Industry Expert-Workshop

Multiphase Flow Modelling and Applications

Wednesday, September 13, 2018

Location: Endress+Hauser Flowtec AG, Kägenstrasse 7, 4153 Reinach Switzerland

Registration:  www.siemens.com/plm/ch/multiphase

Program

08:30  Registration & Breakfast

09:00  Welcome & Introduction Endress+Hauser Flowtec AG

09:15  Overview and Digitization Strategy Siemens PLM Software

Oliver Taheny, Portfolio Development Manager, Siemens PLM Software

In this talk the strategy and vision of Siemens with respect to digitization are presented. The Simcenter Software Suite is presented and the role of the digital twin is presented – how it can be realized and executed. Simcenter uniquely combines system simulation, 3D CAE, and test to help engineers predict performance across all critical attributes earlier and throughout the entire product lifecycle. By combining physics-based simulations with insights gained from data analytics, Simcenter helps to optimize design and deliver innovations faster and with greater confidence.

09:45  Multiphase Solutions of E+H for Entrained and Wet Gas Applications

Dr. Alfred Rieder, Dr. Vivek Kumar and Dr. Rainer Hoecker, Endress+Hauser Flowtec AG

In this talk, various challenges of industrial flow metering in multiphase conditions shall be presented. Effects caused by the presence of entrained gas bubbles and wet gas applications and the measurement solution for such applications shall also be briefly addressed. The successful implementation of multi frequency technology (MFT) of Endress+Hauser Coriolis meters for entrained gas application will be shown.

10:15  Measurement and Characterisation of Particles in Multiphase Flows

Dr. Sebastian Maaß, CEO and co-founder SOPAT GmbH, Berlin

The real time, in-line quantification of bubble, drop or particle size distributions during industrial production processes needs still to be established. An overview is given for already existing in-line real time measurement techniques. They are divided into three main groups: sound, laser and photo based techniques. The results achieved by the different measurement techniques are compared with each other. As proposed in the literature and by ISO-Standard 9267-4:2001 and ISO-9267-6:2008, image analysis is used as the standard method that all other techniques are compared with.

10:45  Break
11:15  **Experimental Flow Measurements**  
*Prof. Dr. Horst-Michael Prasser, ETH Zürich*

Measuring methods for single and two will be presented that have been developed by the Laboratory of Nuclear Energy Systems at ETH Zurich, partially in cooperation with the Paul Scherrer Institute. The presented instrumentation comprises wire-mesh sensors for the characterization of turbulent mixing processes and the structure of gas-liquid two-phase flows. The sensors are capable in delivering distributed parameters, such as series of instantaneous volumetric gas fractions, visualizing the shape of the gas-liquid interface, bubble size distributions, velocity distributions and many more.

11:45  **Multiphase Flows in STAR-CCM+**  
*Simon Lo, Director, Multiphase Model Development, Siemens PLM Software*

This presentation gives a brief overview of the multiphase modelling methods (Eulerian multiphase, Lagrangian particle tracking, VOF, DEM and thin film models) available in STAR-CCM+ together with a selection of examples to illustrate their use in different industries.

12:15  **Multiphase flow and its measurement & control at Cranfield**  
*Dr. Liyun Lao, Senior Research Fellow, Oil and Gas Engineering Centre, Cranfield University*

Over a decade, Cranfield has enjoyed working with industries and government on the researches on multiphase flow, its measurement and control. In this talk, the speaker, from his personal perspective, will present a number of exemplary cases regarding to the researches on those areas. The capability and major test facilities of the Flow laboratory will also be briefly introduced.

12:45  **Lunch & Networking**

13:30  **Go Swiftly from NX CAD Geometry to STAR-CCM+ CFD Results**  
*Oliver Taheny, Portfolio Development Manager, Siemens PLM Software*

Software Demonstration: Target of this session is to demonstrate the gateway from NX to STAR-CCM+ and present the workflow using a simple example.

14:00  **Systems Modeling within Siemens Simcenter**  
*Marco Brunelli, CEO, BSim Engineering GmbH*

Introduction to 1D modeling and how it can be applied to the flow industry. Workflow philosophy will be explained followed by a short demo.

14:30  **Workshop close and final comments**

After the event our experts are pleased to answer your questions in a comfortable atmosphere.

15:00  **Guided Tour of Endress+Hauser Flowtec production facility**

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