All companies in transition to world-class manufacturing face a lot of change, and changing performance measures is only one part of the process. Groundwork needs to be laid first...to support the business and manufacturing strategies," said Bill Holbrook, vice president operations, Stanadyne Automotive's Diesel Systems Division. This groundwork and the relationships between performance measures and a company's business and manufacturing strategies were the subject of a recent seminar on "Performance Measurements for World-Class Manufacturing." Joining Holbrook for this session were speakers Roger L. Heffernan, corporate vice president, manufacturing for General Instrument Corporation and Brian Maskell, president of Brian Maskell Associates.

**Performance Measure Characteristics**

"Although the new performance measures being used by world-class manufacturers vary considerably, they have seven common characteristics," said Brian Maskell. They:

- Are directly related to the manufacturing strategy
- Primarily use non-financial measures
- Vary between locations
- Change over time as needs change
- Are simple and easy to use
- Provide fast feedback to operators and managers
- Are intended to foster improvement rather than just monitor performance.

At Stanadyne, the list of characteristics has been expanded. Holbrook noted that measurements must be supportive of the critical success factors, simple and understandable, flexible, timely, accurate and fair, controllable, visible, communicated, paid attention to, and based upon actual data. He added that this list was based on "25 years of not using the right ones." For example, the company formerly paid attention to standard cost variations, and...
Measurements must be:
- Meaningful and performance traceable to the financial statements (everything linked to the bottom line)
- Clear, easy to understand
- Visible and shared with all employees
- Used to drive the continuous improvement process
- Performance objectives must reflect process maps, competitive analysis, and benchmark studies
- Heavy use of ratios and time-based metrics including velocity of processes and responsiveness
- The basis of incentive compensation.

Types of performance measures he suggested include:
- Delivery performance: schedule position, supplier delivery performance, etc.
- Process time: WIP inventory levels and setup time, etc.
- Production flexibility: new product introduction time, etc.
- Quality performance: scrap levels, defects/machine, etc.
- Financially-based performance: inventory turns, cost/unit of output, etc.
- Social skills: teamwork levels, suggestions/employee, etc.

Bill Holbrook sees the possibility of effectively using performance measures as the basis for tracking progress towards established goals, the basis for pay increases, the foundation for performance improvement discussions, and as justification for equipment or personnel. Four of these measures (quality, schedule, cost, and housekeeping) became the basis of a total recognition system called SCORE (Stanadyne Commitment to Overall Responsibility for Excellence). This system is used as a means of rewarding teams within Stanadyne for excellent performance, and to evaluate suppliers. (More details about SCORE are in the article, “Stanadyne Automotive Corp.: Cultural Change in an Old New England Company,” by Lea Tonkin, in the March/April, 1993 issue of Target.)

General Instrument measures its performance in five key areas: materials management, JIT, TQM, inventory management, and customer satisfaction. “TQM means velocity — doing things right and doing things fast” at General Instrument, according to Heffernan. Speed is an important focus in all aspects of their operation, from time-to-market for new products to supplier leadtime.

TQM Environment

All three speakers clearly indicated that performance measures are not stand-alone items. World-class performance measures can exist only within — and they must support — a Total Quality Management (TQM) environment.

For Stanadyne Automotive’s Diesel Systems Division, performance measures were the fourth critical factor supporting their TQM environment. The first three elements included customer focus, business process focus, and empowered people. Holbrook said their first step toward creating effective measurements is the strategic planning process. “You’ve got to know where you’re going before you figure out how you’ll get there or put your system of measurements in place,” he said.

Alignment within General Instrument is assured by the monthly review of its selected performance measures with the chairman of the company. “A measurement system in a vacuum is worthless. It must be embedded in the management system to be truly successful and all measures must somehow find their way to the bottom line,” Heffernan said.

According to Maskell, “Adoption of business and manufacturing-driven, non-financial measures relies heavily on a key act of faith by management: Control the right things and the financials will take care of them—
selves.” He said an organization will be better off if measures support key improvements, such as increased flexibility, to meet customer requirements (see Figure 2).

**Team Activities, Conclusions**

An interactive feature of this one-day seminar was a panel discussion set for the afternoon session. During registration, each participant was asked to sign up for one of five teams based on their interest. The areas were: cycle times (trend analysis), employee pay systems, factory control/cost of quality, factory control/labor efficiency, and customer satisfaction.

During a break-out session, each team was asked to identify key problems they were experiencing in their area of interest, prepare a list of possible solutions, and develop a final report of their conclusions to be shared with the entire group. A recap of the team presentations follows:

- Cycle time presentations centered on the measurement of new product programs, especially as it related to over-engineering a product and also the management of costs driven by engineering costs.
- Pay system issues involved transitions from individual-based incentive systems to team-based gainsharing systems. Time was spent discussing the barriers to change that are created when members of an organization are not treated or compensated equally.
- Both factory control teams discussed issues related to making sure the measures being used were ultimately traceable to the bottom line.
- Customer satisfaction issues centered on improving feedback loops. Team members recognized that they key to customer feedback was capturing pertinent quality-related information on a timely basis. Roger Heffernan summarized the discussion of this topic: “If your employees are not devoted to customer satisfaction, you’re losing the game!”


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