Streamline shutdowns by integrating planning, scheduling and tracking

To keep daily maintenance and shutdowns on track, a nuclear generation facility tightly integrated its scheduling system with its planning and cost-tracking system.

The successful integration contributed to reducing the length of refueling outages from 50 days to the currently-planned 25 days, saving $450,000 per day in lost revenue. When an un-planned outage occurs, the plant can quickly synchronize systems and build an accurate schedule that helps start maintenance work within four to six hours.

Nebraska Public Power District (NPPD) is the state's largest electric utility, serving the needs of 75 communities and one million customers. NPPD routinely shuts down the Cooper Nuclear Station in Brownsville, Neb. every 18 months at a cost of $25 million in materials and work performed, plus lost revenue. With revenue losses from a shutdown costing approximately $450,000 every day, and often amounting to $10–15 million for an entire shutdown, NPPD strives to complete these projects in the shortest time possible. Any delay in the project means additional lost power production, and therefore financial loss. A typical shutdown involves a total of 12,000 operational activities, and requires 1,500 workers occupied by as many as 500 daily tasks.

To manage the intricate schedule of activities during shutdowns and regular daily maintenance, NPPD uses P3e, a project management application from Primavera Systems. NPPD has been a Primavera user since the mid-'80s, but briefly used SAP's Plant Maintenance Module (PM) for planning and scheduling daily maintenance in an attempt to consolidate its work onto one IT system. After two years of using SAP's scheduling functions, NPPD returned to Primavera to give schedulers more control and better reporting, but planners remained with SAP for better control of financial data. The use of two disparate systems made project management too cumbersome and time-consuming. Both solutions were effective in their separate tasks, yet the transfer of large amounts of data between the systems was inefficient. Employees were unable to produce accurate reports, causing schedules to become inaccurate and resulting in prolonged project time.

In preparation for a scheduled plant shutdown, project managers and schedulers must transfer 12,000 tasks and their dependencies from SAP PM and turn them into complete project plans and schedules in Primavera. Scheduled tasks are then assigned and recorded using SAP, which also simultaneously tracks project cost. To ensure safe and timely project completion, any change during the course of the project requires immediate attention and has to be quickly communicated between the two applications. Therefore, a solution was needed to synchronize project data by bridging SAP and Primavera.

Bridging the gap between planning and scheduling

To solve its integration issues, NPPD began to work with Impress Software, Waltham, Mass. Impress Software provides packaged integration applications that automate business processes between two systems to reduce costs related to manual data entry, improve data accuracy across systems, and maximize the investment in these systems. By providing pre-built processes and data mappings in a packaged solution, Impress is able to deliver a lower total cost of ownership (TCO)

than custom integration alternatives. In addition, Impress solutions are fully certified and supported, giving NPPD a place to turn if problems arose – a luxury not afforded by a custom integration.

NPPD used Impress for EPM, a packaged integration application optimized for bridging SAP with Primavera, for the integration. It synchronizes information between systems, maintaining project data consistency across all systems at all times. The solution synchronizes project activities and downloads them into a working directory. The data in the directory is then used to create reports and plans, compare schedules from multiple days, and analyze key records to improve effectiveness during project planning, scheduling, and execution activities.

The benefits of working in-synch

Impress for EPM provided NPPD a flexible solution to integrate two disparate systems at the Cooper Nuclear Station. It helped cut scheduling man-hours in half by eliminating manual entry, downloads, and imports of the activities required to keep both systems consistent. It also improved schedule adherence and accuracy by allowing staff to build schedules based on real numbers and accurate data. Employees could now make confident decisions, knowing that the information provided was reliable, complete and up-to-date. These factors have contributed to reducing the length of refueling outages from 50 days to the current planned outage of 25 days.

In addition to scheduled shutdowns, Impress for EPM aids NPPD in the scheduling and planning of day-to-day maintenance activities. The number of activities that occur on a daily basis is significantly lower than during an outage, but the 150-200 activities being performed every day by 40-50 people still require accurate scheduling. Impress for EPM gives NPPD confidence and security that all operations are synchronized at all times, and that scheduling and work management tools are aligned.

Improved daily maintenance helps protect against unplanned shutdowns, but when an outage occurs at the facility, Impress for EPM helps improve response time. With unplanned outages costing two or three times the amount of a planned project, and each lost day of production costing $450,000 in lost revenue, every minute counts. Impress for EPM's ability to quickly synchronize systems for accurate scheduling helps NPPD start maintenance work within four to six hours after an unplanned outage occurs. Synchronization of data between two systems significantly reduces schedule development and maintenance time, enabling NPPD to generate accurate reports and plans, which improve internal communication and scheduling, and result in timely project planning and management.

In addition to the operational benefits, Impress for EPM is advantageous from an IT standpoint as well. It is secure and trouble-free, running on its own server and eliminating the need for constant monitoring by IT staff. Both operational and IT improvements helped to significantly decrease the cost of planned or unplanned shutdown projects due to the shortened project cycle.

Integrating separate systems, and doing so in a way that will not require ongoing efforts to keep the systems synchronized, can be a difficult task. But a successful integration can help make the most of any plant's IT investments while significantly improving performance.