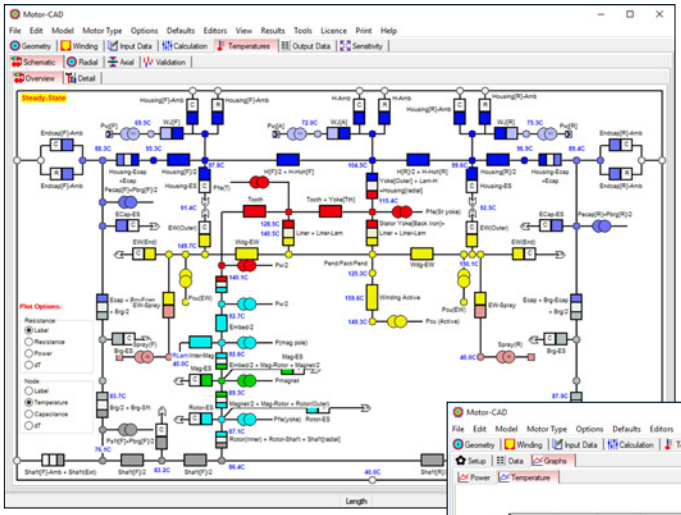
Motor-CAD Therm

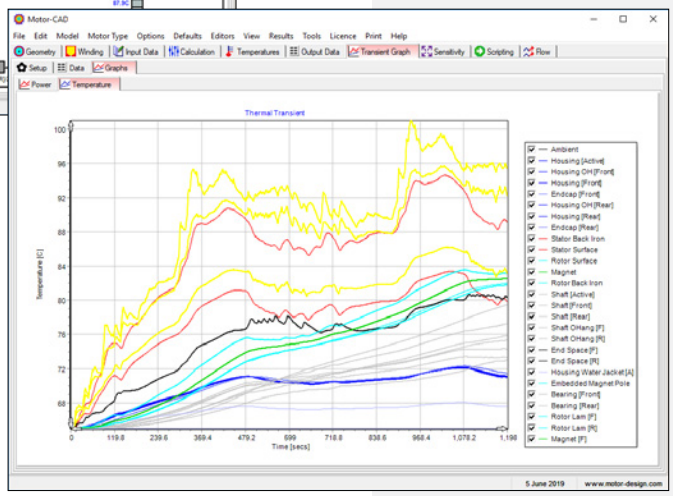
The Motor-CAD Therm module is the industry-standard tool for thermal analysis of electric machines.

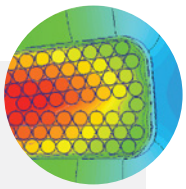
Motor-CAD Therm enables designers to calculate the temperature of the motor components in steady-state and transient operating conditions for accurate modeling of thermal behavior within seconds of calculation. Understanding the main heat transfer paths gives motor designers opportunities to significantly improve motor efficiency power output and make design decisions with confidence.

Key Features

- Calculates the temperature of the motor components in steady-state and transient operating conditions.
- Generates thermal and flow network automatically.
- Includes radial and axial heat transfer in a 3D network.
- Provides detailed visualization and calculation of the slot cross section.
- Produces all calculations with CFD, FEA and empirical correlations.
- Assists in selecting appropriate manufacturing factors with experience built into the software.
- Enables accurate modeling of thermal behavior within seconds of calculation.







Workflow

STEP 1 | SPECIFY COOLING SYSTEM

- Motor-CAD Therm lets you select cooling types, such as a water jacket or fan cooling method.
- You can define housing dimensions such as channel or fin size, and select cooling-type-dependent inputs, such as flow rate and fluid properties.

STEP 2 | SET THERMAL PROPERTIES

- Motor-CAD Therm lets you select the thermal properties for the impregnation, slot liner and housing materials.
- You can then choose the manufacturing factors, such as lamination-to-housing interface gap or impregnation goodness.

STEP 3 | CALCULATE TEMPERATURES

- When you click 'Solve', Motor-CAD Therm automatically generates an equivalent thermal network, which can be used to calculate thermal performance.
- Calculate steady-state temperature, as well as the transient temperature of the motor across a duty cycle.
- Import or iteratively solve losses with the Motor-CAD EMag and Lab modules.

STEP 4 | GENERATE OUTPUTS

- Output data gives users extensive information about the thermal model, including temperatures, the axial temperature distribution, losses, heat transfer coefficients, thermal resistances and more.