

“TWI methods have enabled us to train job skills that used to take multiple days to convey, into single-day increments.”

**-- Roger Hendrick
AmTech President**



AmTech President Roger Hendrick speaks to participants in a TWI open enrollment class hosted by the Alexander City, Ala. company about how his firm is utilizing and benefiting from Training Within Industry. Looking on are ATAC Instructors Dave Devore, left, and Hank Czarnecki.

TWI – The Missing Link to Kaizen

TWI formed the fundamental tenants of kaizen – the Japanese term used to describe a continuous improvement initiative in a Lean implementation. Yet when firms try to apply Lean concepts without first mastering the original TWI skills, they find that something is missing. That “something” is the most fundamental precept of the kaizen process – empowering workers to apply the tools of Lean to improve their jobs consistently and continuously in a positive work environment.

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define and develop consistent work procedures; and to do so through a system based on identifying and accurately reproducing the key steps in a job process to foster: Rapid training; consistent results; immediate efficiency in job performance; improved employee morale; increased productivity; and reduced waste and rework.

Auburn Technical Assistance Center was established in 1976 and is an affiliate of the Alabama Technology Network and an Economic Development Administration University Center. As an Outreach arm of the Auburn University College of Business, ATAC provides business and technical assistance, customized training, and consultation in implementing value-added strategies to manufacturers and other businesses, not-for-profit organizations and government agencies in Alabama and the Southeast. SOAR is an ATAC publication. Direct inquiries and questions to Mitch Emmons, Sr. Outreach Assoc., 334.844.3881, emmonmb@auburn.edu.

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Sustaining a continuous improvement initiative is arguably the most difficult undertaking in a Lean Enterprise. By resurrecting a training method developed to sustain the United States’ industrial might during World War II, Auburn Technical Assistance Center (ATAC) is showing companies that going back to the basics is exactly the catalyst needed to maintain continuous improvement and maximize their investment in Lean.

TWI
Training Within Industry

Manufacturers are finding that TWI provides a proven way to promote, create and sustain standardized work; define and develop consistent work procedures; and do so through a system that fosters rapid training; consistent results; immediate efficiency in job performance; improved employee morale; increased productivity; and reduced waste and rework.

Companies using TWI to maximize Lean benefits

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Training Within Industry (TWI) is a three-component program that is the ideal process for training people within an industry who are responsible for training others in job skills, monitoring and effectively managing continuous improvement initiatives, and doing so with consistent and proven results. **Job Instruction Training (JI)** trains supervisors how to instruct employees so

they can quickly remember to do a job correctly, safely, and conscientiously. **Job Methods Training (JM)** trains supervisors how to improve job methods in order to produce greater



ATAC instructor Dave Devore, left, describes the process of job analysis to David McCain of Owens Corning in Amarillo, Texas, and Pres Jenkins of Blue Bird North Georgia, during a recent TWI open enrollment class hosted by Am Tech.

quantities of quality products in less time by making the best use of the manpower, machines, and the materials available to them. **Job Relations Training (JR)** trains supervisors how to lead people so that problems are minimized and gives them an analytical method to effectively resolve problems that do arise.

“TWI is an American-developed process that was extremely effective in keeping the United States’ industrial base strong and productive during World War II,” says ATAC’s Hank Czarnecki. “But with the U.S. emerging as a victor in both combat and industrial power, interest in TWI as a component in maintaining America’s industrial superiority soon faded. Post-war Japan quickly seized the potential of TWI and used it to launch and sustain its post World War II industrial **Continued on Next Page**

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prosperity. TWI essentially is the foundation of what we know today as Lean.”

Czarnecki, along with ATAC Instructors David Hicks and Dave Devore currently are the only TWI certified instructors affiliated with the Alabama Technology Network. They are working with a number of companies who are former and current Lean clients to transfer TWI into those firms’ continuous improvement system.

One of those companies is AmTech LLC in Alexander City, Ala.

“We looked at TWI right after ATAC began telling us about it in late 2007,” said AmTech Lean Facilitator Cohen Vickers. “We became particularly interested in the Job Instruction and Job Relations components. Once we tried it, we quickly saw how TWI can help us in not only conducting our training more quickly and efficiently, but we also saw how it tremendously boosts quality, aids in standardizing our manufacturing process and the transfer of job skills knowledge, as well as increases employee morale.”

AmTech since has conducted a string of TWI sessions on different production areas involving every employee in a supervisory or leadership position and a number of newly hired employees.

“AmTech manufactures wiring harnesses for products ranging from busses, to medical devices and equipment, to aerospace,” said AmTech President Roger Hendrick. “We are considered to be a small company, but we have hundreds of job tasks that people have to be trained to do. Prob-



TWI course participants listen as ATAC Instructor Dave Devore describes the three TWI components of Job Instruction, Job Relations and Job Methods.

ably our top problem has been how do we train new people faster and better?



Hendrick

TWI has proven to be the best format we have ever tried for this function.

“TWI methods have enabled us to train job skills that used to take multiple days to convey, into single-day increments,” Hendrick adds.

“And because employees are learning through a standard and more thorough process, they are contributing faster and learning new jobs is less stressful. That feeling of contributing, coupled with a less stressful learning environment, has reduced turnover and improved employee morale.”

TWI teaches supervisors how to break down jobs into key steps, describe those steps concisely and consistently, and to develop the ability to continuously analyze those tasks for improvement. Supervisors are taught how to effectively instruct those tasks using both verbal and demonstration



AmTech Lean Facilitator Cohen Vickers, left, and Training Coordinator Allysen Walton are shown in the wire terminating area of the manufacturing floor. AmTech chose this area as the first to implement TWI-JI training.

Who Needs TWI Training?

TWI consists of three standardized programs covering essential skills needed by all supervisors and team leaders, regardless of their industry.

TWI is an essential component in the preparatory and performance building training for any employee who has the responsibility for:

- Teaching another person a job or method
- Improving a job or method
- Dealing with other employees

instruction methods and describing not only how to do the task, but also,

the key reasons for, and the critical importance of, each step.

“TWI incorporates quality into the training and job conducting process,” said AmTech Quality Manager Wayne Kolmetz. “There sometimes has been friction between the Production and Quality groups in companies. TWI defines the process; shows what happens if the key steps are not followed correctly; and gives individual ownership. That old friction between areas is eliminated and different departments truly begin functioning as a team. Our challenge has always been to get



Kolmetz

information to our employees in a format that is easy to understand. TWI is more clear and easier to follow than any training method we have previously used.”

Moreover, TWI teaches employees in leadership roles how to more effectively maintain good relationships among employees by providing constructive feedback, giving credit where credit is due, informing employees in advance about pending changes that will affect their jobs, and in essence, foster a work environment conducive to success.

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*-- Cohen Vickers
AmTech Lean Facilitator*

TWI is not as widely remembered in the Southeast, but nationally, manufacturers are finding that basic methodologies that worked so well more than 60 years ago are providing companies already immersed in the implementation of Lean and continuous improvement with a proven way to promote, create and sustain standardized work; **Continued on Back Page**

IMPORTANT STEPS	KEY POINTS	REASONS
1. Secure tape on harness	1. Make three tight wraps	1. Keeps tape secure
2. Candy stripe the harness	1. Grab harness with hand 2. Wrap diagonally 3. Leave 1" space between wraps	1. Easier to control wire 2. Causes proper coverage - ensures candy stripe 3. Defines candy stripe
3. Break out and diaper wrap	1. Chocross wraps on either side of break out	1. Ensures break out dimension is secure
4. Return to candy stripe	1. Grab harness with hand 2. Wrap diagonally 3. Leave 1" space between wraps	1. Easier to control wire 2. Causes proper coverage - ensures candy stripe 3. Defines candy stripe
5. Apply loom to break out	1. Slide wires through slit 2. Secure loom to break out by taping from trunk to 1" out 3. Secure break out by diaper wrapping	1. Wires can't fit - if not open 2. Loom will come off if not secured 3. Sets distance for break out
6. Apply trunk line loom	1. Open loom and slide on trunk line 2. Ensure all wires are in loom 3. Secure loom to trunk line with 3 wraps 4. If gapped completely wrap - no gap candy stripe - over loom	1. Easier to apply 2. Ensures tight seal 3. Stops slippage 4. Ensures tight seal
7. End taping	1. Tear harness tape 2. Apply electrical tape over harness tape at break 3. Wrap 3 times	1. Complete harness taping 2. Secures harness tape 3. Keeps tape from opening
8. Secure loom end and center point	1. Open loom and expose 1" 2. Wrap wire 2 times with electrical tape 3. Close the loom 4. Wrap outside of loom 3 times with electrical tape at end and center point	1. Allow wire to be anchored under loom 2. Ensures secured 3. Completes seal 4. Secures seal
9. Roll break out wires and secure	1. Make 1/2 loops 2. Use paper tape and secure loop	1. Easier to control 2. Requested by customer

The illustration above shows the efficient three-column format for developing job instructions using the TWI technique. The process emphasizes the important steps, key points, and the reasons for each.