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Flow and Thermal Analysis of a Two Pole TETV Motor using CFD

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Abstract
Ventilation studies in Motors with complicated geometry are generally carried out with analytical methods during design stage. However, analytical methods do not provide comprehensive information of flow and temperature fields inside the motor at a system level. Therefore, CFD techniques are being extensively employed by motor manufacturers to analyze motor cooling systems. In the present work, Flow & Heat transfer analysis of Totally Enclosed Tube Ventilated (TETV) motor was carried out using ANSYS CFX. The complete fluid domain was modelled and heat loss data was defined on heat generating components. The ventilation flow circuit and calculated temperatures on critical components have been studied and end winding temperatures are compared with physical test data. The CFD results were within 5% of the tested data.

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