

T.A. COOK IN THE PRESS

Hydrocarbon Engineering | September 2016

Case Study

Plants strive to make every project a financial success, whether it's a shutdown, turnaround or capital investment (Capex). As a large, non-recurring investment, the benefit of a Capex project becomes clear over time - if it is expertly managed. This article will take a look at three different Capex projects, each with their own specific challenges, and explore the best practice solutions employed to correct those difficulties.

Determining the Necessity of Contractors

The Challenge

In the first case study, a chemical company planned to upgrade equipment and make new capital investments at one of their Eastern European sites. With a budget of €200 million, the Capex project team was responsible for expanding the plant and investing in new equipment. The company needed to determine the project team's internal capacity and whether or not the work could be feasibly undertaken within the allotted time and with the available resources. As such, the decision-makers required a detailed project overview to determine whether contractors would be necessary.

In light of the above challenges, T. A. Cook was approached to organize the process, manage outside contracts if needed and reinforce realistic goals.

The Solution

By collaborating closely with the client, the T.A. Cook team focused on improving the Capex management process. First, the scope of the project was determined to a reasonable degree of accuracy, so that no unnecessary tasks were included. A risk-based analysis was then conducted so that all safety considerations had been taken into account, and to ensure that the most urgent of tasks were addressed first. At this point, it was agreed that outside contractors would be necessary to assist in an equipment modernization project of this scale.

To effectively manage the appointed contractors, effective communication was paramount. All parties involved were clearly explained their roles and responsibilities so that a culture of compliance could be built,

in which understanding and agreement were complete. The project manager was held to a particularly high set of leadership and communication standards throughout the entire planning and execution process.

Although the plant had a gate adherence strategy in place to help simplify and organize the planning process, it was not consistently adhered to. In the preparatory phase, appropriate resources were therefore identified and assigned at each stage of the process. This method was created and adapted for the site's Capex needs and proved to be a valuable tool in the project's work order system.

Earned value analysis techniques were implemented to measure project progress and performance. This approach combined the resources, schedule and project scope into a comprehensive set of measurements in consideration of the project's planned and actual expenditures.

Although the plant's engineers had handled capital investment projects in the past, they did not have a system in place to implement any improvement procedures for similar tasks in the future. It became clear that genuine return data was not regularly or accurately measured and recorded. Training sessions were held to help the team to properly document results according to best practice, which will be used to develop new strategies and improve future Capex projects.

Benefits

Through enhanced communication procedures, all relevant teams and departments developed a more comprehensive understanding of the project's goals and capabilities. In turn, this helped to adequately allocate all resources, increase transparency and allow costs to be much more easily calculated. With the help of improved management techniques, mistakes were corrected and the investment arranged to create a more productive and safer plant. The implementation of these recommendations has the potential to generate a 10% cost improvement.



*Dirk Frame,
Managing Partner Europe,
T.A. Cook Consultants*

In-house Coaching

The Challenge

In the next case study, a European multi-site chemical company wanted to develop a new business unit and train current employees to match increased production demands. In the past, when a project had exceeded an employee's skill set, management had compensated by hiring third parties to undertake detailed engineering and calculation-based work, but had now decided to increase in-house efficiency and minimize reliance on contractors.

Given the increasing complexity and internationalization of the project, the client decided to engage unbiased, external assistance to help manage the complex relationships between engineering, production and site management.

The Solution

During an initial analysis, the T.A. Cook team evaluated the site's engineering process and project management systems. Then, in cooperation with the company's senior engineers, they decided to implement a two-phase project.

Forty in-depth interviews were conducted with engineers, site directors and project and production managers, which helped determine the site's basic demands and the strengths and weaknesses of the employees. Eventually, a series of detailed project audits were piloted to determine specific opportunities for improvement. Then, this data was organized by project type and phase to quantify the most accurate benefits.

The information-gathering activities showed that the staff's lack of preparation was due in part to poor accountability measures. Project performance was viewed with indifference, leading to an unacceptable amount of re-work and making exact scope estimations nearly impossible. Engineers were also spending 30% of their time, on average, completing small sub-projects and unofficial jobs in which the time, effort and associated costs were not accurately recorded.

Overall, engineering and project management performance was found to be 15-20% lower than projected. Therefore, with better organization and increased motivation techniques, the site was able to increase productivity by 15% using in-house employees. A 12-month plan was put in place to assist the 300 employees in the engineering department handle the site's restructuring and new business unit developments.

Benefits

After training employees in core activities, the new business unit staff was better equipped to complete their tasks and had a much deeper understanding of how their work contributed to the success of the site. As a result, they enjoyed a better sense of worth and increased productivity. As a result, fewer project overruns and reduced contractor hours meant that the project paid for itself many times over, and continues to contribute to high employee engagement.

Keeping up with Growth

The Challenge

In the next case study, a medium-sized owner-operated engineering company wanted to invest in new machinery for their production of testing products for automotive power train and running gear components. The 600-employee, €120 million organization's products were valued for their client-specified designs, high quality and outstanding performance by carmakers, garages and testing organizations.

To tailor each product to their clients' needs, the company's production methods and software management requirements had increased in complexity. Although the company had significant revenue growth, smaller batch sizes and frequent product changes had affected the planning process, causing productivity to decrease. As a result, management had decided to invest in new machinery to help increase work output.

Unfortunately, the rising cost of materials combined with project management challenges meant that losses

were being incurred. To address these issues, the company engaged T.A. Cook to support them in their targets of increasing productivity by 25% and decreasing operational costs by 7-10%.

The Solution

After observing core processes, the joint T.A. Cook and client team identified a pattern of mistakes in the planning process. There was frequent rework, duplication and no continuous improvement plan to keep up with increased demands.

Furthermore, it was discovered that a number of problems were caused by a lack of management skill. Often decisions were not made objectively or based on data, but predominantly accredited to gut instinct. The majority of leadership skills were self-taught and there was a company-wide tendency to firefight instead of solving problems at their core.

Over nine months, five consultants worked with the staff to analyze company culture and improvement potential. To minimize the ambiguity of the complex ever-changing production process, the joint team defined the structures, processes and operating procedures in manufacturing, assembly and logistics. Management took training and coaching seminars to encourage fact-based decision-making. By implementing these programs, break-in work was reduced, purchase costs were better negotiated and management's skills and knowledge were broadened.

The Benefits

After identifying and assessing potential for improvement, this collaborative engagement resulted in a more stable and transparent work process. The new and improved performance-driven leadership and management practices led to substantial improvements in communication between departments and helped motivate the staff to keep up with company changes.

The change from functional organization structure to integrated process, combined with an optimized material flow led to a 25% increase in productivity. Custom-

ers enjoyed a variety of benefits: planning, purchasing and logistics were optimized and the order times were reduced by 30%, on average; the material costs were decreased by 7.5%; the complaint rates were reduced by 5%; the Return on Investment (ROI) was 4.5 : 1 per annum; and assembly costs were reduced by 8%. The combination of these changes significantly reduced overall unit costs and improved company profits.

Tailoring Best Practice Techniques

When managers handle large-budget capex projects, they find themselves under significant pressure to make the most of every cent invested. The three capex projects explored in this article all had different difficulties: keeping up with their quickly growing business, building on their employee's skills, improving plant processes and defining scope. Every site will face a unique set of obstacles with each venture they undertake; but if managers make the effort to seek out best practice techniques and if necessary, the external support needed to implement them, challenges can be overcome and ultimately, productivity and profits increased.