

Fuher Helps Set EPA Standards

Michael J. Fuher ('91 BSE ME) was awarded the 2002 SAE/InterRegs Standards and Regulations Award for Young Engineers for his work at Ford Motor Company in authoring several published reports and technical papers regarding automotive emissions.

In making the announcement of the award, the organization noted that Fuher's standards will be felt on a national level, saying, "His recommendations have been adopted by the EPA and the California Air Resources Board, which have resulted in the establishment of standardized protocol for future evaporative emissions testing."

Fuher was hired at Ford ten years ago in what is known today as Vehicle Environmental Engineering. He credits the company with giving him many opportunities to grow and to learn about automotive engineering, emissions testing, and environmental responsibility. He's currently a technical standards engineer at the company.

His special interest and involvement in standards enabled him to participate in a variety of projects dealing with exhaust emissions and evaporative emissions of motor vehicles. In one of his first projects, he conducted experiments to study the impact of humidity and moisture on the performance of carbon canisters.

"Concern had been raised that higher levels of moisture may reduce the purge performance and working capacity of canisters, which are used to control fuel evaporative emissions of vehicles," noted Fuher. "The data did not support such concerns, and as a result, the California Air Resources Board (ARB) used these findings in developing their evaporative emissions test requirements. I authored a report on these studies, which was published in 1994 as SAE Technical Paper 940299."

Fuher then became involved with the SAE's Light Duty Vehicle Performance and Economy Measurement Standards Committee, participating in the task force to develop exhaust emissions and fuel economy measurement standards for hybrid-electric vehicles (HEVs). The group developed the basic framework of HEV testing including the four-phase urban test, battery state-of-



ME staff member Janet Lyons, who works in the Automotive Research Center, fills up her new Ford Focus, which is equipped with the latest evaporative emissions control to trap refueling vapors. Since 2000, all passenger cars are equipped with onboard absorbing carbon canisters to trap gasoline vapors produced during refueling.

charge tolerances, and the appropriate weighting of test results based on consumer charging and driving habits.

Fuher encapsulated the recommendations made by this task force and authored SAE Technical Standard J1711, "Recommended Practice for Measuring the Exhaust Emissions and Fuel Economy of Hybrid-Electric Vehicles," published in 1999. SAE J1711 offers a broadly applicable and widely accepted procedure for measuring HEV emissions and fuel economy. Since the publication of J1711, the California ARB published HEV testing requirements, which are mainly based on the standard's recommendations and introduced the optional zero evaporative standard, which is a compliance requirement for partial zero-emission vehicles.

Fuher and his colleagues played a leadership role in developing a standardized protocol to demonstrate zero fuel evaporative emissions capability. They worked with engineers across the automotive industry and with the

California ARB to develop the fuel system test rig concept, the dry rig subtraction concept, and the protocol to measure representative permeation of engine compartment components. After agreements were reached between industry and the ARB, Fuher wrote the standardized test protocol, published by ARB in November 2001 as "Manufacturers Advisory Correspondence #2001-03."

The SAE/InterRegs Standards and Regulations Award for Young Engineers was established two years ago as a way to reward and encourage the participation of engineers under the age of thirty-five in developing standards that reduce emissions or improve safety of automobiles.

"While public activism is often seen as the driving force behind environmental improvement, I am gratified that SAE and InterRegs, Ltd. co-sponsor this award to endorse the engineering side of environmentalism, which I feel is where the real work is being done. The groundbreaking efforts of the HEV task force and the publication of a clear and universal standard have helped to pave the way to the development and production of HEVs, which hold the promise of reduced emissions and improved fuel economy over conventional vehicles."

Fuher is quick to credit his years at ME for the education he received.

"On North Campus, I was surrounded with highly motivated students, renowned faculty, and state-of-the-art resources. I gained a solid engineering base at Michigan, which provided me with confidence and skills for my years ahead at Ford. Spending four years in Ann Arbor also fostered in me a deeper appreciation for human diversity, which I feel is an essential leadership value in today's corporate world."

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