practice to ensure a seamless transition, maximize asset utilization, and establish sustainable operational systems for the new facility.

Challenges & Approach

The client’s existing rod mill relied on outdated processes and underutilized systems - most notably its SAP Plant Maintenance (PM) module - leading to inefficiencies in maintenance work management, inventory control, and reliability engineering. With the new rod mill nearing commissioning, the client required rapid, structured improvements to align operations with business goals, enhance equipment reliability, and establish a robust management operating system.

Management Operating System	Reliability Engineering	MRO Inventory Management	SAP PM Optimization	Maintenance Work Management
Established a robust framework for tracking performance, driving accountability and sustaining change	Enhanced MTBF and reduced MTTR, improving mill availability and lifecycle costs	Optimized inventory levels and warehouse operations, ensuring material availability for commissioning and ongoing maintenance	Increased system utilization and data-driven decision-making, reducing downtime and improving process efficiency	Shifted maintenance from reactive to proactive, with a sustainable system supporting the new rod mill’s operations

Implementation

Management Operating System

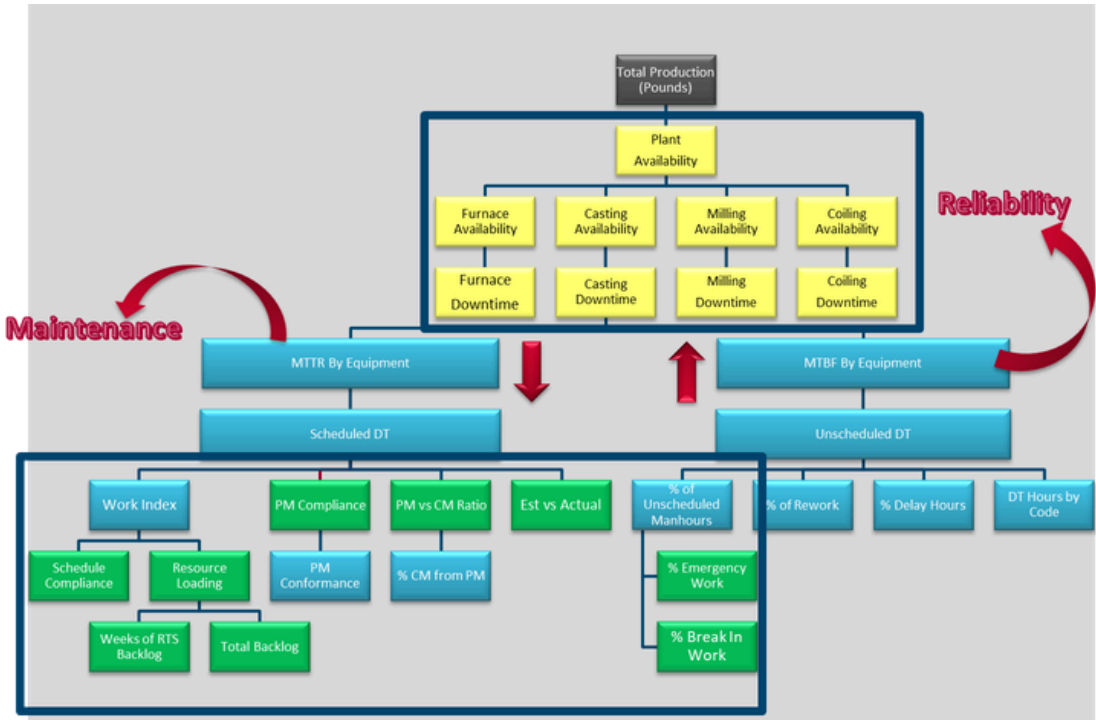
Our client’s Maintenance Management Operating System lacked the robustness to support rapid change, with inadequate visual displays, metrics, action logs, and meeting structures to drive performance and accountability.

Key implementation objectives were:

- Design a simple, robust management system to enhance structure, engagement, and communication
- Deploy Leader Standard Work and effective behaviors for supervisors
- Implement a performance scorecard, KPI tree, and effective meeting structure

We partnered with our client and implemented a tailored Management Operating System featuring visual dashboards, a KPI tree, and structured meeting frameworks. Leader Standard Work was deployed for frontline supervisors, supported by a RACI framework and accountability measures. The performance scorecard enabled daily, weekly, monthly, and annual tracking of progress and results, fostering a culture of continuous improvement and behavioral change across the maintenance organization.

Maintenance KPI Tree



KPIs Defined & Ownership Assigned

KPI's Measured

Schedule Compliance %

Emergency & Break-Ins %

Resource Loading (%)

PM Compliance %

Weeks of Ready to Schedule Backlog

Total Backlog

PM versus CM Ratio

Estimated versus Actual Hours

DEFINITIONS

Emergency maintenance is a type of reactive maintenance that is used to prevent a threat to lives, property, profitability, or viability of an organization.

Break-in Maintenance is another type of reactive maintenance for identifying maintenance jobs that are added to a schedule without proper planning and scheduling completely by-passes the process.

OBJECTIVES

This metric is used to measure the amount of work that is added to the weekly schedule.

FORMULA

Reactive Work (%) = [Work that breaks into (hrs) / Total Maintenance Work (hrs)] × 100

Emergency Work (%) = (WBS / TML) × 100

KPI's Measured

Schedule Compliance %

Emergency & Break-Ins %

Resource Loading (%)

PM Compliance %

Weeks of Ready to Schedule Backlog

Total Backlog

PM versus CM Ratio

Estimated versus Actual Hours

DEFINITION

This metric is the ratio of the actual number of labor hours reported on a work order to the estimated number of labor hours that were planned for that work order.

OBJECTIVES

This metric measures the accuracy with which work is planned and the efficiency of planned work execution.

FORMULA

Resource Loading % = (Planned Work Order Hours / Total Available Hours) × 100

AHPE = (AWOH / PH) × 100

COMPONENT DEFINITIONS

Planned Work Order Hours

The planner's estimate of hours needed to complete the work order.

Total Available Hours

The quantity of hours available for completing job tasks

KPI's Measured

Schedule Compliance %

Emergency & Break-Ins %

Resource Loading (%)

PM Compliance %

Weeks of Ready to Schedule Backlog

Total Backlog

PM versus CM Ratio

Estimated versus Actual Hours

DEFINITION

This metric is a measure of adherence to the maintenance schedule, expressed as a percent of total time available to schedule.

OBJECTIVES

This metric measures compliance to the maintenance schedule and reflects the effectiveness of the work scheduling process.

FORMULA

Schedule Compliance (%) = [Scheduled Work Performed (hours) / Total Time Available to Schedule (hours)] × 100

SC (%) = (SWP / TAS) × 100

Implementation

Reliability Engineering

At the old rod mill, the absence of formal reliability engineering processes had led to frequent unplanned downtime, reduced equipment availability, and suboptimal lifecycle costs - issues that posed a significant risk to the new facility if not addressed proactively. The client lacked structured methodologies for identifying critical assets, tracking performance data, and resolving chronic reliability issues, resulting in lower Mean Time Between Failures (MTBF) and higher Mean Time To Repair (MTTR). With the new rod mill's commissioning on the horizon, establishing a robust reliability engineering framework was critical to achieving operational excellence and long-term asset performance. During implementation, we deployed a Reliability Engineering program tailored to the new rod mill's needs, embedding best-in-class practices to maximize uptime and minimize costs. Key actions included:

1 Asset Criticality and Data Foundation

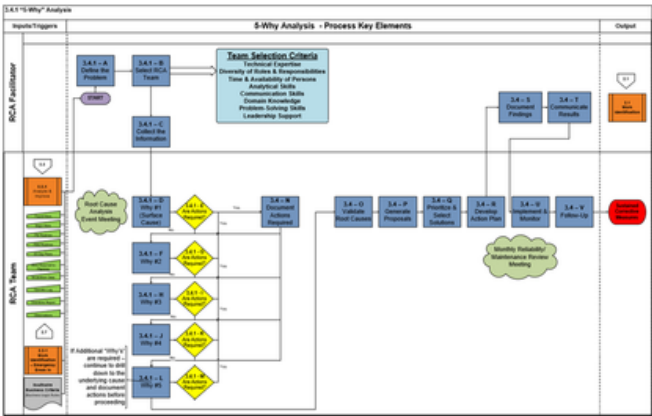
- Conducted a detailed criticality analysis to prioritize equipment based on operational impact, failure risk, and maintenance cost
- Developed comprehensive Bills of Materials (BOMs) for identified critical assets, ensuring accurate spare parts identification and availability
- Created an asset hierarchy within SAP to facilitate granular performance tracking and reporting

2 Maintenance Strategy Development

- Designed initial maintenance strategies, including preventive maintenance (PM) schedules and condition-based monitoring protocols, tailored to the criticality and failure modes of key assets
- Defined key performance indicators (KPIs) such as MTBF, MTTR, and overall equipment effectiveness (OEE) to benchmark and monitor reliability improvements

3 Root Cause Analysis (RCA)

- Implemented a formal RCA program utilizing the 5 Why Process to systematically identify and eliminate root causes of equipment failures
- Trained maintenance teams on RCA execution and documentation, fostering a problem-solving culture



RCA Process & Tools Developed

3 Closed-Loop Reliability Framework

- Created a closed-loop process to ensure continuous improvement, linking failure data from RCA to updated maintenance strategies and KPIs. This system enabled real-time feedback between operations and reliability teams, allowing for rapid identification and resolution of emerging issues.

3 Training and Capability Building

- Delivered hands-on workshops and simulations for reliability engineers and technicians, focusing on tool usage, data interpretation, and strategy execution
- Embedded reliability principles into daily workflows to sustain long-term gains

Implementation

MRO Inventory Management

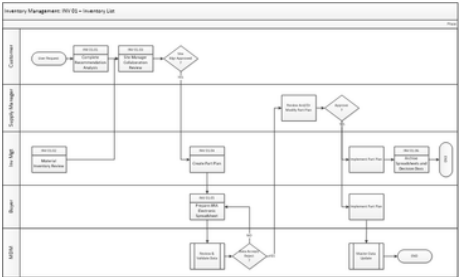
Our client’s material management processes were severely constrained by an underutilization of SAP capabilities, leading to a reliance on frequent backflushing transactions to maintain inventory levels for operations and maintenance. This reactive approach resulted in inconsistent material availability, elevated carrying costs, and inefficiencies that threatened the new rod mill’s commissioning timeline. Objectives of the workstream included:

- Identify site-specific design guidelines for in-scope processes and materials
- Redesign inventory and warehouse management processes to optimize material flow and availability
- Facilitate the physical layout and construction of the new rod mill warehouse
- Coordinate the identification, prioritization, and movement of critical materials to assigned stocking locations
- Leverage SAP to establish a proactive, data-driven inventory management system

What We Did

1 Design Guidelines and Process Redesign

Collaborated with engineering, maintenance, and procurement teams to establish site-specific design guidelines tailored to the rod mill’s material needs. Redesigned inventory management processes using ABC analysis to prioritize high-value, critical components and minimize overstocking of low-turnover items. Warehouse management processes were reengineered to streamline receiving, storage, issuance, and tracking workflows.



Process Maps

Min Max Reorder Tool

2 SAP Integration and Optimization

Developed and integrated material master data with Bills of Materials (BOMs) for critical assets, eliminating the need for backflushing by enabling real-time inventory tracking within SAP. Standardized SAP templates were implemented to ensure consistency across material records, while automated reorder points and min-max thresholds were configured to maintain optimal stock levels.

4 Material Transition Management

Coordinated the identification and prioritization of in-scope materials, managing their physical movement from the old facility and external sources to assigned stocking locations in the new warehouse.

5 Inventory Control and Assurance

Established robust inventory control procedures, including cycle counting audits and reconciliation protocols, to maintain accuracy and prevent discrepancies. Trained personnel on new processes and SAP functionalities to ensure adoption and sustainability.

These efforts transformed our client’s MRO inventory system from a reactive, disjointed operation into a proactive, integrated framework. By optimizing inventory levels and reducing stockouts and excess stock, we ensured material availability for both startup and ongoing maintenance, delivering significant cost savings and operational continuity.

Implementation

SAP PM Optimization

The client's SAP system was underutilized, resulting in an inefficient maintenance process for identifying, prioritizing, planning, scheduling, executing, closing, and auditing work orders. This lack of system optimization hindered performance tracking and decision-making.

Activities during implementation included:

- Aligned stakeholders on SAP optimization strategies
- Developed asset and materials master data
- Integrated SAP with work and material management processes
- Optimized system-generated KPIs and reports
- Trained key personnel on updated procedures

Implementation Engineers implemented a controlled work order (WO) process, enhanced KPI and report outputs, and improved data validity and usability. The team increased system functionality and overall utilization by integrating SAP with work management procedures. Key personnel were trained on modified processes, ensuring adoption and sustainability. These efforts resulted in a fully optimized SAP PM system tailored to the new rod mill's operational needs.

Work Management

The maintenance department operated in a reactive mode due to the absence of embedded work management processes and tools.

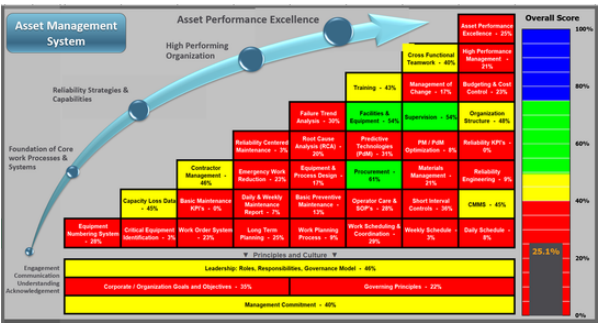
Activities during implementation included:

- Designed and implemented a sustainable Work Management System aligned with client goals
- Integrated work management with SAP
- Developed tools and a RACI (Responsible, Accountable, Consulted, Informed) framework for each process step
- Trained stakeholders on processes and SAP usage

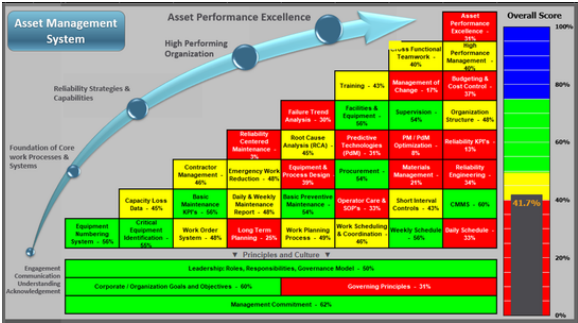
During implementation, we designed and installed a comprehensive Work Management System, incorporating planning and scheduling standards, tailored workshops for new planners, and company aligned guidelines. Existing tools were evaluated and adapted for the new mill, with SAP configured to support work order generation, tracking, and reporting. Performance metrics, regular audits, and continuous improvement protocols were established, shifting the maintenance team from reactive to proactive operations.

Summary

Implementation Engineers' Asset Performance Excellence program exemplifies how a comprehensive, multi-workstream approach can transform maintenance and reliability operations during a critical facility transition. We integrate advanced systems like SAP with tailored processes, reliability tools, and organizational frameworks to deliver measurable, lasting results for our clients.



Asset Performance Excellence Score
26% Before Implementation



Our Client's Score Increased to 41.7%
After Improvements During IX®

Let's Get Started

- Schedule a meeting with our team to discuss how Implementation Execution (IX®) can help your organization achieve its goals. Submit an IX® request on our website at www.implementation.com
- Visit www.implementation.com to read more about IX® and how we have helped our clients create sustainable results
- Follow us on LinkedIn to stay up to date with the latest industry insights and updates. Join our network to access exclusive content and stay connected with our team of experts

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