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# Grade the shift: Improving operations and process performance

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On the last day of each year, the lead operator at a major American oil field challenges his team to push more crude oil down the pipeline than they had the year before. They do everything possible during their 12-hr shift to accomplish this: creating clear goals, working together to establish targets, closely monitoring the process, openly communicating the results, celebrating their successes and discussing lessons learned. This all-out effort is repeated every year, and while it is usually successful, it is not for the faint of heart.

While sustaining such a high level of production over the long term is neither possible nor advisable, the careful daily application of these techniques can result in steady and progressive improvements in refining margins. This approach has been successfully used at many refineries throughout the world, where it is often referred to as "grading the shift."

"Grade the shift" is a work process that follows the traditional plan, do, study and act (PDSA) cycle of continuous improvement (FIG. 1) specifically applied to process facilities. This approach establishes a goal, creates a plan, executes the plan, compares the results against the goal, makes a few changes and then repeats.


FIG. 1. The plan, do, study and act (PDSA) cycle.

The "grade the shift" method, detailed in FIG. 2, is an optimization cycle that:

- Establishes clear and realistic goals with key stakeholders (management, operations, engineering and maintenance)
- Communicates the goals clearly to the workers
- Gives operations the freedom to perform their jobs
- Solicits feedback on status and problems encountered
- Displays the important process values, targets and margin drivers
- Compiles and distributes the results.

**Weekly business plan.** Key stakeholders must work closely together to identify realistic, attainable and measurable goals that can be achieved within the constraints of process, equipment, labor force, safety and regulations. Business planning must set targets to drive optimal process conditions. Margin drivers, which are process value tags that display the economic consequences of off-target values, must be included on key performance indicator (KPI) dashboards for everyone to see. Controls must be in place to limit who can recommend and set process values, targets and margin drivers.

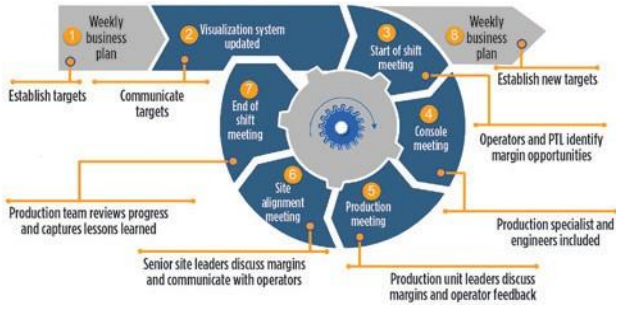


FIG. 2. "Grade the shift" optimization cycle. (Source: McKinsey, 2019).

**Visualization system updated.** Everyone from the boardroom to the control room must have real-time access to the KPI dashboards that display process values, targets and margin drivers. The displays must be clear, consistent and meaningful to everyone who uses them, including management, operations, engineering and maintenance.

**Start of shift meeting.** At the beginning of the shift, production team leads must provide operations with their instructions that support production goals and economic drivers. After that, the operators run the plant and record progress in their shift reports, which then roll up into the managers' daily reports. With clear process safety guidelines in place, operators can positively impact the margin contribution and produce consistent positive results.

**Console meeting.** Unexpected changes in processes and equipment happen all the time. Production specialists, maintenance crews and engineers communicate with control room operators throughout the day regarding these changes. Workarounds must be identified, clearly documented and incorporated into the daily operation of the plant. Operators must include the specific details of these changes and their workarounds in the shift reports for later analysis.

**Production meeting.** As the shift progresses, production unit leaders must monitor process values and targets. The production goals are evaluated, and the process is tweaked as needed. The analysis and actions performed by the production unit leaders are documented in shift reports, including recommendations to key stakeholders.

**Site alignment meeting.** Throughout the shift, senior leadership will be watching the margin drivers and KPIs, which are then discussed during the site alignment meeting. Decisions made during the meeting must be communicated back to the key stakeholders and rolled up into the weekly business plan.

**End of shift meeting.** Console operators and the production team leads review the daily production numbers, capture their lessons learned and communicate the results to the next shift in the shift handover report.

**Weekly business plan.** Before the start of the next shift, business planning must review and update new targets and margin drivers based on all information documented during the previous shift. The cycle then begins again.

**Takeaway.** "Grade the shift" provides the structure needed to set production goals, establish targets, monitor processes, communicate results and celebrate successes across multiple units and work groups. To be successful, goals must be attainable with no more than three to six margin drivers clearly showing the economic impact of workers' actions. The structure requires a dedicated process monitoring application that not only displays real-time process values, targets, KPIs and margin drivers, but also integrates worker comments and generates shift reports.

To learn more about process visualization and worker communication tools, please visit AIS Software at booth #30 in the Exhibition Hall. ●

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