

## Lean Production Management (a/k/a “Lean Construction”)

BP, BMW Constructors and Strategic Project Solutions together lead the Regional Contractors Alliance (“RCA”) beyond current best practice by successfully implementing Lean Production Management (“LPM”) for the construction of BP’s new Distillate Hydrotreater Unit at its Whiting refinery.

LPM is a comprehensive project delivery system that fundamentally differs from traditional project management practices still used on a vast majority of projects throughout the world. LPM incorporates the knowledge developed and advocated by the Lean Construction Institute [[www.leanconstruction.org](http://www.leanconstruction.org)], which aims “to extend to the construction industry the Lean production revolution started in manufacturing.”

LPM makes possible project outcomes not previously achievable because, unlike traditional project management, LPM enables optimization of total project workflow – work flows reliably according to a sequence, timeline, and pace that optimizes the total project.

Despite constructing the unit in region of the country with a long history of no large capital projects achieving either on-time or on-budget completions, LPM enabled RCA to meet the schedule (despite significant delivery delays of material and major equipment), and outperform the budget (lead by a 20% productivity improvement for mechanical installation and a significant overall reduction in the use of overtime).

Successful implementation of LPM required a radical change in the behavior and focus of the union workforce, as well as a significant revision in the role of the project management team. For example:

- LPM replaced centralized planning and command-and-control management with distributed planning and control carried-out collaboratively by supervisors responsible for the work
- LPM replaced optimization of individual operations with a system that based all planning and decision making on what’s best for the project as a whole
- LPM redefined “planning” from a backward looking process of monitoring deviations from a baseline, to a forward looking process that embraced the fundamental reality of constant change and provided a structured approach to continuously re-planning remaining workflow
- LPM redirected supervisors’ primary focus from managing the workFORcE (keeping crews “busy” and getting as much done as possible), to managing the workFLOW (ensuring that work flowed without interruption according to a plan that optimized total project workflow)
- LPM ensured structured and systematic communication, collaboration and coordination across the project delivery team
- LPM introduced reliability as a key performance indicator together with a structured approach to continuous process improvement, systematically improving the reliability of RCA’s plans and commitments which significantly improved workflow reliability and made effective coordination possible
- LPM made possible real-time integration of a distributed and dynamic planning process, and provided real-time transparency (of both progress and lookahead) across the project team
- LPM made possible the standardization and continuous improvement of detailed workflow processes
- LPM introduced several additional Lean principles, including balanced workflow, “pull,” JIT deliveries and completions, and buffer management

**Contact: Peter Gwynn • Strategic Project Solutions, Inc • 1040 Battery St  
San Francisco, CA 94111-1209 • 415-710-0024 • Fax 415-362-3210 • [pgwynn@spsinc.net](mailto:pgwynn@spsinc.net)**

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