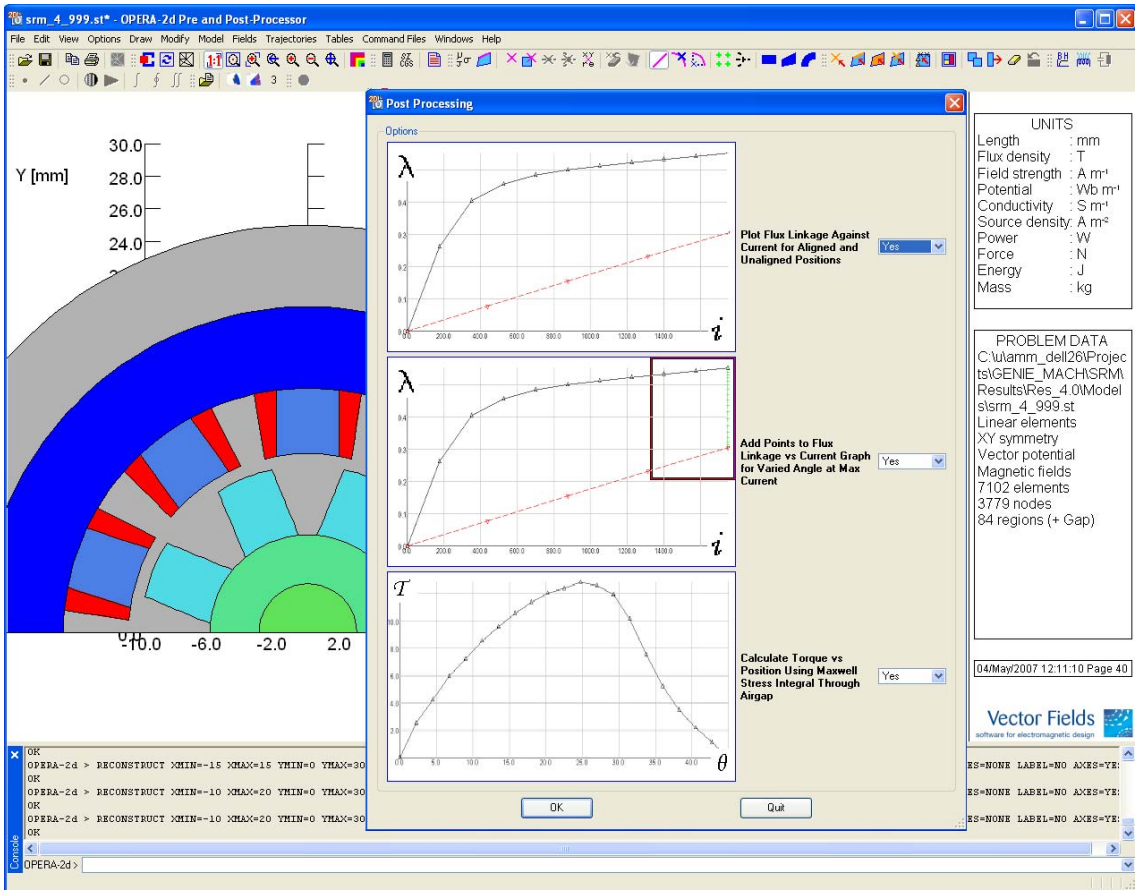
Rotating machinery software delivers radical new design productivity for motor and generator manufacturers

** ultra-fast design entry of motors and generators now available for ultimate FEA electromagnetic simulation*

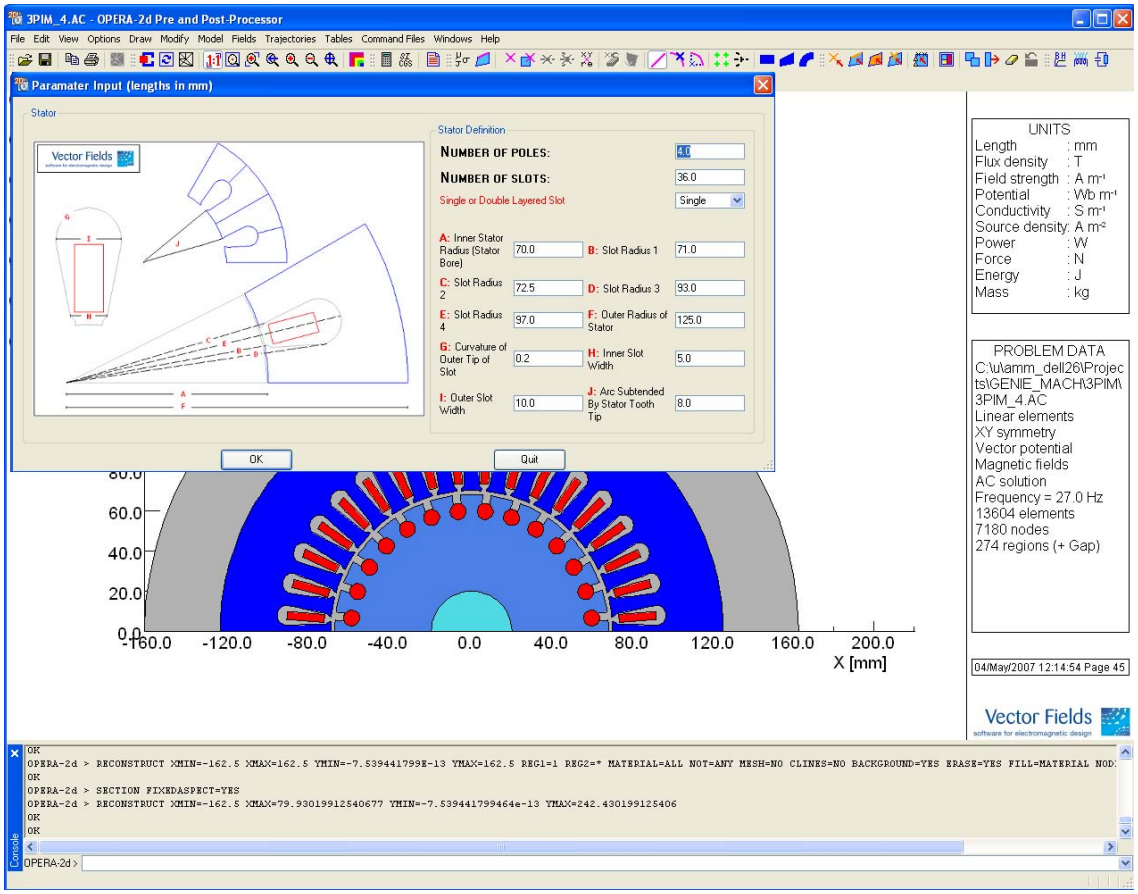
Vector Fields is announcing a breakthrough in design software for rotating electrical machinery which combines the extreme accuracy of finite-element analysis (FEA) modelling with a design entry system that allows users to create electric motor or generator models in minutes. The software — which is part of the well-known OPERA electromagnetic design tool — allows users to achieve radical new levels of design productivity and efficiency.

"Finite element techniques allow users to simulate design concepts with supreme precision and accuracy, but it can take hours to build and simulate a model of complex equipment such as a motor," says Alex Michaelides of Vector Fields. "This new software resolves the argument of whether to go for finite element software, or one of the analytic computer programs on the market, giving users the best of both worlds. It can deliver significant advantages in today's market environment. Currently, there's enormous pressure to improve energy-efficiency for instance. This new OPERA software provides a precision virtual prototyping tool that allows searching 'what-if?' investigations to be performed in minutes, to identify the design characteristics of the perfect machine."



A new electromagnetic design tool from Vector Fields provides a remarkable new level of productivity for electric motor and generator designers.

The software provides a front-end to the electromagnetic simulator that speeds design entry by means of 'fill in the blanks' dialog boxes. Users select the form of motor or generator they want to design from a list of all common types, including induction, brushless permanent magnet and switched reluctance motors, and synchronous motors or generators. Then, by simply entering a list of perhaps 10 parameters to define mechanical geometry, material properties and electrical data, the model is automatically created. For example, the parameters might include diameters of rotor, stator, and shaft, stator tooth width and the number of stator slots.



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If there are any unusual features that need to be incorporated in designs, OPERA is unique in offering users open access to the scripting codes that generate the models, and can modify them at will to create a proprietary automated design process. A library of material properties is also included in the design software for speed, and are selected by means of a drop-down menu. Again, if users employ any special material, such as an unusual grade of steel for laminations, then a new menu item can be created within minutes.

Using the scripts provided, motor or generator models can be generated within minutes Users can then simulate electromagnetic performance and view results such as the torque produced as a function of position, and the static analysis of flux linkage in the phases of the machine as a function of position and excitation. Design ideas can be trialled and optimised easily by varying the values of model parameters, or alternatively by means of an automatic optimisation tool.

One of the advantages of the OPERA tool for motor and generator design is the ability to simulate the complete drive including loads. Users have complete freedom to define the coupling to loads, including friction, load and speed dependent torques.

Vector Fields expects the package to appeal to existing users of analytic motor design programs, providing a means of performing more accurate simulations without a significant compromise in computation speed.

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