

# Reference letter

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Concerning:

Reference Letter – Process optimization in the Shell Moerdijk Maintenance organization

Moerdijk (NL), April 21, 2021.

In the name of Shell Nederland Chemie, I state that PDM has successfully completed the assignment to optimize our Maintenance department at Moerdijk.

During this assignment, PDM executed a project to support us in our efforts of a site-wide increase in the efficiency of the maintenance organization.

The project description is attached to this certificate.

We wish PDM success with their future projects

Sincerely,



Aura Cuellar  
Asset Manager  
Shell Nederland Chemie B.V.

# Case: Shell Nederland Chemie

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## Process optimization in a Maintenance Organization

### BACKGROUND

Shell Nederland Chemie B.V. (SNC Moerdijk) is part of Royal Dutch Shell. The entity focuses on converting naphtha, gasoil, and LPG to the basic chemicals ethylene, ethylene oxide, ethylene glycol, propylene, propylene oxide, butadiene, and styrene. Located at Moerdijk, the Netherlands, the site was first founded in 1968. The site has three main production units (PUs) with a total production of 4.5 million tons of product per year with a daily staff of 1.300 people (800 Shell staff members and 500 contractors).

### ASSIGNMENT

In 2018, PDM successfully completed a maintenance process optimization pilot together with Shell and a site contractor. We summarize the main elements of the new way of working that emerged from this pilot project.

- Rolled out clear objectives (KPIs) to the work floor.
- Written clear process descriptions with effective gatekeeping and validation checks.
- Implemented a clear separation of responsibilities between job preparation and work organization.
- Introduced a paper-based Hands on Tool Time (HoTT) form to monitor daily obstacles in job execution (self-HoTT).
- Base the priorities of “efficiency blockers” to solve on measured obstacles (Pareto).

- Actively solve HoTT blockers in a weekly meeting with all responsible parties to accomplish a more effective work execution.
- Introduced scheduling based on benchmark hours and increase/optimize loading of the schedule.
- Improved start of the day duration.

Building on this success, Shell Moerdijk asked PDM to guide and support the structured roll-out of the previously designed improvements across the Shell site in early 2019.

For this assignment PDM was asked to design a more standardized way of working for all disciplines (i.e., mechanical (hot and cold), electrical, inspections, instruments and site facilities) relevant for both Shell and contractor personnel. The main goal of the project was to create synergy between the teams and facilitate the execution of maintenance according to a site-wide schedule. Furthermore, to achieve this goal, a detailed communication structure and clear responsibilities between all relevant parties had to be documented and implemented. Finally, a critical aspect of the project has been the management of change and engagement of all stakeholders.

*For more information we refer to the 2020 Reference Letter about the HoTT pilot implementation project at Shell Moerdijk, available via the PDM website.*

# Case: Shell Nederland Chemie

## PROJECT APPROACH

The project roll-out followed a standardized approach for all disciplines:

1. Kick-off with all stakeholders
2. Go & See the WoW at other PUs
3. Workshops with stakeholders, adapting the WoW per discipline and PU
4. User training for using the new WoW
5. Facilitating the implementation of the new WoW
6. Follow up on the implementation and managing sustainable change.

### Generating involvement and buy-in

The approach was strongly aimed at creating involvement within all layers of the organization. Emphasis was placed on involving both the management and (representatives of) the work floor in the design of the way of working by organizing inclusive kick-off meetings and facilitating workshops to create a collective perspective. In addition, interdisciplinary workshops ensured that responsibilities and transfer of crucial information were aligned throughout the maintenance process.

In a parallel approach to generate personal engagement, key stakeholders were asked to participate in Go & See sessions, which operate on the principle of “see one, do one, teach one”.

### Application of a standardized WoW

A standardized way of working was used for all disciplines and production units. The design of this way of working was based on the main areas of improvement of the pilot as summarized above.

During the roll-out, all users and stakeholders involved in the maintenance process were trained in both the new maintenance process concept and the underlying reasoning of the new way of working.

### Facilitating the implementation

During the implementation phase of the project, PDM has facilitated multiple key meetings to support the stakeholders in focused communication and to ensure the most effective adoption of the new WoW. A gradual transfer of responsibilities from PDM to the process owners ensured ownership, sustainability, and user confidence.

In addition to the facilitation of key meetings, matching Quick Reference Cards (QRC) were prepared for all disciplines and underlying roles to guide the users and stakeholders in clarifying individual responsibilities and, consequently adhering to the designed process. A key element of the QRCs is the greater ease of identification of the root cause of process deviations.

### Change management & coaching

Active stakeholder management was used to monitor all stakeholders, from the moment of kick-off to completion of the project. Structural personal coaching on all levels of the organization was deployed to be able to:

- Create synergy
- Create acceptance of the new WoW
- Solve perceived obstacles
- Jointly escalate issues (to management) when required.

Subsequent interventions were planned if necessary, such as (personal) training, coaching, or team-based workshops.

# Case: Shell Nederland Chemie

## Continuous improvement loop

Automated data gathering tooling was used to generate the three most important KPIs (the Schedule efficiency, Schedule attainment and Earned/Burned) and for the continuous improvement of the dashboard with the self-HoTT data.

This data was used to visualize the progress and the trend of improvements, supporting all parties involved in decision-making.

In addition, a continuous improvement loop was established around the data to identify the remaining obstacles and improvement potential, for both the site as a whole and for specific disciplines, and to initiate targeted problem solution.

Finally, an objective and structured evaluation method was drafted with which the Shell team can assess whether the process is still functioning properly.

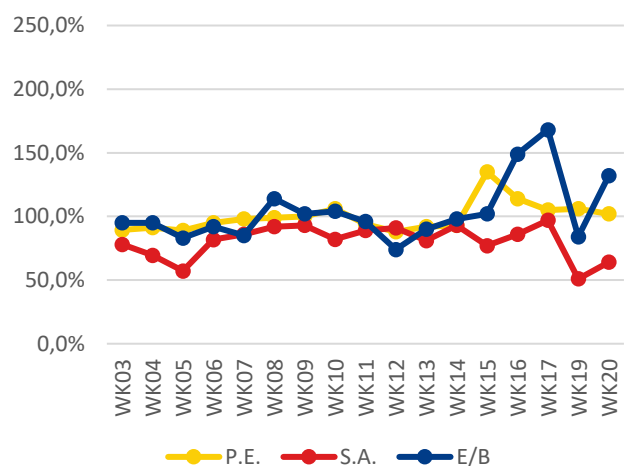
## PROJECT RESULTS

As a result of the roll-out of the standardized way of working across the site and the availability of all aspects for a site-wide schedule, the foundation has been laid for a more centralized and effective Operations organization.

The pilot roll-out initiative, which has effectively been implemented across the organization as described in this document, is now seen as a cornerstone for the reorganization initiative, currently implemented at Shell Moerdijk.

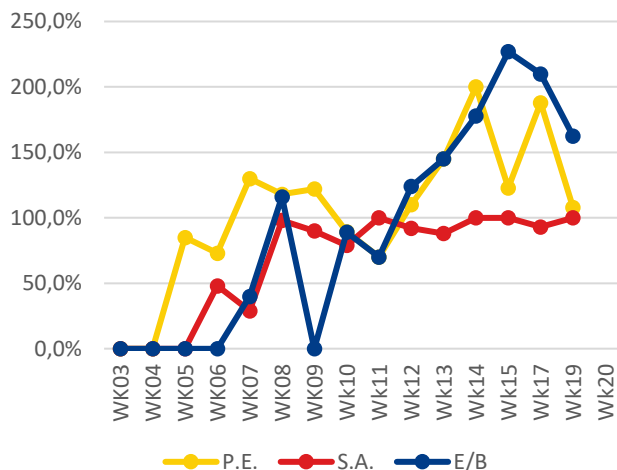
On a discipline level an immediate and stable increase was recorded in the Scheduling Efficiency (S.E.) of the available resources, the Schedule Attainment (S.A.) and the ratio between hours “Earned” and “Burned” (E/B). The teams involved in the site-wide roll-out showed a major improvement in a short period of time (see next page for graphs 2 and 3), and is expected to reach the same desired stability in performance as the pilot PU (see graph 1) has shown.

Part of this immediate success lay in the successful design of the WoW during the pilot project and partly in the approach described in this document.

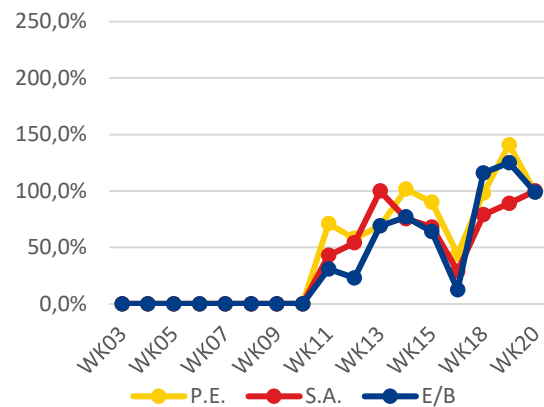


Graph 1 – Pilot Production Unit KPI results 2020

# The impact of our work



Graph 2 – Production Unit 2 KPI results 2020



Graph 3 – Pilot Production Unit KPI results 2020

*PDM has helped us to have a fresh perspective on how we organized our work. This led to new insights and improved performance.*

**Marcel de Vreede – Maintenance Manager – Shell Nederland Chemie**