COVID-19 AND BEYOND: THE NEED TO REDEFINE ENGINEERING, PROCUREMENT AND CONSTRUCTION

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Abstract

The COVID-19 pandemic has presented a range of challenges for the already struggling Engineering, Procurement and Construction (EPC) companies. Some of the key issues include cancelled construction projects, delayed RFP response and supply-chain bottlenecks to timely procurement of goods and assets that in turn impact project Completion. Furthermore, disruption of communication between vendors and partners has stalled business continuity. The most immediate impact, however, is managing contractor workforce while ensuring their health and safety. New models for modularization and technology led construction integrated with advanced technologies such as augmented reality (AR), virtual reality (VR), and robotics can inject new life into the EPC sector.

This paper takes a deep dive into the four key approaches that EPC companies can adopt to sustain through the COVID-19 crisis while reducing revenue loss and enhancing employee experience.
Four key approaches to navigate the COVID-19 crisis

With the pandemic impacting every aspect of material management, supply chain, and workforce management, it is an uphill task for Engineering, Procurement and Construction companies to complete on-going projects or take on new ones. Given the lockdown scenarios, it is a challenge to make decisions on projects that are on hold or those that are yet to be completed. At the same time, it is equally crucial to obtain clearances for new projects while ensuring resource availability. EPC companies will particularly face challenges in terms of designing and engineering healthcare and pharmaceutical-related industry infrastructure that are in high demand, given the pandemic situation. This would require EPC companies to incorporate design changes for enhanced HSSE compliance and manage resource availability and bandwidth while reducing cost overruns. Here are the four ways to do it:

### Improving (Request for Proposal) RFP response

Proactively responding to Request for Proposals (RFPs) is crucial for EPC companies to survive in the post COVID-19 world. However, in a typical scenario, RFPs are physically available and are required to be downloaded from websites. This requires uploading the documents, submitting a hard copy, attending pre-bid meetings, managing site visits and transferring the bid deposit once the deal is finalized. This is a cumbersome and time-consuming process and can result in delayed RFP responses. EPC companies urgently need to virtualize the RFP process through rapid deployment of VCs, cloud enabled software and secure systems. This also means collaborating with the stakeholders, ensuring seamless remote assistance, and white boarding the requirements for a successful collaboration.
Addressing design engineering needs

Enabling design for manufacturing and assembly (DfMA) is crucial to meet modularized and technology led design requirements for scaling infrastructure, or converting a public space into a healthcare facility. For instance, EPC companies can add ventilators and hospital beds in a medical facility or convert a stadium to a temporary relief camp. Automation combined with quick ramp up of remote design engineers can be a key enabler of modularizing such design needs and addressing design engineering for the existing and new assets. In addition, migrating critical engineering tools to the cloud can ensure, anytime anywhere access. Additionally, digital workflows can enable squad checking by various disciplines, identify responsibility and ensure smooth delivery across projects. However, managing time and resource in such a situation becomes important. The way out? EPC companies can take advantage of digital workflows for proper work distribution and leverage cloud-enabled platforms to onboard additional resources based on the availability at various locations. For this, companies can enable or deploy engineering applications with inbuilt facilities.

Managing the supply chain

Under the current circumstances with the lockdown, it is a challenge to manage the supply chain in order to meet design and project requirements. This also necessitates identifying goods, assets or project requirements that are critical to business continuity and reworking the supply chain to ensure the same are sourced locally or from nearby locations in face of the disruptions to the original supply chain caused by the pandemic. Maintaining transparency in communications with clients and resolving issues related with communication disruption between vendors and partners is another crucial aspect that will need to be addressed. However, this calls for a lot of manual intervention and co-ordination of activities and follow-ups to ensure continuity at work. Therefore, outsourcing supply chain management to a trusted vendor can help EPC companies free up bandwidth for strategic work for enhanced business outcomes, and also strengthen the supply chain process for enhanced efficiencies.
In the post COVID-19 era, fieldwork will be a challenge given the need to maintain personnel safety, health-related precautions and ensuring social distancing. The EPC companies will not only need to maintain a recorded repository of the contractors on the workforce, but also track their health conditions as well as their physical movements around the workplace. They will also need to monitor the locations the employees commute to and from between work. According to an analysis of American Community Survey data by the National Association of Home Builders’ Housing Economics, migrant workers comprise nearly 25 percent of the overall construction workforce, accounting for an average of 30 percent of workforce in the construction trade. Prioritizing sites that need attention based on the stoppage condition and future needs of the customers is crucial to managing resources optimally based on cash flow projections. Wearables can help monitor resources, the places they visit during and after work, and their stress levels. The data from wearables can be constantly analyzed to plan ahead for upcoming resource requirements at the workplace as well as to plan backfilling shortage of resources owing to travel restrictions, absenteeism, health conditions, etc.

Prioritizing and tracking construction sites
Conclusion: Leveraging technology through the COVID-19 crisis and beyond

EPC companies have to and are moving towards Virtual Design and Construction (VDC). However, this needs extensive digital technology adoption across the lifecycle of projects and complete involvement of stakeholders. EPC companies are in various phases of this journey and they need to be ready for the next phase in normal and active involvement from IT partner/s to meet and sustain the program.

To understand the requirement, an Integrated city-command-center in a smart city could be a good example. It can help monitor the city through cameras to ensure safety of the people and the community. Once integrated with critical city facilities, it can help ensure minimal movement of people and smooth delivery of essentials during prospective lockdown situations. EPC companies can also leverage IoT to integrate systems and flexible platforms to manage data traffic. AR and VR technology can enable designers, construction managers, city planners and procurement managers gain advanced insights into the design and floor plan of the facility/premises for seamless and easy asset procurement and construction. At the same time, cloud adoption can offer cost savings and aid anywhere, anytime collaborations for stakeholders for enhanced productivity and improved business outcomes.

This altered social and business environment is likely the way forward for the sector as well as applicable to others. There will undoubtedly be challenges on the way. Increasingly, there will be bits and pieces that will need to be implemented as and when required. There is also need for a common program that is flexible like a Lego block. This will increase the agility and speed to adapt to the evolving environment.
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