Tamer SEBEAY

Institution: IComp, University of Limerick
Academic Mentor: Professor Noel O'Dowd
Commercial Partner: Wood Group Ltd
Commercial Mentor: Dr Adrian Connaire

Tamer is an expert in the field of structural design and analysis using composite materials. His h-index is approaching 15 with more than 40 publications to his name.

His Masters degree was awarded from Zagazig University in Egypt; and his PhD was obtained at the University of Girona in Spain.

After this PhD, Tamer joined Qatar University as a postdoctoral fellow and later as an assistant professor of applied mechanics. There, he developed his experience in the use of composites in the oil and gas industry – and lightweight automotive structures.

Tamer is on leave from his permanent position as an associate professor of design and production engineering in Zagazig University.

See case study overleaf

Professor Noel O'Dowd

Professor O'Dowd is Chair of Mechanical Engineering at the University of Limerick. He has strong experience in composite materials and is a pioneer in the application of micro-scale models to material design. He has published over 120 web-of-science journal articles in computational mechanics and mechanical behaviour of materials. His work on constraint-based fracture mechanics has been cited over 1,000 times. Overall, Professor O'Dowd has over 2,700 citations with a h-index of 23.

Dr Adrian Connaire

Dr Connaire is Technology Manager at Wood Group, Ireland, and is a Chartered Member of Engineers Ireland and the Institute of Marine Engineering, Science and Technology. His experience covers umbilical cables, flexible pipe systems, top-tensioned risers, steel catenary risers, drilling risers, mooring systems and coupled analysis of riser/mooring systems. As well as having been lead engineer, project manager or consultant on many detailed feasibility design projects, he has been involved at a senior level in many of Wood Group's joint industry projects.

IComp, University of Limerick

IComp was established in 2010 under the EI/IDA Technology Centres initiative and is hosted at the Bernal Institute, UL. It has facilities for composites manufacturing, including autoclave and automated tape placement. High-resolution imaging equipment, including scanning electron microscopy (SEM), 3D microCT X-ray and in-situ SEM-test capability is also available.

Wood Group Ltd

Wood Group works on oil platforms, factories, power stations, wind farms and refineries. It has designed over 600,000 km of subsea pipelines. In Galway, Wood Group engineers develop and support Flexcom, which is a finite-element based structural analysis software underpinning the engineering design of offshore projects.

Tamer's project

The need to reduce the fuel consumption in transportation led to the use composites for structural application. The light weight and the high specific strength are advantages of polymeric composites.

In addition, thermal and chemical stabilities help to introduce composites in oil and gas pipelines.

The technology is still new in energy applications and has the potential to grow.

Within a few years, composite pipes may be able to replace steel pipes. To reach this point, scientists need to spend more time and effort on solving problems related to installation as well as in-service conditions of composite pipelines.

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