



# Four Keys to Agility and Resilience for EPCs

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## Introduction

The process industries are facing unprecedented challenges operating in today's VUCA (volatile, uncertain, complex and ambiguous) environment. For example, most upstream oil and gas producers have announced capital spending cuts in the range of 20-50% for their next fiscal year, while energy companies focused on downstream activities are delaying new projects and adjusting timing on revamp projects. For chemical manufacturers it's a mixed environment with demand falling for plastics but skyrocketing for some specialty products such as hand sanitizers. These dynamics, driven by the COVID-19 pandemic, will likely result in delays or changes to ongoing capital projects and possibly those still on the drawing board.





## The Business Challenge: Navigating Uncertainty, Creating Opportunity

Engineering, Procurement and Construction (EPC) firms with a large presence in the process industries are preparing for a major disruption to their business. The now inevitable scaling back, delaying or cancelling of projects will have a tremendous effect on these companies. A top priority for EPCs, which typically operate on very thin margins and own few assets, will be preserving cash. Actions already announced by some EPCs include furloughs, layoffs, pay cuts and reduction of dividends.

But with every crisis comes opportunity. Despite significant challenges, there are strategies that EPCs can employ to strengthen relationships with key customers and enhance their engineering processes to deliver added value.

# Four Keys to Building Digital Capabilities and Becoming a Strategic Partner

## Short-Term Opportunities

Short-term moves EPC firms can make to navigate the present situation and prepare for future economic recovery include:



### Provide decision support for CAPEX reductions

While owner-operators have announced significant cuts in spending, they will face challenges in quickly evaluating their entire slate of capital projects and ranking projects according to anticipated margin and production impact, agility impact and risk. Multiple factors can influence how those cuts are made.

Often, it can be the influence of strong opinions or tribal knowledge and culture that determine a course of action, not objective data.

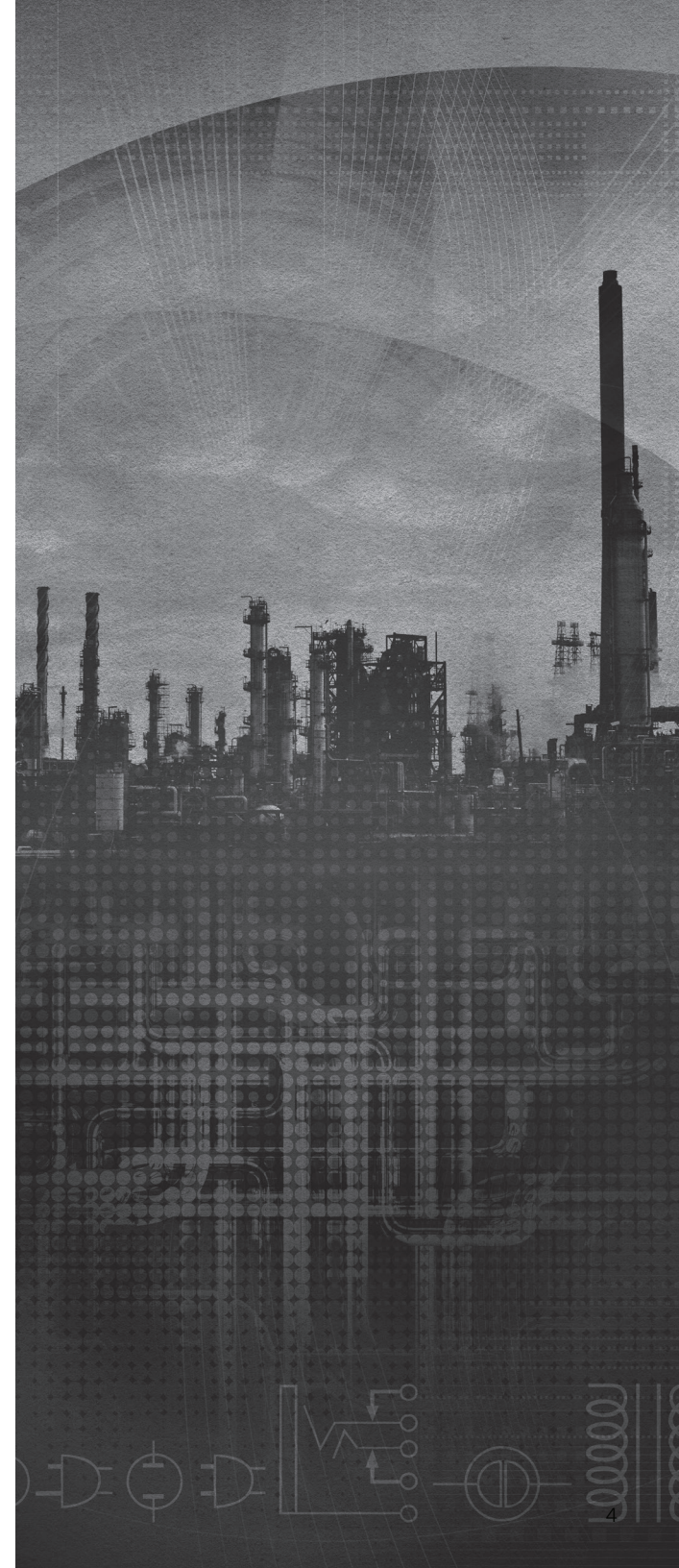
**Exploring options across the project portfolio.** EPCs are in a good position to leverage their engineering and estimating skills, tools and knowledge to quickly consult with customers about their options for changing a project's approach, scope and schedule to best meet their business goals.

The same approach can even apply to their client's overall project portfolio. For example, linking project engineering data with the estimating function

is an extremely powerful tool to create and analyze a range of scenarios to quickly evaluate ways to modify a project for different CAPEX and OPEX objectives. Coupled with insights from the EPC's intimate knowledge of processes and projects, this can serve as a key input into an owner's decision regarding how to redeploy their reduced capital.

**Bringing probability to the equation.** Likewise, EPCs can use estimating and probabilistic modeling to further augment and refine inputs to key decisions. Engineering data used in conjunction with an estimating tool can quickly calculate the cost impact of relocating a project to another location. Probabilistic forecasting tools can also be used to determine the likely impact of value engineering activities such as adding or removing redundancy, spares or buffer capacity or to determining the impact of removing entire operating units or trains. Impact can be measured both in terms of cost and production and can be determined at the equipment, unit, plant or project portfolio level.

Providing knowledge and data-based recommendations to customers can position EPCs as 'trusted advisors' and enable them to be viewed as strategic partners rather than commoditized service providers, helping the owners make difficult CAPEX tradeoffs.



## 2

### Revise bids quickly and accurately

Projects with reduced scope or even delays will result in the need to re-calculate costs and potentially re-submit bids. Through integration of engineering and estimating tools, EPCs will have the needed agility to alter scope in their simulation and engineering tools. They can then import that engineering data into their estimating tool to quickly generate new bids that are grounded in sound engineering. This can be done quickly, providing key data that the owner needs to adjust spending, while enhancing the confidence the owner has in the EPC.

By consolidating its engineering software and technology portfolio from over 160 products to less than 30, a North American EPC can better support project delivery and be more responsive to customers.

## Opportunities During Recovery

In addition, there are two strategies EPCs may want to begin implementing now, if they haven't already started, to best prepare them for recovery when it comes.

## 3

### Accelerate digital transformation

Prior to the current global economic disruption, most EPCs were either initiating or contemplating digitalization initiatives to support business transformation that executives viewed as imperative to improving engineering productivity and reducing project and financial risk. These initiatives were being undertaken, in large measure, to consolidate and connect their portfolios of engineering software and technology in support of new, streamlined, digitalized workflows spanning departments, disciplines and offices.

Anticipated business benefits include shorter cycle times, lower cost, and higher quality designs, as well as fewer errors and problems encountered during design, construction and handover. The use of digital twin technology, in particular, can bring high value to clients as it captures real-time data of the asset once it's in operation. Additionally, being in a position to leverage digital design and engineering data during handover provides greater potential for offering value-added services during operations and maintenance, making the firm less reliant on capital spending alone.

### **Consolidating/centralizing tools and data.**

In speaking with customers across all regions, the highest priority area to be addressed under digitalization is consolidation of engineering software and technology portfolios, followed by digitalization of remaining applications and business processes. Critical to this effort is the ability to find and re-use data across the organization, and eventually across their ecosystem of vendors, sub-contractors and consultants.

Such digitalization initiatives should move forward and potentially even be accelerated as the EPC industry moves past the initial crisis and begins a gradual recovery. There is so much to be gained (some companies estimate there is an opportunity for double-digit improvement in engineering and estimating productivity alone) that those who do not move forward risk being less competitive during and after the recovery.

For EPCs, there is so much to be gained by moving forward with digitalization initiatives that those who do not risk being less competitive during and after the recovery.

Given that most EPCs have already begun planning such initiatives, a looming slowdown may be the right time for a revamp of their own processes and systems.



### **Create new revenue streams from OPEX**

As the industry moves into recovery, capital budgets are likely to remain depressed. EPCs with a focus on oil & gas and chemicals will have to look to new areas for revenue and growth. Because there are so many more assets in operation than are currently being planned, designed or built, it will be critical for these firms to develop offerings targeting the operations and maintenance phases of the asset lifecycle.

In addition to looking to cut CAPEX, owners want to reduce operating expenses or operate their plants in new ways (e.g., reducing feed rates (turn down), more frequent startup/shutdown cycles, or producing alternative product mixes). These non-standard operating conditions can be more challenging and uncharted territory for owners, and EPCs can assist by offering up their process engineering skills and tools or providing personnel who may be freed up due to delays on capital projects.

**Troubleshooting and optimizing equipment.** One example of an area where EPCs can assist owners is use of up-to-date process simulation models to facilitate “what if” scenario planning, as well as equipment monitoring and troubleshooting, to yield better results

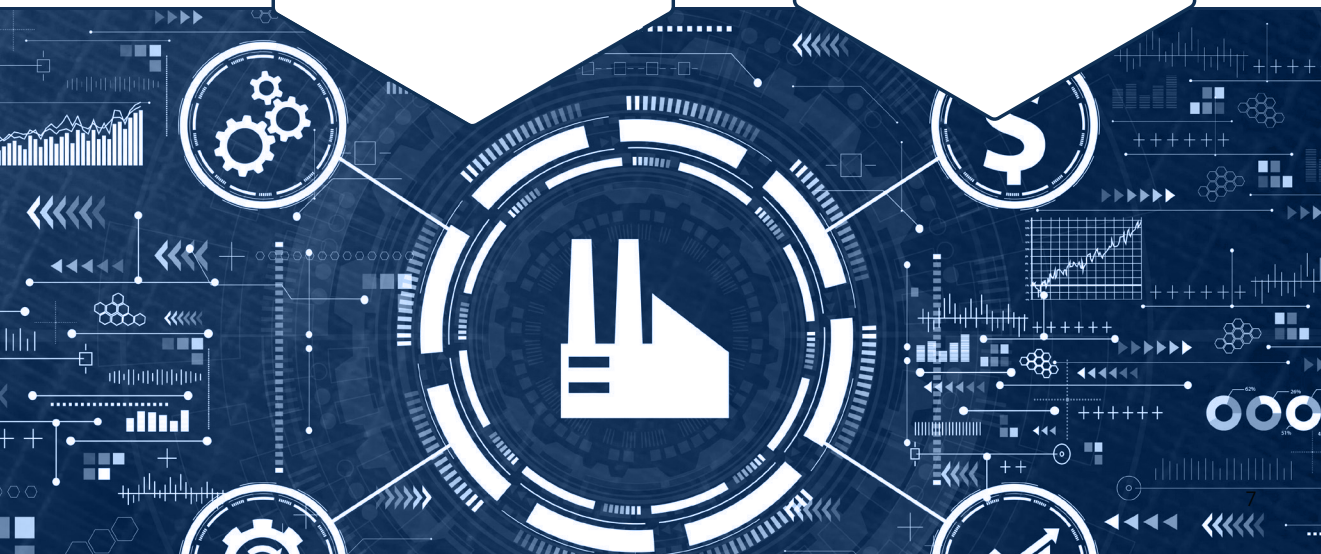
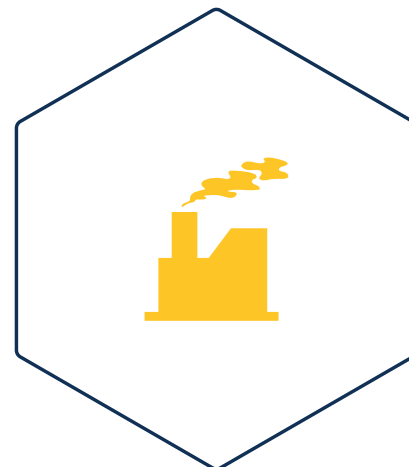
at non-standard feed rates. Helping owners optimize equipment performance is another way to generate more revenue leveraging EPC core competencies and a bench of experienced process engineers. Fouling of heat exchangers in the refinery preheat train alone is estimated to cost operators \$4.5 billion USD per year (exacerbated by running at non-standard feed rates). Distillation columns, which can be another challenging piece of equipment to run at lower flows, offer additional opportunities for new optimizations.

**Reducing energy usage and costs.** Another significant operating cost is energy usage, which can account for more than half of a plant’s non-feedstock expenses. Creating a model of the plant’s utility system and connecting it to operating data can provide the guidance required to achieve the lowest operating costs under new and unique operating scenarios developed in response to changes in demand driven by the pandemic.

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Often, plant operators lack the modeling skills and tools necessary to achieve optimal economic operation of the facility. The opportunity for EPCs is to leverage their modeling expertise and plant knowledge to help unlock energy savings of 2-5%. They can also assist by expanding design models into plant-wide processes and utility models, and developing plant-wide energy optimization strategies. These modeling activities can also surface opportunities for smaller revamp and debottlenecking investments for energy improvement projects which can generate new revenues for the EPCs. Such investments often provide payback within one year and can be very attractive to the operators.

**Supplementing operator training.** As operators are less accustomed to dealing with significant changes in flow rates and more frequent startup/shut down scenarios, another area for EPCs to add value is in dynamic modeling and operator training (OTS). While this is an area of specialization that most owners do not have in-house, it adds value from multiple angles — including economic, safety and environmental — as most incidents occur during these non-steady-state operations.





## A Progressive Recovery

In the near term, EPCs may consider advising clients on the best approach for adjusting capital spending and reconfiguring bids to quickly respond to project changes. As the industry transitions to a new normal, there may be personnel available who can productively engage in digitalization initiatives, paying dividends now and in the future. Ultimately, diversification into new sources of revenue less reliant on capital spending is a prudent direction and one that also helps clients meet OPEX reduction targets as well.

From our position as an industry partner, AspenTech has been working with companies globally to support workers who have the critical need to access AspenTech software for remote access to perform their daily mission-critical work. Our customer and training websites, customer support telephone and chat systems are all fully available to rapidly respond to support companies and their teams who are currently operating in work from home mode.

As our EPC customers reach out to extend their services in the areas of operations and maintenance, we can provide back up and support for translating their skills and expertise into new, compelling business offerings that aid our owner-operator customers as well. Regardless of where your firm is along your digitalization and business journey, we have the expertise, software, services and support to help you manage through the crisis, transition and recovery from the unprecedented global situation.

**Learn more at:** [www.aspentech.com/en/solutions/covid-19-response](http://www.aspentech.com/en/solutions/covid-19-response)



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