



Implementing a successful Plant Turnaround

DuPont
Sustainable
Solutions



Achieving a successful Plant Turnaround is an integral part of any Operations Excellence Program and requires the right partnership to be implemented successfully.

About Plant Turnaround

A Turnaround, is a core part of an Operations Excellence Program, typically falling under the pillar of Risk Reliability and Integrity. A Turnaround occurs when part of, or all of, a plant's operations have to shut down for equipment to be inspected and, if necessary, cleaned, serviced, repaired, and/or replaced.

Turnarounds are extremely challenging activities which, if not executed and planned for efficiently, can become highly expensive, potentially costing an organization millions of dollars per day.

Robust assessments for successful Turnaround

Paramount to implementing a successful Turnaround begins by conducting a robust assessment of the turnaround strategy and planning process prior to the actual execution of the Turnaround itself. The purpose of the assessment is to identify the improvement levers and value release opportunities for

follow-on work. DSS gains an understanding of potential opportunities and the pain points with an accuracy of about 80%, a top performance metric from an industry standards perspective.

At DSS, highly skilled engineers critically assess the effectiveness of Turnarounds with a view of helping clients reduce the time and cost which, in turn, positively impacts the 'mean time between Turnarounds' to ensure improved equipment reliability. An improvement roadmap which focuses on the areas where value can be released is presented to management to ensure alignment.

Following this, an engagement phase takes place as per the roadmap defined. During the assessments, a number of activities are conducted such as widespread onsite reviews, a focus on mixed interviews, performance data reviews and in-field studies. To execute this process, DSS typically interviews key company representatives, does extensive site walks, during both the day and night shifts, takes part in daily meetings and conducts extensive surveys.

Common reasons why a Turnaround won't be successful

An in-effective strategy can result in a company's inability to meet the Turnaround and business goals due to a lack of alignment with asset conditions which can lead to high levels of unplanned downtime. Turnaround targets which are not compared with world class benchmarks and a lack of qualified resources to roll-out can impair the execution of an effective Turnaround. Inefficient planning can result in cost overruns, low schedule compliance and a high number of incidents and unreliable production. A Turnaround's timings can change due to external forces and if the correct planning hasn't been implemented, a successful rollout won't be possible. Not having qualified resources with regional or local expertise required for specific industries or in-country Turnarounds can result in poor delivery in execution quality.

Main challenges to the success of a Turnaround

Turnarounds require external resources to implement and deliver on an effective program because permanent employees do not necessarily have the right level of day-to-day experience or expertise to execute a Turnaround. Turnaround activities typically occur every four to five years, depending on the operation. This often requires a high contractor population to join the existing workforce to supplement the Turnaround implementation but often they themselves are not familiar with the environment, resulting in poor outputs. A contracting workforce can potentially create disengagement.

Delivering a Turnaround on time, within scope and on budget is challenging because it is almost impossible to know the extent of maintenance required, which might only become apparent once the work actually begins. According to the World Class Turnaround Management Lessons and Benchmarking report from the National Petrochemical and Refiners Association, 80% of Turnarounds exceed costs by 10%.

A Turnaround presents a number of challenges regarding safety which occur during this process. This includes non-compliance to safety and environmental regulations, a lack of pro-active focusing on safety precautions, not learning from previous incidents and a lack of communication and information sharing. Without an effective Process Safety Management (PSM) system in place, organizations not only run the risk of injury and fatality but can also impact the Turnaround project overall.

The DSS methodology for a Turnaround

High quality preparation and planning coupled with the right processes, tools and techniques are fundamental to executing a successful Turnaround strategy. Assessments provide the strategic framework for a Turnaround, from setting the objectives, to implementing and measuring the results. Evaluation is an important process to a Turnaround as it helps inform and directs the process for when the next Turnaround is due.

There are typically five elements in the DSS assessment process:

- Maturity Assessment:**
 The maturity level assessment is a structured and efficient way to measure the maturity of a Turnaround at an organization. This process helps assess work methods currently in place and are supported with visual technique to better prepare the execution of the work itself.
- Readiness Assessment:**
 This assessment compares the actual Turnaround preparation status against global best practice for Refineries and Petrochemicals. Furthermore it takes into account the complexity of the upcoming Turnaround.
- Effectiveness Assessment:**
 Assessing Turnaround effectiveness through specific Key Performance Indicators (KPIs) and

establishing the ratio between the value adding and non-value adding work.

- Post Turnaround Review:**
 Gathering lessons learned from completed Turnarounds provide the basis for identifying areas of improvement for future Turnarounds providing opportunities for continuous improvement.
- Process Improvement/Quick Wins:**
 Identify the key levers to impact the effectiveness of a Turnaround and finding ways to improve the value which a Turnaround inevitably brings to the organization.

In the below diagram we summarize some of these elements and the activities we would plan to execute. The entire process is subject to the scope and requirements for the Turnaround.



EFFICIENT TAR EXECUTION

According to DSS methodology, efficient TAR execution is possible only with high-quality preparation and planning processes and tools

©2019 DSS Sustainable Solutions. All rights reserved. Du Pont, the DuPont Oval Logo and certain trademarks and service marks that include "DuPont" are owned by affiliates of DuPont de Nemours, Inc. and licensed to DSS for a limited period of time. Visit us on <https://www.consultdss.com>

The benefits of a successful Turnaround

Typical benefits include increased revenue due to minimized downtime and higher production and schedule attainment. Reduction in cost overruns and an increase in an organization's return on Operational Excellence and Capital Efficiency redeployment. Contractor claims and spend are also minimized while productivity is increased. Risk mitigation is aided with an increase in cost and scheduled predictability as well as an increase in discipline and responsiveness. Efficiency is raised due to understanding the scope of collaborations, lowering inefficiency of workers and increasing contractor productivity and the speeding up of the decision-making process.

Key metrics for assessing a Turnaround

Key metrics are on time execution of the project, within the budget and without scope creep. The following operational metrics ensures the sustainability of the Turnaround efforts.

These include:

- Safety Improvements of up to 25-35% in TRIR (Total Recordable Injury Rate) and environmental incidents,
- Quality Improvements (15-25% improvement in operable leaks and unit trips after a Turnaround),
- Cost Reduction of 20-30% (labor, material, and equipment),
- Downtown Reduction of 10-30% and a reduction in unplanned downtime.



Typical benefits include increased revenue due to minimized downtime and higher production and schedule attainment.”

The DSS difference for a Turnaround

DSS follows a strict Turnaround cycle that includes services pre, during and post, to support Clients throughout the process.

1. Pre-event:

Before a Turnaround implementation, this includes the strategy review, diagnostics of assessments, design and methodology implementation, and conducting studies to describe the future of the Turnaround.

2. During implementation:

During a Turnaround, DSS provides the necessary technical support and training to standardize Turnaround skills needed. DSS designs a series of tools that will help Clients assess the effectiveness of their Turnaround strategies and plans in a very short timeframe.

3. Post Turnaround:

Post a Turnaround, DSS conducts a post mortem assessment which evaluates the outcomes and feedback for Clients.

4. Expertise:

DSS has strong experience working in continuous production environments with many of its Clients operating in the Oil & Gas, Petrochemical, Chemical, Mining, Metals and Utility industries. DSS is cognizant of the cultural differences and diverse backgrounds of employees working in large scale operations and prides itself on the sensitivities towards people related challenges.

5. Heritage:

DSS has a rich heritage of Turnaround experience, through its legacy with DuPont, which has in excess of 200 production sites globally, and a proven track record having assisted Clients with delivering effective Turnaround projects at a global level.

DSS welcomes the opportunity to show you how our solutions will ensure a successful implementation of Turnaround programs.

DSS is a leading provider of operations management consulting services that enable organizations to protect their employees and assets, realize operational efficiencies, innovate more rapidly and build workforce capability.

dss.info@consultdss.com

+971 2 409 3142

Visit www.consultdss.com

**DuPont
Sustainable
Solutions**

