

## WHAT HAPPENED TO ALL THE SKILLED LABOR?

Providing employees with proper training, technology, and resources will help bring your fabrication shop into the future.

BY LYLE MENKE AND KANDICE GINGRICH

**LAST YEAR'S STEEL CONFERENCE** in New Orleans revealed a disturbing trend in the structural steel fabrication industry: the continuing lack of qualified, skilled labor in the fabrication shop. This problem continues to erode the effectiveness of structural steel in the price battle with concrete to dominate the construction trade.

### Identifying the Problem

During the conference, Peddinghaus Corporation moderated the panel discussion "Will Technology Change Your Fabrication Shop?" to an unprecedented number of attendees. Whether driven by a thirst for knowledge or an understanding of prevalent labor difficulties, this diverse group showed a desire for answers to their problems.

A standing room-only crowd listened intently to the opinions and advice of several industry leaders. One theme remained consistent throughout the discussion: No matter the geographic location, skilled shop labor is rapidly declining, and shop managers need a definite plan to strengthen the future of the structural fabrication industry.

Several attendees spoke up, illustrating just how universal this problem has become:

**From the Midwest:** "I was walking through my shop one day when it hit me: 60% of my shop workforce was going to retire in less than 10 years!"

**From the West Coast:** "In assessing the potential employee applicants for shop work, it became pretty evident that I had a huge problem: They were not qualified to work in fast food, let alone in a structural shop."

**From the East Coast:** "It is evident that the next generation is not prepared or willing to function in a structural shop environment. It's too hot, too cold, too dirty, too noisy, or just 'unfulfilling.'"

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### What is the Solution?

We can never replace the human factor in business success, but automating the more mundane tasks may provide the solution for many of these labor problems. By using automation to its best advantage, shops

will be able to eliminate the simpler tasks, reducing their dependence on newer, untrained employees and allowing more time for training and more specialized tasks. Automation using the technology of today promises a hopeful future for steel fabricators around the world.

### Problem-solving through Automation and Labor-saving Technology

Fortunately, many equipment manufacturers and software vendors have already begun to take advantage of technology in order to provide solutions to the structural industry's problems:

**Problem:** Beam transport using slow-moving overhead bridge cranes has proven to be ineffective and occasionally hazardous.

**Solution:** Today's systematic beam processing.

- ✓ Progressive fabrication shops employ knowledgeable firms to design shop layouts where materials are handled effectively and efficiently.
- ✓ All stock sections are loaded in the materials yard to save shop space for more sophisticated fabrication (i.e., trusses), which can increase profit over time.
- ✓ Systematic beam processing is designed to maximize tonnage production while minimizing inventory costs for just-in-time fabrication.
- ✓ Cross-transfer systems effectively transport long sections from one bay to another in seconds, nullifying traditional beam-handling methods.

**Problem:** Manually produced production drawings take time to create and are difficult to apply to physical production.

**Solution:** Today's building information modeling (BIM) and material requirements planning (MRP) software.

- ✓ Users can create building models that provide data that's immediately useful at any stage of the building process.
- ✓ Data taken from the model can be transferred directly to computer numerical control (CNC) machine tools on the shop floor, minimizing the chance for operator error; thus each fabricated member fits together with unerring precision.
- ✓ MRP software monitors project flow through the shop, from unloading the stock material to loading finished fabricated parts onto trucks for transport.

**Problem:** Creating detail components using burn tables and other machines requires multiple operators, exposes



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Materials handling in fab shops has become more efficient and safer.



Modern machines for producing plate and angle detail connections require minimal staff to monitor all loading, processing, and unloading functions.

workers to unnecessary “table-top” hazards, and takes up too much space.

**Solution:** Today’s machine designs for producing plate and angle detail connections.

- ✓ These machines incorporate multiple technologies such as high-speed drilling, punching, carbide part-making, and high-definition plasma and oxy-fuel cutting.
- ✓ Stock material is handled one piece at a time—faster and much safer than in the past.
- ✓ Modern machines eliminate the need for multiple laborers, requiring only one operator to monitor all loading, processing, and unloading functions.

### Accommodating Shop Labor, New and Old

Even with all of these advances, the human element in the fabrication process is no less present or important. Since a successful fab shop will always be dependent on labor, and must evolve along with incoming workers to meet their needs and increase their productivity, innovators have focused on the smaller elements of the job as well. These innovations will eliminate hazards and inconveniences in the workplace, granting new laborers time to learn crucial details of the job from their coworkers:

**Problem:** Saw flood coolant is hazardous and takes too much time and labor to clean up and contain.

**Solution:** New band saw coolant technology is now on the market, and new band saws no longer require flood-type lubricant to lubricate the blade and remove chips during the sawing process.

In the past:

- ✓ The coolant had to be mixed with water.
- ✓ Bacteria thrived in the old coolant medium, causing

skin problems for workers and creating a foul-smelling workplace.

- ✓ Material was doused with coolant, which left a residue that had to be cleaned before the material could be painted.
- ✓ Old coolant had to be removed by professional clean-up firms, adding one more shop expense.

Today:

- ✓ Technologically advanced machines, using vegetable-based micro-mist coolant, are now available.
- ✓ The coolant can be directly added to the machine—no mixing required.
- ✓ The coolant system’s configuration inhibits the introduction and growth of bacteria.
- ✓ The micro-mist is applied in a fine spray directly onto the cutting site, and never in excess.
- ✓ As the mist is applied directly and sparingly to the blade tooth area, disposal is no longer a concern.

**Problem:** New laborers lack the knowledge and experience to operate and maintain sophisticated machinery.

**Solution:** New machine controls are outfitted with today’s electronic technology.

- ✓ Today’s CNC controls with PC front ends provide a back-up system of operation; if one system should fail, the other system keeps the machine functioning.
- ✓ With remote diagnostic programs, machines anywhere on the planet can be accessed by qualified service technicians via the Internet. Corrections can be made quickly and easily.

**Problem:** A lack of support for machinery and equipment.

**Solution:** An increase in technical service assistance to meet the needs of growing companies.

- ✓ Using effective communication centers equipped with the latest technology, long-distance technical service is more available than ever, giving fab shops the opportunity to utilize the experience of seasoned service professionals.
- ✓ Skilled technicians can travel more easily than ever before, providing prompt and effective solutions to a variety of issues.

### Looking to the Future

The construction world, including the structural steel fabrication industry, has reached a crucial point, one at which technological advancements provide the greatest hope for survival and continued growth. As society becomes more technologically advanced (not to mention dependent), the fabrication shops of the future must adapt to this changing shop environment; if they continue to cling to outdated methods, they run the risk of becoming obsolete.

As evidenced by the NASCC exhibit floor, innovative firms are dedicating substantial engineering research and design investment dollars to provide advanced machine tool solutions that address these labor issues. The “fab shop of the future,” using today’s advanced technologies, will soon be the standard by which the next generation of structural fabricators will operate.

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