

DIGITAL INDUSTRIES SOFTWARE

# Simcenter FLOEFD for Solid Edge

Facilitating rapid and accurate fluid flow and heat transfer analysis in Solid Edge

## Benefits

- Rapid and accurate simulation of fluid flow and heat transfer
- Frontloads simulation without disrupting the design workflow
- Delivers powerful parametric studies and design comparison functionality for easier what-if analysis

## Summary

Simcenter FLOEFD™ for Solid Edge® delivers the industry's leading computational fluid dynamics (CFD) analysis tool for fluid flow and heat transfer. Fully embedded in Solid Edge, FLOEFD has intelligent technology at its core to help make CFD easier, faster and more accurate. It also enables design engineers to frontload CFD, or move simulation early into the design process, allowing users to identify and fix problems earlier, saving time and money and enhancing productivity by up to 40 times.

## Underlying technology

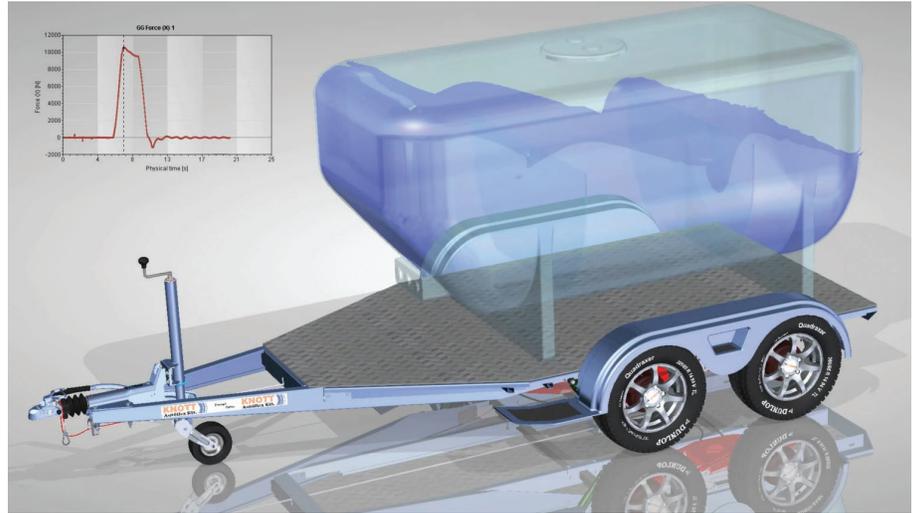
Fast and powerful, Simcenter FLOEFD for Solid Edge takes advantage of synchronous technology and uses native geometry. Users don't lose time transferring, modifying or cleaning a model, or generating extra geometry to represent the fluid domain. As soon as the model has been created in Solid Edge, it can be prepared for analysis. For effective design validation, users can create variants of their concept and analyze them immediately in Solid Edge.

**SIEMENS**

[solidedge.siemens.com](https://solidedge.siemens.com)

**Features**

- Fluid body creation from native Solid Edge CAD data
- Provides an intuitive user experience
- Guided problem setup and automated, accurate, fast and easy meshing
- Robust solver for highly complex geometry
- Provides timely feedback
- Visualization tools



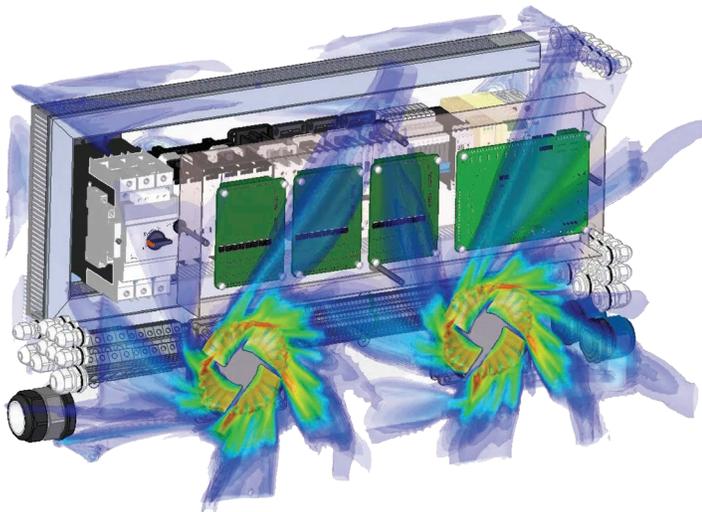
Unique SmartCells™ technology allows use of a coarse mesh without sacrificing accuracy, and a robust mesher easily captures arbitrary and complex geometry. As a result, the meshing process can be completely automated and requires less manual input.

Simcenter FLOEFD for Solid Edge also delivers engineering outputs in a timely and intuitive manner, including reports in Microsoft Excel and Word.

**The expandable power of Simcenter FLOEFD**

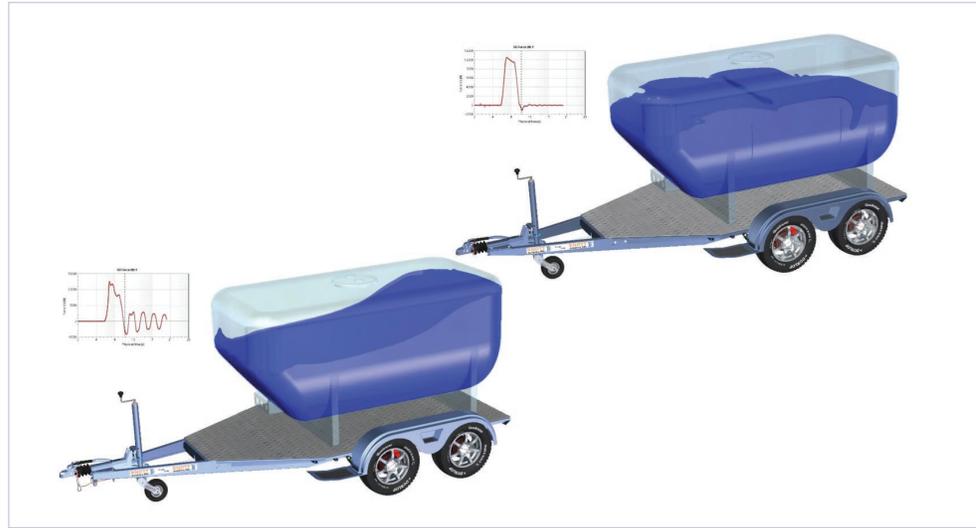
Simcenter FLOEFD is extensible with the aid of optional modules for advanced analyses, including:

- Advanced CFD module for special applications such as hypersonic flow for up to Mach 30, orbital radiation simulation such as for satellites, the NIST real gas database and gas combustion simulation
  - Heating, Ventilation and Air Conditioning (HVAC) module for designing occupied spaces, including buildings and vehicles. It includes special simulation capabilities, including comfort parameters and tracer studies, an additional radiation model and an extended database for building materials
  - Electronics Cooling module for detailed simulation of electronics systems. It includes an extended database, packaging materials and physics such as joule heating
  - Light-Emitting Diode (LED) module for all lighting-specific simulations with the Monte Carlo radiation model, and a water film model for condensation and icing simulation of water films
  - Electronic Design Automation (EDA) Bridge for importing data from EDA software, including Siemens Digital Industries, Cadence, Zuken and Altium, as well as import power and



materials maps (SmartPCB) of printed circuit boards (PCB) and definitions of thermal territories and network assemblies (Delphi model)

- Structural module specifically designed for Finite Element Analysis (FEA) of electronics cooling cases, leveraging the SmartPCB FE model; allows for a direct use of temperature and pressure loads from the CFD simulation all within one simulation run
- Extended Design Exploration module for multi-parameter optimizations leveraging the advanced HEEDS Sherpa solver
- Electromagnetic (EMAG) module for simulation of low frequency electromagnetic effects of Alternating Current-induced (AC) ohmic and iron losses, as well as permanent magnets and the direct coupled CFD simulation, in order to consider these losses in the thermal simulation of components such as in transformers, bus bars and induction heaters
- Power Electrification module for more accurate thermal simulation of batteries with Equivalent Circuit Model (ECM) and Electrochemical-Thermal Coupled Model (ECT)
- T3STER Automatic Calibration module for the design of calibrated thermal semiconductor models from Simcenter T3STER measurements such as integrated circuits (IC) and insulated gate bipolar transistors (IGBT)
- BCI-ROM + Package Creator module, which comprised of the Boundary Condition Independent Reduced Order Model (BCI-ROM) feature, for extracting dynamic compact thermal models from a 3D model; thermal netlist extraction, for converting a 3D model into an electrothermal model for Simulation Program with Integrated Circuit Emphasis (SPICE); and package creator tool, for the rapid creation of thermal models of electronic packages



- Electronics Cooling Center module, offers the ultimate solution for electronics cooling, includes the BCI-ROM + Package Creator, EDA Bridge, Electronics Cooling and T3STER Automatic Calibration modules and more

**Extending value**

The Solid Edge portfolio is an integrated set of powerful, comprehensive and accessible tools that advance all aspects of the product development process. Solid Edge addresses today's complexity challenges with automated digital solutions that cultivate creativity and collaboration.

By harnessing the latest innovative technologies in mechanical and electrical design, simulation, manufacturing, publications, data management and cloud-based collaboration, Solid Edge dramatically shortens time-to-market, provides greater production flexibility and significantly reduces costs with its collaborative and scalable solutions.

**Minimum system configuration**

- Windows 10 Enterprise or Professional (64-bit only) version 1809 or later
- 16GB RAM
- 65K colors
- Screen Resolution: 1920x1080
- 8.5GB of disk space required for installation

**Siemens Digital Industries Software**  
[siemens.com/software](https://www.siemens.com/software)

Americas  
 1 800 498 5351

Europe  
 00 800 70002222

Asia-Pacific  
 001 800 03061910

For additional numbers, click [here](#).