Figure 11.9b. PROCESS IMPROVEMENT STRATEGIES: An Overv iew

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Manufacturers must use holistic approach to maintain their strength

BY BARRIE HAWKINS

Mr. Hawkins is vice-president and general manager of the Ontario Centre for Advanced Manufacturing.

COMMENTARY

The world today is entering the era of the greatest unfettered competition in history. As barriers to trade are reduced or eliminated, the struggle is becoming fiercer. Industries that are helpless without tariff protection will fail. But those whose performance has been inhibited by the old barriers can be spectacular winners.

Any manufacturer who wants to win under the new rules will have to adopt the key elements of "High Performance Manufacturing."

These elements are: simplification; worker involvement; total quality control; total productive maintenance; just-in-time production; continuous improvement; and the use of appropriate technology. It is only by applying these concepts in a co-ordinated and holistic fashion that Canadian companies will be able to produce goods that are durable, dependable, efficient and cost-competitive. That is, Canadian products will be as good as any in the world.

A few years ago, we believed that the way to achieve this was through technology. Today, the emphasis has shifted to management and simplification, with technology applied where it will do some real good, not used as a quick fix or a smoke screen for a lack of progress. The maxim today is: "If technology is not the problem, then technology is not the solution."

But it is not enough just to recognize that the old manufacturing methods, processes and management techniques will no longer work. We must also change the way in which success or failure are measured.

The fact is that traditional measurement systems don't tell us what we need to know about what is going on in today's factories. Or else they tell us too late. Standard bottom-line measurements of profit and return on investment measure the ultimate result, but they take too long and are too far removed from the people who count – workers, engineers and supervisors -- to have much effect.

One problem with the traditional measurement systems is that they emphasize control rather than improvement. Another is that they are results-oriented rather than process- or activity-oriented.

In the traditional factory, decision-making authority rests almost exclusively with management. By the time the manager upstairs reads reports from the plant floor, they are already out of date. Those reports fool the manager into believing he is in control, when quite the opposite is true. With this kind of system, it is virtually impossible to recognize problems in time to draw any meaningful conclusions or to make corrections.

As for the focus on results instead of process, while results are obviously important, there is little doubt that Japanese manufacturers are much more process-oriented and that this is the secret of how they have managed to dominate whole industries almost overnight. They were steadily improving their manufacturing processes for the long term, while we were too busy analyzing quarterly results.

A good example is the approach to quality. Traditionally, in North America we have measured a product's conformance to specification, inspecting out bad parts before they were shipped. As long as defect rates didn't get too high, we were content.

The Japanese took a different line. They concentrated on continuous quality improvement. They measured the rate of reduction in both product and process deviations from a zero defects target. Along the way, they proved that pursuing quality improvements actually drives costs down, and that near-perfect quality is attainable.

When it comes to cost, the results-oriented view is that you measure conformance to standard cost, and occasionally do a cost-variance analysis to determine how you are faring. What we should be measuring, however, is value-added and the rate at which non-value-adding activities are eliminated. Any activity that doesn't add value – for example, moving the product in and out of inventory – is bad and should be eliminated. Virtually all of the new methods that go into High Performance Manufacturing are geared to eliminate non-value-adding activities.

Another major area in which we need to change our scoring systems is in measuring the contribution of each department or division to over-all company performance.

The forklift truck provides the ideal symbol of where we have gone wrong. The forklift is an indispensable tool that has helped many plants to waste hundreds of thousands of dollars a year. It has allowed companies to establish large central inventories, to and from which this marvellous vehicle can carry skids of material, racking up thousands of miles a year.

Not one of the components of this system is wasteful by itself: the forklifts are efficient, the drivers well-trained, the central carousel is modern and well-designed. Taken as a whole, however, the system is little short of disastrous. It is a model of waste. It adds nothing to the value of the product. Therefore, in today's world, it must go.

The fact is that we cannot measure the contribution of an individual operation or department to the company as a whole by evaluating its efficiency as though it were a self-sufficient enterprise. However efficient it may be in itself, it may be creating serious problems for other divisions, and thus inhibiting the company's overall goal. What we should be measuring is the degree of synchronization between customer requirements and production throughput.

This points to one of the basic tenets of High Performance Manufacturing, which is to know the company's goal, and know how each part of the operation is contributing to that goal. This requires teamwork at all levels. And an essential element of this teamwork is communication.

The need for communication is two-fold. There must be communication from the top down and from the bottom up. There must also be lateral communication between divisions. That is why managers in High Performance Manufacturing companies spend a lot of time talking to each other, and not a lot of time counting the widgets their own department is turning out.

Look at the improvements that can be made when operations are moved closer together, as in a just-in-time set-up. Suddenly, machine operators are talking to each other. Problems are recognized almost immediately, instead of after a backlog of scrap parts has been produced. Thus, solutions can be identified and implemented quickly and effectively.

(*continued overleaf*)

Similar benefits result when design engineers talk to manufacturing people. Seventy to 80 per cent of a product's manufacturing costs are determined early in the design phase. The simpler the design, the fewer the number of parts, the easier and less expensive it is to produce. Going one step further, actually designing the product for ease of manufacturing can slash costs by 20 to 40 per cent and double productivity.

Finally, we come to the ultimate measurement, which is a company's performance in the market-place. This encompasses a lot of things. Revenue is part of it, and so is profit. Unfortunately, for some companies, sales and profit have become all of it. Too many North American companies are preoccupied with quarterly results, with short-term profit and dividends, while the Japanese concentrate on gaining market share. All too often it seems that the difference between "us" and "them" is that, here, long-term is anything beyond the next quarterly report, while in Japan, long-term is anything beyond the next quarter-century. We need to remember that a company can look like a winner in the short term and be dead 12 months down the road.

Ultimately, it is customer satisfaction that is the best measure of a company's performance and the best indicator of how well positioned it is for the onslaught of ever-fiercer competition. Initiating a just-in-time production system may not gain a single extra sale. Yet, by eliminating backlogged orders and guaranteeing delivery times, it may keep customers who would otherwise be lost.

Better product and better service, these are the keys to achieving long-term success in an ever-more-competitive world.

1 Near the middle of the left-hand column overleaf on page 11.53 of the article EM8910 reprinted above, Mr. Hawkins advocates .... *chang(ing) the way in which success or failure are measured*.
- Explain briefly what is meant by *success* and *failure* in this context.
- Outline the measurement(s) that Mr. Hawkins proposes; make it clear in your answer *what* the article indicates is to be measured and *how* the measuring is to be done.

2 In three paragraphs starting near the bottom of the left-hand column overleaf on page 11.53, Mr. Hawkins juxtaposes the North American and Japanese approaches to quality. Compare and contrast what *he* says with the discussion of the *same* matters in the video *Ford Batavia* described in Figure 11.3a on pages 11.11 to 11.14.

3 At the end of the first paragraph of the right-hand column overleaf on page 11.53, Mr. Hawkins states that the Japanese *.... proved that pursuing quality improvements actually drives costs down .....*
- Describe briefly the *type(s)* of quality improvements that reduce costs.
- Describe briefly the type(s) of quality improvements that usually *increase* costs.

4 In the fifth and sixth paragraphs of the right-hand column overleaf on page 11.53, Mr. Hawkins refers unfavourably to a .... *central carousel (that) is .... well-designed ....* and to an operation or department that *However efficient it may be in itself, it may be creating serious problems for other divisions .....* Give a concise answer to a person who argues that Mr. Hawkins is advocating poor design and inefficient operations or departments in these statements.

5 In the last sentence of the fourth-last paragraph overleaf on page 11.53, and again in the second-last paragraph above, Mr. Hawkins refers to *customers*; compare and contrast the meanings of this term in these two contexts.

6 Identify the two paragraphs of the article EM8910 in which Mr. Hawkins refers to the industrial importance of *timely recognition of problems.*
- Summarize concisely the factor(s) that are indicated as affecting such recognition.
- Outline the reason(s) Mr. Hawkins gives for regarding this recognition as an essential business practice.
- Describe briefly how *control charts* can be used to facilitate timely problem recognition.
  - Suggest ways in which control charts might be used where they would *not* typically assist in such recognition.

Suggestions for Further Study

Some themes from Mr. Hawkins' article EM8910 can be pursued in videos available in the University of Waterloo Audiovisual Centre (E2 1309):

- *Facing the Challenge* – two 25-minute videos in which two well-known business strategists, Peter Drucker and Warren Bennis, analyze the radical change that is sweeping organizational management.
- *Just in Time* – one 25-minute video on the style of production management in which the required components arrive directly at the right place, at the right time, just when they are needed.
- *The Morgan Motor Company* (the sixth Part of the BBC series *Trouble Shooter*) – a 40-minute video describing problems in the classic hand-built sports car factory where business is booming yet there is a 10-year waiting list for the cars.