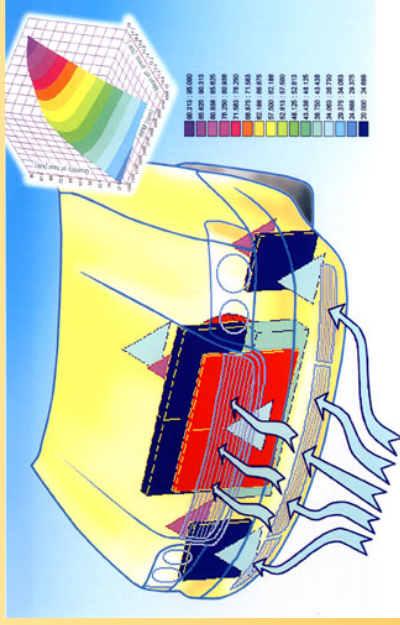


KULI

2nd User Meeting

1999

KULI Developments



KULI Basic Module

KULI ADVANCED

Integration, Interfaces
FLOWMASTER, Heat Exchangers, CFD

KULI DRIVE

Transient Simulation, Optimization

KULI AC

Air Conditioning

KULI HEATSIM

Heating and Ventilation Systems

2nd KULI User Meeting

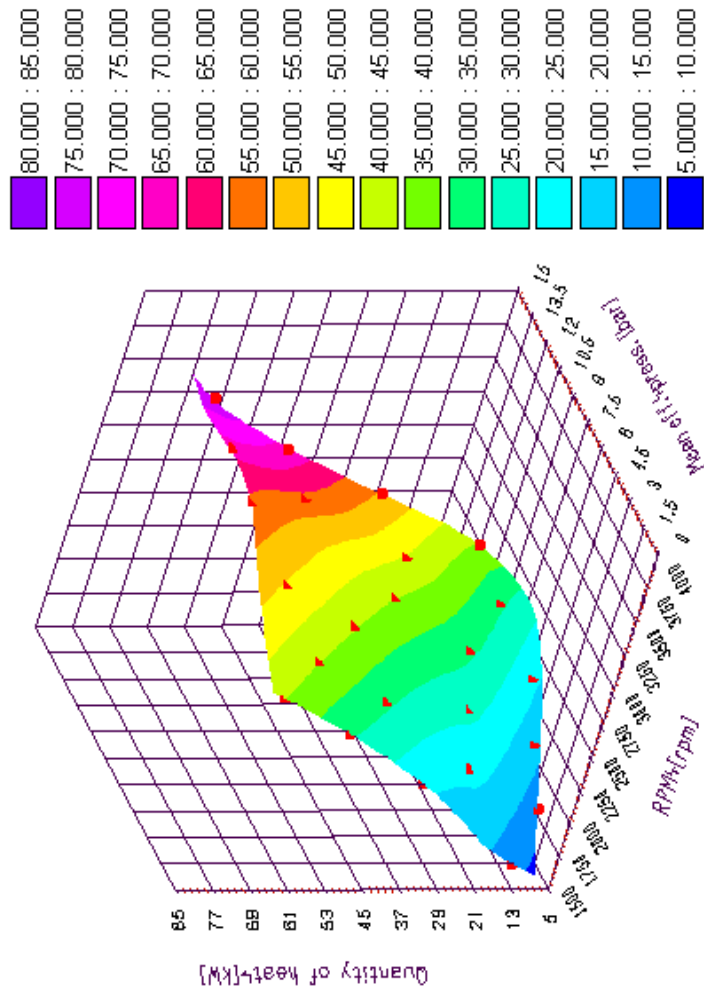
KULI Developments

KULI 3.1 - Highlights

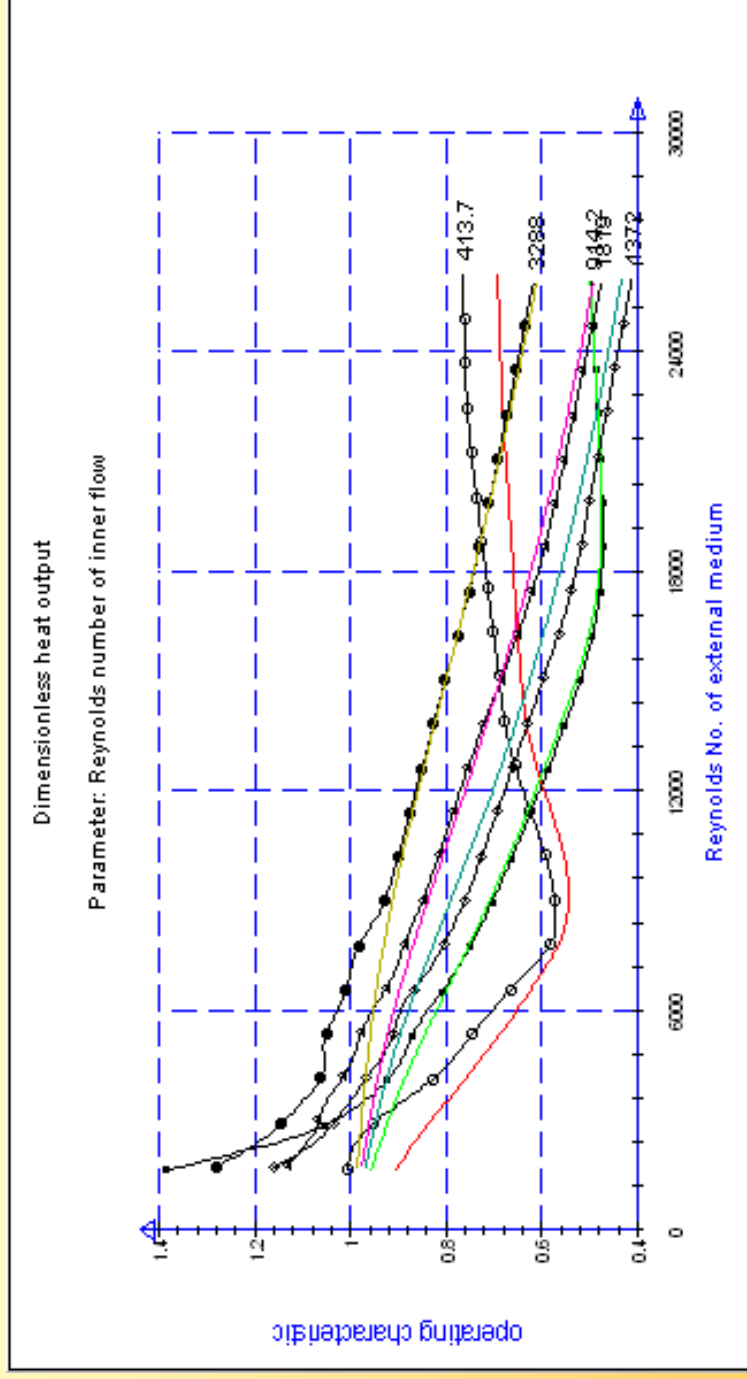
- ◆ **3-D Heat and Flow Maps**
- ◆ **Regression of Heat Transfer Data**
- ◆ **Storing and Printing Graphics**
- ◆ **Licensing (FlexLM, License on Server)**
- ◆ **Window for FLOWMASTER References**
- ◆ **Units for Input Data**
- ◆ **Parabolic Resistances**
- ◆ **Saving the Configuration in "INI"-Files**

3-D Heat Map

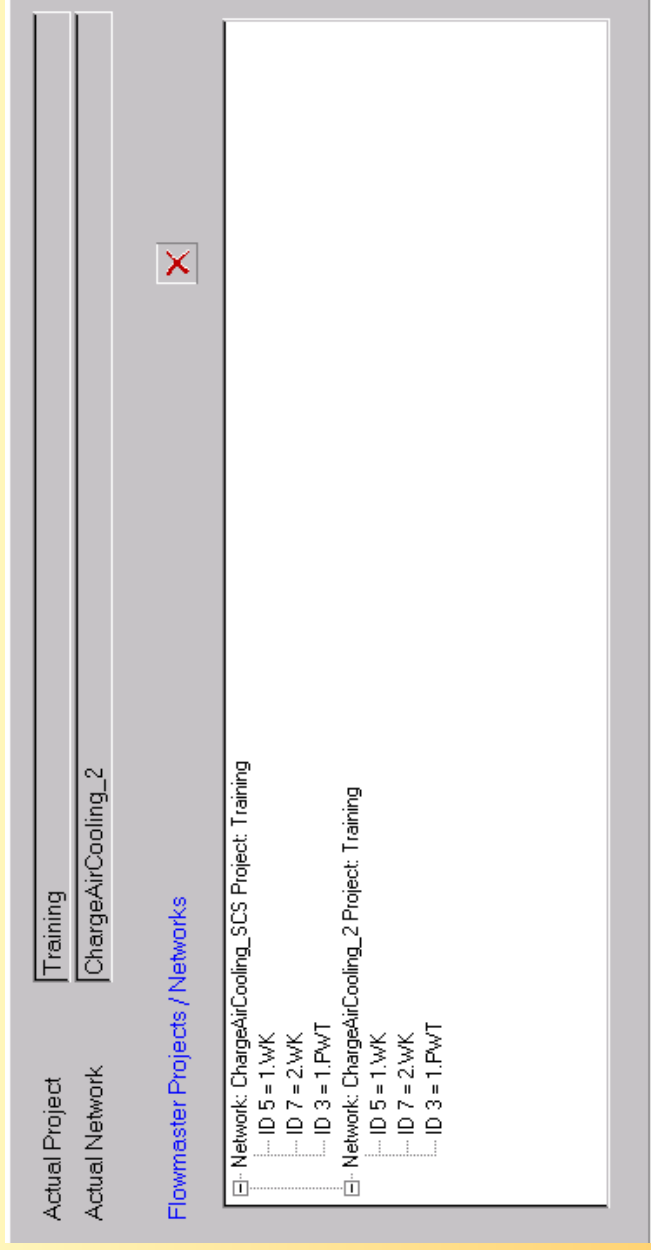
Heat map



Regression of Heat Transfer Map

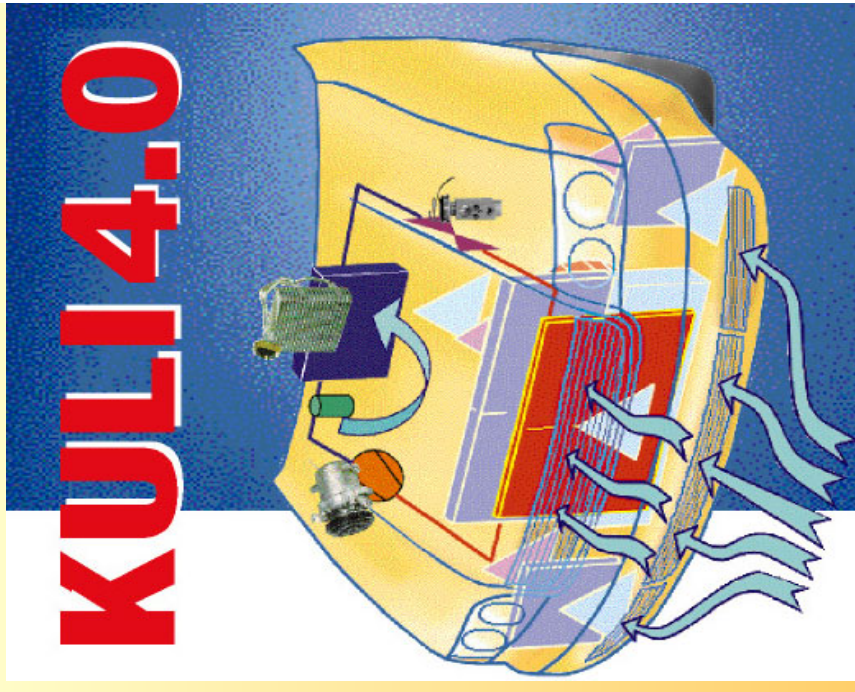


FLOWMASTER References



KULI 4.0 - Development

- ◆ Post Processing
- ◆ Online Help
- ◆ Non Symmetric Resistances
- ◆ Regression of Resistances
- ◆ Fan Map
- ◆ Input- and Edit Features

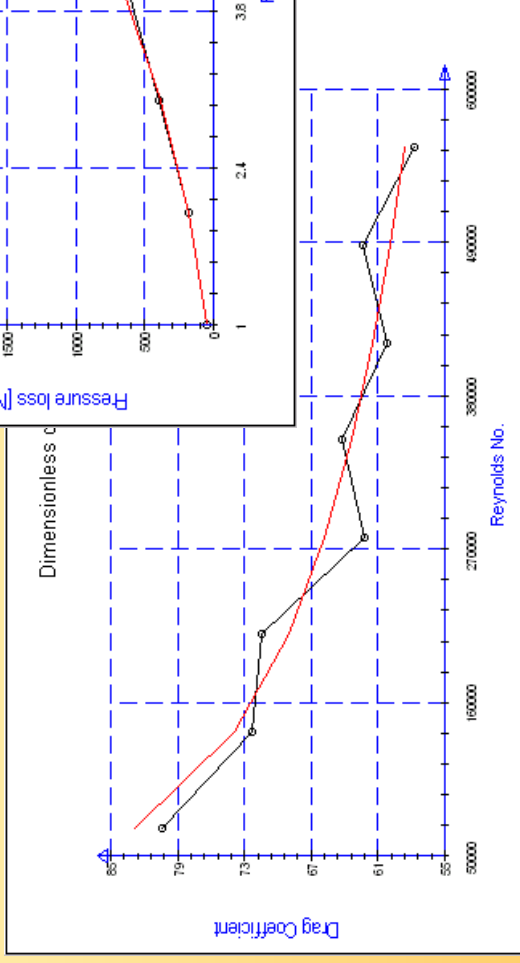
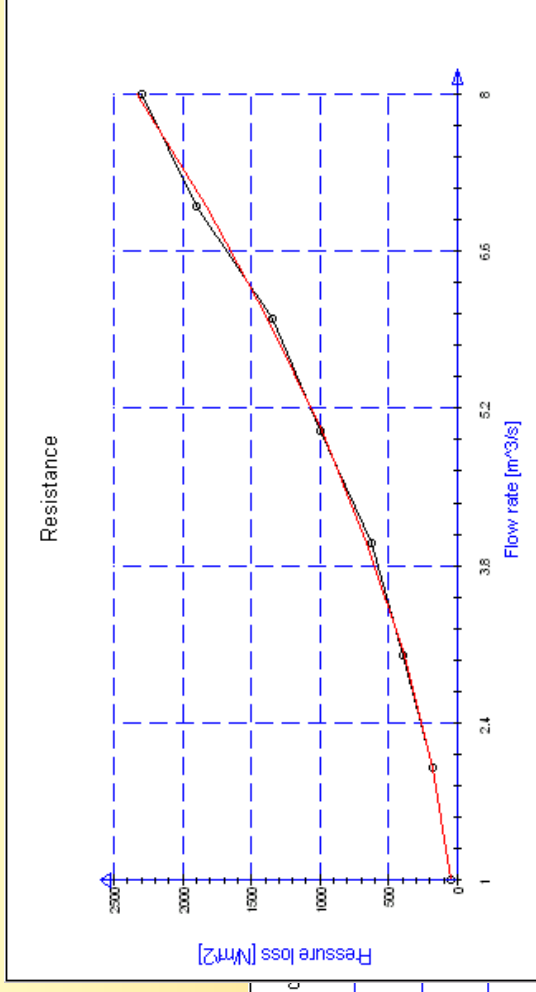


Post Processing

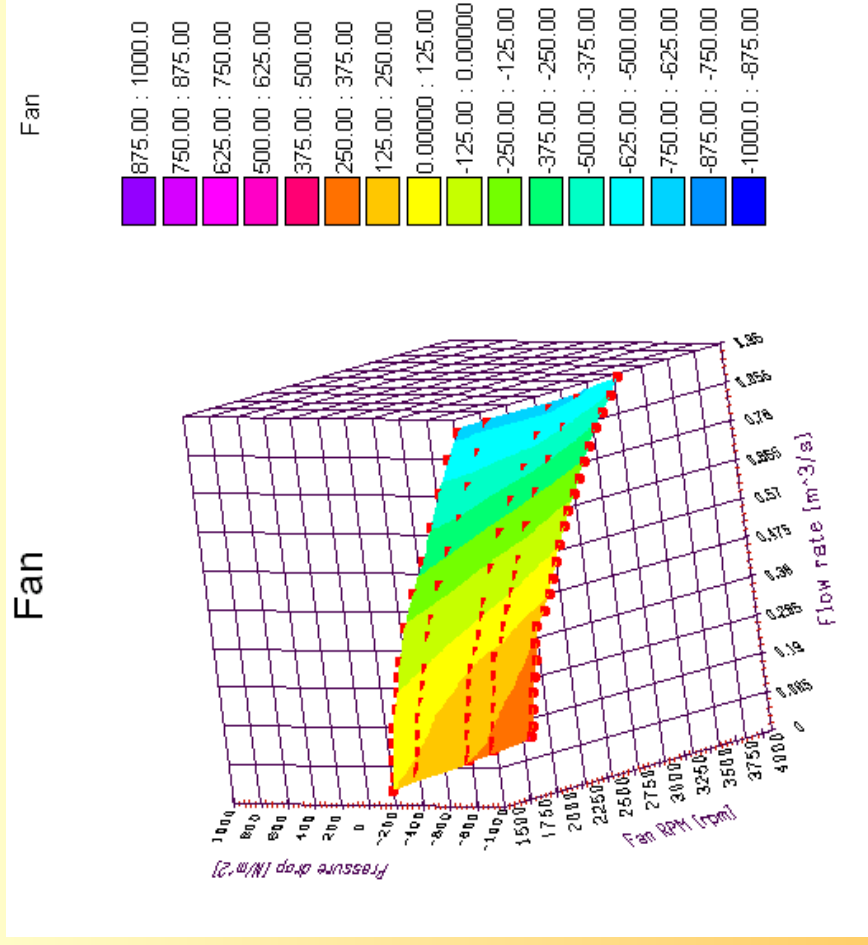
- ◆ **Filtering and Arrangement of Output Data**
- ◆ **Quick Compare of Variants**
- ◆ **2-D Bar Graphs**
- ◆ **2-D Graphs of Component Properties and Operating Points**
- ◆ **3-D Heat- and Velocity Maps of Components**
- ◆ **HTML Reports**

Regression of Resistances

$$\Delta p = a \cdot \dot{V}^b$$



Fan Map



KULI 4.0 - New Features

Module KULI ADVANCED

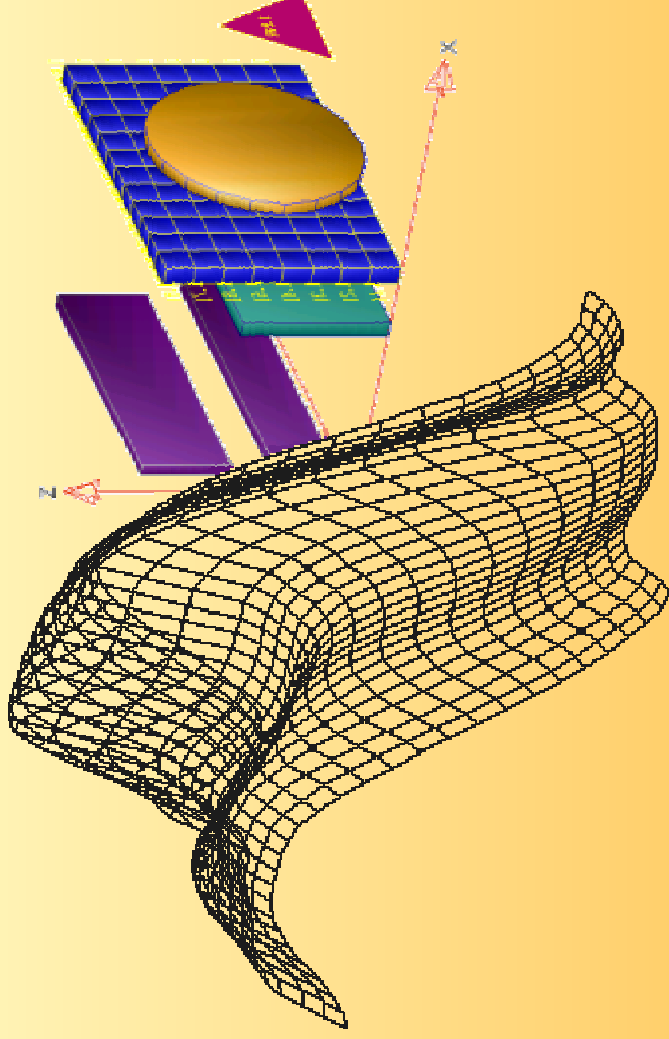
- + CFD - Interface**

Module KULI DRIVE

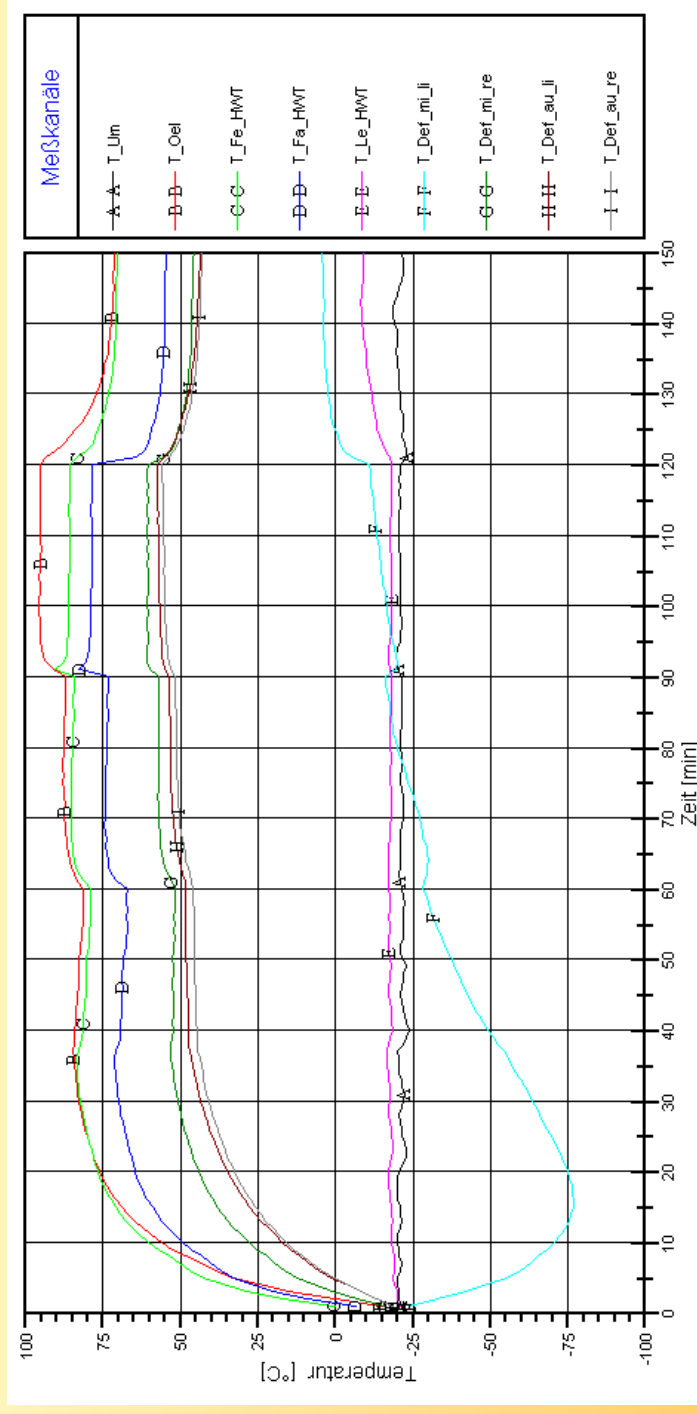
- + Optimization Routines**
- + Transient Simulation**
- + Improved Air Flow Model**
- + Enhanced FLOWMASTER - Interface**

Module KULI AC

KULI CFD Interface



Transient Simulation



KULI AC

- ◆ Two-phase Model
- ◆ Condensate Separation
- ◆ Air-side Integration
- ◆ Analysis of AC Systems
- ◆ Concept Studies
- ◆ Optimisation

