The majority of us are working in a competitive market, and many who have historically not been in that situation are going to be soon (just look at the deregulation going on in the utility industry). It is more important than ever that we understand how a competitive market will affect those of us responsible for maintaining our company's assets.

A competitive market always creates pricing pressures for companies, resulting in the need to control costs to be price competitive. This means that the amount of money industry has to spend is constantly under scrutiny, including the money spent on maintenance. The challenge facing maintenance managers is to spend that money where it will do the most good.

It is my experience that today most companies do a good job managing their work management process which includes planning and scheduling, work execution, and follow up. Most companies also already have software such as a computerized maintenance management system to help them with this process.

However, most companies are not as good at identifying the work they need to manage and do not have technology in place to help them with that identification.

Advanced methodologies such as Reliability Centered Maintenance and specialized maintenance data analysis software ensure that you do the right work at the right time.

Our research has shown that when advanced methods and technologies are used to determine comprehensive maintenance programs, of 100 percent of the failure modes of most modern industrial systems:

- 33 percent require detective maintenance. This is common for protective devices and involves checking to see if the equipment has failed.
- 25 percent require predictive maintenance. This involves checking to see if the equipment is in the process of failing.
- 5 percent require preventive maintenance. This is time-based restoration and replacement.
- 33 percent can be allowed to run to failure. This is a valid maintenance strategy when the failure has no business consequences.

- 4 percent require re-design to the equipment.

This means that 63 percent of all maintenance tasks require some form of proactive maintenance (detective, predictive, and preventive). If we look at only these task types we find:

- 90 percent of proactive tasks require condition monitoring. This includes detective and predictive tasks.
- 10 percent require time-based restoration and replacement. These are the preventive tasks.

This data tells us that the vast majority of maintenance tasks should be condition-based and not time-based. Now let's break the condition-based tasks down even further:

- 85 percent of all condition-based tasks require visual inspections.
- 15 percent of all condition-based tasks require predictive technologies such as vibration analysis, lube and oil analysis, thermography, etc.

This analysis tells us that while using predictive technologies is important, they play only a small role in a condition-based program. You still need to rely on the senses of your people to collect most of your equipment condition information. The key is having tools that will allow your staff to record and analyze all of these types of data to determine the true health of the equipment.

By using advanced methodologies and technologies you will be able to meet your corporation's cost control goals by:

- Reducing reactive maintenance. Reactive maintenance impacts production and, when equipment is allowed to run to failure, there is often ancillary damage that now also needs to be fixed, increasing the cost of the maintenance work.
- Eliminating unnecessary time-based maintenance. You will not need large quantities of parts on hand for all of the restorations and replacements that you currently do if you are now replacing them only when the equipment is failing.

Not only will you be able to control costs which is what management expects, but you also will contribute to other aspects of the business such as maximizing capacity and output, improving quality, increasing revenue, etc. These benefits enhance the value maintenance delivers to the

organization and propels it into a strategic role rather than being viewed as a cost center. **MT**