TACKLING THE UNIQUE CHALLENGES PRESENTED BY TANK OUTAGES

IN THE grand scheme of refinery and petrochemical plant turnarounds, tank outages are often seen as a lesser priority. While this may seem to make sense economically, it has led to an industry-wide mismanagement of tank assets. For many tank outages, late engineering and material ordering, delays in permitting, and a general lack of urgency among team members are regular occurrences.

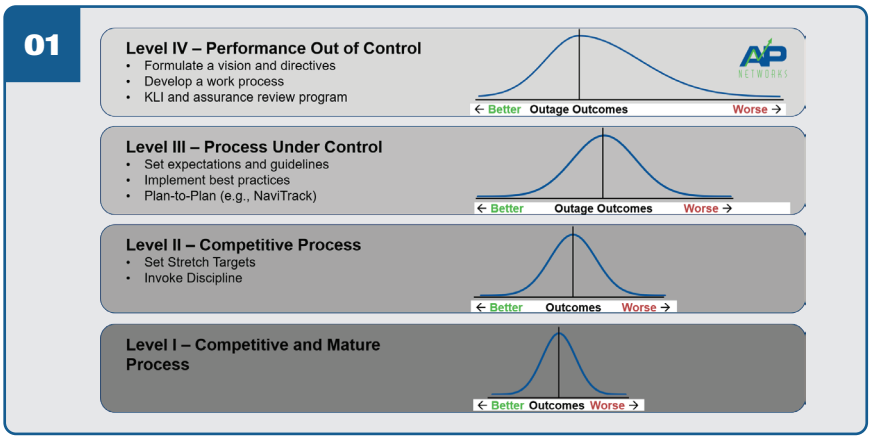
At some sites, the tank outage team is a subsidiary of the maintenance department. However, Asset Performance Networks (AP-Networks) has observed that, increasingly, these events are falling under the direction of the site turnaround manager. This shift has shone a spotlight on the shortcomings of tank outage planning and preparation, especially when compared to the maturity of the plant turnaround sector. While plant turnaround organisations and work processes have, to a large extent, become standardised across industry, the same cannot be said about tank outages, an area in which many sites tend towards an ad hoc methodology for planning and execution.

One of the more striking differences between tank outages and plant turnarounds lies in scoping. Over the past decade, industry, backed by data, has realised the importance of freezing scope early enough in the planning and preparation phase to ensure that work packages will be completed on time, material will be ordered and delivered, and all pre-turnaround fabrication work will be completed prior to oil out. For high complexity turnarounds, this scope freeze typically takes place at T-9 months.

With the clients that AP-Networks has worked with in the tank outage sphere, the concept of scope freeze is lukewarm at best, with some teams choosing to begin the scoping process only after a tank has been de-inventoried, cleaned, and inspected. This begs the question: What, if anything, can tank outage teams learn from plant turnaround teams?

THE VITAL IMPORTANCE OF A WORK PROCESS

In the quest to become more predictable and competitive in plant turnarounds, industry has turned to the adoption of company-wide standard work processes that govern and direct planning and preparation. These work processes take a multi-phased approach and include milestones such as allocating resources to the turnaround team, developing scope, planning work packages, awarding contracts, and procuring materials. Ultimately, these work processes lead plant teams through turnaround execution and any post-turnaround work or reports that must be filed.



The road to developing an effective turnaround work process is not an easy one. Figure 1 shows the path that many companies take from out-of-control performance to competitive, predictable outcomes. As shown in Level IV, companies tend to recognise the need for standardisation only after performance has gone off the rails. This realisation often comes when reviewing internal performance or following a particularly poor outcome.

As a company's standard work process begins to be developed and adopted, turnaround performance begins to become more predictable, as shown in Levels III and II. In these stages, sites have recognised the benefits of standardisation, planning, and preparation. These sites have come to understand that value is created early in the planning process, causing them to move away from an ineffective but common strategy of relying on execution to make up for any planning deficiencies.

With proper leadership focus, companies can make the final leap from predictability to competitiveness, as shown in Level I. The bedrock of these Level I companies is an effective work process. The three critical aspects to making a work process effective are: organisational buy-in, leadership support, and successful deployment and implementation.

CREATING A TANK OUTAGE WORK PROCESS

If plant turnaround teams can successfully leverage a turnaround work process to become more predictable and competitive, then what about tank outage teams?

In mid-2016, AP-Networks was approached separately by two clients who wanted an answer to that very question. In both cases, plant turnaround managers had suddenly found themselves inheriting the tank outage programme and quickly recognised the need for change. AP-Networks partnered with these clients to tackle the shortcomings of tank outage planning and execution and develop a path forward.

AP-Networks took its industry-standard plant turnaround work process as a starting point and adapted it to solve the unique challenges presented by storage tank outages.

One of the key adaptations came from recognising the difference in interval, the time between events. Most standard plant turnaround work processes contain a long-range planning phase to accommodate the traditional three to five-year interval between turnarounds. Tank outages, in contrast, are performed much more frequently.

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TANK OUTAGE WORK PROCESSES

To address this, AP-Networks developed an annual tank process, which allows sites to manage the high-level strategies and long-range planning activities that govern the overall tank maintenance programme. This annual process enables sites to track the ordering of bulk and long-lead materials needed on a yearly basis, and to maintain any financial planning information developed over the course of the year.

While the annual tank process helps to manage the overall tank maintenance programme, an individual tank process provides a more detailed strategy for planning and preparation divided into six phases. This process begins 12 months prior to a tank being taken out of service and concludes with the completion of post-outage reports approximately six weeks after a tank is returned to service.

The individual tank process contains approximately 100 activities tailored to the specific scope of the tank outage. With the input of a few key details, this tailored process provides step-by-step activity guidance to help sites define and plan the scope of work. The process outlines the steps required for scope development, contractor engineering, inspection plan creation, and more.

WORK PROCESS IMPLEMENTATION

Simply having a standard work process is not enough to achieve successful outcomes. AP-Networks has frequently observed sites where the work process sits on a shelf, rarely consulted. To unlock success, a work process must be introduced properly, embraced by the organisation, and deployed in such a way that it serves as an interactive tool, one that can be progressed and tracked in real time.

For this reason, AP-Networks uploaded the annual tank process and the individual tank process into NaviTrack, the company's web-based work process deployment tool. This tool is housed on the Turnaround Network, found at www.Turnaround-Network.com, part of the AP-Networks software toolset. This toolset is in use at more than 400 facilities in over 50 countries throughout the world, including more than 80% of US refineries.

This brought the tank outage work processes into a digital environment, one where activities can be assigned to functional groups as well as individual team members. These team members are responsible for completing their activities in accordance with the work process and updating their progress within the NaviTrack tool. This strengthens adherence to and compliance with the work process. NaviTrack contains built-in reports and benchmarking metrics that provide site and corporate leadership with an overall view of work process progress and compliance, updated in real time. Armed with this information, leadership can take corrective action in a timely manner.

HOW DO YOU KNOW IF A SITE IS COMPETITIVE?

Perhaps the most prominent question that AP-Networks clients want answered, regardless of the type of turnaround, project, or outage being executed, is this: How well do we perform in relation to the rest of the industry? This question is integral to improvement efforts. It requires a measure of baseline performance to serve as a starting point, along with metrics designed to quantify and qualify results. After all, without this data, how can you evaluate the true effectiveness of a work process - or of any preparation efforts?

The AP-Networks Turnaround Database is the result of nearly two decades of benchmarking turnarounds from the onshore and offshore upstream, gas, refining, chemical, and power industries. With practices and outcomes data from nearly 2,000 unique turnarounds, it is the largest and most comprehensive collection of turnaround data in Industry. This data underpins the work processes developed by AP-Networks.

In response to the industry's increasing focus on tank maintenance and spurred by requests from several clients, AP-Networks has launched the Tank Outage Benchmarking Study. It seeks to answer the question, 'Are your tank maintenance outcomes competitive?' The study will look to identify the drivers of high discovery scope during tank outages and best practices for tank outage planning and execution. It will also establish industry average and top quartile metrics around tank outage performance to provide a definitive baseline for benchmarking and improvement.

ACHIEVING EXCELLENCE IN TANK OUTAGE PERFORMANCE

Industry-wide, tank maintenance is still an immature area, with many sites only recently recognising the opportunity for improvement. But with the lessons learned in the plant turnaround sector, sites can make the jump to competitive, predictable tank outage performance in a fraction of the time. The key will be for leadership to embrace the use of standard work processes and benchmarking. AP-Networks stands poised to aid sites in their journey to tank outage excellence.

For more information

This article was written by John Camp, deputy director, EMEA, AP-Networks. www.ap-networks.com. For more information and to register interest in the Tank Outage Benchmarking Study email tankbenchmarking@ap-networks.com.

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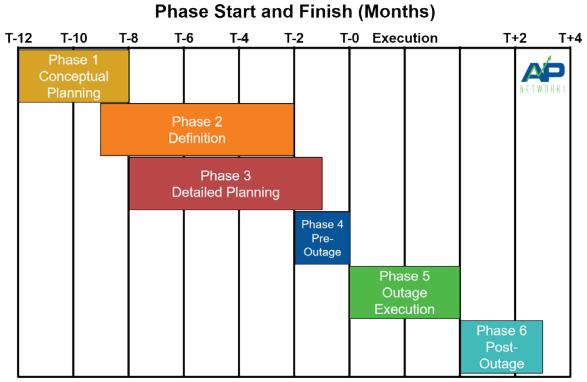

01 Figure 1: The performance improvement journey

02 Figure 2: Tank outage work processes

03 Figure 3: Individual tank process – phased approach