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# BUSINESS & TECHNOLOGY

SECTION

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## McConnell Technology & Training Center: Our Business is RESULTS

*“By providing our military with innovative solutions to reliability and maintenance problems, MTTC is making it possible for military personnel to concentrate on the mission at hand, protecting America’s freedom.”*

U.S. Senate Republican Leader Mitch McConnell

The McConnell Technology & Training Center (MTTC) in Louisville, KY, provides technology enhanced services and solutions for national defense, business and workforce customers ([www.mttc.org](http://www.mttc.org)).

Originally founded as the Manufacturing Technology Transfer Center by Raymond Zavada – current chair of the Kentucky Association of Manufacturers board of directors -- in August 2000 it was officially renamed and dedicated to Senator Mitch McConnell. MTTC is managed and operated by Innovative Productivity, Inc., a 501(c)(3) organization ([www.innovativeproductivity.com](http://www.innovativeproductivity.com)).

### **Knowledge. Experience. Innovation. Results.**

These are the factors that distinguish MTTC as the premiere provider of technology, consulting and training services. Our team has the combination of real-world leadership, academic credentials, and professional experience to take any employer to the next level. Many of MTTC’s consulting and training programs are best performed on site at your company or facility, but when results could be best achieved by sessions off-site, MTTC can offer conference center, meeting room and classroom space at its headquarters in Louisville.

Take a look at what MTTC has accomplished for the Navy and Department of Defense – you’ll see why business and industry come to us for answers!

MTTC’s **Fleet Maintenance Reduction Program**, the only program of its kind in the country, solves Navy fleet maintenance problems and reduces maintenance hours by finding cost effective technology solutions. Fleet Maintenance Reduction projects generate huge reductions in maintenance representing a recurring cost avoidance for the Navy of \$80.5 million and \$1.2 billion over 15 years.

### **National Surface Treatment Center**

MTTC developed the National Surface Treatment Center (NST Center) in response to the Navy’s #1 maintenance problem: corrosion. NST Center has developed preservation assessment techniques to facilitate best practices, workforce training that addresses surface



*“Every day, 24/7, the United States Navy stands up to defend us against a determined enemy.*

*We’re proud to be part of that – with research, training - and equipment as small as a hinge pin...as large as a motor powering a gun mount. That same technology and training is available for your business.*

*Because OUR business...is RESULTS.”*

*Raymond Zavada, President, Innovative Productivity Inc. / MTTC Program Manager and 2007 KAM Board Chair*



**BILL THOMPSON**  
Director of Computer  
Technology Programs

## Consider Apprenticeships for Technology Positions in Manufacturing

In 2005, the National Association of Manufacturers (NAM) announced a \$1.4 million on-going campaign to attract young people to careers in manufacturing and to make manufacturing a preferred career choice by the year 2010. The “Dream It, Do It” program seeks to promote interest in young people for the many types of careers available and to also provide the information they need to get a corresponding education to fulfill their career goals. The U.S. Department of Labor awarded a \$500,000 grant to the program and the Ewing Marion Kauffman Foundation contributed an additional \$900,000 to the campaign. In October, the Dream It, Do It web site ([www.dreamit-doit.com](http://www.dreamit-doit.com)) won an international gold medal award for creative excellence.

The program intends to expose young people to careers in manufacturing, especially higher paying careers that utilize technology skills. One of the goals of the campaign is to change the perception of young people about the manufacturing industry. Many tend to think of such jobs as traditionally



## MTTC: Our Business is RESULTS

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treatment requirements, and a comprehensive website ([www.NSTCenter.com](http://www.NSTCenter.com)) that houses a world of information on coatings specifications and corrosion.

### Computer and Information Technology

Technology without the hassle? Yes, there is such a thing!

Hands-on, industry-recognized certification prep training in the areas of computer repair, desktop support, and networking technology and security are available to career newcomers and IT professionals in state-of-the-art classrooms. Offerings also include introductory training for novice users and training needs assessments.

Speaking of hassle...Do you have surplus computers taking up space? Take advantage of MTTC's tax deductible computer donation/refurbishment program. And through Business 2.x, select from a variety of affordable packages for Internet Solutions -- fully managed web development, hosting and site maintenance. Likewise, Networking Solutions packages -- from installation to upkeep to upgrade -- are offered by in-house Microsoft Certified professionals.

### ISO/TS Quality Management Systems

MTTC boasts a 100% success rate in helping organizations achieve certification to international QMS Standards; in fact, all achieved registration (including ISO 9001:2000 and ISO/TS 16949:2002) in their first registration attempt. Many use MTTC to provide post-registration support, such as performance of the internal audit function as well as auditor training. RABQSA and/or AIAG certified auditors and consultants provide customized support, tailored to the unique needs of each organization.

### Lean Sigma

Based on our experience, implementation of a lean quality improvement process has yielded total cost recovery in <120 days, netting a 3:1 annual ROI (return on investment).

- Lead time reduction up to 90%
- Floor space requirements reduced by up to 30%
- Work in process reduced by up to 80%
- First pass yield improved by up to 100%
- Thru-put increased by up to 80%
- Productivity improvements up to 125%

Businesses cannot afford to waste human effort, space, equipment, production time, or any other resource. Lean eliminates waste; reduces variation, cycle time and inventory; and most importantly, increases profitability.

### Leadership/Organizational Development

MTTC's consultants provide leadership solutions that not only change undesirable behavior, but also sustain desirable behavior. Executive Coaching provides one-on-one intensive professional development. Return on investment has been estimated to be almost six times the initial cost of purchasing coaching services (The Courier-Journal, 2004). MTTC also has quite a track record in helping clients transition a "good worker" into a great supervisor through its Supervisor Training program. A number of other Leadership/Organizational Development services are available including Change/Transition Management; Team Building; Leadership and Self-Deception; and Employee Motivation. For additional information on MTTC, please contact (502) 638-4400 or visit [www.mttc.org](http://www.mttc.org).



**GALVIN JONES**  
Senior Organizational Consultant

## Inventory...Asset or Plague?

Inventory is one of the largest assets that your company has. Yet Lean teaches us that inventory is a waste. It consumes capital, requires a place to hold it and can become obsolete, damaged, or stolen. We often put in procedures to count and verify quantities and location of inventory, requiring precious manpower, plus large computer systems to help us control it and order more of it. Experts tell us that a normal cost for carrying inventory is 20-40% of its value. Is inventory an asset or a plague?

How much inventory is appropriate? Most industries operate with about 10 inventory turns (annual sales divided by the inventory on hand) or about one month's supply of material, but some operate with much less. Lean manufacturers operate at the 20 to 100 turn level or less. Additionally, studies show a correlation between customer service performance, productivity, and on time delivery with enhanced inventory turns. So why do companies often keep large inventories?

Inventories allow firms to focus on longer runs reducing time wasted on change over of equipment. It is also an insurance policy against those bottleneck processes that break down at exactly the wrong time. Inventory often protects the organization and allows shipment of product if a quality issue is discovered. Perhaps the largest reason for excess inventories is accounting systems deceive plant managers into thinking inventory is an asset and reducing it will show up against our bottom line. Traditional financial metrics hide the true cost of inventory.

Excess inventory is not a problem. It is an effect. Practices and poor performance in the manufacturing plant lead to the necessity of high inventories. Solutions require commitment to a long term program and changing operating philosophy. Let's look at two examples.

### Plant Layout

As facilities have grown, requiring additional floor space and equipment, the original plant layout schemes have been compromised and inefficiencies have been built in. The result often requires queues between operations and excessive material handling. Quality



DON HILEMAN

Project Manager, National Surface Treatment Center

## What is corrosion?

If you Google the word “corrosion” you will find that there are over 28,000 references available.

The American Society of Metals (ASM) Handbook defines corrosion as “The chemical or electrochemical reaction between a material, usually a metal, and its environment that produces a deterioration of the material and its properties”.

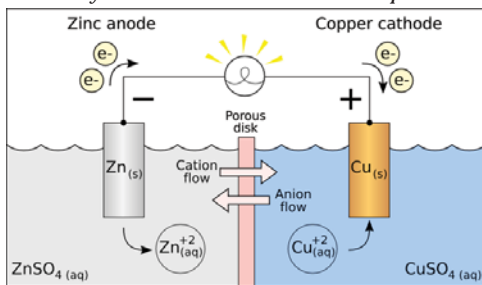
The more common term most of us use when we visually see a ferrous metal corroding is “rust”. Rust is defined as the substance formed when iron compounds corrode in the presence of oxygen and water. It is a mixture of iron oxides and hydroxides. Rust is a common term for corrosion, and usually corrosion of steel. In any case, corrosion is a very destructive and indiscriminate force, and whether you own a business, home, or car, corrosion will affect you sometime or another.

We come into contact with some type of corrosion nearly every day. The bodies of an automobile or truck, a battery terminal or battery hold-down assemble on a lawn tractor, the gas line coming into your business or home, a plumbing system. All of these items can and in most cases will corrode over a period of time.

Most people don’t understand the corrosion process or where to look for corrosion problems around their business or home. Even when they do identify a corrosion problem they don’t know how to correct it.

At the anode, a chemical reaction occurs where metal atoms give up electrons and enters the electrolyte (usually water or soil) as ions. Thus, the metal anode loses atoms and is said to corrode. The electrons from the corrosion of the anode flow through the electron path to the cathode (usually metal). At the cathode, another chemical reaction occurs that uses up the electrons which were produced at the anode. Thus, there is no loss of metal (i.e. no corrosion) at the cathode. The electrolyte serves

*Figure 1 is a diagram of an electrochemical cell commonly used to illustrate the corrosion process.*



both as a source of chemicals for the reaction and as a medium in which the flow of electrical current between the anode and the cathode can occur.

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## Consider Apprenticeships for Technology Positions in Manufacturing

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“blue collar” or low-skilled positions that require getting their hands dirty. To the contrary, technological applications have resulted in many manufacturing careers that require high skill levels and offer high pay and clean work environments. While many lower-level jobs have been exported overseas, the United States still needs a technically skilled work force. Recent studies indicate that, based on current trends, the United States could face a shortage of 15 million qualified employees by 2020, many of those in manufacturing. This would force manufacturers to find higher skilled employees in overseas markets.

One aspect of the “Dream It, Do It” campaign is to connect qualified students and job seekers with available internships or apprenticeships. These are not only an excellent way for the career seeker to “learn the ropes”, they are also effective tools for manufacturers to attract new talent, to validate potential employees’ skill sets, and to acquire technology skilled labor at reduced cost. Apprentice and internship programs are a great way to screen future employees to determine those in whom the employer should make an investment. Some organizations have learned to take advantage of these benefits to the extent that they offer internships or apprenticeships in virtually every department or business unit.

Apprenticeship is a great way to incrementally add technical talent to your IT Department, help desk, or manufacturing floor. It can also be used for temporary projects or transient peak labor demands such as a mass system swap out or inventory build up for the holiday season. Technology training schools are a great source for apprenticeship candidates. These schools are usually eager to find placements for apprentices and they will work diligently to send qualified candidates in an effort to establish long-term relationships. Technical schools are also a means to upgrade the technical skills of current employees. Investing in technical training for an existing worker may eliminate the need to hire a new one.

Taking advantage of apprentice labor need not necessarily be part of a formal program: it can be as simple as phoning a local school. Colleges and universities may require certain formal paperwork from the employer for their own internship curriculum. Most technical schools do not. So, one phone call can produce highly-skilled, low-cost labor with minimum effort. Contact the Manufacturing Institute at (202) 637-3108 or visit the web site at [www.dreamit-doit.com](http://www.dreamit-doit.com). Even Donald Trump is savvy enough to use an apprentice. Contact Bill Thompson at [BThompson@mttc.org](mailto:BThompson@mttc.org) or (502) 638-4430.



## What is corrosion?

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The electrometrical cell can either be destructive as in the case of corrosion or it can be useful in the form of a battery.

*Tip - Do you need to clean silver? Place the silver in an aluminum pan with baking soda. The voltage generated between the silver and the aluminum causes the silver sulfide to be reduced back to silver. No actual silver is removed. The silver is then rinsed and washed in warm soapy water.*

Corrosion damage to businesses, homes and personal property must be repaired or replaced at the owner's expense. Corrosion damage to equipment, facilities and infrastructure maintained by our local, state, and federal governments must be corrected by those governments. A recent study revealed that it costs U.S. households, businesses, and government agencies more than \$300 billion each year. That's over \$1,000.00 for every man, woman, and child in the USA.

In most cases corrosion doesn't just happen overnight. There are usually warning signs of forthcoming corrosion damage to materials or equipment. Some of these warning signs include: a white substance formed on or between the battery terminal and battery post of an automobile battery; a scratch or nick in a coating system; rusty rivets or fasteners and rust or corrosion on water or gas pipes and associated hardware. Unfortunately in some cases these corrosion warning signs are ignored.

Let's look at the adverse effects of corrosion on businesses:

- Corrosion can affect the reliability and appearance of equipment, especially trucks and automobiles.
- Would you enjoy eating in a restaurant that had rusting equipment? I doubt it.
- What about production equipment on an assembly line? How much would it cost an automaker if their production line went down for a couple of hours due to a corrosion problem?
- Think about the costs involved to a food manufacturer when a product is contaminated and recalled.

It's a fact that the identification and correction of corrosion problems in industry will result in a reduction in maintenance and operation costs, avoid plant shutdowns, save valuable chemicals, and improve personnel safety. It's important to remember that water, air, debris and dissimilar metals in contact with each other can cause corrosion in and around your business or home.

When business and home owners understand how, where, and when corrosion occurs they can control or prevent it. Whenever that happens they can save money and manpower as well as improving the reliability of their equipment, facility, and personnel safety.

The Internet, maintenance and owners manuals, and libraries are great places to find preventive or corrective maintenance procedures for specific products and equipment.

Do you want to learn more about the prevention of corrosion? Individuals and businesses interested in learning more about corrosion control, surface preparation and coatings can visit our website [www.nstcenter.com](http://www.nstcenter.com).

More information can be found at the NST Center website at [www.nstcenter.com](http://www.nstcenter.com) or contact Don Hileman at (502) 638-4481 or Karen Chitwood at (502) 638-4414.

## Inventory . . . Asset or Plague?

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issues are often not found soon enough due to inventory between operations. Employees often do not get a true understanding of the entire process and their role in the process. Cellular Layouts are a remedy for these ills. Additionally, work cells allow a more natural transition into work and quality teams that eliminate quality and productivity issues. They also enhance the work experience for employees.

Work cells cannot be put in place overnight. Many businesses have what we call "monuments" that typically are large complicated pieces of equipment not easily moved nor can they be dedicated to one product line. Monuments require long change over times, again generating work in progress (WIP) queues. One solution is to place as much work as possible into cells. Be creative. Reduce change over time through setup reduction processes on the monument. (You may need help from outside expertise.) This will, over time, allow for smaller batches and reduced inventory. Use the Theory of Constraints to manage this monument. In the longer run, when new equipment is purchased, buy smaller scale and simpler lower cost items that can be incorporated into a work cell.

### Scheduling

Western manufacturers have a true love-hate relationship with our complex manufacturing computer systems. These systems often dictate the way we manage our facilities, require constant feeding of data, and return inaccurate inventories and schedules that require large WIP queues and lead times. Use of Kanbans and/or visual control methods within work cells will eliminate the need for complicated schedules and ordering systems. Knowledge is spread throughout the workplace and not held by a privileged few. The power of the team will take over and anticipate problems, solving issues while they are small. Inventory will decrease and processes will flow.

Solutions to large inventories will not be resolved overnight. A change in the way we think about inventories and a commitment to the way we address excess material will allow capital to be freed up and create a smoother operation. For additional information, contact Galvin Jones at [GJones@mttc.org](mailto:GJones@mttc.org) or (502) 638-4462.