

Paris, France, January 7, 2013

Creation of the Chair Centrale Nantes – ESI

ESI is the pioneer and world-leading solution provider in virtual prototyping.

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Connect with Centrale Nantes



To foster research on Advanced Numerical Methods for the Simulation of Manufacturing Processes

Paris, France – January 7, 2013 – [ESI Group](#), pioneer and world-leading solution provider in [Virtual Prototyping](#) for manufacturing industries, announces the launch of a 6-year joint research program between [Centrale Nantes](#) and [ESI](#), for which an Endowed Chair has been created. Both organizations will conduct advanced research on the topics of Model Reduction, Advanced Welding Simulation, and Thermoplastic Welding. The official inauguration will take place on January 21, 2014 at Centrale Nantes.

The research scope has been designed to solve current and future problems linked to advanced multi-material design and optimization strategies. “Centrale Nantes and ESI are joining forces to propose solutions that will raise the competitiveness of the French manufacturing industry and the country’s higher education alike,” says **Dr Vincent Chaillou**, COO, ESI Group.

[ESI Group](#) will be financing this 6-year collaborative research project, focusing on Model Reduction, Advanced Welding Simulation and Thermoplastic Welding.

Pr. Francisco Chinesta, Professor of Computational Mechanics at Centrale Nantes (France) and titular of the [EADS Foundation Chair](#) for the past four years, will be appointed “Centrale Nantes – ESI Chair”. Most specifically, he brings years of expertise in Model Reduction Strategies and advanced modeling and simulation of materials and processes. **Dr Jean-Louis Duval**, Platform Product Director, ESI Group, will oversee Model Reduction research operations on ESI’s side. **Dr Yannick Vincent**, Welding and Assembly Solution Product Manager, ESI Group, will coordinate the research on numerical simulation of welding processes, while **Dr Laurent Dufort**, Composites Manufacturing CoE Manager, ESI Group, and **Dr Christophe Binetruy**, from Centrale Nantes’ Materials, Processes and Composites department, will jointly lead the research on thermoplastics.

For Model [Reduction](#) Strategies, both organizations will work towards the development of virtual charts for non-linear models involving multiple

parameters, by using the Proper Generalized Decomposition (PGD method). These virtual charts represent complex mathematical relationships at a glance, e.g. in the form of tables that can be easily visualized. They will be integrated in [ESI](#) software to deliver real time simulation results, optimization, and reverse analysis, with the aim to predict even faster how design and manufacturing changes (geometries, materials, processes) will affect a finished product's performance.

For Advanced Welding Simulation, research will investigate [Friction Stir Welding](#) (FSW) processes, which enable the joining of dissimilar materials (such as steel and aluminum) in solid state. Another research objective will be to improve modeling techniques for additive manufacturing, as part of the welding process.

Today, out-of-autoclave systems based on [thermoplastic](#) materials are seen as a tangible solution to decrease process cost in the aeronautic and automotive industries. A research team will investigate this area, by focusing on the advanced simulation of automatic tape placement.

For students at [Centrale Nantes](#), this initiative provides an opportunity to conduct teaching and research on topics that are directly in line with current and future industrial projects. It will finance four PhD theses around the above research projects, while the Research Institute of Civil Engineering and Mechanics of Centrale Nantes will strengthen its team with an additional research position in the field of Computational Mechanics.

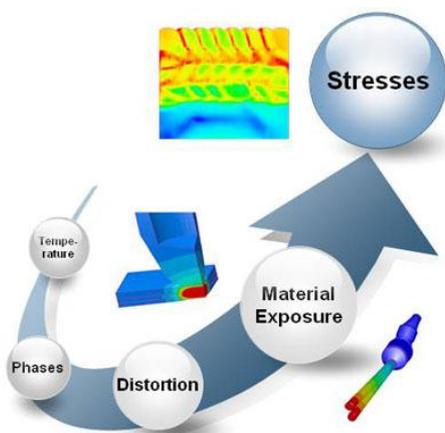


Image: Challenges encountered during the numerical simulation of welding processes (left); and example of part of a virtual chart as used on a tablet (right)

For more information about Centrale Nantes, please visit <http://www.ec-nantes.fr>

For more news or information about ESI's Welding solutions, please visit www.esi-group.com/welding-assembly

For more news or information about ESI's Composites Manufacturing Simulation solutions, please visit www.esi-group.com/composites



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About Centrale Nantes

[Centrale Nantes](#) is a member of the Écoles Centrales Group (Lille, Lyon, Marseille, Nantes and Paris) and trains Centrale engineers for industry. Founded in 1919, Centrale Nantes today has 2050 students on its 16-hectare campus: 1340 engineering students, 200 engineering apprentices (ITII), 240 PhD students and 270 Master students. Centrale Nantes trains engineering, master and PhD students at the forefront of scientific and technological development and introduces them to the best managerial practices. For further information: www.ec-nantes.fr

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Centrale Nantes– Media Relations

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About ESI Group

[ESI](#) is a pioneer and world-leading provider in Virtual Prototyping that takes into account the physics of materials. [ESI](#) boasts a unique know-how in Virtual Product Engineering, based on an integrated suite of coherent, industry-oriented applications. Addressing manufacturing industries, Virtual Product Engineering aims to replace physical prototypes by realistically simulating a product's behavior during testing, to fine-tune fabrication and assembly processes in accordance with desired product performance, and to evaluate the impact on product use under normal or accidental conditions. [ESI's](#) solutions fit into a single collaborative and open environment for End-to-End Virtual Prototyping. These solutions are delivered using the latest technologies, including immersive Virtual Reality, to bring products to life in 3D; helping customers make the right decisions throughout product development. The company employs about 1000 high-level specialists worldwide covering more than 40 countries. [ESI Group](#) is listed in compartment C of NYSE Euronext Paris.

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