

The AGS Gear Industry Training Series

An Introduction to Gear Process Engineering

Matthew Jaster, Senior Editor

With the number of contacts Joe Arvin has in the gear industry, the logical next step in his career was to start a consultancy business. He started Arvin Global Solutions two years ago, and began this next chapter in his career by asking about the most relevant challenges facing gear manufacturers today.

While some answers dealt with topics such as incorporating new technologies, staying relevant in a competitive environment and increased foreign competition, one challenge, in particular, kept coming up in these initial discussions—the lack of well-trained, knowledgeable gear process engineers.

“This came up time and time again,” Arvin said. “The demand for gear process engineers led my business partner (Scott Newton) and myself to consider establishing a recruiting arm as part of AGS. Unfortunately, the lack of training programs available to the gear market was the first issues that needed to be addressed.”

With his experience and growing list of gear contacts, Arvin changed his focus from recruiting to establishing a training program that could introduce some of the basic elements of gear processing to industry professionals. The first in the AGS Gear Industry Training Series: An Introduction to Gear Process Engineering took place March 7–9 at the Northern Illinois University (NIU) Naperville Conference Center.

Conversational Instruction

A prerequisite in developing the training seminar was to keep it conversational and educational, void of the pitfalls that can certainly dominate highly technical, engineering presentations.

“I didn’t want this to be another typical monotone presentation where someone stands at a podium and delivers a great deal of information while the audience occasionally nods off,” Arvin said. “We wanted it to be a forum to share ideas, offer suggestions and create a lot of back and forth between our presenters and our attendees.”

For the first training seminar, Arvin invited a diverse group of presenters that included Ron Green, Matt Mondek, Bruce Roberge, Chuck Schultz, Mike Steele, Al Swiglo and Kevin Walsh.

Topics included “What to Look for When You Open Up a Blueprint?” “Turning, Milling and Drilling,” “Gear Cutting,” “The Impact of Heat Treatment,” “Surface Temper Etch and Magnaflux,” and more.

One of the highlights of the program was the heat treat section, where attendees spent five and a half hours discussing heat treat distortion. Swiglo gave attendees insight into heat treat practices and offered ideas and suggestions they may not have considered previously.

“The greatest compliment was hearing how many of our attendees went back to their shops with new ideas and new ways at looking at heat treat distortion,” Arvin said. “I think it was extremely beneficial to let our presenters like Swiglo share

past experiences and anecdotal stories that really complemented the questions being asked.”

Another highlight was when the attendees went through a step-by-step procedure to process a 22-inch shaft (6 in. diameter) with a helical gear in the middle. A panel of judges examined the work, offered alternatives and suggested how they could process the part differently. This again opened up a great bit of dialogue between presenters and attendees.

Overall, attendees were thrilled with the content presented. Mike McKernin, president at Circle Gear, wished a conference like this existed 30 years ago when he was first starting out in the industry.

“Joe Arvin is a really well connected and creative individual. I am sure he will continue to bring together our industry’s most experienced professionals to pass their knowledge to the up-and-coming engineers,” McKernin said. “I believe this conference was exceptional for the initial offering. I also believe the conference will improve with each future seminar.”

Planning Future Installments

AGS plans to present the same seminar again in June and is also prepping an Advanced Gear Processing Course based on feedback he has received from his contacts in the gear industry.

“The advanced course will go more in-depth on heat treat distortion, how to control it, and determine what it has done to your gear teeth, etc.,” Arvin said. “We’ll take a closer look at heat treat distortion through various heat treating procedures.”

There will also be more in-depth discussions on gear cutting. Arvin reiterated that the process engineer doesn’t need to know how to set up a Höfler gear grinder, for example. “They need to know what’s important once the gear blank reaches that Höfler gear grinder,” he said.

The Advanced Gear Processing Course will also look at high-volume commercial gears for industries such as aerospace, energy and mining. After the successful workshop on processing a part in the first course, the Advanced Course will include three different parts for the attendees to process. “I’m looking forward to this section of the seminar and hearing what our judges have to say about the work our attendees present,” Arvin added.

Skills Remain Top Priority

While the skills gap continues to plague the gear industry, manufacturing, in general, is still playing catch-up. According to Arvin, the industry is well aware of the problem, but they’re still not where they need to be in terms of training the young engineers that will eventually lead the gear industry into the future.

“I can’t tell you how many conversations I’ve had about the amount of experience that is disappearing on factory floors today. One gear manufacturer lost a bulk of his skilled labor in a three-week time span. This is where we come in.”



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MARCH 7 - 9, 2017

AT THE
NORTHERN ILLINOIS UNIVERSITY - NAPERVILLE CONFERENCE CENTER
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The “we” Arvin is referring to includes many gear industry veterans that are retired, but want to stay in the game, so to speak, on a limited basis.

“These people have the knowledge and experience to share with the next generation of gear engineers, and more importantly, they *want* to share this information.”

Arvin was skeptical when talk of his own retirement surfaced. He thought he might go crazy not being involved in the day-to-day minutia the gear industry offered.

“I called up five guys that had retired from the gear industry in the last two years to ask what they thought about retirement. Many of them said it was just okay and that they missed being in the fray. They also said they didn’t want a job if that was the reason I was calling!” Arvin said.

Some of these same retirees, however, were very interested in participating in the gear seminar as a way to share their experiences and help the next generation coming up. And it was a way for them to continue participating in the gear industry on their own terms.

Schultz (a presenter at the event) discussed this sentiment in a recent blog on the *Gear Technology* website (www.geartechnology.com/blog/why-not-teach/).

“I was fortunate to have the opportunity to attend AGMA committee meetings from a relatively young age. The insights of the esteemed engineers at those gatherings were like a graduate school seminar,” Schultz said. “If only I could go back and ask them the questions that have come to mind in the years since! My own work in this very public sphere is a small way of repaying the kindness shown to me back then.” 

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**The next session of
"An Introduction to Gear
Process Engineering"
takes place June 20-22 at
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