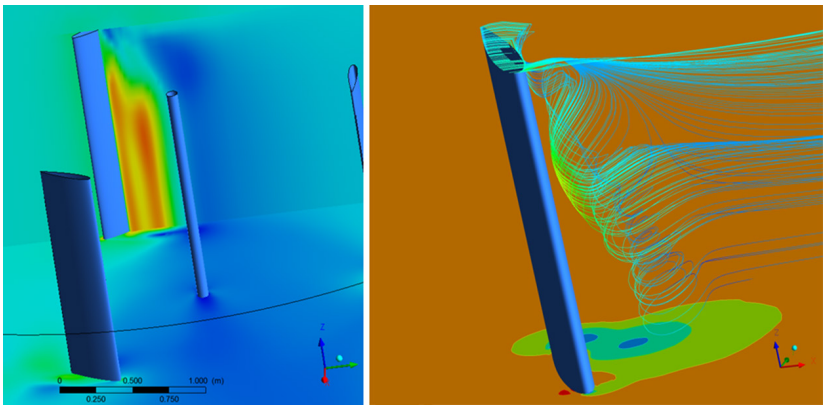
GREEN ENERGY DESIGN AT THE UNIVERSITY OF LEEDS

By *ANSYS Advantage* Staff



At the University of Leeds, Professor Mohamad Pourkashanian and his team used ANSYS CFD and ANSYS DesignXplorer to optimize the design of a vertical-axis wind turbine.

At the U.K.'s University of Leeds, Professor Mohamad Pourkashanian heads the Energy Technology and Innovation Initiative (ETII), which focuses on engineering innovations that help to achieve more efficient, greener energy production.

Research areas at ETII range from carbon capture and storage to wind energy, green transport, fuel cells and bioenergy. Because many of these topics rely on the science of computational fluid dynamics (CFD), ETII has built special expertise in this area. In fact, it has been named a Center of Excellence in Computational Fluid Dynamics by the European Union.

Pourkashanian and other researchers at ETII employ ANSYS fluid dynamics solutions for their leading-edge studies, including optimization for wind turbines and fuel cells. As advanced users of ANSYS software, researchers there have worked with ANSYS to develop new modeling capabilities in areas such as NOx pollutant formation and oxy-fuel combustion. The software's use has resulted in many patents, along with more than 150 journal and conference papers.

According to Pourkashanian, CFD solutions from ANSYS deliver the accuracy and fidelity needed to support advanced research, along with the ease of use required by students. At ETII, more than 200 master's and doctoral students use ANSYS tools, as do about 75 students from other departments and schools at the University of Leeds.

"ANSYS software combines the ease and reliability of commercial software with the rigorous quality standards and flexibility required by our research activities," says Pourkashanian. "We value ANSYS software because of its fast, high-quality mesh generation and manipulation, advanced CFD solver, and the ease with which we can integrate our in-house models into the solver. These features allow us to apply our studies to complex industrial problems immediately after validation. Such facilities are essential for both fundamental research advancement and the development of new industrial technologies." Pourkashanian cites as an example the integration of new optimization tools and the CFD solver in the same software environment, opening the door to new, innovative solutions.

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Making the Grade

Engineers need advanced skills to tackle today's complex, multidisciplinary problems. By partnering closely with engineering schools, ANSYS helps ensure that the next generation of engineers is competent to tackle real-world problems in the highest-impact manner. In addition, at labs around the world, ANSYS fuels groundbreaking academic research that has the potential to shape the future.