



# Powertrain

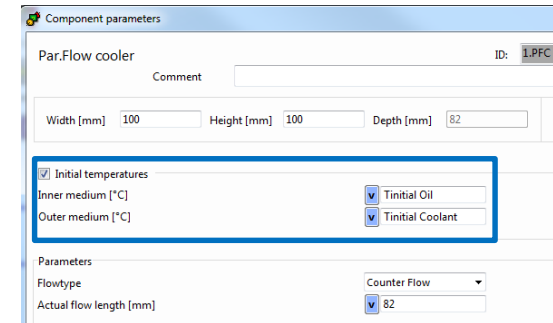
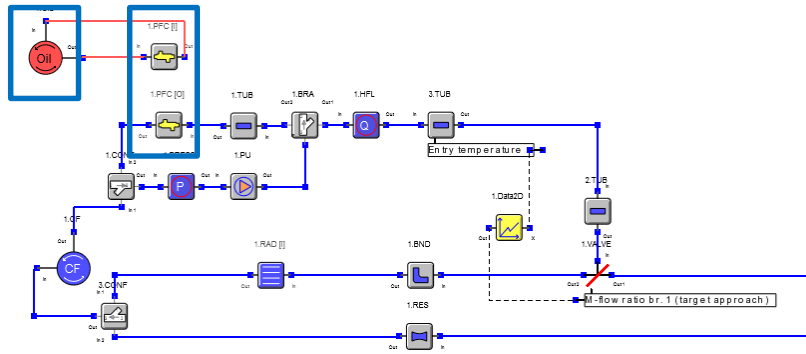
New Features/Current Development

Markus Kovac / Product Manager KULI

# New Features since last KULI UM

# New Features – Dynamic Solver

- PFC supported by the dynamic solver
  - The two involved circuits are either water or oil circuits
  - Can connect either two dynamic solver circuits or one dynamic and one classic solver circuit
  - New method for the case of small or zero flow rates
  - The initial temperature can be set separately for the inner and outer side of the PFC
- Oil circuit supported by the dynamic solver







- **Circuit:** The **initial temperature of a circuit** that is simulated by the dynamic solver can now be
  - set via an actuator and via direct access (COM interface)
  - read using the corresponding sensor
  
- **Tube:** The **initial temperature of a tube** that is located in a circuit simulated by the dynamic solver can now be
  - set via an actuator and via direct access (COM interface)
  - read using the corresponding sensor

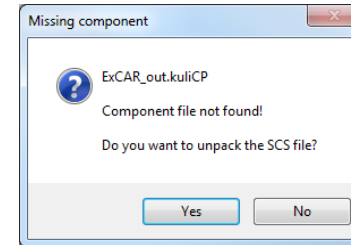
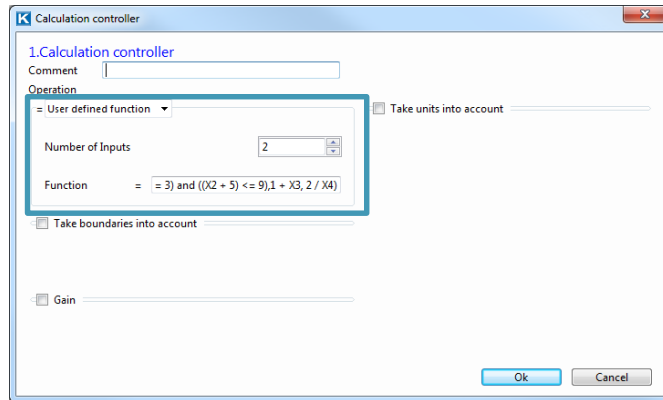
- With version 13 the KULIAnalysis DLLs (both 32-bit and 64-bit versions ) have been replaced with the **64-bit KULIAnalysisServer**
- KULIAnalysisServer runs separately to the KULI interface or any third-party applications such as Excel or Matlab regardless of bitness
  - more stable
  - handles memory more efficiently
  - consistent results regardless of the application using it

# New Features – KULI Logging

- KULI now offers **enhanced message and error logging** mechanism
  - Log files are written during system modelling, simulation and during post processing in KULI lab
  - The files can be found in the "%appdata%\ECS\Logs" folder
  - The KULI log file can also be shown with the menu command "Output -> Show log file"
  - One log file per day
  - Archive for seven days

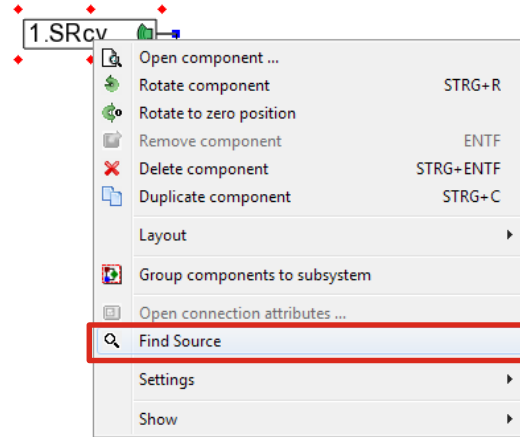
Name	Date modified	Type	Size
 Archive	18/02/2019 14:21	File folder	
 KULI lab.kulilog	15/02/2019 12:14	KULILOG File	54 KB
 KULI.kulilog	14/02/2019 14:12	KULILOG File	9 KB
 KuliAnalysisServer.kulilog	18/02/2019 15:32	KULILOG File	635 KB

- **Calculation Controller**
  - Improved handling of **user-defined functions** for faster calculation
  - more supported functions
- When opening of an SCS file support of **unpack** the SCS file where required component files are missing



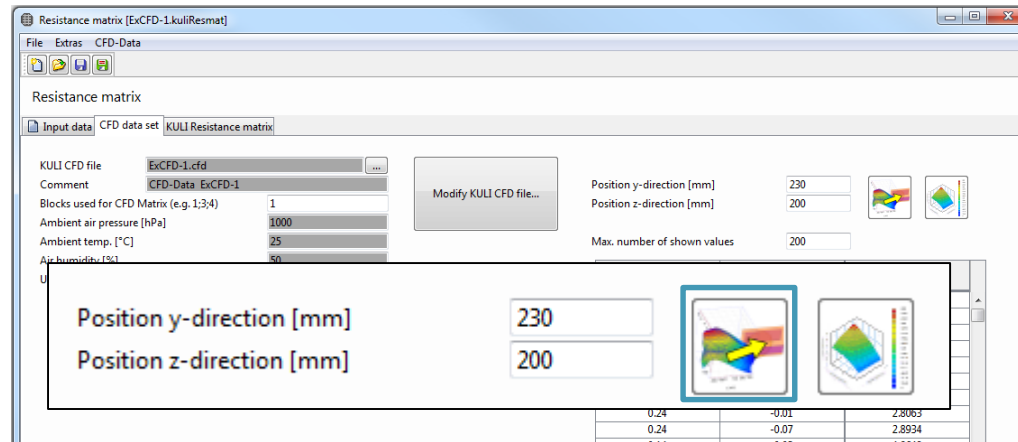
- **Signal receiver**

- Item **Find Source** in context menu
- The source will be marked in the tab *Circuits/Air path* or highlighted in the 3D view





- **Resistance matrix** - the position of the CFD field relative to the affected blocks in the KULI system can be determined
  - automatically by pressing the new button "Align CFD data with blocks"
  - by choosing the corresponding menu item within the menu "CFD-Data"

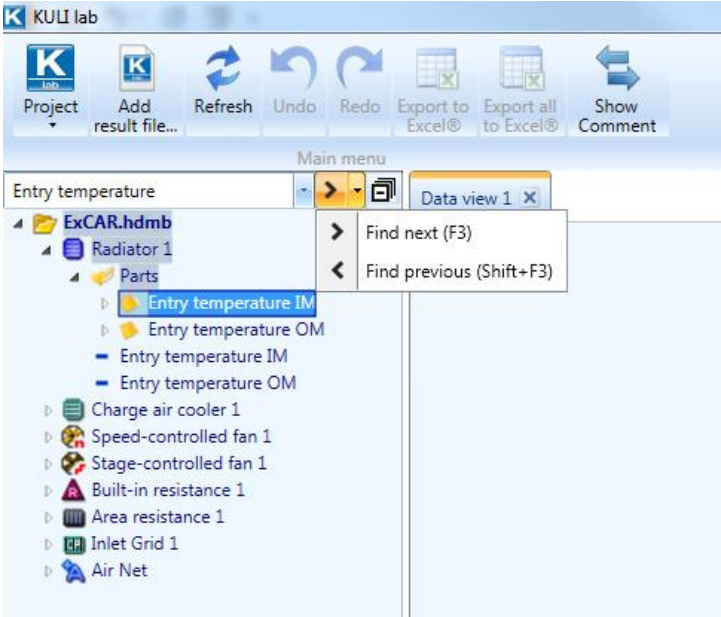


- **Passenger compartment** - New sensor and actuator for the **air recirculation rate** of extended passenger compartment
- **EXV:**
  - Actuator "**Exit pressure**" in case of using the type "High pressure" for the definition of the component
  - The connector attributes are showing sensors and actuators depending on the selected type in the component
- Additional refrigerants (**R290, R32, R454c** and **R410a**) for A/C simulation in the media library

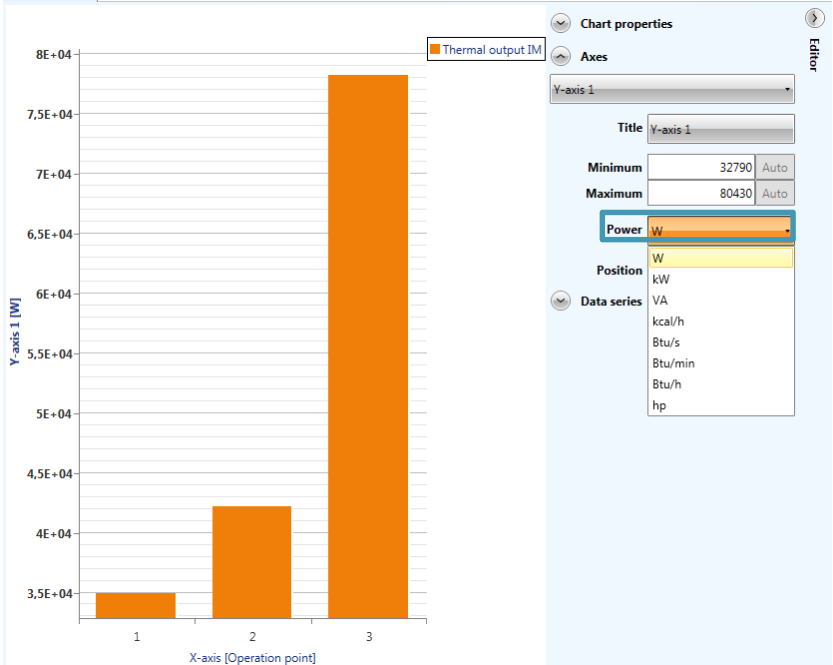
# New Features – KULI lab



- Project tree - **Filter for components and parameters** of components



- 2D chart – Change of units for given axes



# Current development



DRIVING **EXCELLENCE.**  
INSPIRING **INNOVATION.**