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# Multi-mode plant-wide process operating performance assessment based on a novel two-level multi-block hybrid model

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## Highlights

- Multi-mode plant-wide process operating performance assessment problem is solved.
- The novel two-level model handles both the quantitative and qualitative information.
- The optimal degree of the process is assessed in real-time.
- Both the global and sub-block-level performance grades are assessed online.
- Non-optimal cause identification technique with good interpretability is built.

**Abstract:** Process operating performance assessment judges the optimal degree of the process performance and identifies the cause for non-optimality in real-time. Therefore, process operating performance assessment is of great significance in both the theoretical research and practical application. In this article, the multiple working modes, the plant-wide process characteristics, and the coexistence of both the quantitative and qualitative information are considered. To solve the above problems, a novel two-level multi-block hybrid model based operating performance assessment approach is proposed. Under each working mode, the two-level hybrid model is

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