NX Advanced Thermal

Benefits

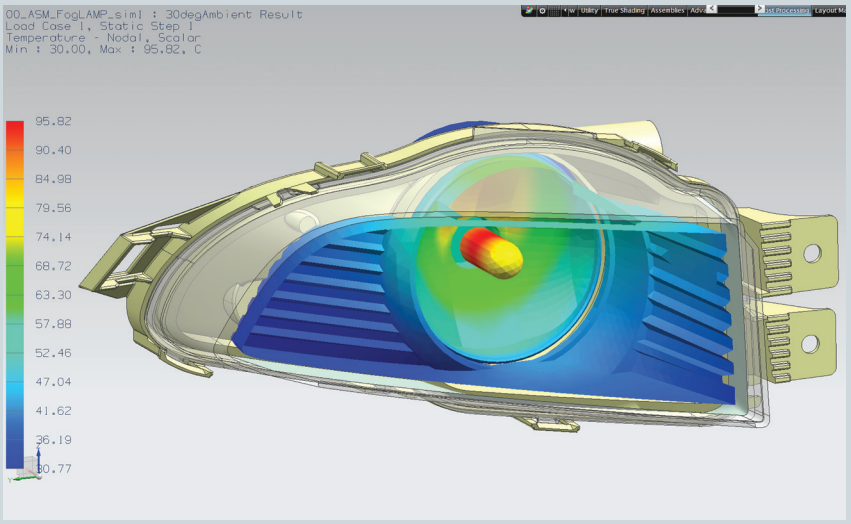
- Quickly move from NX CAD assembly to thermal simulation results
- Perform rapid what-if scenario investigations even for complex thermal analysis problems
- Reduce product design risk through high fidelity thermal simulation

Features

- Advanced heat transfer models for radiation and electric heating
- Parallel radiation solver for solution efficiency
- Advanced material models including phase change
- One-dimensional hydraulic network modeling

Summary

NX™ Advanced Thermal software extends the modeling and simulation capabilities of NX Thermal or NX Electronic Systems Cooling. The NX Advanced Thermal solver provides a wide range of methods for advanced radiation analysis, radiative and electrical heating models, advanced materials models such as phase change, charring and ablation, as well as one-dimensional hydraulic network modeling. Thermo-fluid coupling is enabled with NX Flow and NX Advanced Flow, and thermo-elastic effects can be simulated by mapping temperature results to NX Nastran®.



NX Advanced Thermal adds a rich feature set to the powerful simulation technology of NX Thermal. Intended for tackling complex thermal physics and challenging thermal management problems, NX Advanced Thermal offers the same best-in-class level of integration within the NX pre-processing, post-processing and simulation tools.

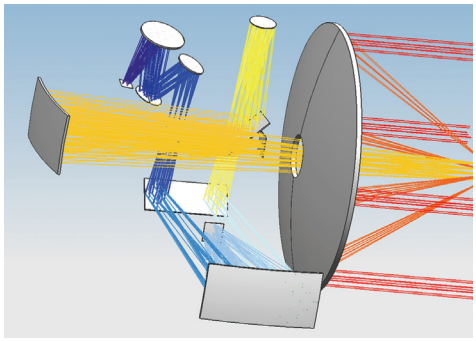
NX Advanced Thermal

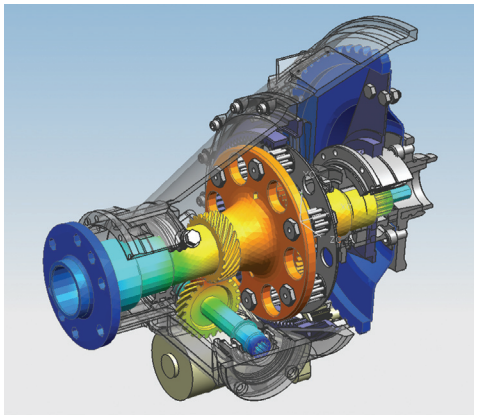
Applications of NX Advanced Thermal include simulation and analysis of a range of heat transfer problems in automotive, electronics, power, process and other industries. NX Advanced Thermal offers the following additional features on top of the NX Thermal license.

Advanced optical properties
- Specular reflectivity, diffuse and non-diffuse transmissivity, index of refraction, solid absorption
- Direction-dependent optical properties, BRDF
- Wavelength-dependent properties for nongray analysis

Advanced material models
- Ablation and charring models
- Electrical resistivity and Joule heating
- Override sets for rapid evaluation of solution scenarios

Advanced radiation methods
- Deterministic and Monte Carlo ray tracing
- Nongray multiband radiative heat transfer





Radiative heating
- Solar heating with atmospheric and albedo flux models
- Radiative source definition, collimated or diffuse, spectrum-dependent, time and spatially varying flux

1D hydraulic network modeling
- 1D flow modeling using duct networks
- Ability to simulate convection to and from 1D duct networks

Advanced thermal couplings
- Perfect contact
- One-way heat transfer
- Free and forced correlation-based convection couplings
- Convective gap couplings
- User-defined couplings

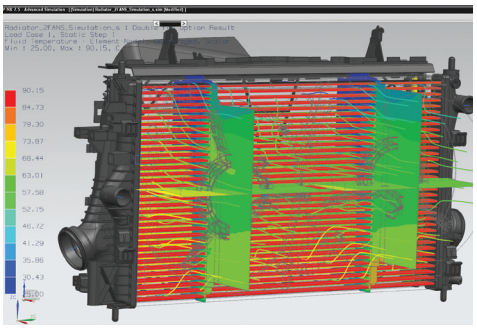
Articulation and motion modeling
- Any combination of translational motion and rotational joints
- Time-dependent radiation and thermal couplings
- Post-processing of articulated mesh

Thermal control devices
- Peltier cooler models
- Active heater controllers, PID controllers

Open architecture
- Full access to thermal system equations
- Incorporation of external models
- Enhanced solution control

Parallelized radiation solver
- Distributed memory (MPI) based parallelization for highly scalable computation of view factors and radiative heating
- Applicable to multicore, network and cluster architectures

Supported hardware/OS
NX Advanced Thermal is an add-on module in the NX Advanced Simulation suite of applications. It requires a license of NX Thermal as a prerequisite. All standard NX hardware/OS platforms are supported (including Windows, Linux and selected 64-bit platforms). Contact Siemens PLM Software for any other specific hardware/OS support requests.



You can conduct coupled thermo-flow analysis without the need to transfer data between multiple software tools.

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