

FOCUS ON MANUFACTURING



Helping Tennessee companies achieve a sustainable competitive advantage

Winter 1999

ISO 9000: Is it time for your company?

Many smaller companies are just now considering the benefits of ISO 9000. If your company is one of them, this information may help you get started.

Focus on Manufacturing spoke to TMEP ISO consultant **Chris Wright** about what's involved for a company undergoing the ISO or QS 9000 registration process. Here are his answers to questions about issues you should consider before you embark on this significant endeavor.

STAR Shines As ISO Model

"When General Motors told us we had to be ISO 9000 certified by July of 1998, we had no idea what this process would involve," says STAR Transportation vice president of operations Jim Brower. But only nine months later, in April 1998, STAR passed its ISO registration audit with flying colors.

STAR's route to registration is a textbook example of the right way to tackle the ISO process according to Chris Wright, TMEP ISO consultant.

When asked their advice for other companies on how to be equally successful, Brower and STAR's ISO project manager Sue Wheeler agreed on these important points:

- 1. Carefully select a person to manage the project and give him or her the resources to get the job done.**

"Sue was allowed to devote 100 percent of her time to this project," said Brower. "You can't do it in your spare time; there never is any."

- 2. Find someone to help you get started and provide guidance along the way.**

"Smaller companies often don't know where to begin," said Wheeler. "Having Chris [Wright] explain what it was all about, point us in the right direction, train our internal auditors and help us over the bumps was invaluable."

- 3. The project manager should learn everything there is to know about ISO 9000.**

Wheeler said she became an ISO expert and is glad she did. She attended every training session and took every opportunity to learn as much as possible about the process.

- 4. Get everyone involved.**

"We all learned so much about the company," said Wheeler. "Employees at every level now have a better overall understanding of STAR's operations, and STAR definitely benefits from that."



Sue Wheeler and Jim Brower are justifiably proud of the success of STAR Transportation's ISO 9000 effort.

Q: We've all been hearing about ISO 9000 for quite a while now, but many people still aren't sure exactly what it is. How do you explain ISO 9000?

The ISO 9000 series is an internationally accepted set of generic standards that provides quality assurance guidelines. The standards require a company to establish and document a quality management system consisting of policies, procedures, work instructions, and quality records; and to periodically review and audit its quality management system to ensure that it is implemented and effective.

Q: Does ISO 9000 apply to certain industries more than to others?

The quality system requirements of ISO 9000 apply to almost any type of industry or organization. However, some

continued on page 2

INSIDE:

Sea Ray Boats Steers New Course For Efficiency

Representative John Tanner Brings Y2K Conference to West Tennessee

Just What Is The TMEP? Calendar

Produced by **T·M·E·P**
The Tennessee Manufacturing Extension Program

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ISO 9000, continued from page 1

industry segments such as automotive, aerospace, and medical devices have developed quality system requirements that include ISO 9000 at their core along with additional sector-specific requirements. Certification to these sector-specific standards requires assessment by third party auditors, just as with any ISO 9000 quality system.

Q: Is there a deadline by which industries must become certified?

In most cases, no. However, the Big Three automakers have imposed deadlines on their first tier suppliers to become certified to QS-9000, the automotive OEMs' quality system requirements based on ISO 9000. Now, first tier suppliers are requiring their suppliers to comply with QS-9000. Other organizations such as the Department of Defense and the Food and Drug Administration have adopted ISO 9000 as the preferred guidelines for quality system requirements for their suppliers of products and services.

In addition, many companies that are certified to ISO 9000 also are setting deadlines for their suppliers to become ISO certified.

Q: What besides a customer request prompts companies to decide to become ISO certified?

Clearly, pressure from a major customer is a key reason. But there are other reasons to pursue certification. An Automotive Industry Action Group (AIAG) survey of OEM suppliers that had been certified to QS-9000 indicates that "companies save money by implementing QS-9000 and other quality improvement initiatives."

Some companies simply recognize the value of ISO 9000 as a roadmap for improvement efforts. Through the certification process, companies often find they didn't have as good a handle on their procedures or on their performance as they might have thought. In fact, companies that apply ISO 9000 principles effectively should realize real cost and time savings, and get a competitive edge in the marketplace. In that way, ISO 9000 (as well as QS-9000, AS 9000, etc.) can be a valuable tool that helps achieve cost, product, and process improvements, as well as opportunities to expand business.

Companies that do business in the European common market (EC) also may be more inclined to become certified. That's especially true for companies in the medical device, pressure vessels, construction materials, and personal safety indus-

tries, because the EC is requiring ISO certification for these kinds of products.

Q: Does achieving ISO certification help companies attract new customers?

While cost remains a key issue with our clients, achieving ISO certification also gives companies an edge. It sends an important message to prospective customers. It says the customer can rely on consistent, continuously improving quality and on adherence to specifications. It says that the certified company has invested time and money to better serve its customers.

Q: Are there companies that you would not advise to go through the ISO certification process?

Perhaps the late Dr. Edwards Deming¹ put it best when he said, "You don't have to do this; survival is not compulsory." Unless top management is committed and involved any ISO or QS process will be an exercise in frustration and sunken costs.

Q: How does a company begin?

Becoming educated on the requirements of ISO or QS-9000 and what the process involves is a good first step. There are many public seminars and publications that cover costs, benefits, and what to expect. Because of the TMEP's close personal relationships with our clients, we encourage customers to initially educate several company representatives, particularly from top management, on how to achieve ISO 9000 certification in the most cost-effective way. This is a good sign of commitment from top management. But it must continue throughout the project.

Q: What staff functions need to be involved in a company's ISO 9000 process?

ISO 9000 will touch all areas of your organization, so all staff functions should be involved. The process must start with top management; it also needs commitment from employees at all levels.

Typically, companies have one person leading the charge, working with a steering committee and/or implementation team representing all major organization functions.

Often, companies also find that they need some

continued on page 3

¹Renowned consultant on quality and productivity improvement who was instrumental in changing the face of quality in Japan during the post-WWII era and later in the United States.

A draft of the next proposed revisions to the ISO 9000 Standard series is now available for comment. Contact the American Society of Quality at 800-248-1946, item T1200. Publication of the revised Standards is planned for the last quarter of year 2000.

ISO 9000, continued from page 2

outside expertise to help them through the process. But select your consultants carefully. Look for consultants with a reputable track record, who will be around awhile, and who are not interested just in getting you a “plaque on the wall in 90 days.” These types of consultants, and the resulting certifications, are just what they appear to be: “As good as money can buy!”

Perhaps the worst thing you can do is hire a consultant to do the entire project without serious involvement by your core employees. That misses the whole point. ISO 9000 forces you to define your policies and procedures and to eliminate non-value-added steps. You must commit your own employees’ knowledge and expertise if your company is going to benefit from ISO 9000.

Q: How long does certification take? What is the average cost?

Although there are “implement ISO 9000 in 90 days” promotions by some consulting organizations, we encourage smaller companies to plan on nine to 12 months, start to finish. However, the national average is about 18 months—and that’s for companies that are serious about it.

The cost of certification consists of both internal and external costs and typically includes training, preparation, implementation, assessment and registration. Your actual costs will vary depending on the size of your organization, your approach to and your methods of documentation, your selection and use of consultants, registrar costs, and most important—the commitment of your top management. All of these factors, and more, will dictate the final cost of the project.

Q: How can a company keep from being distracted from its core business by the ISO process?

Companies can’t afford to let it distract them. Achieving ISO 9000 should be a key part of the company’s strategic business plan, along with establishing measurable objectives and target completion. But certainly ISO 9000 helps companies better understand and improve their core business. The payback is definitely there.

Q: What makes ISO 9000 different from other management/manufacturing trends we’ve seen come and go?

ISO 9000 is a generic quality standard, recog-

nized by more countries around the world than any other. Adoption of ISO 9000 by various industrial sectors as their core quality system standard is an indication of the trend toward global integration of numerous quality standards.

By adopting ISO 9000, many nations have agreed that focus on quality performance is very important, and that companies doing

Betty Machine Looks to QS-9000 for Long-term Benefits

Betty Machine Company had no reason to seek QS-9000 certification. At least not a “normal” one.

“We aren’t presently supplying the Big Three automakers directly, and our customer base hasn’t stated QS-9000 as a requirement,” said Carl Davis, executive vice president of the Hendersonville-based manufacturer of precision machined parts and assemblies.

But, said Davis, Betty’s management believes that leading companies in any industry will have to maintain some type of quality certification. When they looked at where they wanted to take their business, they determined that registration to QS standards, which are more stringent than ISO standards, would serve the company best.

“Now, we’re doing things consistently, following through and finishing everything we start,” said Davis.

Unlike the way some companies organize their ISO or QS efforts, Davis said they purposely did not give responsibility for the project to the quality department.

“It’s much more than just a ‘quality’ issue,” said Davis. “We wanted to be sure everyone understands that it covers our entire business system.”

Davis suggests that the key to success in any QS or ISO process is commitment. “Once you have commitment from the team at the top, it gets much easier.”

He also recommends getting “good, competent help who will commit their time to your company,” and has high praise for the ISO/QS team from the TMEP.

Davis appreciates the fact that the QS process forced Betty Machine to question all its procedures, whether they’re five years old or 30 years old. And that questioning even led to the incorporation of several new ideas into the company’s strategic plan.

Betty Machine began its QS-9000 effort in December 1997. By the time this is printed, they will have undergone their registration audit, exactly one year later. And based on their pre-assessment, they’ll be bringing in the new year with a big celebration.



Gage technician Patsy Dunn is on Betty Machine’s internal audit team. She believes the QS-9000 effort has helped the company in many ways, including improving organization throughout the plant.

business should strive to eliminate waste and consistently deliver high quality products and services.

Q: How does a company actually achieve certification?

After you have implemented your quality system you engage a third party registrar to audit the system for conformance to ISO 9000 plus any additional sector-specific requirements such as

continued on page 7

Almost 50 percent of PCs shipped in early 1997 failed Y2K compliance tests.

Greenwich Mean
Time Study,
1997

According to a recent study by the GartnerGroup, small and mid-size companies will experience more critical systems failures in the year 2000 than larger organizations.

Fifty-five percent of all small companies worldwide will have at least one system failure, along with 40 to 45 percent of mid-size companies, the study reported. The costs of dealing with these failures will range from \$20,000 to \$3.5 million.

System failures will actually begin this year as businesses move into their 1999-2000 fiscal years. And failures will continue to occur until 2003.

Y2K, continued from back cover

believe that, along with computer hardware and software, other products and services such as elevators, security and fire alarm systems, and credit card and banking transactions will fail also because they rely on embedded micro chips that aren't Year 2000 compliant.

As *National Journal* put it recently, "Accounting software could send out a bill in December 1999 but not recognize the check when it arrived on January 1, 2000, mistakenly 'thinking' it to be a check from 1900."

Programmers are making progress fixing the bug. More than 50 percent of the federal government's "mission critical" systems are now Y2K compliant. State and local governments are making progress as well.

But for now it's about more than just ensuring your own system can function. You must also know whether the folks with whom you

exchange electronic data are Y2K compliant. And, ultimately, it doesn't help you if your systems are fixed and the systems used by those you rely on—from the utility company, to the bank, to the gas station, to your suppliers—are not.

It's really as simple as this: If theirs won't work, yours won't work. And that's an unacceptable outcome for all of us.

A good place to start

That's why the Jackson conference, "West Tennessee Business and the Y2K Problem: Answers and Solutions" is so important. The TMEP and many others want to give you the tools you need to be sure not only that yours will work, but that theirs will, too.

The conference is being held as a service to our constituents in the eighth district, but everyone is welcome to attend. I look forward to meeting you there. ■

West Tennessee Business and the Y2K Problem: Answers and Solutions

January 19, 1999 • Jackson, Tennessee • 8:30 a.m. until noon
McWherter Center, Jackson State Community College

LEARN what you can be doing now to protect yourself from legal liability....what steps banks are taking to protect your assets....and what the federal government is doing to help businesses like yours.

HEAR from managers of Tennessee companies who have gone through Y2K remediation, and learn from their experiences.

DISCOVER the assistance available to small and mid-size businesses and tools you can use to plan and carry out your own Y2K program.

Plus, the experts will be there, in person, so you can ask your questions and get the answers you need to feel confident in your approach to the Y2K issue at your company.

Your Presenters:

Mr. Thor Urness; Attorney; Boulton, Cummings, Conners & Berry, PLC. Head of his firm's intellectual property section and coordinator of its Year 2000 practice, Mr. Urness will speak about potential Y2K liabilities and what you can do to avoid them.

Mr. Tom Behne, Vice President and Year 2000 Project Manager, First American Corp. How safe is your money? Will your bills be paid on time? Will you have access to the cash you need to run your business? Mr. Behne will let you in on what you can expect from your bank and from banks across the country.

Mr. Walter L. Williams, Electronic Commerce Consultant, Tennessee Manufacturing Extension Program. Mr. Williams is uniquely qualified to present an overview of your Y2K options and solutions, plus resources you can turn to for help. He also will introduce you to the Y2K Self-Help Tool Kit, an invaluable package that can help you manage your Y2K program.

Mr. Jim Rhodes, Human Resources Manager, Emerson Hermetic Motor Division. Mr. Rhodes knows what's involved in getting a manufacturing firm ready for the year 2000. He'll share his company's experience and lessons learned.

Plus, **representatives from the federal government** who will let you in on what government agencies are doing to help and protect smaller businesses.

Admission is FREE, but we need to know you're coming. Please call UT's Event Management Services at (615) 320-4962 to register.

Sea Ray steers new course for efficiency

Sea Ray Boats was a successful and profitable firm. But even a casual look around the Vonore, Tennessee, boat manufacturing plant revealed a lot of room for improvement in organization and product flow. With competition in the boat business about to heat up considerably, Sea Ray was ready to put significant effort into reducing waste and increasing productivity.

Sea Ray's management staff were familiar with the 5S concepts of the Toyota Production System. The 5 Ss—which refer to five words that, in Japanese, all begin with the letter “s”—are principles of maintaining an effective and efficient workplace. After considerable study of the 5S process and benchmarking its use in other facilities, the Sea Ray team determined that it might be the solution they were looking for.

Cutting waste from cutting

Bob Van Norman, Sea Ray's plant manager, and quality assurance supervisor David McDonald, along with many of their co-workers, knew that applying the 5Ss to Sea Ray could make a big difference. But they also knew that, even with 400 employees, it would take a tremendous number of

Before:



After:



man hours they couldn't furnish.

After an extensive search, Sea Ray was able to hire six engineering students from The University of Tennessee to work on 5S implementation during the summer of 1998. Along with department supervisors, they formed Sea Ray's first 5S team.

“We had a very ambitious plan,” said McDonald. “We wanted to

apply the 5S system to 30 departments, but it took us almost 10 weeks to do the first one.”

That first department was the cutting area, and today, it's a model of efficiency. Rather than having work-in-process spread all over the floor, it's stored in specially built racks. Every rack contains not only each part number to indicate where the part fits but also a photograph of what a full rack should look like. An overflowing dumpster in the center of the work area has been replaced by a trash chute built into the wall. And better lighting has been installed to help employees distinguish among the various shades of vinyl.

The team also prepared detailed work instructions for every operation. According to McDonald, the work instructions and other visual aids allow workers new to the department to be up to 70 percent productive the first day on the job.

Perhaps most important, though, material flow has improved dramatically, eliminating up to four hours of labor per day. Parts that previously were handled five times now are handled only once. Rolls of vinyl have been organized on carousels that let employees put their material in position (without having to pick through rolls of material) then lift them into place with a hoist. And traveling time between work stations has been reduced through a redesign of the department's layout.

McDonald says these improvements are expected to generate significant cost savings for several years which will help offset the costs of the 5S team's operations. Plus, he adds, Sea Ray also has benefited from improved safety conditions and higher employee morale.

The 5S team now has moved on to other departments and is finding similar opportunities for improvement throughout the plant.

McDonald attributes much of the team's success to Van Norman's support.

“As organizations grow, these simple, basic concepts often are overlooked. This is a big challenge, but our plant manager understands it and is behind us 100 percent.” ■

5S principles:

- Elimination of everything not required for the work being performed
- Efficient placement of equipment and material
- Tidiness and cleanliness
- Ongoing, standardized efforts to continually improve in the first three areas
- Discipline with leadership



A Sea Ray employee loads product fresh from the cutting area into a newly organized and labeled staging area for the next operation.

If you would like more information about applying the concepts of workplace organization and visual controls in your facility, please call the TMEP at (615) 532-8657 or toll-free at (888) 763-7439.

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Small and mid-sized manufacturers support over three-quarters of the U.S.—and Tennessee—manufacturing workforce and account for more than half the total value of U.S. production. But many smaller firms face significant barriers to competing in today's global economy. Fast-changing technology, production techniques and business practices often leave manufacturing managers behind as they work long, hard hours to keep their companies running.

The Tennessee Manufacturing Extension Program, or TMEP, was formed to serve just such companies. Its mission is to help manufacturers become more profitable and more competitive, and satisfying that mission takes the TMEP into many different directions. Among the types of assistance the TMEP provides to Tennessee manufacturing firms are:

- **Plant modernization, process design and technology selection:** From redesigning plant layouts for greater productivity to helping with the many issues involving new production methods, the TMEP can help your company with all aspects of plant and process improvements.
- **Lean manufacturing:** Cutting waste from production processes can lead to greater productivity and higher profits.

Through on-site employee training and manufacturing assistance, the TMEP helps firms save money and increase profits.

- **ISO/QS 9000 programs:** The TMEP provides the full spectrum of training and guidance to those

seeking ISO or QS 9000 certification or implementing other quality programs.

- **Selection and implementation of business systems for manufacturing:** Selecting a computer-based business system with which to manage your manufacturing firm is a long, tedious process,

often taking up to a year or more. The TMEP can cut that time to a matter of weeks, help prepare RFPs, arrange product demonstrations, and guide implementation.

- **Environmental and safety compliance/ISO 14000:** The TMEP delivers environmental and safety assessments, waste reduction assistance and employee training on all types of environmental and safety issues to help companies avoid fines, accidents and high workers' compensation premiums. The TMEP also can help your company develop an ISO 14000 environmental management system, whether or not you seek registration.

- **Comprehensive operations assessments and constraints management:** Companies often know they have problem areas but either can't pinpoint them or don't know what to tackle first. The TMEP can help determine which are your critical issues and what changes will have the most significant positive impact on your profits.

- **In-plant employee training:** From team building, problem solving and communication skills to activity based costing, quality control and cellular manufacturing, the TMEP delivers training to help employees become more productive.

What if you need something else?

With all these services and more, the TMEP can help just about any manufacturing firm with any issue. Perhaps one of our clients said it best when he remarked, "I call the TMEP when I don't know who to call!"

The TMEP draws upon the expertise of university faculty from all across Tennessee in the areas of engineering, science, and management, in addition to our own highly experienced technical staff. The TMEP also works closely with state agencies, federal laboratories and private consultants to deliver the best solutions for manufacturing issues.

An affiliate of the national Manufacturing Extension Partnership, the TMEP is operated by The University of Tennessee's Center for Industrial Services in partnership with the Tennessee Department of Economic and Community Development. For more information, call Anne Jordan at (615) 532-4930 or toll-free at (888) 763-7439. Or, complete and return the form on this page. ■

Tell me more about how the TMEP can help me!

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ ZIP: _____

Phone: _____ Fax: _____

Email: _____

Any areas of special interest? _____

**Fax to Anne Jordan at (615) 532-4937. Or, just call us.....
(615) 532-8657 or toll-free at (888) 763-7439.**

ISO 9000, continued from page 3

QS-9000, AS 9000, etc.

The registrar, who is accredited by nationally recognized agencies and/or governing bodies, determines whether or not a company can be certified based on the audit report. Recognition of the registrar by different countries may be an important consideration, especially if you plan on doing business in different countries and/or a key customer is doing so. Hence, registrar selection is very important.

Q: Do most companies achieve certification on their first try, or does it take several?

According to various sources, the pass rate is about 70 percent for companies that attempt to pass registration without a pre-assessment audit. That rate increases among companies that opt to have a pre-assessment, or a dry run, if you will. Third party registrars can be hired to conduct a pre-assessment. At the end of the pre-assessment, they will give you a list of what still needs to be addressed before the "official" registration audit. There is about a 95-percent pass rate for companies that have pre-assessments.

Q: If you aren't certified on your first attempt, what is the process for re-applying?

There are three possible outcomes of a registration audit: approval, conditional approval, or disapproval. If you don't receive "approval," the registrar will give you a list of what needs to be addressed along with a determination if a full re-audit is required and approximately how much time he thinks is needed for corrective action. The registrar will then follow up at the end of that time to either accept the corrective action results or schedule another audit.

After a company is certified the registrar will conduct a surveillance audit every six to 12 months to ensure compliance is maintained. ■

The TMEP specializes in assisting Tennessee companies with the ISO/QS process. From the initial gap analysis through to the registration audit, the TMEP can help your company as much or as little as you need. For more information, call the Center for Industrial Services at (615) 532-8657 or toll-free at (888) 763-7439.

CALENDAR

January 19, 1999: **"West Tennessee Business and the Y2K Problem: Answers and Solutions,"** Jackson. U.S. Rep. John Tanner and the TMEP present a half-day conference with tools, tips and a look into what will really happen in 2000. See page 4 for more information. Contact the TMEP at (615) 532-8657 or (888) 763-7439.

February 17-20, 1999: **POLYCON**, Nashville. The International Cast Polymer Association meets at this annual conference to share their experiences in the cast polymer industry. Contact the association at icpa@icpa-hq.com, or call (703) 610-9034.

March 3-5, 1999: **APEX '99 — "Machine Tools & Manufacturing Technologies for the Mid South,"** Nashville. This exposition gives metalworking professionals a chance to see demonstrations of machine tools, manufacturing systems and related metalworking technologies. Contact SME at www.sme.org, or call (800) 733-4763.

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The TMEP offers numerous courses for manufacturers on topics including team building, leadership and supervisory skills, analytical skills, and environmental and safety compliance. Call (615) 532-8657 for course catalogs, or visit our web site at www.cis.utk.edu.

Micro Craft gives Head Start a new home

On September 1, the Head Start Program in Tullahoma, Tennessee, lost its home. But thanks to Fran and Dan Marcum, it's now housed safely in a building at the Micro Craft facility in Tullahoma.

The Marcums (who are CEO and president of Micro Craft) learned of the problem after a public hearing revealed that the Program's long-time home was no longer safe for its occupants.

Micro Craft, which makes aerospace and nautical products, will house the 80 Head Start students rent-free for up to three years while a new, permanent facility is being made ready. ■

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An affiliate of:



Editor: Anne Jordan

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West Tennessee business and the Y2K problem: A half-day of answers and solutions

By U.S Representative John Tanner, Eighth District, Tennessee



U. S. Representative John Tanner joins the TMEP to update west Tennessee businesses on the Y2K problem.

Fast forward to January 2, 2000. You're the purchasing manager of a mid-size machine tools manufacturer. It's time to order parts from more than a dozen suppliers located across the United States.

Unlike your company, the suppliers you deal with haven't taken the steps necessary to ensure that their computers, equipment, and billing and purchasing operations will function. Because your suppliers and the computers they rely on aren't Year 2000 (Y2K) compliant, your business is now in jeopardy. And there is little you can do at this point to fix your problem.

It's everyone's responsibility

Just as we used to rely on people to order supplies, we now rely on computers to perform many purchasing and sales functions. The challenge of the year 2000 will be for these computers to not only continue operating but to continue communicating with each other. It's called interoperability, and your dependence on suppliers in an economy driven increasingly by on-time delivery requirements means it is critically

important that each of the more than 380,000 small and medium size manufacturers ensure their computers are Y2K compliant.

If you haven't tackled the Y2K problem in your plant, you're not alone. What concerns many is that less than 15 percent of manufacturers with fewer than 2,000 employees have begun Y2K remediation programs.

That's why we are working with the Tennessee Manufacturing Extension Program to give west Tennessee businesses the tools they need to make sure they aren't bitten by the so-called Millennium Bug. (See page 4 for more information on this important event.)

What's being done now

The problem is pretty simple. Dates generally have been stored in computers using only two digits to represent the year. Thus, 99 means 1999. When your computer software or the chip in your manufacturing equipment recognizes only the last two digits of the year, it will read 2000 as 1900. And that's bad.

And it's bad not only for your business. Many

continued on page 4

Focus On Manufacturing ■ Tennessee Manufacturing Extension Program

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