Training–A Top Priority for Investment

Joe Arvin

Let me share a story with you.

Not long ago, I was visiting a gear manufacturing company. My visit started with a tour of the plant. What I witnessed was very impressive. They had a lot of new, state-of-the-art equipment in most of their departments. Their facility was neat and well-organized. I was told how they were integrating robotics and other digital factory initiatives. I saw a lot of work on the shop floor, and I was told that they have the largest backlog of work in their history.

Heading back to the office, I had the opportunity of meeting with a few members of their engineering team. Their experience and knowledge was equally impressive.

After the tour was completed, the president and I went back to his office. He closed the door and we sat down. I said, "What a great operation you have here. I can't imagine that you have a care in the world."

"I wish that were true," he said. "The fact is, we have a serious problem and I don't know how we're going to make it." He paused solemnly, and then continued.

"Here's our problem. Our older experienced operators are retiring, and we just can't find skilled people to replace them. Our only option is to hire unskilled workers, and our productivity just keeps getting worse and worse. We're plagued with scrap, rework, and late deliveries. Our largest customers are threatening to pull their orders."

Skilled Workers – The Key to Success

To be honest, this is not really the story of any one company, but rather a collective composite of what I have seen in the past few years. The harsh reality of manufacturing is this: You can have the best equipment, the best systems, and plenty of orders, but if you don't have skilled operators on the shop floor, it is very difficult to succeed in the market.

The skills gap in manufacturing is well-reported and the gear industry is certainly feeling this pain. Thankfully, there are numerous organizations working to address this problem.

For example, the programs of the American Gear Manufacturers Association (AGMA), including their National Training Center at Daley College in Chicago, show great promise.

According to AGMA President Matt Croson, "AGMA offers 13 different engineering level classes that cover the full spectrum of what a gear engineer needs to understand. In 2020, we are introducing our first four operator level training classes – something our members have also asked for AGMA to focus time and attention on as they need qualified operators to succeed. Many of the classes will be at our new space at Daley College. The 10,000 square foot facility will have both classroom space and 7,000 net square feet of operating equipment so participants get hands on training."

Another innovative approach to training is through the e-learning platform developed by THORS eLearning Solutions. They have a fantastic program for self-paced learning.

According to THORS Founder, Senthil Kumar, "THORS has developed an online learning solution that has captured the knowledge of industry experts. This knowledge is then presented through our interactive courses which utilize narration, graphics, and animation. This approach allows for self-paced learning that is measurable. Because gear manufacturing entails a thorough understanding of multiple manufacturing disciplines, the power transmission courses offered by THORS can be a valuable tool for substantially minimizing the learning curve of people new to the gear industry.

One learning resource that should not be overlooked is the Michael Goldstein Gear Technology Library. According to the magazine's founder, Michael Goldstein, this valuable resource is available for anyone wishing to access deep technical knowledge about gear manufacturing.

"The Gear Technology Library is an online digital archive which contains every technical article from the publication since 1984. Accessible from the main Gear Technology website, this library is searchable by subject and is the most comprehensive repository available for technical information on gear manufacturing. The library is a valuable resource for both new and seasoned people in the industry, and access to this information is available to anyone, free of charge. With around 4,000 articles we have over 11,000 unique visitors to this section of our website each month," Goldstein says.

Notably, in addition to the numerous articles from industry experts, the library also includes the *Back to Basics* series which was run during the first four years of the publication. This series covers the mechanical fundamentals of key processes such as hobbing, shaping, shaving, honing, and bevel gear generating. Much of this information was drawn from handbooks by the actual machine tool builders. This knowledge is essential in today's CNC environment as it provides a solid understanding of what is actually mechanically involved in these processes.

These are just a few of the many options out there. So why are companies still suffering from the skills gap? This is a complex question, but I would suggest that the problem stems from two main causes – the cost of training, and the resistance to change.

Let's talk about the cost of training first. The gear industry, as a whole, has been very busy in the past few years. Many managers are faced with the balancing act of having a person loading a machine (making money) versus taking that person off the machine and having them receive training (costing money). Coupled with the pressure to get work out the door, it can be very tempting to ignore training in the short-term, and simply hope that the inexperienced worker doesn't cause any serious problems.

Then there is the resistance to change from the way things have been done in the past. Historically, inexperienced people gained knowledge slowly

by "osmosis" over time. If they stayed around long enough, they would eventually pick up the essential knowledge of the fundamentals from their co-workers. This approach no longer works, and here is why: Today, with CNC machines, the training of new workers typically does not include the fundamentals, and the training is often limited to loading the tooling, loading the part, and hitting the cycle start button. An operator without the fundamentals will not be a strong asset to your operation.

That reminds me. When I was eighteen, I was working at a gear company while going to night school at Purdue. I remember standing behind the foreman when he asked one of the experienced operators to train me. I heard him tell the foreman, "I'm not training some snot-nosed kid. He can learn like I did." He was very serious about not wanting to share his knowledge, as I later discovered he had a notebook with notes on setting up the Reishauer.

The bottom line here is that if you want to succeed, you are going to have to invest the resources of money and time to train your workforce. Trained workers simply aren't going to show up at your door. Training needs to be an investment that is as high on your priority list as making sure you have the best equipment you can afford.

So you might be thinking, "Joe, you're living in La La Land. Where do you think I'm going to get the money to send all my new people out for training until they're ready? And then when I've paid for their training, they'll go to my competitors for $1.50 more per hour."

Yes, there you have the big challenge. Unless you have money trees on your property, it's simply not reasonable to have your workers in training 40 hours a week for months at a time. But on the other hand, you can't assume your workers are going to be magically transformed into skilled workers by hoping they will pick up the skills without formal training.

As a way of dealing with this dilemma, it is a common practice to have your experienced operators show "the ropes" to the new people. At first, this seems like a great solution because it gets you around the cost of training. However, the down side to this approach is that you're reducing the productivity of your best people. Secondly, they're not usually experienced trainers working with a carefully crafted training path for the new worker. This leads to very ineffective training efforts.

What's a manager to do?

Clearly, the required course of action for every situation is different. But it's logical to conclude that the best solution for your company will reside somewhere in the middle between full-time training and no training.

With that said, a manager must first identify what "training" is required for each individual and then define the specific training path for them. The manager must then identify the budget for the training – consisting of not only the hard costs of the training, but also the cost of the worker being away from their machine.

Finally, the manager must look at the different training methods and pair those with the training need. In doing so, a manager might consider the following options:

- **Off-Site Classroom Training.** Programs like those offered by the AGMA or Community Colleges
- **In-House Classroom Training.** Bringing Subject Matter Experts into your facility to present material to your people
- **In-House Hands-On Training.** Providing training sessions on the shop floor allowing workers to interact with an expert (either an outside resource or an internal person)
- **One-On-One Informal Training.** Providing direct individual instruction
- **Individual Self-Paced Training.** Providing the trainee with access to information about the training topic, possibly online or printed material, such as Gear Technology and their Library, videos, or elearning such as THORS.

Conclusion

If you want a trained workforce, you will most likely have to train them yourself. Furthermore, you must look at training as an essential investment in your organization.

With a carefully identified learning path, and the careful selection of training tools, you can experience the increased productivity and high quality work of a knowledgeable workforce.

Joe Arvin is a veteran of the gear manufacturing industry. After 40 years at Arrow Gear Company, Joe Arvin is now President of Arvin Global Solutions (AGS). AGS offers a full range of consulting services to the manufacturing industry. His website is *www.ArvinGlobalSolutions.com* and he can be reached by email at *ArvinGlobal@Gmail.com*.

A Final Word

If there is a topic you would like to have addressed in this column, please send me an email at ArvinGlobal@Gmail.com. Also, if you have a particular problem or question, please call me at 815-600-2633. I'm always happy to provide some free advice.

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