

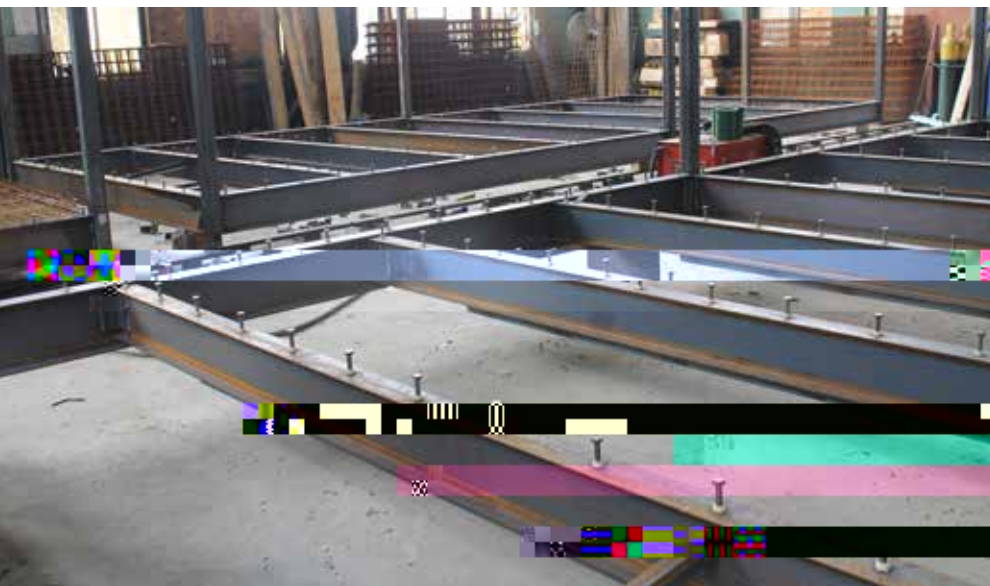
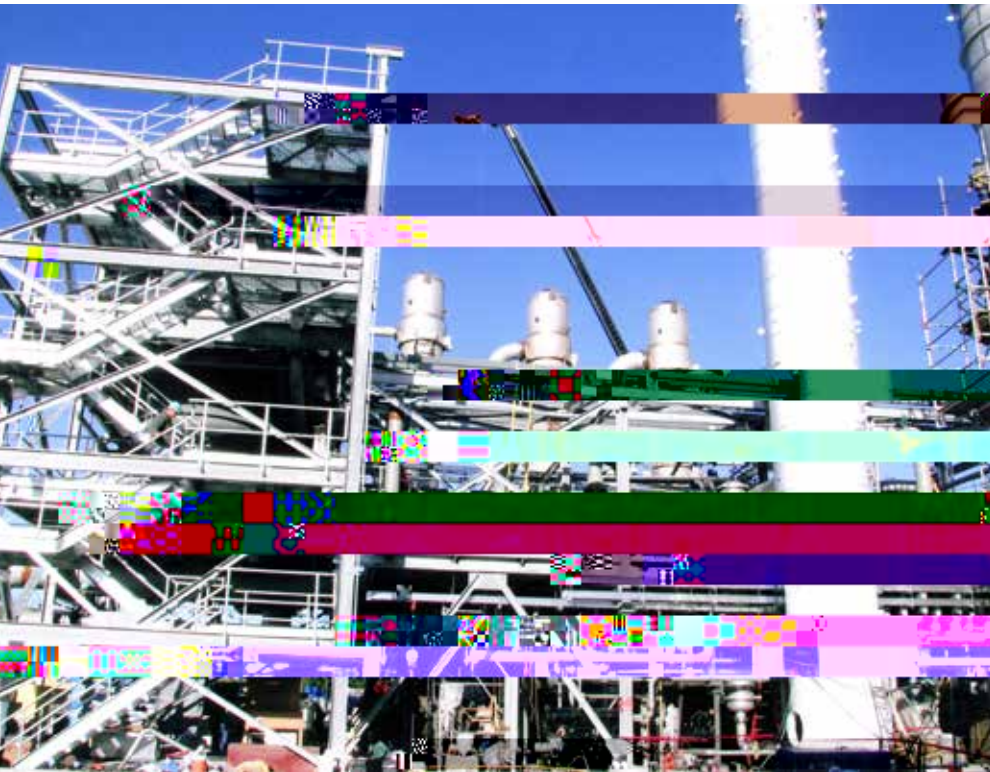
I ECE EA , large industrial or power projects have been embracing the concepts of modular construction to meet increasingly aggressive construction schedules.

These efforts have typically fallen under the umbrella of “PPMOF,” which has been defined by the Construction Industry Institute (in Document IR171-2) as:

Prefabrication: A manufacturing process, generally taking place at a specialized facility, in which various materials are joined to form a component part of a final installation. Prefabricated components often involve the work of a single craft.

Preassembly: A process by which various materials, prefabricated components and/or equipment are joined together at a remote location for subsequent installation as a sub-unit; generally focused on a system.

Module: A major section of a plant, resulting from a series



◀ Nearly any large industrial or energy project can benefit from PPMOF (prefabrication, preassembly, module and off-site fabrication).

This does not mean that prefabrication isn't worth pursuing—but it does mean that project teams should pay careful attention at the very beginning. PPMOF must begin in the preliminary design phase or you risk not having sufficient time to conduct a proper analysis. Being able to complete a full cost/benefit analysis is especially important whenever changing traditional practices in any industry, as costs are frequently underestimated. As such, analysis of new PPMOF techniques should show a substantial benefit before proceeding further.

Be absolutely sure that you understand the potential effects on key project variables and have looked at the consequences across the project team; you cannot assume that everyone will understand the impact of your prefabrication choices. There will be multiple critical paths in your project and the entire project team will be more interdependent than ever, so increased communication at all levels is a must. ■

This article is based on the session "Modular Construction Practices" from the 2013 NASCC, presented by Perry Green and Jim Ryan. You can view it at www.media.aisc.org/NASCC2013/N44.mp4. For more on industrial facilities, see "Power-Up" (11/2012) at www.modernsteel.com. You can also view CII IR 171-2 Prefabrication, Preassembly, Modularization, and Offsite Fabrication: Decision Framework and Tool and CII RS 283-1 Industrial Modularization: How to Optimize; How to Maximize, both at www.construction-institute.org.

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Thinking about modular construction for an industrial facility? Here are some tips:

- ▶ Include modularization in design criteria for all disciplines before starting detailed engineering.
- ▶ Develop the general arrangements for the project around modular framing.
- ▶ Use bolted field connections.
- ▶ Budget extra steel and commodity fluctuations.
- ▶ Question the value of preassembly; once you start down the path of increasing prefabrication, people may start thinking of everything that you could possibly preassemble, but you must always ask whether it genuinely makes sense to do so.