

## How One Company Used a Daily Financial Report to Improve Quality\*

In the 1980s, a chemicals company became committed to a total quality management program and began to make extensive measurements of employee participation, statistical process control, and key quality indicators. Using computerized controls and remote data entry systems, the plant monitored more than 30,000 observations of its production processes every four hours. The department managers and operating personnel who now had access to massive amounts of real-time operational data found their monthly financial reports to be irrelevant.

But one enterprising department manager saw things differently. He created a daily income statement. Each day, he estimated the value of the output from the production process using estimated market prices and subtracted the expenses of raw materials, energy, and capital consumed in the production process. To approximate the cost of producing out-of-conformance product, he cut the revenues from off-spec output by 50% to 100%.

The daily financial report gave operators powerful feedback and motivation and guided their quality and productivity efforts. The department head understood that it is not always possible to improve quality, reduce energy consumption, and increase throughput simultaneously; tradeoffs are usually necessary. He wanted the daily financial statement to guide those tradeoffs. The difference between the input consumed and output produced indicated the success or failure of the employees' efforts on the previous day. The operators were empowered to make decisions that might improve quality, in-

crease productivity, and reduce consumption of energy and materials.

That feedback and empowerment had visible results. When, for example, a hydrogen compressor failed, a supervisor on the midnight shift ordered an emergency repair crew into action. Previously, such a failure of a noncritical component would have been reported in the shift log, where the department manager arriving for work the following morning would have to discover it. The midnight shift supervisor knew the cost of losing the hydrogen gas and made the decision that the cost of expediting the repairs would be repaid several times over by the output produced by having the compressor back on line before morning.

The department proceeded to set quality and output records. Over time, the department manager became concerned that employees would lose interest in continually improving operations. He tightened the parameters for in-spec production and reset the prices to reflect a 25% premium for output containing only negligible fractions of impurities. The operators continued to improve the production process.

The success of the daily financial report hinged on the manager's ability to establish a financial penalty for what had previously been an intangible variable: the quality of output. With this innovation, it was easy to see where process improvements and capital investments could generate the highest returns.

\*Source: "Texas Eastman Company," by Robert S. Kaplan, Harvard Business School Case No. 9-190-039.