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## STAR-CCM+ and SPEED for electric machine cooling analysis

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**Abstract:**

This paper shows how two well established software programs can be used to determine the electrical machine performance and the temperature rise within the machine parts using a permanent magnet interior rotor synchronous machine as an example. Both software packages, STAR-CCM+ providing an engineering process code for solving problems involving fluid flow, conjugate heat transfer and solid stress and *SPEED* the specialized analysis tool for the design of electric machines such as motors, generators and alternators including the drive with inverters and their control, are developed by CD-adapco. In the latest versions of the 2 packages a link was established to exchange the data needed from *SPEED* to STAR-CCM+. The process is presented in more detail in this paper.

 [CWIEME\\_2012\\_MA\\_SH.pdf](#)<sup>[1]</sup>

**Author Name:**

Dr. Markus Anders

Dr. Stefan Holst

**Author Company:**

CD-adapco

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