Facing a Famine in the Workforce

How Manufacturing Leaders can Overcome the Shortage of Skilled Maintenance Employees

More and more local employers are struggling to find skilled workers. A strong economy—coupled with 4 percent nationwide unemployment and 2 percent regional unemployment—has contributed to a shortage of skilled people willing and able to take jobs. In manufacturing and maintenance, this shortage is even more acute.

The obvious bad news is that there is a continuing shortage of skilled employees in manufacturing and maintenance nationwide. The not-so-obvious bad news is that there is no end in sight. The shortage will continue as long as the economy is strong, and it could continue well into the future. If action is not taken now, the shortage will worsen.

The good news is that employers and business leaders can do something about it. But it means making a concerted, focused effort for short-term sustainable gains as well as for long-term economic well being. The need for action has never been greater.

Problem may be Bigger than Most Business Leaders Realize

The problems associated with the growing skills shortage might not be obvious. Many business leaders today are unaware of the complexity of the skilled labor market—the strong skill base developed in the 1960s and 1970s and the declining skill base in the 1990s.

"The demand for skilled workers is growing in every industrial sector," according to the Manufacturing Skill Standards Council. "For example, the Big Three U.S. automakers (GM, Ford, Daimler-Chrysler) will need some 250,000 mostly skilled new workers by the year 2005. In the same time, more than one million technicians will be needed to meet the requirements in the information technology sector. The semiconductor industry is conducting a national campaign to train and attract 40,000 manufacturing technicians over the next five years."

The U.S. Census Bureau says, "Over half of the manufacturers cite the need for skilled workforce as the most significant barrier to technology adoption."

A National Association of Manufacturers survey revealed that 88 percent of manufacturers report a skills shortage in at least one job category.

Here are a few insights to help make sense out of the growing skills shortage.

- **Maintenance is misunderstood**: Maintenance of equipment **does not** mean fixing things that break. Maintenance means performing work regularly to keep machines, equipment, and buildings in good condition and in working order. Planned preventive maintenance is less costly than reactive repair maintenance by a factor of 10 times or more. Repairing things that break is not maintenance even though people in the maintenance department may carry out the repairs. Skilled people are not attracted to workplaces that merely "fix things that break."

- **Retirements are growing**: We are on the verge of massive retirements of our most skilled senior people in manufacturing and maintenance. The employees who came into the workplace in the 1960s and early 1970s are now eligible for retirement. Many of the maintenance people were the products of military service or vocational technical school education. Their replacements are few and far between. We have seen these skills shortages grow over the past 10 years. It is now at a crisis level since the U.S. military is a fraction of what it was in 1990 and the number of vocational-technical school graduates has been declining.

- **Skilled job entrants are declining**: Fewer and fewer young people are interested in manufacturing- and maintenance-related careers. Many parents have discouraged their children from pursuing "blue-collar" jobs in favor of going on to college and getting a decent "white collar" job. College enrollments have swollen over the past twenty years but almost 50 percent of those enrolling never finish with a degree. With both secondary and post-secondary vocational/technical program enrollments declining, there are fewer people being exposed to the basic skills required in today's manufacturing plants. The U.S. Department of Education has reported that

  > "After a period of growth in the 1960s and 1970s, secondary vocational education has been shrinking. Students are taking fewer vocational courses than in the early 1980s; there are fewer vocational teachers and fewer university programs training them; and fewer state employees working in vocational education."

- **There is a steady decline of technical teachers**: Where will our technical educators come from? Kenneth S. Volk reported a major study in the *Journal of Technical Education*:

  > "There is a thirty-year trend of declining enrollments in industrial arts/technical education (IA/TE) teacher training programs. In 1970, there were 8,218 IA/TE graduates. By 1990, there were 2,490 graduates nationwide. And in 1995 the number of graduates declined to less than 1,300. The trend continues. As with many other teaching jobs, fewer students are interested in pursuing teaching careers because of the wages and working conditions. If the trend continues, there will be virtually no new industrial arts/technical educators entering the labor market by 2005."

  Coupled with the decline of graduating teachers, there may also be a decline of experienced technical educators willing and able to address the problem.

What Can You Do?

Here are 11 actions that employers and business leaders can take to stem the problems associated with skills shortages.

1. **Focus on results**. Avoid the temptation to implement a widespread "productivity improvement program" in the hopes that it will improve performance. If you are in an older manufacturing business and do not see results within two weeks to two months of beginning improvements, then you have more than likely missed the mark. You should target constraint, or bottleneck, and high maintenance cost areas first. This is the best way to get people involved, engaged, and motivated in creating a lasting change in the workplace – and see measurable, bottom-line results along the way.

2. **Simplify work**: Make work easier, and reduce the time to learn equipment-specific skills and accomplish the required tasks. Error-proof jobs as much as possible. Visual factory and especially "visual machine" techniques will help.

3. **Make your equipment reliable**: Get out of the reactive, repair-based maintenance mode on your critical equipment. Apply the six interdependent principles of Total Productive Maintenance (TPM) to make the equipment performance and reliability match the production requirements. These principles are:
   - Improve equipment effectiveness by targeting the causes of poor performance.
   - Involve operators in the routine daily care and upkeep of their equipment.
   - Improve maintenance efficiency and effectiveness.
   - Train to improve the skills of everyone involved in improving equipment reliability.
   - Improve maintainability and operability of the equipment throughout its life cycle.
   - Win with teamwork focused on common goals.

4. **Strive for process quality reliability**: Establish procedures that will result in process quality that is in control and capable. Avoid the temptation to implement a "quality program" for the sake of having the documents and certifications. This could cause more problems if the causes of poor performance are not addressed first.

5. **Address waste in the workplace**: Learn from the Toyota Production System and lean manufacturing methodologies. Systematically identify and eliminate waste to reduce manufacturing cost and the unnecessary deployment of people in the following areas:
   - Overproduction
   - Waiting
   - Transportation within the plant
   - Processing (getting the work done)
   - Inventory
   - Motion
   - Defects

6. **Have an attractive work culture and environment**: Clean up the place, the policies and procedures. Get rid of outdated bureaucratic ways of doing the simplest of things. Cross train production employees for job rotation and flexibility. Communicate the types and varieties of work that occur. Listen to employees' ideas and their needs and follow through with the ones that make sense.

7. **Keep skilled people**: Create a work environment that encourages skilled and knowledgeable people to remain on the job after eligibility for retirement, even if it is part time. Determine the causes of skilled employees' leaving and take immediate corrective action. Stop the "brain drain." In most cases, it is be less costly to retain good employees than to hire their replacements.

8. **Attract retired people**: Attract retired, highly skilled people back to work with flexible schedules and incentive pay. The new Social Security laws make this more appealing to retirees than in the past.

9. **Encourage vocational-technical education at all levels**: Support the development of vocational/technical programs for manufacturing and maintenance careers. Develop "applied learning" methods that emphasize practical application of theories. This appeals to about 75% of the population, which does not respond well

to traditional lecture methods of learning. Participate in secondary and post-scecondary education advisory boards to help them understand what is needed in today's workplace. Guest lecture in classes related to your business needs. Hire co-operative education students.

10. **Provide training**: Develop and implement workplace training for equipment- and process-specific skills development now. Seriously consider the advantages of skilled "apprenticeship-type" programs for both equipment maintenance and operations. A recent study completed by the ASTD showed that leading companies spend between 2.0% and 3.6% of payroll on employer-provided training. Companies with fewer than 500 employees spent on average 2.5% of payroll on employer-provided training. Where does your company stand?

11. **Value the three elements of productivity**: People, work processes, and equipment. Historically many companies have invested in new **equipment** to boost productivity. Others have focused on new **work processes**, methods, or procedures. Still others have hired wisely and trained their **people** in a wide variety of skills. Each of these decisions was based on the hopes that the efforts will improve productivity in a sustainable manner. Only those companies that simultaneously addressed the three elements of productivity—needs of the people, their equipment, and the work processes—have seen rapid, and sustainable, gains in productivity.

    It is all too often seen as easiest to invest in equipment or new work processes. What is most difficult for some decision-makers is to address the skills and knowledge levels of their people—those who operate, maintain, and supervise.

The time for action is now. What better time to re-tool the workforce than when the economy is strong and business viability depends on attracting, training, and keeping skilled people for today and well on into the future? Investing in the skilled workforce is likely to be one of the wisest investments business leaders can make. People are the only company "asset" that is capable of learning and improving.

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