

## In Memoriam—Klaus J. Weinmann

Klaus Juergen Weinmann, a consummate engineering educator, respected colleague, loyal friend, devoted family man, and professor emeritus of Mechanical Engineering–Engineering Mechanics (MEEM) at Michigan Technological University passed away peacefully in his sleep on Nov. 3, 2010 on the last day of a dream cruise to the Galapagos Islands. He is survived by his wife Sigrid, two daughters (Sylvia and Claudia), and two grandchildren.

A native of Germany, Klaus first came to the United States in 1954 as an exchange student and attended high school in Lawrenceville, IL. In 1957, he emigrated to the U.S. to study at the University of Illinois at Urbana-Champaign where he received his BS (1962) and MS (1965) degrees in mechanical engineering. While pursuing his studies, he held intern positions at American Steel Foundries, Procter and Gamble, and Ingersoll Milling Machine. In 1969, he earned a Ph.D. in mechanical engineering (also from the University of Illinois) under the direction of B. F. von Turkovich. As a graduate student, he also worked closely with K. J. Trigger.

In 1970, Klaus accepted a faculty position at Michigan Technological University; he was promoted to associate professor in 1974 and to professor in 1979. He served as chair of the Department of Mechanical Engineering–Engineering Mechanics (MEEM) from 1993 to 1997. Upon his retirement in 2003, he was named professor emeritus. Following his retirement, he continued to work as a research professor at Michigan Tech and as an adjunct professor at the University of California at Berkeley. In recent years, Klaus and Sigrid (a professor emerita in Humanities) lived in California.

A committed and passionate teacher, Klaus delivered courses on manufacturing processes, metal forming, tool engineering, machine design, mechanics of materials, and plasticity theory and shaped the lives of thousands of students. Shortly after his arrival at Michigan Tech as a young assistant professor, he created a course in metal forming. This course was taught every year until Klaus retired and always remained popular with the students. Klaus loved teaching, and after moving to UC-Berkeley in the early 2000s, he taught a popular undergraduate class on manufacturing processes. Knowing that many of the UC-Berkeley students were destined for manufacturing careers in the Silicon Valley, Klaus ensured that the course addressed not just metal processing but also the processing and assembly of chips and printed circuit boards. He also delivered a graduate course in advanced machining and enjoyed knowing that even after transitioning from machining to forming research in the 1970s, he could still crunch through machining derivations after being away from the topic for 40 years.

Klaus established an impressive record of research accomplishments in partnership with the industry (e.g., General Motors, Alcoa, Johnson Controls, and Deere) and the government (National Science Foundation and Department of Energy). Many of these research advancements are related to two forming topics: cold extrusion and sheet forming. The cold extrusion research concentrated on gaining a better understanding of friction at the workpiece/die interface in the presence of a coating. A friction test was developed to quantify the friction associated with a variety of lubricants in cold extrusion of steel—this test has been successfully employed by a number of other researchers and industrial practitioners. The sheet metal forming research dealt with problems of flow of sheet metal over the drawbead. Klaus and his students developed the first intelligent sheet metal stamping die equipped with active drawbead control to improve the drawability and quality of both aluminum and steel sheet panels. The active drawbeads adjust sheet metal flow into the die by changing the blankholder force in response to process disturbances. Several industries have pursued this technology.



Klaus mentored over 40 graduate students (including 11 Ph.D. students) to the completion of their degrees. These students went on to secure leadership positions within the academia and the industry (e.g., General Motors, Ford, Johnson Controls, and American Axle). His research led to the publication of approximately 100 refereed papers and a comparable number of technical presentations.

The leader of the manufacturing program at Michigan Tech for over 30 years, Klaus was a forceful advocate for maintaining a strong manufacturing component within the mechanical engineering curriculum. He supported this effort by successfully recruiting high quality manufacturing faculty to Michigan Tech. In addition, Klaus actively mentored young manufacturing faculty worldwide and helped to advance their careers.

Klaus was active within the Manufacturing Engineering Division of ASME (formerly the Production Engineering Division (PED)) for many years. He was the chair of the PED in 1983 and 1984. From 1981 to 1983, he was associate editor for the Journal of Engineering for Industry (now the Journal of Manufacturing Science and Engineering). Klaus was also a fixture within the North American Manufacturing Research Institution of SME (NAMRI/SME) and had the distinction of having attended every North American Manufacturing Research Conference (NAMRC) since its creation. He was the chair of the NAMRI/SME Scientific Committee from 1986 to 1988 and was the NAMRI/SME president in 1989 and 1990. In 1984, he organized NAMRC 12, and in 1995, he co-organized NAMRC 23, both of which were held at Michigan Tech. Klaus was also heavily involved in CIRP (International Academy for Production Engineering). He served as secretary and vice chair of its Forming Scientific and Technical Committee (STC-F) from 1990 to 1996, and as vice chair (1992–1997) and chair (1997–2001) of the Dictionary STC. Klaus also served on the CIRP editorial committee and was a principled advocate for the outstanding contributions of others.

Klaus' love of life, tenaciousness, reassuring countenance, and support made the world a better place. His demanding nature and high expectations challenged his students while they were immersed in their research—but later in their careers, they appreciated the drive for excellence that he instilled within them. His professionalism and willingness to help others will continue to serve as a model for all of us. Colleagues will miss his never-wavering loyalty, his open heart, and his true appreciation of the successes and accomplishments of others. All our lives will be forever influenced by his straight-from-the-heart viewpoint, which never sugarcoated an issue and reflected his global perspective. The manufacturing community has lost a gentle soul, an outstanding contributor, a committed supporter, and a never-wavering source of inspiration. Goodbye dear friend!

**John W. Sutherland**  
Purdue University