

MARCH 2020 | HydrocarbonProcessing.com

HYDROCARBON PROCESSING[®]

PETROCHEMICALS

The future of propylene production

Optimizing capital projects with
DIGITAL SOLUTIONS

SUSTAINABILITY

Are single-plastic bans really the answer?



Gulf Energy[®]

Efficiently expanding a specialty chemical company

COIM, a specialty chemical company, decided to expand its production capacity in the U.S. to supplement growing market and economy. The company already had an operating presence in the U.S. in West Deptford and Paulsboro, both in New Jersey. The West Deptford site was selected for the capital investment due to its proximity to the market, availability of feedstock, access to skilled labor and excellent infrastructure, including rail and roadway access. FIG. 1 shows the project's status 18 mos into construction—the steel structure is fully erected, and equipment and piping installation is underway.

Project development. COIM approached this expansion in a methodical fashion. Internally, vigorous debate was encouraged, and key issues were addressed objectively in evaluating various plant configurations and design options. Ultimately, it was decided to implement this expansion in a phased manner. COIM places great emphasis on having key engineering management responsible for the project's performance from concept to operation.

To achieve these business objectives, it was essential to develop key partnerships with local suppliers to achieve a “win-win.”^{1,2} Concern for the community, environment and sustainability were as important as financial considerations. By carefully balancing the needs of all its constituents, COIM was able to achieve a successful execution strategy that has

yielded a long-term, sustainable solution.

All required process considerations were laid out prior to selecting the appropriate equipment, considering process conditions such as temperature, pressure, viscosities and flows in developing capacities. In addition, supplemental utilities were based on the requirements to support a growing capacity in the future. An emphasis was put on emissions and waste management.

Project scope. The project called for developing a four-story, 27,000-ft² process building, along with logistics infrastructure and tank farms. The process building houses numerous process equipment, such as pumps, pressure vessels, tanks, heat exchangers, instrumentation and controls, piping and electrical distribution—laid out for smooth, seamless and efficient operation.

Schedule. A detailed schedule was developed for all project activities. Using conventional software, each task was assigned to a specific party with start and end dates. Progress was monitored on a periodic basis. A high-level schedule is shown in FIG. 2.

The project's schedule was 26 mos. Adequate time should be provided up front for a careful review of front-end design and justification, taking costs and benefits into account. In addition, it is worth noting that permitting could not

be started until the basic engineering was completed. The schedule was compressed by maximizing shop fabrication of steel and pipe as much as possible.

Critical success factor. The critical success factors for this project were safety, cost, schedule, quality and flexibility. These factors were rigorously considered in selecting the appropriate partner for engineering and construction. Having the engineering finalized in a timely fashion was essential in laying the groundwork for successful construction. It was important to find a locally based construction company that was the right size, with the appropriate functional and technical expertise, a flexible work process and competitive cost structure. Transparency and responsiveness were essential to building trust as the project progressed.

Sourcing strategy. One of the first strategic decisions that was made was to source most materials domestically vs. internationally. With a presence on five continents, COIM was well positioned to op-



FIG. 1. Project status 18 mos into construction.

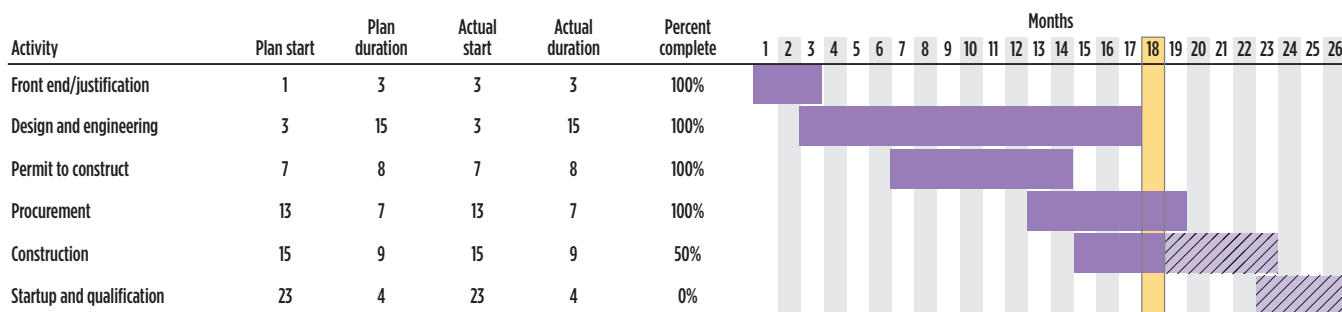


FIG. 2. Gantt chart for the project.

timize engineering resources and material procurement for the project. An emphasis was placed on overall value, which was defined as cost of construction in relation to scope, schedule, quality and safety. It was decided to minimize the number of contractors and vendors and hold various parties accountable for their deliverables. COIM acted as the main coordinator managing multiple contractors onsite.



FIG. 3. Project status 18 mos into construction.

Engineering. It was decided to outsource engineering. This strategy was deemed the best choice taking into account the tight engineering labor market, the additional management burden that would have resulted from hiring personnel on a temporary basis and the complexity of the project. A qualified, local company that possessed all the functional and technical design capabilities carried out basic and detailed engineering.

The project was broken down into specific functional disciplines, such as civil, building foundation, structural, mechanical, piping and electrical. Engineering drawings were exchanged electronically and design reviews, along with a 3D model, were conducted in person. The objective was to complete as much engineering as possible before inviting construction bids. Permitting was also a critical path item that required detailed design to be completed in a timely fashion.

Construction. COIM initiated a systematic review of several local construction contractors. It was necessary to find

partners that were a good fit in terms of work culture, skills, experience and resources. COIM made it a point to meet key personnel face-to-face to gauge their expertise. In addition, the contractor's references and reputation were carefully checked and reviewed with multiple companies. Furthermore, the contractor's safety and quality management programs were carefully examined. Preference was given to companies that had design and fabrication capability in-house, as well as multiple functional disciplines.³

The contractor^a selected for the key structural steel and mechanical packages used a consolidated construction approach that consists of civil/structural, mechanical and electrical capabilities under one umbrella. The contractor's multi-disciplined, turnkey approach enabled it to autonomously carry out projects, saving project capital and improving the overall project schedule. From design to procurement, through the construction phase to project completion, the contractor used direct and transparent communication. This project was developed and executed with a senior

LIVE WEBCAST

Tuesday, March 17, 2020 | 9 a.m. CDT/ 2 p.m. GMT



Ron Beck

Market Strategy Director
AspenTech



Lee Nichols

Editor-in-Chief/Associate Publisher
Hydrocarbon Processing

Optimize Your Operations and Gain Insights on Your Assets with Digital Twin Technology from AspenTech

What is a digital twin? Why is it an essential building block for your organization's initiatives, such as sustainability, operational excellence and improved margins? Leading energy and chemical companies are leveraging digital twin technology to model the behavior and performance of assets to improve their bottom line.

Please join AspenTech's Market Strategy Director and industry expert Ron Beck as he shares how digital twin technology provides the following benefits:

- Increased visibility into energy and water use
- Improved sulfur recovery and reduced emissions
- Improved utilization across a multi-asset network

There will be a live Q&A session following the event. We encourage you to join the conversation by submitting questions when registering.

Register for Free:
HydrocarbonProcessing.com/Webcasts

executive as the single point of contact during project development and execution.

The keys to the project's success included:

- Selecting the right partner by considering their capabilities, cost and culture
- Adopting an owner's mentality by looking at entire lifecycle cost, not just the initial cost
- Making safety paramount
- Keeping a lean team energized
- Completing detailed engineering to minimize scope changes and change orders, unless introduced with additional scope of work by the project owner
- Making decisions quickly based on available data; not deciding can result in a costly and time-consuming process
- Empowering people to act decisively and monitor progress closely
- Having open, horizontal communication to avoid surprises
- Escalating key issues quickly before they become a problem, as well as

communicating to management of any issues that arose and progress through every phase of the project.

Within 18 mos of starting the project, steel structure has been completed, equipment has been installed and piping is being installed in sections (FIG. 3). The layout was carefully designed for easy access for maintenance.

Takeaways. COIM's approach to a significant expansion of its production capability in West Deptford was initiated on its core values of safety, integrity, passion, hard work, keeping customer focus and forming key partnerships. These factors determined COIM's execution strategy. Partnerships were formed based on capabilities, cost and culture. It was critical to adopt an owner's mentality, looking at the entire lifecycle. Safety was every project personnel's job. It was essential to complete detailed engineering to minimize scope changes and change orders. Decisions were made quickly based on available data, and team members were empowered to act decisively. Having open, frequent

and horizontal communication avoided surprises, and the owner's management team was apprised of issues and progress through every phase of the project. **HP**

NOTES

^a Refers to ShureLine Construction

REFERENCES

Complete references available online at HydrocarbonProcessing.com.

ASHIM PARMAR is the Plant Engineering Manager at COIM USA Inc. He has more than 25 yr of experience in project management, operation, maintenance, reliability management and startup. His primary responsibility is ensuring that projects are completed on time and on budget. He is focused on continuous improvement by improving the company's bottom line and digitizing processes with a value-add approach. His previous work has been with multinational companies such as Eastman Chemicals, International Flavors & Fragrances, Symrise, Novartis and Pfizer Pharmaceutical.

GOUTAM SHAHANI is Vice President of sales and marketing at ShureLine Construction. Previously, he was Business Development Manager at Linde Engineering in North America. With more than 30 yr of industry experience, Mr. Shahani specializes in industrial gases for the energy, refining and chemical industries. He holds BS and MS degrees in chemical engineering, as well as an MBA degree.

PRIMEROYAL® H METERING PUMP

COMPACT. ACCURATE. CONFIGURABLE.

Milton Roy PRIMEROYAL® H Metering pump provides accurate dosing of a broad spectrum of fluids used in many industrial processes.

Its modular design offers several types of liquid ends, capacity control, and other configuration options to meet the specific requirements of your process application.

To learn more about the multiplexing options, safety features and robust capabilities for model H, contact your local representative or visit our website.

