You’re an AGMA member, and you’ve attended Gear Expo, but the following describes activities—especially those having to do with ISO—of which you may not be aware.

The first point I’d like to make is that ISO is a physical place and an organization located in Geneva, Switzerland, with its members representing most of the countries in the world. The American National Standards Institute, or ANSI, represents the United States. In turn, ANSI reaches out to its membership and selects members to become the designated experts in particular areas. AGMA is that expert with respect to gearing. We are an ANSI accredited standards developer, and we are approved by ANSI to be the U.S. representative for the country’s gearing interests to the ISO standards body.

In particular, AGMA is the secretariat (in the U.S. we would say “chair”) for the Technical Committee (TC) 60 committee that oversees gearing standards. An ISO standard simply means that it’s an international standard developed under the rules ISO has developed to assure users that the document was created in an open and equitable manner; it is a global document that a number of countries have agreed to accept as the international standard. To complicate matters a bit, each country can still have its own standards—and even regions, provinces, and individual companies can have their own standards—and that is in addition to the ISO standard.

Just using Caterpillar as an example, no one is going to tell them that their engines have to be configured differently in Ohio than in Germany, but they comply with different regulations dealing with emission controls, lighting, or driver-safety issues. But Caterpillar can decide how they want to build the engine, and, typically, they rely on international standards. AGMA fits into that equation by making sure that American manufacturer’s concerns were addressed in the formation of that international standard.

From the ISO’s perspective, AGMA is charged with representing the interests of United States gear manufacturers, because people in Canada, for instance, have their own delegates to that committee, just as people in Germany, etc., do. One of the distinctions I’d like to point out, though—and I don’t mean to represent this as a stereotype—is that we have found over the years that the European model tends to be based on academic theories. That is the professor, or the designer, would say “the equation states that the load on this particular gearbox can go up to a maximum of X,” whatever that happens to be. In the United States we certainly do that type of calculation as well, but we also tend to rely on field-tested data—empirical data from the users. So, if we find that the rating calculation says X, and we take it in the field and it’s really X minus two, then we would argue for a reduced rating on that gearbox. Our standard would show a lower rating than the European standard would show.

That’s not to say that their approach is in any way lacking, because the science that is taught in the classroom is ultimately derived from real life. They just don’t go back and verify it quite as many times as we do. But we’re finding that, increasingly, as we share this technology around the world, that others in TC60 are beginning to rely more heavily on empirical data in addition to theory.

One of the things that is absolutely fluid around the world is technology, and it constantly flows, it’s constantly shared, analyzed, and updated. That’s how you move ahead. That’s the basis for progress, I think. And I tend to believe that AGMA’s delegates have certainly had some effect on that. I mean, the market speaks to us in so many ways, and if a company has a massive number of gearboxes failing that were designed by the greatest minds, and they look at their calculations and say “we didn’t make any mistakes, but the gear still failed,” then they’re more open to empirical input. Facts are a brutal teacher sometimes,
but I don’t back away from the U.S. having a positive influence on that technique being applied more often around the world. Some people might think that’s not as elegant as the theoretical approach, but that’s okay. Users want a beautiful gear more than they want a beautiful theory.

But it’s a two-way street, in terms of what we can learn from each other. In fact, it was my view when I joined AGMA in 1991 that we would increasingly become a global organization, simply because that’s the only way you can survive in an industry like ours. The cost of being an isolationist is just absurdly high, and it really is counterintuitive to think that you’re just going to sell in a particular geographic area. Actually, AGMA has been actively involved in the international community for well over two decades now. But the point is that we have grown and matured as an organization, and the other countries have also begun to recognize the opportunities found in working together. As an American manufacturer, you have to be open to accepting ideas from Japan, Germany, England, Asia, wherever they come from. All the intelligence is not captured in one particular part of the world, so we’ve been very active in terms of working consistently and on a regular basis with our counterparts in Europe, Japan and elsewhere. We routinely meet with counterparts in all of these countries, and we have very cordial, productive relationships with the other trade associations all around the globe. We share economic and technical information.

As an example, AGMA is the only non-manufacturing member of the Gear Research Circle at the University of Aachen in Germany; this relationship started about three years ago. And we’re there because of this opportunity to share research and information. They are a phenomenal research body, and we couldn’t hope to take the kind of research to them that they do on their own. We can bring some funding, however, and we can introduce certain ideas and challenges. In fact, the AGMA Foundation is funding a project with Aachen University right now on PVD coatings for gear teeth. So I think that working with members and helping them advance their companies and operational techniques has been part of AGMA’s mission for quite a number of years.

In terms of ISO, though, I’d like to clarify a couple of points. ISO would exist whether AGMA did or not. We happen to have been elected secretariat of TC60 back in 1993, and that’s been renewed up until the present time. But just to give you an idea of the scope of activities, there are nine active working groups within TC60. Those groups are involved in developing multiple standards: they are currently working on 23 documents in those nine groups, for instance, and they have another 44 documents that need to be reviewed in the next five years. So that’s a lot of work going on in the international community. And while our involvement in TC60 has been in place for quite a number of years, we’ve always been very attentive to our responsibilities. We are an aggressive participant in the ISO activities today, as we have been since the late eighties.

In terms of its internal structure, each country and each industry has the opportunity to create a technical advisory group, or a “TAG.” AGMA is the secretariat for the U.S. TAG for TC60. There are rules for how each group is formed, but basically it’s an open process that
can include anybody with a knowledge and active interest in the subject matter. As for our involvement, which has to do with gear standards, the TAG will determine the U.S. position on a particular question within a standard. Once the delegates meet, their different stances on the positions are first introduced, then debated, and then voted on. But it's not a simple process. Supporting data must be compiled and presented, and the debate can take a couple of days at times. And defensive situations can occur. There was a situation a couple of years ago where one group in ISO wanted to "derate" the calculations on a certain gearbox. This would have required U.S. manufacturers to basically restructure their entire manufacturing process. Well, representatives from the U.S. then banded together with like-minded manufacturers in other countries, presented their data and arguments, and the motion was defeated. That was a very positive step for the association, and for the members who were actively involved in that particular action. A member of the ISO leadership—and a very senior person in the Canadian industry—once said that "standards appear to be technical issues, but they're always about economics." He was right.

But what we gain from these exchanges is immeasurable. In every discussion, you're advancing the art; you're advancing the technology. Many times it's as much about educating people around the world on new things that you've discovered as it is about convincing them politically to vote your way. Of course, standards that are based largely on politics can't withstand the test of time. The ones based on hard facts, on good evidence, and on good science tend to be the enduring ones that you see repeated after the standard is revised every five years. People rise up and salute the good decision they made five years earlier.

I've got to admit that our industry's best advocate is Bill Bradley, though, who is vice president of AGMA's Technical Division. The very reason that we've been elected, and then reelected, as secretary of TC60 is because of the fair and evenhanded job that he does. You know, if Bill was a bully and said "vote my way or we won't have a vote," then none of these countries would vote to reelect us.

We all think that what we do is fundamentally important for the future of the American gear industry, because what we're talking about is the future of gear manufacturing. People every day are looking for ways to transfer power and motion without gears, so it is in our interest to make sure that we have the best and most-efficient technology that we can possibly have. And the way to do that is to work with the best minds around the world—and that's what AGMA is doing through its association with ISO.

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