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Testing Equipment Puts Clemson's Automotive Engineering Graduate Program in a Class by Itself

CLEMSON –Major Automotive Testing and Research equipment valued at nearly \$10 million for the automotive engineering graduate program in Clemson University's International Center for Automotive Research (CU-ICAR) gives students and faculty access to a unique world-class laboratory. Several companies that are worldwide leaders in their respective specialties made in-kind gifts totaling \$2.3 million to make the equipment purchase possible. The equipment includes a MTS seven-post shaker unit with a Weiss climate chamber, a FEV engine dynamometer, a Renk chassis dynamometer, and a state-of-the-art coordinate measurement machine from Carl Zeiss and J&H Machine Tool.

Tom Kurfess, the BMW Chair in Manufacturing at Clemson and director of the Carroll A. Campbell Graduate Engineering Center which will house the automotive engineering program when the building is complete next year, said these tools make a testing and diagnostic platform like no other.

"I don't know of another university in the country – maybe in the world – that has this combination of equipment under one roof," he said. "Clemson students and faculty are fortunate indeed. We are very excited."

The equipment manufacturers are the newest [supporters](#) of the automotive industry to join the CU-ICAR team that includes BMW, Michelin, Timken, and SAE.

MTS Systems Corporation, headquartered in Eden Prairie, MN, has more than four decades of ground vehicle testing expertise, providing full-vehicle, system and

component-level testing solutions for a broad spectrum of vehicle development applications. Additional information on the company is available at www.mts.com.

Germany-based **Weiss** is a major producer of standard testing chambers and systems for environmental simulation worldwide. The product range comprises temperature and climate testing systems as well as test systems for simulated exposure to weather, temperature shock, corrosion and for long-time testing in various test chamber volumes. For more information, visit the company's web site at www.wut.com.

FEV is an independent engine and powertrain systems research, design and development company, headquartered in Aachen, Germany. Globally, it provides complete concept-to-production support to the transportation industry, commercial engine manufacturers and the emerging hybrid and fuel-cell industries. The company designs, prototypes and develops advanced gasoline-, diesel- and alternative-fueled engines, as well as advanced vehicle powertrain concepts, electronic control systems and hybrid-electric vehicles. FEV also is a global supplier of advanced test cell, instrumentation and test equipment. Additional information is available at www.fev.com.

Renk Test System with headquarters in Augsburg, Germany along with their US operation, **Renk Test Systems Corporation** located in Mooresville, Indiana design and build turnkey test systems for research/development, production and quality assurance. Their activities focus on automotive, railway and aerospace industries. The company's web site is www.renk.de

Carl Zeiss IMT Corp., founded as a workshop for precision mechanics and optics in the German city of Jena in 1846, is a global leader in the optical and optoelectronic industries. The company's headquarters are located in Oberkochen, Germany. Carl Zeiss offers a spectrum of leading-edge solutions and products for semiconductor and optoelectronic technology, life sciences and health care, eye care and industrial applications. More information is available at www.zeiss.com.

J&H Machine Tool Specialty, Inc., based in Hartland, WI, is a manufacturing representative firm providing industry with high-quality components for assembly, automation and machining. The company's web site is www.jhmachinetool.com.

CU-ICAR equipment consultant George Trask, who coordinated the purchase, praised the companies for their generosity and for what their involvement means to CU-ICAR.

“These names are recognized throughout the automotive industry for their quality and commitment to excellence,” he said. “Their combined support of CU-ICAR will be of great benefit to our students, and it also serves as a message to other potential industry partners that this program has the support of industry leaders.”

Unique funding support

Just as the equipment is unique, so is the funding process that made it possible. South Carolina legislation provides state funds to match private dollars for higher education research infrastructure. In this case, the equipment manufacturers donated a portion of the cost, which Clemson was able to utilize as matching funds.

“This innovative legislation – the South Carolina Research Infrastructure Bond Act -- leverages and enhances private support for higher education,” Kurfess said. “Through the generosity of the manufacturers and the vision of the South Carolina legislation, we are able to provide our research teams with about \$9.6 million worth of equipment for approximately \$5 million. That is true investment in education.”

“We have been very gratified by the response of the automotive industry to CU-ICAR, and we anticipate that as we tell the story of this outstanding public-private partnership that focuses on both education and economic development, there will be other companies who will want to join the CU-ICAR team. They will be most welcome,” Kurfess added.

Similar legislation, the South Carolina Research Centers of Economic Excellence endowed chairs program, also provides state education lottery funds to match private funding to attract top-flight faculty. The CU-ICAR graduate program has four such chairs, including Kurfess.

The Campbell Graduate Engineering Center is the focal point for academic research and technology transfer in support of the automotive industry and offers M.S. and Ph.D. programs in automotive engineering with emphasis in systems integration. Facilities for full-scale vehicle and component testing are integral to the program.

Clemson University Vice President for Research and Economic Development Chris Przirembel noted that the potential for the presence of the engine test cell equipment in the CGEC has already contributed to the Timken Company announcing a relocation of its power train group to the CU-ICAR campus, bringing high-paying new jobs to the Upstate. This equipment and these facilities will also bring automotive suppliers and motor sports companies to the CU-ICAR campus for testing and research purposes.

“This unique laboratory is very impressive,” Przirembel said. “Students conversant with this technology will be invaluable to the industry.”

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