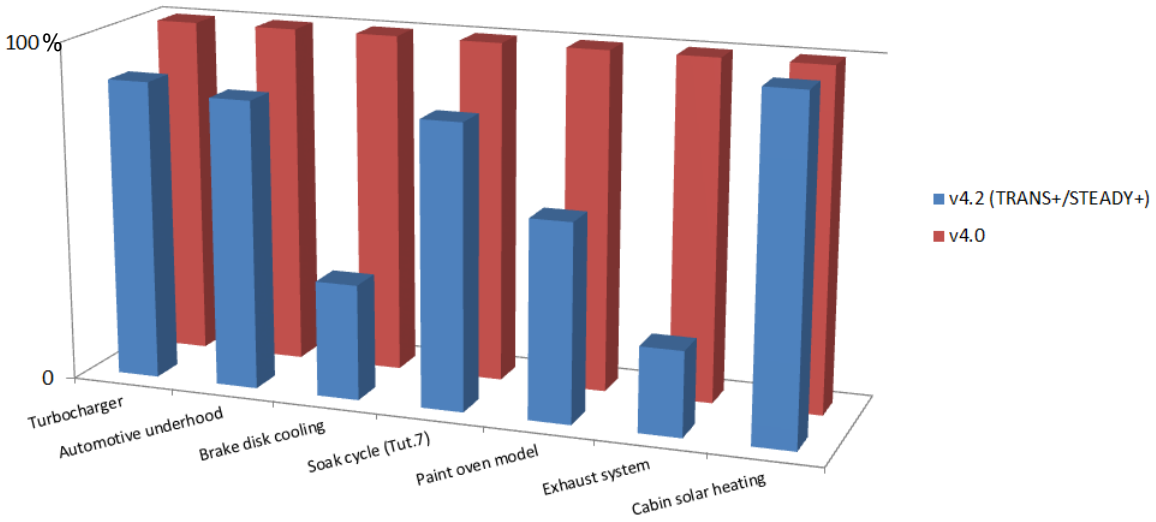
June 2012: Current Software Release - version 4.2

▪ Faster solvers

Choose the Keywords SOL TRANS+ for transient thermal solutions and SOL STEADY+ for steady state simulations in THESEUS-FE and activate a new solver technology that helps to minimize CPU times as shown in the figure beneath for various models...



▪ New sales agent for Europe

We are proud to present our new partner *Go Virtual* from Sweden for sales and technical support in all of Europe.
Go Virtual provides products for virtual product development within the manufacturing industry. With software partners like Intelligent Light (FieldView) and Hewlett-Packard they can provide tools and services for your virtual development. More information is available at www.govirtual.se

▪ Manikin TILL finally removed

In the future the only thermal manikin model supported by THESEUS-FE is the improved FIALA-FE that supports a huge number of modern thermal comfort models.

The outdated manikin TILL from the old times of INKA has been removed from the code.

With the current release of THESEUS-FE it is also possible to create a full PMV calculation without any manikin shell mesh. The influence of radiation can be derived on a reference shell set (e.g. the seat).

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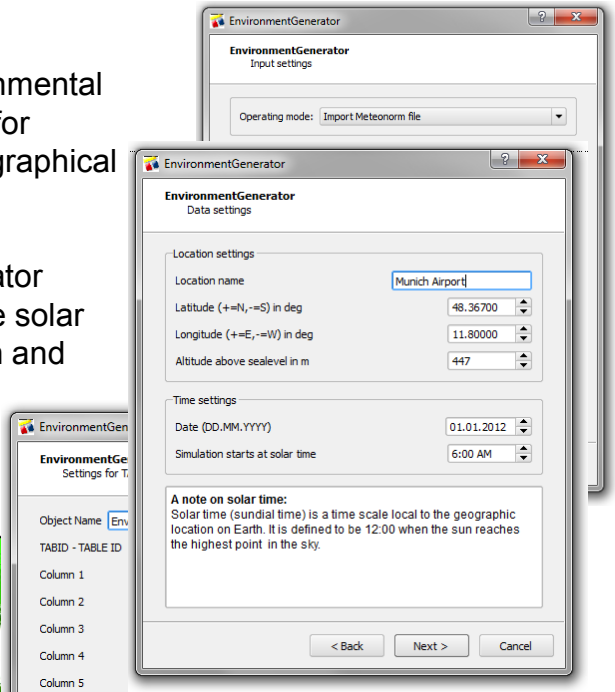
- **New GUI tool: EnvironmentGenerator**

  Release 4.2 includes a new tool to create environmental boundary conditions (e.g. solar intensity values) for climate simulations. It is fully integrated into our graphical user interface (GUI).

  It supports reading climate data files created by *Meteonorm*. Additionally, the EnvironmentGenerator offers a generation mode in which you can create solar environment data yourself for any place on earth and any date assuming clear sky conditions.



Global radiation long-term mean 1996-2005

meteonorm

P+Z Engineering

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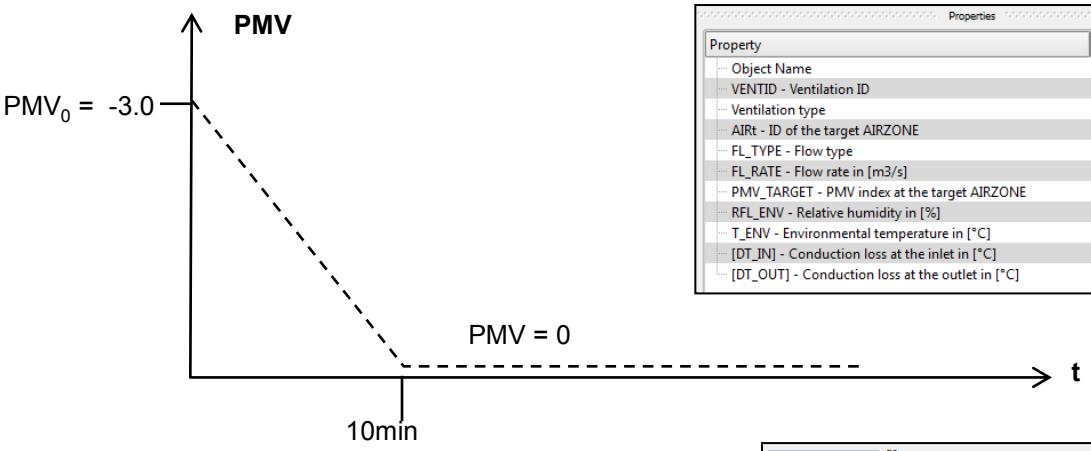
▪ New inverse PMV ventilation

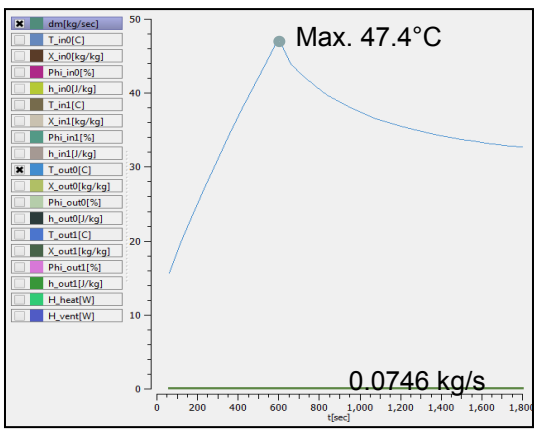
For automobile cabins the solver can now determine the ventilation outlet temperature needed to reach a user-defined PMV(t) curve.



Properties

Property	Value
Object Name	Inverse Ventilation
VENTID - Ventilation ID	1
Ventilation type	FATPMV
AIRt - ID of the target AIRZONE	AIR1
FL_TYPE - Flow type	VOLUME
FL_RATE - Flow rate in [m3/s]	0.06
PMV_TARGET - PMV index at the target AIRZONE	TAB1_2
RFL_ENV - Relative humidity in [%]	40
T_ENV - Environmental temperature in [°C]	10
[DT_IN] - Conduction loss at the inlet in [°C]	
[DT_OUT] - Conduction loss at the outlet in [°C]	

This feature is available in a fresh-air ventilation (VENTILT-FATPMV) and in a re-circulation mode (VENTILT-RATPMV). The figure on the right hand side shows the ventilation outlet temperature (blue curve) calculated by THESEUS-FE in a winter case with constant mass flow. The specified PMV curve for the cabin Airzone is shown above. PMV=0 is reached after 10 minutes of heat-up.

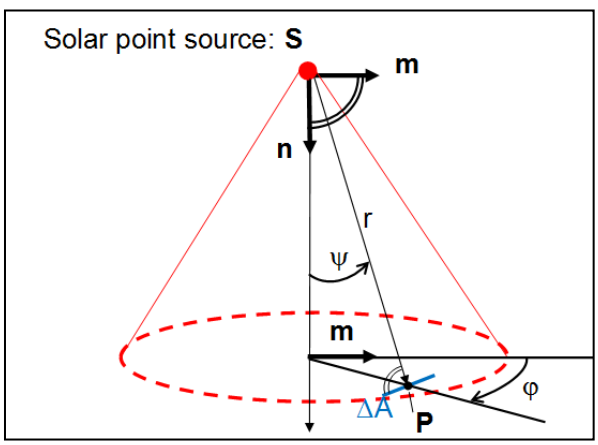


▪ New solar point source

With our new release v4.2 THESEUS-FE provides not only parallel solar radiation but also solar point sources that help to model the lamps in automotive climate chambers.

The total amount of solar heat emitted from **S** can derived from $\dot{Q} = \int \dot{q}_r dA = \int \dot{q}_r r^2 \sin(\psi) d\psi d\varphi$

The user defines the intensity $I = \dot{q}_r r^2$ optionally as a function of the angle ψ,with the solar heat flux $\dot{q}_r$ (in W/m^2) measured on ΔA at a distance r from the source **S**.



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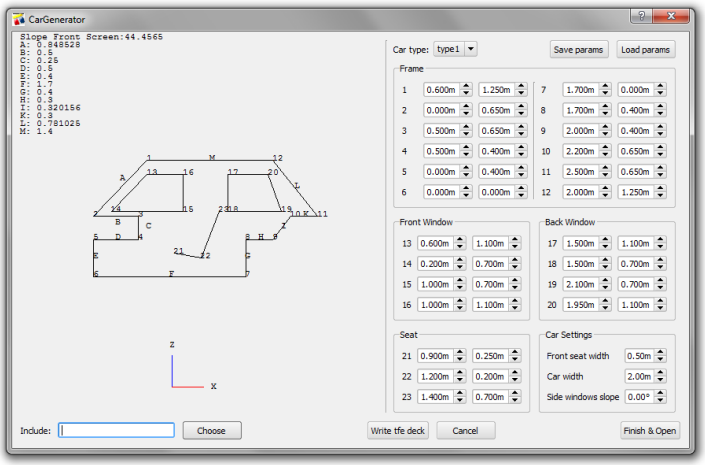
▪ New GUI tool: CarGenerator

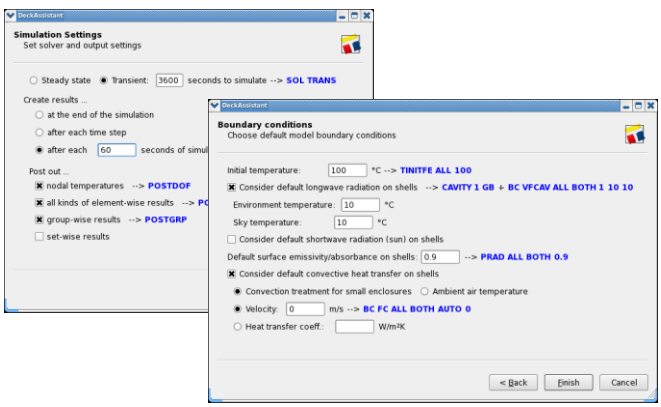
Determining some global quantities such as the average cabin temperature in an air-conditioning study does not require detailed shell modelling. To make use of this THESEUS-FE 4.2 now offers the CarGenerator as a built-in GUI tool. By specifying a small number of geometrical parameters or loading these from a file, you can have THESEUS-FE generate a simple cabin geometry, complete with boundary conditions if desired.



Running a transient simulation on such a generator model can be two orders of magnitude faster than using a detailed FE geometry. This can help during early design iterations where detailed local results are not yet required. Our redeveloped X3 tutorial demonstrates the use of the CarGenerator.

▪ New GUI tool: DeckAssistant

Some solver keywords are needed in practically every THESEUS-FE simulation. Adding these every time is tedious and error prone. Version 4.2 includes another GUI dialogue, the DeckAssistant, that can help in defining simple boundary conditions as well as solver and output settings in a user-friendly manner. This can speed up the model-building process and helps beginner users gain familiarity with the code.



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