

Sustaining the Steel Industry at the University Level

by Joann Cantrell

The AIST Foundation's mission is to ensure the iron and steel industry of tomorrow will have a sufficient number of qualified professionals. One program the AIST Foundation has been hosting for the past few years is the AIST Industry-University Roundtable. This group of professionals, representing steel industry operations and human resources, meets with professors and career services professionals from universities at the AISTech and MS&T conferences. The purpose of the Roundtable is to maintain communication and form relationships between the groups, to discuss and share ideas on the perception of the industry, and establish ways to encourage student interest in pursuing a career in the industry.

At a recent Roundtable discussion, it was agreed that awareness of career opportunities in engineering needs to begin at the high school level or even earlier. While the demand for engineers is going up, the current interest is not yet there for younger students. The perception of steel being an old technology, produced mainly in uninteresting locations, has to change. Once they are exposed to the steel industry, students will learn that there is still much to be discovered and developed, and that steel is still a very dynamic area of research and production with many new applications.

According to John Speer, a professor in the Advanced Steel Processing and Products Research Center (ASPPRC) at the Colorado School of Mines, "Perhaps the most effective means of generating interest in the steel industry are plant tours or hands-on demonstrations, along with good public relations. An effective marketing tool available to the steel industry is the ability to show just how amazing a continuous caster is or a hot rolling mill, or to demonstrate a steel structure in a microscope for the first time." Teaching students about the unique properties of steel and how they are utilized is a great way to get them excited about the industry.

Another key issue is awareness through public relations. "Today, students use the Internet to research, and for steel companies, having an effective Web site is just as important as having dynamic recruiters at career fairs," Speer said. "Good students need to be introduced to engineering as early as high school to understand the opportunities that may be available to them in this industry."

In addition to reaching students at a younger age, it is important to encourage the study of engineering at the university level. All

disciplines of engineers are needed in the steel industry. Steel and steel-related companies are already supporting schools in a variety of ways such as industrial research support, scholarships, support of operating expenses, internships, endowments, recruitment and hiring.

Universities also rely on corporations, foundations and individuals to invest in future generations' engineering education, research and technology by providing resources to establish endowed professorships and chairs. These gifts contribute to the strength of the college by supporting faculty members, recognizing their accomplishments and providing opportunities to sustain skilled and talented engineers for the future welfare of the steel industry. An endowment helps a university attract exceptional academic performers, and its value cannot be over-emphasized. Such a critical position plays an important role in retaining the type of faculty that can drive a university's high standard for excellence.

For example, Kent Peaslee became the F. Kenneth Iverson Chair of Steelmaking Technology at Missouri University of Science and Technology (formerly the University of Missouri-Rolla) in 2006. Nucor Corp. established the Iverson Chair, naming it in honor of the company's founding chairman, F. Kenneth Iverson. Missouri S&T has one of the nation's largest programs in metallurgical engineering, having averaged 20–25 bachelor degrees in metallurgical engineering per year for the last 10 years, with about half of those graduates taking jobs related to the iron or steel industry. The university is using Nucor's \$2 million endowment to enhance metallurgical engineering education and research, as well as support for undergraduate, graduate and post-doctoral students working within the steel manufacturing program.

Peaslee came to academia from the steel industry, having worked in a variety of technical and management positions in both integrated steel companies and minimills. His industrial background led to his interest in both research and education focused on the iron and steel industry.

Peaslee explained that endowed chairs and professorships are invaluable tools in the recruitment and retention of talented faculty, and they help to ensure the long-term stability of a department's academic programs. Endowed professors make sure that universities continue training graduates for the steel industry by providing professors dedicated to the industry.



Most universities require \$1–3 million to endow a professor. Typically, expenses include salary and benefits for support staff, post-doctorate associates and graduate students, supplemental salary and benefits, equipment, dues and travel expenses. Sridhar Seetharaman, associate director at the Center for Iron and Steelmaking Research (CISR) at Carnegie Mellon University in Pittsburgh, Pa., is also the POSCO Professor of Materials Science and Engineering. The CISR is a University/Industry Cooperative Center within the department for Materials Science and Engineering devoted to education and research related to the production of iron and steel.

Seetharaman recognizes the importance of an endowed professorship. “An endowed chair or professorship is the best gift a university can receive,” he says. “It is a gift that ensures that a particular field of study will go on and always have a presence. The strength of the chair is that it is recession-proof because it is a guaranteed funding. Everything else is subject to economic times. An endowment in metallurgy ensures that it will always be a course of study at a university.”

Colorado School of Mines’ ASPPRC and Carnegie Mellon’s CISR have more than 15 major industrial members and are two of the oldest and largest academic centers for steelmaking research in North America. Seetharaman states that endowments are one of the best ways for industries to help steel research, and universities are very appreciative for that.

“A cause for concern today is that there are no longer a lot of metallurgy graduates. Out of about 75,000 graduates in engineering in the U.S., only about 100 are specific to metallurgy,” said Peaslee. Most schools now have a basic materials science and engineering degree, and specific steelmaking, casting and forming courses are not offered as they once were. Student interest is low because they are not really learning about steel, metals or manufacturing. It’s hard to believe, but there is a conception from some that steel is no longer being made in the U.S. anymore, so you can see why student awareness and student perception is a very big issue.”

Jim Turnquist, director of career services for Michigan Technological University, knows that it is essential to encourage students to find new pathways and pursue unfamiliar routes in engineering to be better prepared for technical careers.

“At Michigan Tech, we have approximately 6,600 students — two-thirds of whom are planning to become engineers,” Turnquist said. “Some of those students become disenchanted along the way because they aren’t quite sure what specific field of engineering they want to get into.

“Within the last five years, the steel industry has made great strides in visiting campuses. Producers such as ArcelorMittal, U. S. Steel and Nucor have displayed great interest in recruiting, and their presence is very well known. With the recent economic recession, corporate attendance for campus career fairs has been down about 25%, but the good news is that the companies who were in attendance were all hiring for full-time positions, co-ops or internships.”

Turnquist observes firsthand that the steel industry can be appealing when engineers talk about their jobs as being hands-on and problem-solving, with many different career options, promotions and opportunities for growth. “Engineers are not limited, and students don’t realize how vital that diversity is to the future.”

Steel producers like ArcelorMittal have made a concerted effort to recruit by visiting with faculty and staff, and that time has paid off tremendously. Ranked as the world’s largest steel producer with more than 280,000 employees and facilities in more than 60 countries, ArcelorMittal has a Campus Partnership Program that targets specific schools. Mike Rippey, president and CEO of ArcelorMittal USA, takes an active role in the college relations process and assigns his executive vice presidents, directors and management resources to assist with strategic planning and program development at various universities. The program specifically focuses on meeting with recent and future graduates in search of top talent.

“At ArcelorMittal, we place great emphasis on personal development and offer our employees continuous learning and growth opportunities,” said John Gerrard, manager, talent acquisition for ArcelorMittal. “In the coming years, we will need to recruit the best and brightest talent for professions in engineering, finance, business management and other areas. This includes both recent graduates and experienced professionals.”

As the technology used in the steel industry continues to advance and the industry continues to grow, universities must stay informed and equipped to provide the employees needed who have the knowledge and skills required in the steel industry. In turn, the industry will need to provide the resources, information and opportunities to the professors and students, maintaining awareness and interest. This exchange will be possible through continued communication between industry and university professionals.



K. Peaslee



S. Seetharaman



J. Speer



J. Turnquist

The next Industry-University Roundtable meeting will be held on Monday, May 2, 2010, in the Somerset Room of the Westin Convention Center Hotel, Pittsburgh, Pa., from 3:30 to 5:30 p.m. Contact Lori Wharrey at lwharrey@aist.org to register for the event. ♦

