

SAVING TIME, MONEY AND RESOURCES: DUPONT CAPITAL MANAGEMENT SYSTEM



OVERVIEW

Capital expansion projects present unique challenges for the businesses undertaking them, and a failure to properly manage their complexity can result in significant wastes of time, money and resources. DuPont has developed a gated, integrated capital management system to not only proactively plan for the potential risks such projects face, but to effectively mitigate their impact on project timelines and budgets.

The project management team at DuPont's Cooper River site near Charleston, SC applied these methodologies throughout the expansion of its DuPont™ Kevlar® production facility, leading to ahead of schedule and under budget project completion despite facing site-specific and extenuating economic challenges. The Cooper River expansion project is a model of DuPont's best-practices in sustainability, as the project management team exemplified a shared commitment to protecting and supporting the site's community and environmental assets.

INCREASING DUPONT™ KEVLAR® PRODUCTION CAPACITY

Due to the surging demand for DuPont™ Kevlar® fiber, a proprietary technology best known as the primary component of ballistic and stab-resistant body armor, DuPont began a process to increase and improve Kevlar®

production capacity. In 2007, DuPont selected the Cooper River site as the location of a new production facility. Just north of Charleston, South Carolina, this site was already home to a pre-existing DuPont™ Hytrel® facility, one with a history of high performance and an established, robust company culture.

Construction of the \$500 million dollar Cooper River plant – the largest in the history of the Kevlar® business and one of the largest capital projects for DuPont in recent years – was completed in April of 2011. The plant increased the overall global production capacity for Kevlar® by 25 percent, with an estimated 40 percent total increase expected by the end of 2013. Furthermore, the new facility has contributed significantly to the local economy, bringing 140 permanent jobs to the Charleston area and employing hundreds of construction workers, designers, and technicians during the construction process.

The Cooper River expansion embodies a DuPont-wide focus on lean manufacturing concepts, considering both sustainability and process safety management throughout the project planning, design and construction process. During the gated planning stages, design accommodations were made to ensure that the plant met or exceeded both DuPont standards and the

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South Carolina building codes required to withstand natural disasters, including the earthquakes and hurricanes the region occasionally experiences.

IMPLEMENTING A RIGOROUS CAPITAL PROJECT MANAGEMENT SYSTEM

After starting the project, the global economic crisis hit in 2009 and required the team to conserve cash until the economic recovery began. This presented the project management team with a series of challenges across the project’s timeline. Despite these challenges, the Cooper River expansion was completed ahead of schedule and under budget.

The team at Cooper River was able to accomplish this because of a rigorous capital project management system – one defined by an extensive set of sequential best practices, gate-keeping checks and controls to optimize positive outcomes – that is used to govern the construction and capital builds of DuPont facilities across the globe. A central component of this management system is a strong focus on intensive planning in the early stages of a project life cycle, or “front-end loading” (FEL). The DuPont FEL processes



detail, streamline and accelerate construction planning, ensuring optimal and safe project performance as construction work proceeds. The process includes a highly disciplined gated approach, one defined by quantitative review and proactive adjustments before proceeding to the next phase: this helps the project to not only move forward in a timely manner, but concurrently anticipates risks that could reverberate throughout the project and negatively impact completion timelines or budgets.

According to Davide Vassallo, managing director, Sustainability and Capital Growth practice for DuPont Sustainable Solutions, successful project management requires an initial investment in solid planning and coordination, and ultimately provides returns by saving both time and resources. He says, “Front-end loading is synonymous with building the foundation for any process. Based on clearly-defined business objectives and deliverables, and involving an integrated team from project engineering, operations and business, it ensures that all stakeholders are represented and that there is a disciplined, sequential implementation of interdependent variables. One door must close before another opens.” He emphasizes that planning and review at the early stages of a project are crucial, because there is the greatest return opportunity on project outcome: changes are relatively simple, the cost investment is relatively low, and the schedule and budget are minimally impacted.

Implementation of these methodologies allowed the Cooper River project team to address site-specific challenges, as the budgetary and scheduling repercussions from rising fossil fuel prices, shifting building code regulations, and vendor supply difficulties were effectively mitigated. Proper capital management allowed the team to not only anticipate and neutralize

7 Critical Success Factors



Front End Loading (FEL) vs. Business Goal

Early and comprehensive stakeholder engagement, contracting strategy and execution processes, clear understanding of scope, role and responsibilities from day one



Proactive Management of Environmental, Health & Safety



Contracting Strategy & Contractor Management



Staffing & Managing Teams for Success



Technology Confirmation



Execute with “NO CHANGES”



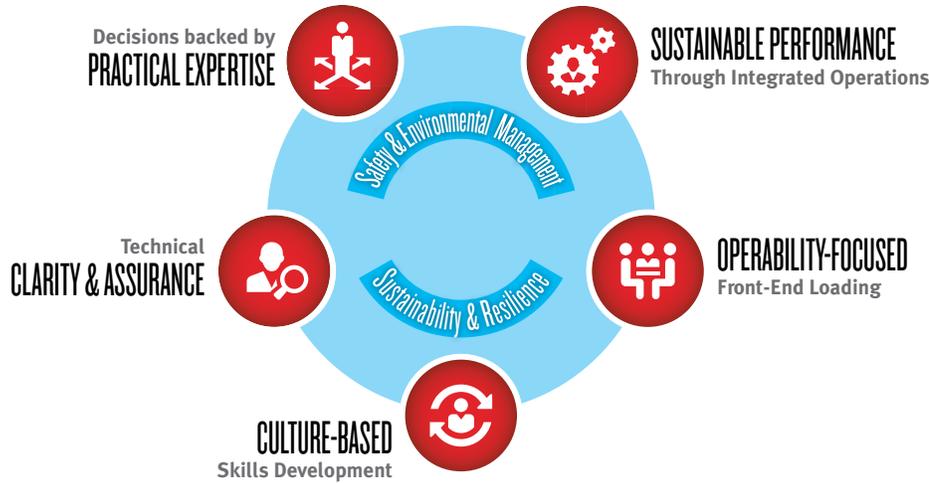
Minimize Non-Value Adding Investment

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ENABLING SUCCESS

Building Clarity, Capabilities & Trust

A practical approach creates an environment where decisions and actions are continuously aligned and focused on one outcome: **PROJECT SUCCESS.**



the more predictable challenges faced during such expansion projects, but also provided responsiveness to the low-probability, extenuating risks that are more difficult to anticipate.

Balancing the global economic crisis and all the internal and external stakeholder needs, the project management team deployed best practices to prevail under these very dynamic and extraordinary circumstances. Typically, project flow challenges like these cause significant high impact disruptions in material delivery schedules, manpower demands and fulfillment, and availability of quality management resources. At Cooper River however, successful utilization of the DuPont capital project methodologies minimized and in some cases, completely mitigated the disruptions, allowing the team to recover quickly.

PROTECTING CONTRACTORS

The success of the Cooper River project was made possible by the dedication of both those managing its construction and those contractors involved in building it. Throughout the construction and operations process, the company maintained its commitment to the protection of employees, the site environment, and existing assets.

The DuPont management team identified and utilized the construction management services of a reputable long-term partner that was already well-versed in DuPont's expectations of integrating safety and

sustainability into capital project management. The safety management philosophy of the construction management company was aligned with "safety excellence" practices DuPont developed for capital projects in the early 1900s, so this partnership was an easy fit. The team worked diligently to develop strong, detailed contracts for the major work to come, and ensured that the successful bidders met the rigorous requirements of commercial ability and safety performance.

The Cooper River project team's implementation of the contractor safety management (CSM) process resulted in an impressive safety track record for the site, with over 3.1 million man-hours of construction work completed without a lost-time injury. During construction, the site twice eclipsed 1 million safe man-hours without a medical treatment, and throughout the project cycle, only three minor medical treatments were recorded among the contracted labor forces. "This achievement required a massive amount of effort and coordination as the number of contractors we had at Cooper River at any given time ranged from 400 to 800," said Barry Schrock, DuPont Construction Manager. "Safety is a core value in DuPont and our expectation is always zero injuries."

DuPont understands that proper project management requires specific oversight systems for contractors. As the environmental and process context of each production site varies, DuPont establishes a site-specific contractor management team, which then works with the contracting firm to manage the performance and

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safety of all contractors and sub-contractors. By utilizing a rigorous six step process that emphasizes structural policies and both a bottom-up and top-down culture of safety, the Cooper River team limited on-site contractor injuries, prevented schedule delays, and limited project expenditures on worker compensation.

Intellectual property protection is of utmost concern during any plant design and manufacturing process. As needed, the project team should formulate an IP plan that limits contractor access to the complete facility, and carefully monitors the number of individuals involved in the installation and engineering of proprietary machines.

Cooper River is a sterling example of the manner in which good contractor management allows for capital projects to be completed ahead of schedule and under budget, while simultaneously protecting the health and well-being of those who work for and with DuPont.

COMMITMENT TO LOCAL STAKEHOLDERS AND THE COMMUNITY

The Cooper River project and site embody the DuPont commitment to sustainable social development, improving the world not only through provided products and services but by actively addressing the concerns of the diverse stakeholders involved. The company recognizes that there exists the potential for significant value generation through improved engagement with local stakeholders, and has created structural methods of ensuring that it not only respects the people and places that make DuPont's work possible, but actively contributes to improving the state of communities in which it operates.

In light of this goal, DuPont has established Community Advisory Panels at nearly every global site it operates, ensuring that the frequency and type of community engagement is tailored to the individual conditions of each location. Furthermore, DuPont has established wider mechanisms for funding local partnerships. For example, the DuPont Community Fund, founded in 1990, has provided financial support to over 500 global projects addressing sustainability, social progress, economic success, or environmental excellence.

It is within this framework of good corporate citizenship that the DuPont Cooper River site has collaborated with Berkeley County stakeholders with environmental, historical, and social concerns, dedicating both financial and material donations and supporting employee volunteer involvement.



CONCLUSION

The Cooper River expansion project is representative of DuPont's creative, flexible response to the complex challenges faced in capital projects. By applying a holistic, rigorous capital project management system, the Cooper River team not only ensured a successful project completion, but did so while maintaining the highest regard for the well-being of the communities and environment in which it operates.

ABOUT DUPONT SUSTAINABLE SOLUTIONS

DuPont Sustainable Solutions (DSS) offer consulting services and process technologies that help organizations transform their workplaces and work cultures to become safer, more efficient and more environmentally sustainable.

For more information on DuPont Sustainable Solutions and its world-class consulting services, call us today at 1-800-532-SAFE (7233) or visit us at <http://www.sustainablesolutions.dupont.com>

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