

PRACE Supports Industry



THE PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

Wherever physical effects or chemical processes feature prominently in industrial production, computer simulations can simplify R&D and help save time, energy and costs. That is why PRACE supports European entrepreneurs by providing high performance computing resources.

www.prace-ri.eu

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PRACE, the Partnership for Advanced Computing in Europe, provides access to Europe's world-class High Performance Computing research infrastructure not just for scientists and academic researchers, but for industry as well. Companies can apply for PRACE Project Access and PRACE Preparatory Access via the same Calls for Proposals as academic scientific projects or they can be involved in an academic project as a collaborator, under the condition of Open R&D (www.prace-ri.eu/industry-access). As of July 2015, 35 companies already benefitted from the resources offered by PRACE.

PRACE also provides access to HPC resources specifically tailored to small and medium-sized enterprises (SMEs) as part of the SHAPE programme (SME HPC Adoption Programme in Europe). The SHAPE programme was launched in 2014 and as of July 2015, 21 innovative SME projects applied to receive computing resources on high-performance computers. Several of these projects began their research with resources awarded to them via PRACE Preparatory Access.

Wind and Wave Energy

The latest success story from the SHAPE programme involves Albatern (www.albatern.co.uk/), a Scottish company that produces WaveNET: giant three-armed, squid-like steel structures that generate electricity in the sea from the energy of wave motion. Up to three "SQUID units" can be interconnected via the free-moving "tentacles" in a honeycomb formation. The floating structure moves like a Mexican wave, converting the mechanical energy of the waves first into hydraulic energy and finally into electrical energy via a generator. The optimum structure for electricity generation and the hydraulic and electrical system of this energy producer were developed by Albatern with the assistance of computer simulations. The company has deployed its first power-generating system off the Isle of Muck, on the west coast of Scotland. This comprises three SQUID units with a total capacity of 22kW and will supply a fish farm with electrical power for its lighting and feeding equipment.

The Spanish company Vortex Bladeless (www.vortexbladeless.com) uses computer simulations to develop bladeless wind turbines for electricity production. Turbulence causes vibration of the upwards-stretching trumpet-like columns; the energy released is converted into electricity. The rotorless wind turbines are quieter than conventional turbines and do not pose a dangerous threat for birds.



SHAPE is the SME HPC Adoption Programme in Europe. It is a pan-European, PRACE programme supporting HPC adoption by small and medium-sized enterprises (SMEs). The programme aims to raise awareness and equip European SMEs with the expertise necessary to take advantage of the innovation possibilities opened up by High Performance Computing (HPC), thus increasing their competitiveness.

www.prace-ri.eu/shape

Award for Industrial Innovation

In November 2014, the SHAPE project run by French company Nexio Simulation (www.nexiogroup.com/index.php/en) became the organisation's second project to win the IDC Award for outstanding application of HPC. Nexio develops software that enables simulation and testing of the behaviour of electromagnetic fields – to show how the radiation from antennae on aircraft, cars or ships interacts with its carrier object, for example. As a result, new developments can be tested and optimised before and during production, thus saving costs by reducing the number of prototypes required.

The stated examples represent just a small selection from a diverse range of projects. These and other projects come from the fields of electromagnetics, aeronautics, agriculture, sailing and the naval industry, renewable energies, welding and heat transfer, and steel casting optimisation and more.



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