

## **Cobham Technical Services supplies electromagnetic design software to Siemens Wind Power**

Cobham Technical Services has been awarded a contract for its powerful Opera electromagnetic design tool by Siemens Wind Power, a leading supplier of wind turbines for onshore, offshore and coastal sites.

Fast and accurate electromagnetic simulation helps wind turbine suppliers to make breakthroughs in wind turbine design. The Siemens design team employs the Opera electromagnetic simulator from the Vector Fields Software product line of Cobham Technical Services to help it develop new generator concepts, and often runs thousands of simulations within a few hours to discover the best design solution for applications.

Opera was selected as a core design automation aid following an in-depth review of tools on the market, because of the package's speed and efficiency, and its ability to cross-couple with other software used in the overall equipment design.

When designing new wind turbine generators, wind turbine designers typically exploit the package's two-dimensional (2D) simulation capability to rapidly find 'sweet spots' in the design space. Siemens' wind turbine generators are large machines, with a large number of poles, but the fast execution of Opera 2D simulations means that the designers are free to explore new architectural concepts very thoroughly.

Opera's scripting capability allows the designers to set up thousands of simulations very swiftly. As an individual 2D Opera simulation like this runs quickly - taking perhaps 10 minutes - and the design team has a computer that can run 80 simulations in parallel, thousands of potential design solutions can be explored and compared within just a few hours. The ability to quickly assess so many design variants makes Opera an invaluable part of the design process - enabling a level of optimization that would otherwise not be possible. Following this 2D exploration, the team can then characterize the best potential design solutions using 3D simulation.

Getting to the best design solution is always a balance between performance and cost. For wind turbines in particular, there are strongly competing design goals such as generator efficiency and power output quality versus the need for compact physical size and the minimization of expensive materials such as rare-earth permanent magnets. The core benefits of using Opera for wind turbines are design excellence, combined with speed of development and the minimization of the need to manufacture costly prototypes.

"Renewable energy is a critical area of development at this point in our history - and there is an enormous demand for innovative new solutions," says Dr Kevin Ward of

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Published on Electronic Component News (<http://www.ecnmag.com>)

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Cobham Technical Services. "Seeing the Opera tool play such a role in this important field is very rewarding."

**Source URL (retrieved on 02/01/2015 - 6:34pm):**

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