



ESDU SPF-M3-4

CFD studies of fluid mixing in the loop: manifold design

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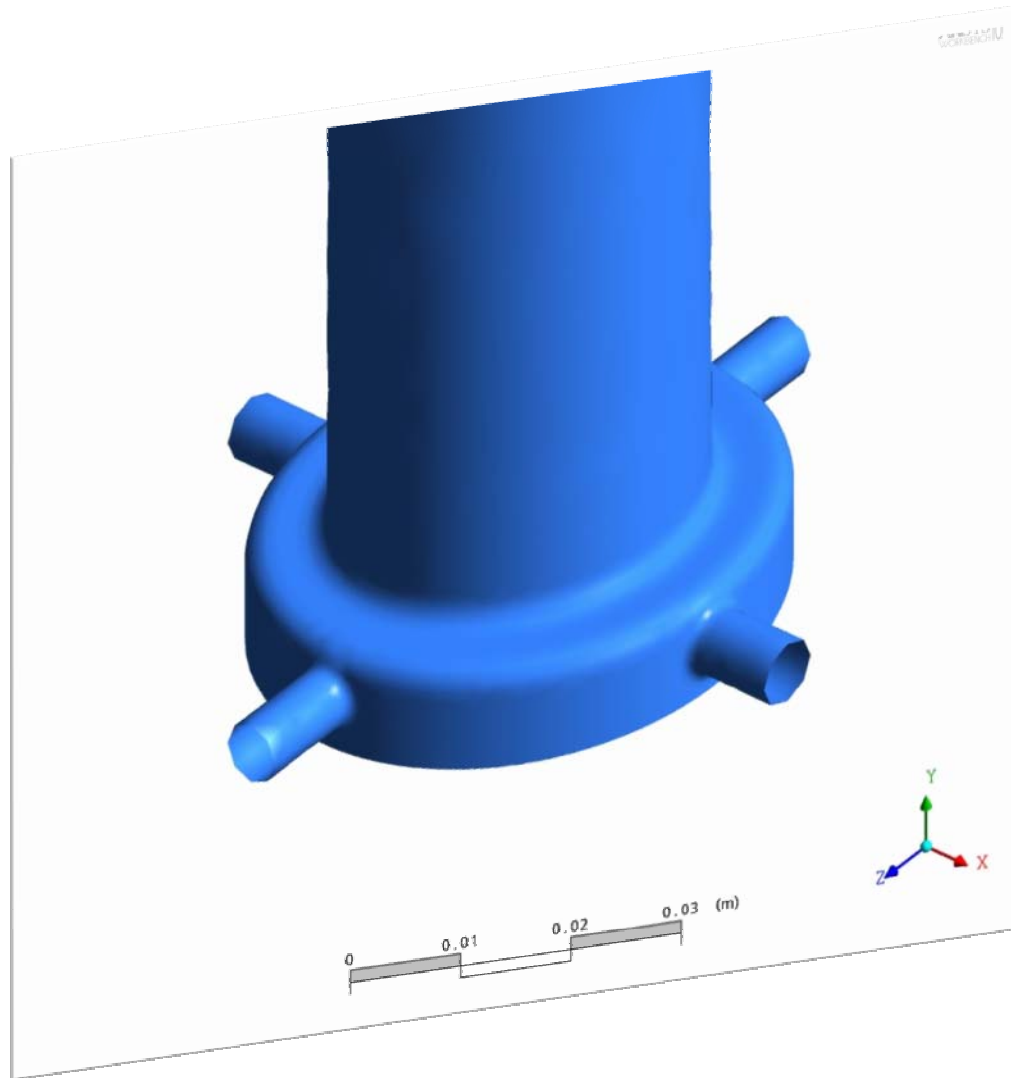


Documents
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Sub-Project F Annulus Flow Tests
Dr. Jerzy Pental
28th March 2006

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Data

- Both data sets are based on the design values used when designing the heat exchanger train in a typical refinery.
- **Data set 1** – Temperature 251.4 [C]
Density – 607.7 [kg/m³]
Dynamic Viscosity – 0.364 [cp]
Specific Heat Capacity – 2.9059 [J/kg K]
Thermal Conductivity – 0.103 [W/m K]
- **Data set 2** – Temperature 39.4 [C]
Density – 805.5 [kg/m³]
Dynamic Viscosity – 3.399 [cp]
Specific Heat Capacity – 2.0449 [J/kg K]
Thermal Conductivity – 0.132 [W/m K]

Data continued

- General data**

Mass flow rate per inlet if four inlets – 0.245 [kg/s]

Mass flow rate per inlet if two inlets – 0.500 [kg/s]

Turbulence model – k-Epsilon

Wall roughness – 0.1 [mm]

Pressure – 30 [bar]

- Table illustrating differences between examined models.

Model no	No of inlets	Inlet diameter	No of nodes
A	2	6	92389
B	4	6	109040
C	4	6	345168
D	4	9	207826

2 vs. 4 inlet geometry

