Maintenance

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This Wiki page summarizes all of the standards from Star Factory relating to Maintenance.

1. Work Order Management

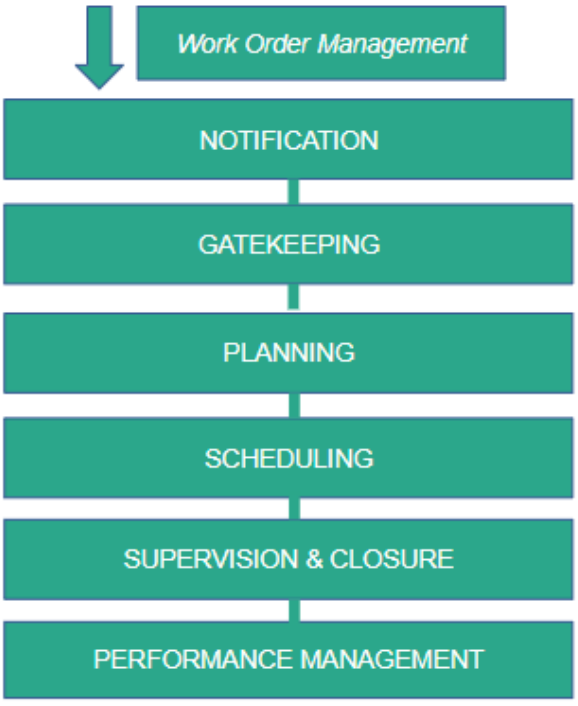
1.1. Introduction

Work Order Management (WOM) is a systematic approach to plan and execute maintenance work orders, which will minimize asset downtime. Another way to look at the maintenance performance of a site is to measure and benchmark the “Overall Wrenching Time”, which is a measure of the amount of time maintenance technicians spend doing actual maintenance work.

The Star Factory Standard one-pager can be found under this link. An in-depth Playbook on Syensqo Maintenance Principles can be found under this link .

1.2. Solution

In order to improve on WOM, sites should improve work efficiency (do things right) by implementing the right process (see flow below). One of the aims is to lower the emergency work ratio down to less than 10%.



The detailed description of this process is available in the “SoLMAX Lean Work Order Management Self-Assessment” Playbook, under this link .

1.3. Financial & Operational KPIs

A high Overall Wrench Time means that staff maintenance resources are correctly allocated. In 2022 at Syensqo, the Overall Wrenching Time ratio is about 30-35% when the world class benchmark is around 50-55%.

Improving the WOM will enable sites to decrease maintenance costs and increase OEE by improving category 2 losses.

1.4. Tools to be used

The tool Mecano should be used to track the overall performance. The SBS_SAP team should be leveraged to be able to implement

2. MRO - Inventory Spare Parts Reduction

2.1. Introduction

What is MRO? It stands for Maintenance, Repair, and Overhauls spare parts, corresponding to the parts that directly support the production process but are not included as part of a finished product.

MRO is part of the inventory and therefore the cash that is tied down into operations. Freeing up inventory by optimizing it enables freeing up cash which can be used for CAPEX and other investments. One target is removal of obsolete stock.

2.2. Solution

The Star Factory Standard one-pager can be found under this link . The Inventory Spare Parts Reduction Playbook from the Value Chain Transformation team can be found under this link , while the associated Wiki Page is here.

2.3. Financial & Operational KPIs

The main KPIs that are tracked for MRO performance are:

- Lagging Indicator: Inventory Value (vs. target). This showcases the final outcome of the project and is linked to the cash that it can deliver.
    - The Group's target in mid-2020 was to generate 25M€ of cash by 2025 by implementing this methodology in all sites.
- Leading Indicator: Overview of Max stock, Min stock, Reorder point and real value. This enables project managers to challenge the sites during the project and create new targets.
- Lean Indicator: Number of SKUs in each “10 box model” category.

Note : more detailed maintenance KPIs can be found in the Maintenance Dashboard .

2.4. Tools to be used

The MRO 10 Box tool is a framework that uses data from the previous years in SAP, the MRO 10 box tool proposes new parameters (MRP type, lot size, min/max stock, reorder points, etc.) which enables to optimize stock by those adjusting these parameter settings and minimizing obsolete stock. The MRO 10 Box tool can be found here .

As a prerequisite, in order to roll out this toolbox, a site should have its spare parts managed through SAP and have more than 5 years of consumption data.

3. Site Maintenance Playbooks (F2G)

The Fuel For Growth (F2G) program has developed playbooks on site maintenance that are referenced here . This stemmed from the realization that there were no standards or best practices shared within the Group, leading to missed synergies. These playbooks were developed for Syensqo Spending Smart and now apply to the Spending review challenge.

The intended goal is to further develop these site maintenance playbooks, covering the following topics:

- General Maintenance (Europe ; North America ; APAC)
- Scaffolding & Insulation Services (Europe ; North America ; APAC)
- Corrosion (Worldwide)
- Piping (Europe ; North America ; APAC)
- Mechanical Equipment Service (Europe ; North America ; APAC)
- Electrical & Instrument Service (Europe ; North America)
- HVAC Services (Worldwide)
- Lubrication Services (Worldwide)

The audience of these playbooks are the site's **Operational Excellence Managers** as well as the **Maintenance managers** .

Ultimately, the goal of deploying these site maintenance best practices is to **reduce maintenance costs between 5 and 10%** .

4. Maturity Assessment

A Site Maintenance Maturity Assessment tool has been developed by the SolMax teams. Indeed, when a site wanted to have SolMax transformation or F2G diagnostic, site & transformation teams did not have very clear tools to analyze current status and identify the gap with the benchmark.

This Maturity Assessment Tool can be found here .

The assessment takes place in three steps:

1. Self assessment (first step)
2. Audit assessment done with SolMax Team (one item at a time)
3. Define the actions to close the gap to Syensqo benchmark

Usually, a multidisciplinary team from the site will be needed to answer the questionnaire and it will take ~4h (to be done in 2 sessions).

5. Self-Analysis Report

In the past, it was very difficult to find savings or improvement potential while going through the Work Order analysis, by looking at the priority ratio, proactive ratio, planning & scheduling, etc. To answer this operational problem, the SolMax team developed a step-by-step procedure to extract data (+ transfer to a common template) and answer a 120 question long Self-Analysis Report .

1. The self-assessment is a set of 120 questions to be answered by the site.
2. This information will give an estimate of the maturity level in different levels, such as Asset Management & Leadership, Reliability, Work Management Process, Digital and MRO.
3. Also will give a quantitative result for the 4 pillars:
    a. Mindset and Behavior
    b. Performance Management
    c. Technical Systems
    d. Organization
4. The answers to these questions will be also an input for the work order analysis, impacting different maturity levels and the potential accordingly.
5. It is recommended to answer these questions ‘in a consensual manner’ in order to get a more accurate view from different team members.

Once the data (from SAP) has been extracted and transferred to the template, it takes around 3h to complete the self-assessment.

Maintenance cost saving can be defined theoretically by this method (usually ~5%-10%).

6. E-work permit / DCCS-GTBU

Current Work Permit process is fully manual. Errors can occur during the process increasing the safety risk. The new solution will provide a more reliable and accurate process. More specifically, this new solution provides a Management of "Permit to Work" process including:

- Risk Assessment
- Work permit generation
- Work permit approval workflow

Ultimately, this solution will allow to:

- Increase the quality of work permit i.e. more than > 99% of permit without error
- Facilitate work permit management i.e., Gain of 10% on the full processing time of the work permit process
- Improve ways of working

There are a few requirements to starts e-works permits:

- "State of the art" digital solution to manage the Permit to Work process
- Solution interfaced with SAP PM
- Solution available on mobile devices

7. Reliability Standard Approach

Reliability is a key concept impacting:

- **Compliance:** Safety & Environment
- **Customer:** stable production and delivery in time
- **Competitiveness:** reducing production losses and optimizing maintenance costs and inventories

It is therefore key to ensure a reliable culture when driving transformations along a clearly defined standard describing the key processes to improve such reliability on sites.

This ultimately leads to:

- Maintenance cost reduction, due reduction of corrective works and preventive maintenance optimization
- OEE losses category 2, breakdowns reduction, increasing production volumes
- Higher safety and environmentally friendly ways of working

In order to apply such standard, a few elements are required:

- An organization in place with right level of competence
- A minimum digital instrumentation in place on site
- A high adoption of SAP utilization

8. Turnaround Guidelines

8.1. Introduction

Today, all Syensqo production sites organize their turn around independently. This represents roughly 800 days in total with a direct loss of 200m€ Contribution Margins. Optimizing turnaround to decrease their duration and allow for increased production volume represents a great opportunity for Syensqo.

8.2. Solution

The purpose of this standard is to share best practices across the organization by building the turnaround standard including:

- Organization
- Safety management
- Schedule management
- Quality management
- Resource management
- Communication
- Cost management
- Contractor management
- best practices sharing.

8.3. Financial & Operational KPIs

This can ultimately lead to:

- 3~5 % of turn around cost reduction
- 3~5% of time saving, OEE loss reduction (~0.3% reduction)

8.4. Tools to be used

9. DCCS-GTBU (Cost Control / Automated Invoicing)

Due to an unreliable and time consuming cost control process at our contractors, a review of our cost control process of our maintenance contractors has been put in place. This allowed Syensqo to adapt payment according to the service provided and adapt/develop the digital cost control tool. This standard embeds best practices related to this review.

This led to concrete improvements:

- Estimated maintenance cost reduction (with contractors onsite maintenance) ~ 5%
- N# of contractor hours available onsite x Planned hours x Executed hours x paid hours
- Motivation of people changing the way of work, avoiding repetitive and non-add value work
- Transparency improvement between Syensqo and Suppliers
- Productivity improvement (wrench time)
- Purchasing contract management simplification
- Pick list contract analysis to optimize the resources

A few elements are required to apply this standard:

- The tool should be linked to SAP data.
- Available in all Syensqo standards Languages (as SAP PM)
- User friendly tool to be used in the shop floor level

Linked Playbooks

- Solvay Maintenance Principles Playbook
- Inventory Spare Parts Reduction Playbook
- Site Maintenance Playbooks (F2G)

Linked Standard One-Pagers

- Work Order Management
- Inventory Spare Parts Reduction
- E-work permit Standard Synthesis Page
- Turnaround Guildelines Standard synthesis
- Reliability Standard (wip)
- DCCS-GTBU Standard (Wip)

Relevant Tools

- Mecano
- MRO 10 Box tool
- Maturity Assessment Tool
- SolMax Self-Analysis Report
- Maintenance Dashboard (KPIs) to track performance
- SAP ASPM/PAI solution (n.a)

Key Trainings

Key Contacts

- Mike Ghere - Domain Leader
- Claude Chaput - EMEA
- Shannon Finn - NAM
- Christophe Mallevaey - EMEA

Linked Pages

- Inventory Spare Parts Reduction