Memorial Resolution of the Faculty of the University of Wisconsin-Madison
On the Death of Professor Emeritus Professor Norman H. Beachley

Professor Norman Beachley was a true Renaissance man. He had a great intellect and a natural curiosity and energy that led him to a life of achievement. His accomplishments were both esoteric and practical. Outside of his profession as a Mechanical Engineer, he was a world traveler, an accomplished jazz pianist, and an outstanding multi-sport athlete. No challenge was too daunting. Fueled by his passion for all things automotive, he designed and built his own, one-of-a-kind sports car that featured, among other unique characteristics, an advanced composite, honeycomb core body.

After earning his Ph.D. from Cornell University, Dr. Beachley’s professional career included time in the aerospace industry including a stint as an officer in the US Air Force designing rocket components. As a professor of mechanical engineering design at the UW, he focused his research on efficient energy utilization and conservation. His technical contributions combining innovative control strategies and techniques, energy storage utilization and road-engine load decoupling laid the foundation for significant improvements in fuel economy while maintaining performance. His pioneering efforts in creating unique engineering designs to improve system efficiencies and performance resulted in the designs of a free-piston engine-pump and a patented vibration-free engine utilizing a modified hypocycloid mechanism. While efficient energy utilization did not hold the importance decades ago that it does today, Dr. Beachley recognized its importance and his research and publications laid the fundamental groundwork for analysis and innovations in efficient vehicle energy utilization. The methodologies he developed have been and are being used to design vehicles that will incorporate many of these conservation concepts in the next decade.

Dr. Beachley was at the forefront of research involving hybrid vehicles utilizing flywheel and hydropneumatic energy storage. He directed numerous projects that were distinguished by its comprehensive nature, involving both analytical studies, as well as extensive design, build, and experimental work. His work resulted in more than 85 technical publications and reports. While he made numerous contributions to the technology in this area, particular innovations include: a matrix method for evaluating fuel economy in computer simulations, utilization of pulse duration modulation techniques to control hydrostatic pump/motors with inexpensive on/off control valves, a more accurate and simplified method of analyzing hydropneumatic accumulators, and the development of innovative control and operating strategies and techniques for hybrid automobiles with minimal energy storage capacities. Additionally, under his leadership, two hybrid automobiles – one a flywheel hybrid, the other, a hydropneumatic hybrid - were designed, built and tested at the UW-Madison.

In addition to his research activities, Professor Beachley was active in teaching a wide range of mechanical engineering courses. He has also co-authored a popular textbook in Dynamic Systems Analysis and served with distinction as the advisor for the Society of Automotive Engineers Mini-Baja, Formula, and Hybrid Electric Vehicle car projects. He also served as advisor for the Urban Vehicle Design Competition. These projects resulted in students constructing more than a dozen vehicles under his direction and guidance. His advice and contributions as a mentor to hundreds of SAE student members, as well as to SAE Formula and Mini-Baja participants, helped to encourage innovative approaches to engineering problems; it certainly has stimulated interest and confidence in numerous young engineers.

Professor Beachley recognized the importance of educating engineering students in both fundamental, theoretical knowledge as well as practical engineering technology. He was adept at making the connection between theory and practice in both his teaching and research activity.
His graduate students particularly, were well-prepared for careers in industry, because, as
students, they designed, built, and tested the machines and devices that were the focus of their
research projects.

Dr. Beachley's contributions to engineering research and education in the area of ground vehicles
has been exemplary. His graduates can be found in all of the major automobile, truck and
powertrain component manufacturers and at many universities. His many contributions to the
field led to many accolades and honors, culminating in his being named a Fellow of SAE, the
worldwide leading association of engineers in the aerospace, automotive, and commercial
vehicle industries.

Norm was a devoted family man. He, along with his wife of 62 years, Marion, raised three
wonderful, successful daughters. He enthusiastically attended all of their sporting, music, and
scholastic events. Later in life, he enjoyed spending time with his grandchildren, particularly
sharing his love of music, which included some lively intergenerational jam sessions.

Norm was known for his dry wit, clever quips, and astute observations. He was always a
gentleman, and a man of honor and great integrity. When he saw injustices being done, he took
action and worked tirelessly to right the wrongs, even when it called upon him to sacrifice his
personal welfare. While his tangible contributions to mechanical engineering are undoubtedly of
great significance, Norm’s role as a mentor and friend, especially to his younger colleagues, add
greatly to the luster of his legacy. Through his actions and behavior, he provided a wonderful
example to his colleagues, students, and friends and family of how to live a fulfilling life of great
achievement.

Memorial Resolution Committee
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