

## Press Release

### ADVANCED COMPUTATIONAL TOOLS FOR TURBOMACHINERY WITH THE EUROPEAN PROJECT EXPERTISE

**15 international young researchers at work to improve virtual testing of turbines, useful in many sectors, from aircraft engines to hydrocarbons extraction and energy production.**

Ostrava, 25 April 2018 – 15 Ph.D. students from all over the world are embarking on 15 parallel and complementary research projects with the ambitious goal of defining a virtual testing system for turbomachinery, simulating the entire machine and not single components as is usually done. This is the objective of the EU project EXPERTISE – models, EXperiments and high PERFORMANCE computing for Turbine mechanical Integrity and Structural dynamics in Europe, coordinated in the Czech Republic by professor Tomáš Kozubek from IT4Innovations National Supercomputing Center, involving a research consortium of 11 beneficiaries and 9 partner organizations from 8 countries.

Among disruptive technologies for energy and mobility, turbines will play a major role, and the European research community needs to prepare for the upcoming challenges.

Simulation is crucial when designing turbomachinery, which is used in many applied fields such as energy production, gas extraction, engines for civil and military aeroplanes and ships, and turbochargers.

Rotating elements are critical because high rotation speed can damage them and threaten the structural integrity of the entire machine. For an aeroplane engine, the worst-case scenario could include human injury or death.

This is why design and certification of components is a complex and expensive process, which requires massive experimental testing. The use of efficient and accurate simulations can considerably decrease development costs and improve final project reliability, so reducing time to market.

EXPERTISE plans to reach this ambitious goal by having 15 individual projects performed by 15 ESR- Early Stage Researchers (PhD students), selected and supervised by Consortium researchers. The exchange between these young researchers involved in the project will contribute to the creation of a new generation of international researchers used to tackle complex challenges by working in a team. Moreover, they will benefit from multidisciplinary training in the fields of structural mechanics and parallel computation, developing their competence to contribute to the demanding tasks in numerical simulation for mechanical projects and design.

The Research Consortium for the Expertise project is composed of 11 Beneficiaries and 9 partner organizations:

Expertise Beneficiaries	Expertise partner organizations
Politecnico di Torino (Italy, project coordinator)	Samara University (Russia)
Imperial College of Science Technology and Medicine (United Kingdom)	Rolls-Royce PLC (United Kingdom)
Universitaet Stuttgart (Germany)	NEC Deutschland GmbH (Germany)
University of Oxford (United Kingdom)	Doosan Škoda Power (Czech Republic)
Ecole Centrale de Lyon (France)	SAFRAN Aircraft Engines (France)
Middle East Technical University (Turkey)	General Electric Deutschland Holding (Germany)
Technische Universitaet Muenchen (Germany)	Nuovo Pignone Tecnologie srl (Italy)
Barcelona Supercomputing Center (Spain)	SAFRAN (France)
VŠB – Technical University of Ostrava, IT4Innovations (Czech Republic)	University of Bristol (United Kingdom)
Cray UK Limited (United Kingdom)	
Mavel AS (Czech Republic)	

More information on the project website: <http://www.msca-expertise.eu/>

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