WANTED: Factory Workers

The largest manufacturing country in the world is having trouble finding skilled labor, and that pretty well covers maintenance workers in pulp and paper mills.

By John Yolton

This was the headline in the Money section of *USA Today* (December 5, 2006). In 2005, the National Association of Manufacturers (NAM) published their *Skills Gap Report*. These are only two of many similar stories explaining the plight facing many U.S. goods manufacturers.

In the *USA Today* article, it is stated, "...manufacturers, regardless of size, specialty or location, across the USA are reporting a dire shortage of skilled workers: people such as welders, electricians or machinists with a craft that goes beyond pushing buttons or stacking boxes, but does not require a degree." That pretty well covers maintenance workers in pulp and paper mills.

The NAM *Skills Gap Report* says, "The vast majority of American manufacturers are experiencing a serious shortage of qualified employees, which in turn is causing significant impact to business and the ability of the country as a whole to compete in a global economy."

Our paper industry is certainly not immune to the problem facing others. In fact, our situation may even be more desperate given the fact that many of our pulp and paper mills are located in rural communities and that many of today's young people entering the work force generally are seeking high visibility, urban work. After all, who wouldn't rather be a rock star, an actor, an athlete or a high tech wizard making tons of money and living the good life in cities across America? Sadly, of the manufacturers surveyed in the NAM study, 84% said that the K-12 schools are NOT doing a good job of preparing students for the workplace.

Looking back at the U.S. pulp and paper manufacturing industry to 1990 (see **Chart 1**), we find the number of jobs statistics unsurprising. The mergers and acquisitions and the rationalization of production capacity over the past decade, or more, has allowed many skilled workers to leave the workforce via early retirement, or to seek other employment after being downsized, right-sized, or furloughed.

Within the U.S. pulp, paper and paperboard manufacturing mills, the workforce has declined by 97,000 jobs since 1990, according to data from the US Census Bureau.

Interestingly the rate of decline from 1990 – 2000 was 19.7%, while increasing to 26.3% for the period 2000 – 2005. The industry is shedding jobs as it closes mills and shuts down paper machines, and, alarmingly, the rate is increasing.

When we look at the U.S. Census Bureau data for the entire industry, including converting, e.g., paper and paper products, the decline is even more dramatic—from 647,000 employees in 1990 to 484,000 in 2004. And the rate of decline has jumped from 6.6% for the period 1990 – 2000 to 19.9% for the period 2000 – 2005.

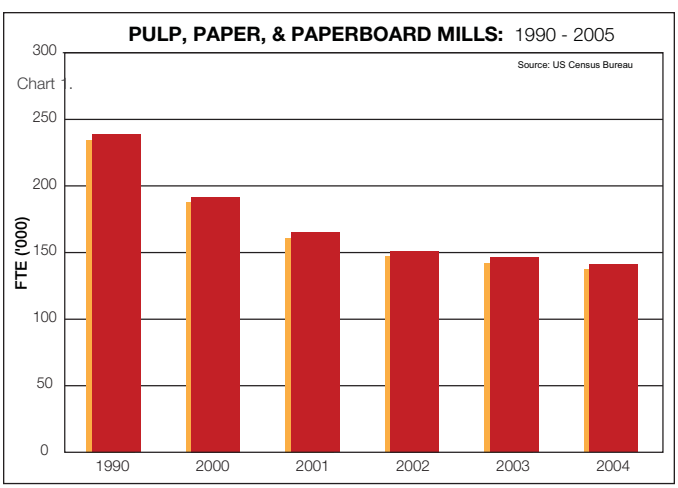

Chart 1.

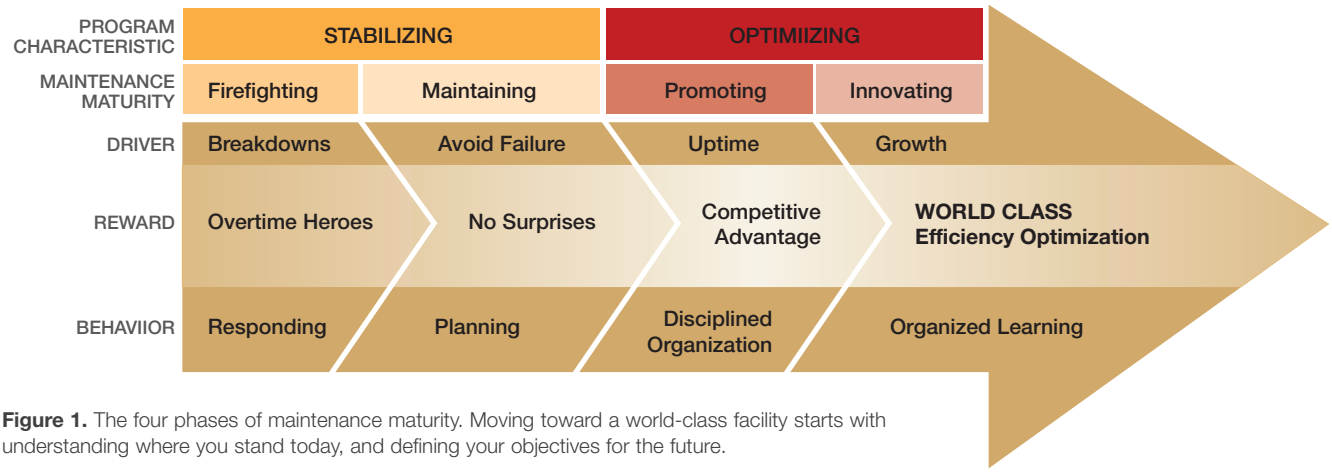

Figure 1. The four phases of maintenance maturity. Moving toward a world-class facility starts with understanding where you stand today, and defining your objectives for the future.

Granted, many of the jobs shed during the last decade of the last century were in the production areas. But more and more, as companies become more sophisticated with their maintenance management (see **Figure 1**) by taking actions to improve, skilled job losses are beginning to take their toll within the maintenance workforce.

The results from SKF's ongoing asset efficiency optimization (AEO®) Client Needs Analysis (CNA) survey indicates that on a global basis the paper industry falls far short of continuous improvement in maintenance worker skills training in particular. Based upon the data from the survey of 138 papermaking sites to date, only 5% of those surveyed provide adequate ongoing skills training for their maintenance workforces (see **Chart 2**). The recognized "best practice" metric for skills training is more than 80 hours per year, yet 80% of the responses have less than 40 hours of skills training per year.

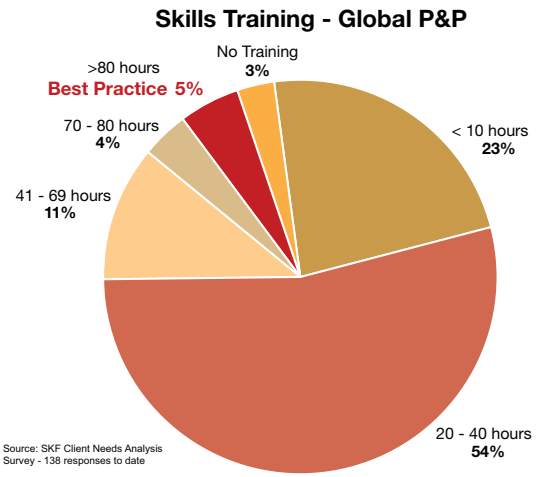

Chart 2.

Too often we fail to appreciate the impact of the loss of skills and knowledge of those who have left the industry due to early outs and downsizing. In the NAM report, for example, 61% of those firms employing more than 500 workers and 60% of those employing less than 500 stated emphatically that the typical high school graduate is not prepared for an entry-level job position.

Where then is the knowledge going to come from? Take a press roll change-out for example. Have you watched the preparation that takes place for a planned press roll exchange? This prep work does not take place by magic or in an ad hoc manner. The preparation is the result of years of experience and training. The selection of the right tools, including wrenches, slings, comealongs; the staging of the replacement rolls; and the use of an overhead crane requires some degree of skill and knowledge not usually found in the person who just walked in off the street, providing you could find someone who wants the job in the first place.

> Consider the old phrase, "If you think education is expensive, you should try ignorance."

What about so-called precision maintenance? Where are the skills to properly align the rolls when they are replaced, or recalibrating the speed sensor, or the doctor alignment? How about proper mounting of the bearings used on the spare roll being installed? Losing these skills, and/or knowledge from downsizing, normal attrition or rationalization results in significantly more loss than the somewhat offsetting cost gain. The resulting impact will be long term.

Consider the old phrase, "If you think education is expensive, you should try ignorance." This is quite appropriate for those mills with management who, as the workforce shrinks, have failed to take action to counteract the loss of skills and knowledge or neglected to properly train remaining workers.

A number of solutions to this problem are available providing you have the people willing to work in an industrial environment. Aside from a national agenda encompassing public and private efforts, the most basic solution is to train your in-house mechanics: initial training, continued training and refresher training are all important processes within the whole skills training effort. Sources for training are abundant, including local technical schools, formalized apprenticeship programs, supplier and vendor training, and training performed by organizations, such as TAPPI, ISA and PIMA.

How that training is performed is another issue, and many options exist for this as well. In today's interactive world many vendors provide on-line training. SKF's Reliability Maintenance Institute (RMI) On-line is a good example. Many others exist for almost any skill required. On-site training is usually available as well from these same vendors. The choice of applicable training delivery methods allows much flexibility.

Training and retraining is just one issue and certainly takes time and money. But what about the loss of knowledge as people leave for whatever reason? Knowledge that was gained from experience with specific equipment or repair procedures, or the special tools associated with our sometimes-unique paper industry. One of the recommended actions of the NAM *Skills Gap Report* is: "Employers must implement new and non-traditional approaches to dealing with skills retention challenges."

In line with action, another question in the ongoing SKF Client Needs Analysis survey mentioned above asks, "From your condition monitoring program recommendations, how many are subjected to a decision support process before recommendation?" The results indicate that less than half of the 138 global mills surveyed thus far subject less than 40% of their condition-based maintenance recommendations to a decision support process before taking action.

Condition monitoring is a great process with some good technology for supporting the process. However, to make the best possible decision concerning the repair and care of the specific equipment, other factors must be considered. We've all been subjected to situations where we made decisions based upon one piece of data, only to find out that we made a decision that did not resolve the problem, or that in our haste to take action, we missed the root-cause completely, resulting in a recurring problem.

Today's decision support systems (DSS) are designed to incorporate as much data and information available within databases about specific assets. The data may come from such sources as vibration monitoring, sensor-based data from DCS, data collected from operator rounds, and even observations by mechanics.

One of the key elements of the DSS is the logic used to make recommendations for taking action. Many times that logic is the result of experience and knowledge of workers involved with the asset, including maintenance workers. Again, the loss of skills and knowledge through normal attrition, imposed downsizing and early retirement, restrict the capability of the application of sound logic in the process of resolving problems. Capturing that departing knowledge must be a primary goal for our competitively challenged mills. After 30 years of vibration monitoring and failure analysis experience that the paper industry has gained, doesn't it make sense that this knowledge be embedded in logic for making informed decisions? And, shouldn't the solution be analyzing every monitored instance while only alerting you to the exceptions, e.g., those deviating from normal optimum conditions? Wouldn't that free up your vibration analysts time to perform more value-added effort such as problem-solving, rather than just problem finding?

After 30 years of vibration monitoring and failure analysis experience that the paper industry has gained, doesn't it make sense that this knowledge be embedded in logic for making informed decisions?

Yes, there is a growing problem of skilled worker shortage. So do we throw that concern on the already smoldering heap of unresolved problems and shrug our shoulders? Or do we take some proactive measures to reduce the effects of this real world issue?

We may not be able to convince Generation Y'ers to change their job prospects by focusing upon the education needed to hold a job in manufacturing, nor change the attitude of the general public about the need for better education. But we certainly can take action within our own facilities.

What are the consequences of not taking action? This statement from NAM's *Skills Gap Report* says it all: "...the largest manufacturing country in the world can barely find the skilled employees it needs to remain competitive in a global economy."

Remaining competitive should certainly be reason enough. ■

John Yolton is a 42-year veteran of the pulp and paper industry. He spent 25 of those years working in mills and headquarters for a number of paper companies, and the last 17 years providing reliability-improving products and services. Today, Yolton is Maintenance Strategy Consultant for SKF's Global Pulp & Paper Segment. He can be reached at john.yolton@skf.com.