

## Digital transformation necessitates change for EPC firms

The crude oil price rout seems to be a faded memory now and capital expenditure (CAPEX) budgets are recovering, albeit slowly. Owner operators are still fairly risk averse and are constantly looking to maximize the return on their investments. This cautious optimism is further kept in check by ongoing volatility in commodity prices. Mitigating factors include uncertainty around US shale oil producers' ability to produce and move their product to market, as well as the ability of OPEC and Russia to adhere to lower production targets. As a result, capital project dollars will flow towards projects and engineering, procurement and construction (EPC) firms promising lower risk and increased discipline around cost. Beyond economics, digital transformation is pushing EPC firms to tap into Industry 4.0 principles to automate their workflows, reduce engineering manhours and collaborate globally. For example, the rise of high value engineering centers (HVECs) in India is driving companies to share work globally. Skills shortage in the West has also resulted in companies envisioning a broader role for their offshore engineering talent. India represents a wealth of well-educated engineering talent that these companies are tapping into. Multinational companies need to include India in their strategy to compete in a globalized workplace.

### A bullish outlook for India

Investments in the Indian energy sector remain strong. This bodes well for EPC firms in India, particularly in the refining and petrochemical sectors. This wave of investment is welcoming to the global EPC industry after rounds of headcount reductions, around 40% at many firms, due to layoffs, retirement, mergers and acquisitions between 2014- 2018. As the industry recovers, HVECs are seeing more than their share of new hires. With work picking up, firms need to close the engineering talent gap and keep costs low. As global companies restaff their organizations, they are envisioning an expanded role for their offshore offices. HVECs can collaborate with overseas offices to provide real-time contribution to projects. However, this virtual, multi-office approach has its own challenges. Companies need to decide how engineers can collaborate on models and project documentation to deliver a consistent, quality outcome. Engineering firms seeking to standardize workflows and technology platforms can enable work sharing, cross-office collaboration and a "follow the sun" project execution approach for conceptual design, front end engineering and design (FEED) and detailed engineering work.

### A necessary platform

To transform digitally and achieve operational excellence, firms need a design and engineering platform that is model-based, simultaneous and collaborative. First, a model-based platform requires a consistent project data model and repository to be used across all parties and disciplines involved in project engineering and design. Updates are automatically propagated and people work with the most updated information. As a result, information is

### **Reaping benefits**

In tapping into changes enabled by emerging technologies, EPC firms can achieve better designs, share and distribute more consistent project information, and are better positioned to accommodate the inevitable project changes. With more engineers working on a project, across time zones, EPC firms can generate additional design options for their customers. The ability to generate design alternatives quickly and respond to customers can help the firm win more projects. Having multiple offices working on a project forces teams to develop process and technologies that enable them to collaborate better, and improved processes and technologies can help teams manage version control, information access and formatting for deliverables. Finally, teams in HVECs can now respond faster to project changes. When teams collaborate around a common engineering environment and set of project data, members are aware of the changes and quickly understand the impact to their deliverables. Changes can also be propagated through the common engineering data platform to all parties and reflected in dependent deliverables, such as equipment lists and data sheets.

### **Maturity model driven by Industry 4.0**

In working with hundreds of EPCs, AspenTech has developed maturity models to help chart a path for collaboration-driven process changes for plant engineering and design. At maturity level one, companies need to target using a common data model, which provides a consistent source of project data for process engineers and estimators. At maturity level two, it is necessary to use inter-connected design tools, which provides specialized tools for each discipline, with a shared, consistent underlying data model. At maturity level three, with a shared information asset, teams can automatically share updates. At maturity level four, the focus is on process re-design and collaboration, which results in an early, cross discipline sharing and coordination for the best outcome. Initiatives, enabled by emerging technologies, are well underway at many EPC firms to improve how they organize and execute project work are fundamentally reshaping the industry. These firms view the ability to coordinate work across functions, offices and geographies as a pre-requisite for competing, as the industry recovers. The net beneficiaries are owner operator companies, who will achieve better designs and more profitable operations. Driven by cost pressures and the need to access global talent, the ramp up of high value engineering centers in India appears to be a continuing trend. To successfully synchronize their efforts with other corporate locations, engineering work process must be streamlined and supported by easily assessable, consistent project data. In fact, EPC and owner operator companies have been on this journey for many years. In fact, now is the best time for EPC firms in India to further accelerate their uptake of industry's best practices with the current digital transformation wave. Taking these steps today will help ensure that EPC firms are competitive and profitable well into the future.



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