Case Western Reserve University Names First Maltz Professor in Energy Innovation

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Former leader of European energy initiatives to continue work on wind turbines in Northeast Ohio

Case Western Reserve University has announced the appointment of Mario Garcia-Sanz as the inaugural Milton and Tamar Maltz Professor in Energy Innovation at the Case School of Engineering.

Garcia-Sanz has been professor and head of the Control, Energy and Space Technology Research Group at the Public University of Navarra, Spain. He has directed the design and control of wind turbines for several European projects.

"Mario is a wonderful new member of our energy team. A world leader in control technology and turbine innovation, he’s going to be a tremendous asset to the university as well as to the region as we look to harness wind energy to fuel our local economy," said Norman C. Tien, dean and Nord Professor of Engineering at the Case School of Engineering.

In his research, Garcia-Sanz focuses on bridging the gap between fundamental and applied research in advanced control and systems engineering, with special emphasis in energy innovation, wind energy, space, environmental and industrial applications.

"I'm excited to be at Case Western Reserve University and at the forefront of North America's new energy economy," said Garcia-Sanz, "Northeast Ohio is the ideal setting to explore new wind energy technologies with Lake Erie's untapped potential for off-shore wind and the state's existing infrastructure in manufacturing, transportation and storage systems. I'm confident we will further develop this area as one of the nation's leading centers in energy innovation with the support of the Maltz Family Foundation, the university and many other strategic partners."

The Milton and Tamar Maltz Professorship in Energy Innovation, the university's first endowed professorship in energy, was established in 2008 with a $2 million grant from the Maltz Family Foundation of the Jewish Community Federation of Cleveland.

As an anchor of the new Great Lakes Energy Institute, the professorship serves as the cornerstone for the university's energy program and will provide leadership for the program's academic and research nucleus.

"The appointment of this chair demonstrates Case Western Reserve's commitment to energy innovation," said Milton Maltz, president of the Maltz Family Foundation. "Energy conservation and innovation must be a collaborative effort, and we are thrilled that the Foundation's grant has allowed the university to bring world-class talent to the Great Lakes Energy Institute."

Since 1998, Garcia-Sanz has worked with M. Torres Ltd., leading many projects on large multi-megawatt, variable-speed, multi-pole wind turbines design and control; dynamic control of wind farm grid interaction; water desalination systems using renewable energy; and parallel kinematics and advanced robots for carbon fiber manufacture for the aerospace and wind energy industry, among others.
More About Mario Garcia-Sanz

Garcia-Sanz received his doctorate in systems and control engineering from the University of Navarra, Spain, in 1992. He was a research engineer at Centro de Estudios e Investigaciones Técnicas de Guipúzcoa (CEIT) Research Center from 1988 to 1995 and held appointments at the Public University of Navarra—first as an associate professor with tenure (1995) and then as a full professor (2007).

In addition, he has held visiting professorships at the Control Systems Centre, University of Manchester Institute of Science and Technology (UK, 1995); Oxford University (UK, 1996); the NASA Jet Propulsion Laboratory (California, 2004); at the European Space Agency’s European Space Research and Technology Center (The Netherlands, 2008); and Case Western Reserve University (Ohio, 2009). He served as NATO Research and Technology Organization lecture series director and as a member of the International Federation of Automatic Control technical committees on robust control and aerospace control.

Garcia-Sanz is well known for his research in the area of quantitative feedback theory (QFT) robust control, where he has been published more than 120 times in journals and at conferences. He has led more than 30 projects for industry and holds numerous industrial patents, including:

- QFT robust control of multiple spacecraft flying in formation
- QFT robust control for formation flying satellites
- Control systems for spacecraft formations with on-off nonlinear thrusters
- Control of satellites with large, flexible appendages
- Fault detection systems for wind turbines
- Control of electrical power systems and fault detection
- Wastewater treatment plant control systems design
- Adaptive control of heating systems
- Reliable control of uncertain systems
- Control problems of tele-manipulators
- Quantitative robust control of nonlinear, multivariable, distributed and uncertain systems for space, environmental and industrial applications
- Darwin spacecraft mission
- Automatic loop-shaping of QFT controllers

He was awarded the 1995 Institution of Engineering and Technology (formerly the Institution of Electrical Engineers) Heaviside Prize (UK) and the 2001 Banco Bilbao Vizcaya Argentaria SA researcher prize (Spain) for his work in advanced control and applications. He was recognized for the best research project in one of the national research and development programs (2000-2003) and is a four-time winner of the best paper honor at the annual Spanish International Federation of Automatic Control Congress (2001 to 2004).

Garcia-Sanz is co-author of the book *Quantitative Feedback Theory: Theory and Applications*, published by Taylor & Francis (2006), and has served as subject editor of the *International Journal of Robust and Nonlinear Control*.

He also has been a guest editor on four occasions: three times for the *International Journal of Robust and Nonlinear Control*, as an expert on robust frequency domain (Special Issue June 2003), quantitative feedback theory (Special Issue January 2007), and wind turbine control (Special Issue 2008). In addition, he was guest editor for the *Institution of Engineering and Technology* (formerly the Institution of Electrical Engineers) *Control Theory and Applications* as an expert on cooperative control of spacecraft flying in formation (Special Issue March 2007).