

**A column aimed at providing information on the technical activities that go beyond facilitating industry standards development.**

This column typically discusses developing and revising ISO or AGMA standards projects and related technologies. However, there are other products, activities, and services supplied by AGMA. These include computer software, technical seminars, interpretations of standards, finding information, and answering questions submitted from the general public. Here are a couple of samples, along with our replies—the second question from a student who is hopefully just starting out in the industry.

**Question 1**—We are frequently involved in evaluating the power capacity/service factor of an existing gearbox, operating under new conditions, or developing a solution involving a new gearbox (the detail design and manufacture of which we would then sub-contract to our chosen supplier). A large proportion of our business is for rolling mill equipment design and supply, and we generally specify that gears be designed to the AGMA 6005-B89 standard. We are looking to purchase a proprietary piece of software to allow us to quickly calculate gear capacities and are considering your Gear Rating Suite 2.2. Can this program calculate the ratings of gears to the 6005-B89 standard? If not, is there another piece of software that we should consider?

**Answer**—We are sure you are aware that AGMA 6005 is an obsolete standard. The AGMA Gear Rating Suite software package provides ratings in strict accordance with the current standard ANSI/AGMA 2101-D04. In

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addition, it will provide ratings in accordance with ISO 6336, if you have applications based on the international standard. The power of the software is in the ability to analyze gear sets to both standards, using common input data screens. The Gear Rating Suite will not provide ratings in accordance with AGMA 6005.

We had the pleasure of sitting in with our Mill Gearing Committee, who met quite recently. They have begun to perform a comprehensive review of AGMA 6005 to update the document to current industry design practices, which will include using AGMA 2101 as the reference rating standard. We assume you learned about the Gear Rating Suite from our Web site,

[www.agma.org]. If not, you can find much valuable information—including a fully functional DEMO version—there for your review.

**Question 2**—I am doing some research and wondering when the involute profile for gears was invented. Do you have any ideas of where I could find information like that or how widely it was used at different times in history? Any ideas would be really helpful.

**Answer**—Leonard Euler was a mathematician born April 15, 1707, in Basel, Switzerland, and who died September 18, 1783. In 1754 Euler worked out design principles and rules for conjugate action. Some consider him to be “the father of involute gearing.” For many years Euler’s picture and an involute gear curve appeared on Swiss currency, specifically the 10 Frank note.

Note, however, that in 1673 a mathematician named Christiaan Huygens published the book *Horologium oscillatorium sive de motu pendulorum ad horologia aptato demonstrationes geometrica*. Most significantly, this work deals with evolutes and involutes of curves. He describes a very specific method for finding the “involute” of a curve. In addition, in 1694 Philip de la Hire did a full mathematical analysis of epicycloids, recommending the involute curve for gearing. Do a Google search and you may find more. If you do, let me know. Current AGMA information is provided at [www.agma.org], or send questions to tech@agma.org. 

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