Reducing Total Installed Cost on Future Megaprojects
Capturing lessons learned from the recent wave of megaprojects on the US Gulf Coast
Introducing our speakers

Moderator

Kurt Schoeffler
Engagement Manager & ECC Future Leader

Panelists

Steve Wardle
Executive Project Director

Matt Key
Vice President of Construction Operations

Reducing Total Installed Cost on Future Megaprojects
Recent US Gulf Coast megaprojects have failed to meet cost and schedule objectives

Overruns observed on recent USGC projects

Median range observed

<table>
<thead>
<tr>
<th>Cost</th>
<th>10-30+%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule</td>
<td>0-15+%</td>
</tr>
</tbody>
</table>

Source: Westney Consulting Group

1 20 USGC petrochemical projects >$250 million in capex. Results hold for projects >$1 billion in the dataset.
2 Percent increase over budget at sanction.
3 Percent increase over original duration for EPC phase.
Current projections show that elevated levels of major project activity are likely to continue.

*Source: Westney Consulting Group, Construction Insider® database*
Which areas provide the greatest opportunity for reducing Total Installed Cost (TIC)?

1. Contracting Strategy
2. Project Culture
3. Design & Layout
4. Modularization
5. Craft Productivity
Contracting Strategy

Key considerations

- Understanding how risk is being appropriated and why
- Most contract types can work
Key considerations

- Transparency and trust
- Win-win approach – is it real?
- Importance of “one team”
Design & Layout

Key considerations

- Owners pursuing “capital efficiency”
- Plant arrangement / layout
- Constructability
- Owner specifications / requirements
Modularization

Key considerations

- Levels and drivers of modularization
- Yard location and availability
- Risks and trade-offs
- Cost vs. stick built

Direct construction work-hours

<table>
<thead>
<tr>
<th></th>
<th>Millions</th>
<th>Work-hours removed from site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>3.4</td>
<td>0.9</td>
</tr>
<tr>
<td>Electrical and Instrumentation</td>
<td>2.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Equipment</td>
<td>2.7</td>
<td>1.1</td>
</tr>
<tr>
<td>Pipe</td>
<td>5.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Structural Steel</td>
<td>1.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Sitework, U/G, and Concrete</td>
<td>3.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Standard Ethane Cracker</td>
<td>18.0</td>
<td>9.0</td>
</tr>
<tr>
<td>Modularized Ethane Cracker</td>
<td>9.0</td>
<td>2.1</td>
</tr>
</tbody>
</table>

ILLUSTRATIVE
Craft Productivity

Key considerations

- Construction-driven planning
- Developing competency of front-line leadership
- Strong completion practices and tools
- Logistics
- Engineering delivery
Q & A

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Thank You