CompoSIDE and Professor Stephen Tsai in partnership to seek industrial collaborator for demonstrating the groundbreaking new Trace-based scaling composites theory

Cowes, UK – Thursday 21st May 2015: CompoSIDE®, the innovative and game changing web based composites design engineering solution, and Professor Research Emeritus of Stanford University Stephen Tsai are seeking an industrial pilot project to further demonstrate the benefits of the Trace-based scaling approach to composites design.

By utilising CompoSIDE's uniquely powerful functionalities, Professor Tsai's team at Stanford and the CompoSIDE team have demonstrated that his innovative scaling approach to composites design can be applied to 3D composites structures to develop composites designs within 2-3% accuracy margins without the need for extensive and costly modelling and material testing.

Having used FESpace® and LAMINASpace® within CompoSIDE to test Trace-based scaling, the next stage is to work with an industrial partner with a composites pilot project to benchmark the theory in the field. Professor Tsai explains: "CompoSIDE is a unique solution that offers both the power and flexibility to extensively validate our theory against traditional FE modelling for 3D composites structures.

"The extensive evaluation performed by CompoSIDE shows Trace-based scaling models to have strong correlation with the FE results. We are now seeking to demonstrate the commercial benefits with a project featuring a highly loaded structure that has weight and costs challenges so we can confirm the potential of this new approach."

CompoSIDE Joint Managing Director Julien Sellier takes up the story: "The implications of this work are far-reaching. Composites offer a unique solution to many highly-loaded applications. However, design, test and development costs and risks are often perceived to be barriers for adopting this technology.

"Trace-based scaling removes many of the complexity and cost barriers to using composites. By incorporating the approach within CompoSIDE, we make the theory – and composites solutions – much more accessible to designers across all market sectors."

The result will be lower material development and qualification costs, a reduction in preliminary and detailed design costs and improved quality. Composites products and applications can also benefit from a faster time to market.

According to Professor Tsai's theory of universal stiffness and strength for trace-based composite laminates, trace-normalised stiffness components for all modern carbon-polymer composites laminates converge to nearly identical values. This universal stiffness means linear scaling, such as that found in a homogenous material, can be applied to the design.

As a result, only a few simple tests are required to characterise composites materials. This approach simplifies composites design to the extent that it is similar to designing with aluminium.

Tsai's breakthrough means designers and engineers now have a new framework for design, testing and manufacturing validation. It can deliver stronger, lighter, lower cost and more reliable composite structures with a simpler and faster methodology.

"An invariant-based framework, trace-based composite material characterisation and laminates homogenisation are the fundamental elements of this new approach. It is simple and yet very powerful, representing a breakthrough in composites design," highlights Radek Michalik, Joint Managing Director of CompoSIDE.

"Using CompoSIDE, we've taken the evaluation to the next level by applying Trace-based scaling to curved and flat panels. The results were excellent as the correlation was well within acceptable limits. This gives us the confidence to deploy Trace-based scaling alongside the traditional approach on an industrial project."

Sellier concludes: "To fully test the benefits and market applicability using a pilot project, we would like to hear from firms in the early stages of developing a composites product or application. By working with Professor Tsai's Stanford team and CompoSIDE, our industrial partner will have the opportunity to benefit from cost savings, time reductions, quality improvements and faster time to market."

Interested in participating? Contact Julien Sellier directly on +44 (0) 1983 242 677 or by email on julien.sellier@composide.com.

Information for the media

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About CompoSIDE
CompoSIDE is an integrated suite of cloud-based design engineering modules and data management tools that significantly reduce development time and cost for composite applications. Our solution can reduce our clients' design time by up to 75%, and cut up to 40% from project costs. Unlike existing software products, we focus on delivering a secure, web-based collaborative solution that integrates seamlessly with our clients' existing systems and quality standards. www.composide.com

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About Professor Stephen Tsai
Professor Research Emeritus of Aeronautics and Astronautics at Stanford University, Stephen W Tsai, has been active in the field of composites since 1961. His research underpins several formulas and failure criteria used daily in the composites industry and in commercial software, to which he also lends his name. A prolific author and founder of the *Journal of Composite Materials,* Professor Tsai has just completed a book with Prof. Jose Daniel D. Melo: *Composite Materials Design and Testing – Unlocking Mystery with Invariants* which provides the foundation of trace-based scaling.