Written by Bob Williamson, Contributing Editor
Sunday, 01 July 2007 00:00

Bob Williamson, Contributing Editor ***"Craftsmanship" results when highly trained, skilled and knowledgeable workers use tools and machinery to perform their work or trade, turning out the highest levels of quality and appeal. It's nothing new. "Craftsmen" actually are descendants of ancient Artisans, the predominant producers of goods prior to the Industrial Revolution. Both Artisans and Craftsmen were revered for their knowledge and abilities to build, create or construct products with high degrees of excellence. In centuries past, Craftsmen were truly admired and highly sought after.***

Today, "Maintenance" is not a trade or craft in the traditional sense of the word. But, it should be—if we expect high-performing, reliable, cost-competitive equipment and facilities. Our Nation, business, industry and infrastructure will continue to be at risk if we do nothing to change the perceptions, development and the retention of the highly skilled employees who are responsible for ensuring that our equipment and facilities operate reliably and cost-effectively. Let's look at the historical development of a "Craftsman" as a lesson for our future.

Craftsmen & Tradesmen

A skilled manual worker in a specific trade or craft was called Craftsman or Tradesman. (Today's politically correct terms are Craftworker and Tradesperson.) The status of such a worker typically would lie somewhere between that of a laborer and a highly trained and

educated “professional.” Most had high degrees of both practical and theoretical knowledge of their trade.

Since the 14th Century, a Journeyman wishing to become “Master Craftsman” would produce a “masterpiece” that would be judged by members of a craft guild (professional association). Successful candidates would be elected as “Masters” in their craft—and generally became obligated to take on young Apprentices in order to pass on their skills and knowledge.

In the past, shortages of skilled Craftsmen grew rapidly in societies where educated professionals were highly prized. This, in turn, would lead to lucrative niche markets in the trades. (Sound familiar? Seems that history really does repeat itself.)

Journeymen

A Craftsman or Tradesman typically began as an Apprentice, working for and learning from a Master Craftsman. After four to seven years, this person would be released from his Master’s service as a Journeyman. (The term comes from the French word “journée,” meaning the period of one day. It referred to the Journeyman’s right to charge a fee for each work day.)

In England, Journeymen typically would work as employees for daily pay. In Germany, they often would “journey” from workshop to workshop, learning from many different Masters while being paid for daily work. The term “jack” is sometimes used as an informal name for Journeyman. A “Jack of all trades…and a Master of none” is a common term for someone who possesses a degree of skill in more than one trade, but has not made a continuous career of any one to become a Master Tradesman or Master Craftsman.

Apprentices

The formal system of training new generations of skilled craft or trade practitioners (that is still popular in some countries) is called “apprenticeship.” As they have for generations, Apprentices build their careers through structured, formal apprenticeship training. Most of this training is done on the job and balanced with classroom studies, while working for an employer who helps the Apprentice learn his/her trade.

The apprenticeship system, which began in the late Middle Ages, came to be supervised by craft guilds and town governments. A Master Craftsman was entitled to employ young people in

his workshop as an inexpensive form of labor in exchange for providing formal training in the craft.

Apprentices, who were usually 14 to 21 years of age and unmarried, would live with the Master's family. Most aspired to becoming Master Craftsmen themselves on completion of their contract (usually a term of seven years). At that time, they would work as a Journeyman. Interestingly, a significant number of these individuals failed to achieve the status of Master Craftsman or acquire their own workshops.

During the 20th Century, the apprenticeship process experienced many changes. While a Craftworker or Tradesperson still begins as an Apprentice, the apprenticeship is carried out partly through working with a qualified Journeyman and partly through attending an accredited trade school for a definite period of time (usually around four years). At that point, the Apprentice becomes a fully qualified Journeyman. Today, very few trades still make a distinction between a qualified Craftworker/ Tradesperson, Journeyman or a Master.

Where do we stand? Are our maintenance and reliability "technicians," mechanics and electricians true "Journeymen" or—better yet—"Masters?" Have we perpetuated the centuries-old apprenticeship processes of passing on skills and knowledge to our younger generations? Unfortunately, no.

Most small and mid-sized businesses and industries have NOT trained and developed the skills and knowledge of their maintenance workforce. Many have assumed that the "craft" of maintenance can be picked up along life's way. It's only when they find themselves in a bind (i.e., really up against the wall), that managers in these operations resort to training—for a short time.

Most maintenance people in small to mid-sized plants today have not been formally trained and qualified to do the tasks we ask them to do each day at work. They are good—in fact, excellent—at figuring things out, however. And why not? We love puzzles. We love challenges.

Still…what about our business competitiveness— now and in the years to come? In short, how do we secure the future of our highly mechanized, automated, techno-logic wired industries?

We need “Craftsmanship” now more than ever before!

21st century apprenticeships

We need to establish company-based apprenticeship- style programs—but, NOT “old-style” programs. We can learn from the mentoring process by which early Apprentices learned to master new skills and knowledge. We can recognize that not every Journeyman is a Master Craftsman. Only the best achieve that status when recognized by their peers. We can accept the fact that quality workmanship (right the first time, safe, cost effective and timely) is a result of formal, structured learning processes. *Briefly, here is what 21st Century Apprenticeships could encompass:*

- Formal assessment and selection processes to identify the best and the brightest with high prospects of success.
- Organized training-learning processes from the prerequisite basics (reading, math, writing, safety, tools…) to core skills and knowledge (pumps, motors, gearboxes, drives…) to equipment and task specifics (Press #44, Allen- Bradley PLC, Line 8…). Don’t stop with core skills and knowledge assuming they can “figure out” specific equipment applications.
- Training focused on results, not training for training’s sake (high cost–low return). Focus on constraint, high-maintenance-cost, problematic, most penalizing and critical at-risk equipment or areas (low cost–high return).
- Detailed step-by-step procedures or “best practices” used as guides for equipmentspecific instruction, and eventually jobperformance requirements (standardized work instructions).

- Apprentice learners assigned to work with topqualified employees as their mentors for specific skill sets. Trained mentors held accountable for effective on-the-job coaching skills.

- Apprentice learners formally “qualified” through progressively more and more challenging task demonstration of on-job skills and knowledge.
- Pay advancement for Apprentice learners linked to progressively higher demonstrated qualifications—“pay for applied skills.” Employees periodically re-qualified on job-critical tasks.

21st century reliability technicians

Many, but not all, of our future maintainers must be profi- cient in “reliability methods.” Higher-level reliability skills and knowledge is the natural progression for those who are highly successful products of the 21st Century Apprenticeships. The more our Reliability Technicians know about equipment and the fundamentals of good maintenance, the more efficient and effective they will be. Reliability “tools” alone will not make a “reliability technician.” Reliability methods help us look into the future, into equipment conditions, using tools and processes to

identify and correct emerging problems before they negatively impact the business. Our 21st Century Reliability Technicians must be proficient in using many and varied appropriate reliability methods. Consider these as starters:

- Condition monitoring technologies and predictive maintenance (PdM) such as oil analysis, vibration analysis, infrared/thermography
- Preventive maintenance (PM) including ultrasound inspection
- Precise machinery lubrication (not oiling and greasing)
- Precision maintenance
- Root cause failure analysis (RCFA) and problem prevention
- Root cause success analysis (RCSA) to promulgate what works
- Reliability-centered maintenance (RCM)
- Data collection and analysis from multiple sources to improve performance
- Partnering with Operations to improve overall performance (Total Productive Maintenance)
- Cross-functional teamwork to improve performance, develop new methods and design new equipment and facilities

The future

Imagine what our future could be if we had formal “mentorbased” development and progression processes from high school co-op students, to work study students, to employed Helpers, to Apprentices, to Journeymen, to Masters or Reliability Technicians. Imagine where we would be in the globally competitive marketplace if we had a highly trained workforce thinking and acting “reliability”(and maximizing today’s proven tools and methods) versus thinking and acting with a “repairs” mindset. Imagine what we could do as a Nation if we were to revive the essence of old-world apprenticeships combined with proven skills-development methods from World War II and the most advanced equipment and technologies in the world. Then, imagine our world WITHOUT “Craftsmen.” Imagine…