

## 4. Workshop - Final Programme

# Measurement techniques for stationary and transient multiphase flows

16.-17. November 2000 / Rossendorf

### 16 November

10:00 Welcome, **F.-P. Weiss**

#### Ultrasonic methods

10:15 **M. Aritomi, H.Kikura, Y.Suzuki** (*Tokyo Institute of Technology*): Ultrasonic doppler method for bubbly flow measurement

11:00 **V. V. Kontelev, V. I. Melnikov** (*TU Nishny Novgorod*): An ultrasonic mesh sensor for two-phase flow visualisation

11:30\* **A. Dudlik, H. Fahlenkamp** (*Fraunhofer UMSICHT*): Fast measurement of the liquid flow rate in pipelines

12:00 **A. V. Ducev** (*TU Nishny Novgorod*): Waveguide ultrasonic liquid level transducers for power generating equipment

#### Optical Methods

12:30\* **A. Breuer** (*TSI*): Recent developments in laser doppler measurements

13:00 Lunch

#### Optical Methods (cont.)

14:00\* **R. Maurus, T. Sattelmayer** (*TU Munich*): Study of bubble behaviour in subcooled flow boiling using high-speed cinematography and digital image processing algorithms

#### Wire-mesh sensors (1)

14:30\*\* **H.-M. Prasser** (*FZR*): Wire-mesh sensors - function, flow visualisation and measurement of gas fraction profiles, bubble sizes and bubble velocities

15:15 Coffee break

16:00 **D. Scholz, C. Zippe** (*FZR*): Validation of bubble size measurements with wire-mesh sensors by high-speed video observation

16:30 **A. Manera, W.J.M. de Kruijf, T.H.J.J. van der Hagen, R.F. Mudde, H. Hartmann** (TU Delft, IRI): Low-pressure dynamics of a natural-circulation two-phase flow loop.

17:30 Individual discussions, visits to test facilities of FZR:

- Coolant mixing in PWRs
- Water hammers and cavitation in pipes
- Two-phase flow pattern

20:00 Open discussion: "Burghotel Stolpen"

## 17 November

### Impedance & others

09:00 **H. Schmidt, O. Herbst, W. Kastner, W. Köhler** (Siemens AG KWU): Measuring methods for the investigation of the flow phenomena during external pressure vessel cooling of the boiling water reactor SWR1000

09:30 **A. Traichel, W. Kästner, S. Scheffer, V. Schneider, S. Fleischer, T. Gocht, R. Hampel** (HTWS Zittau/Görlitz - IPM): Verification of simulation results of mixture level transients and evaporation processes in level measurement systems using needle-shaped probes

### Wire-mesh sensors (2)

10:00\* **T. Lex, F. Hoseit, T. Sattelmayer** (TU Munich): Flow visualisation and pressure losses of a gas liquid flow through a continuously closing globe valve

10:30 Coffee break

11:15 **S. Richter, M. Aritomi** (Tokyo Institute of Technology): Methods for studies on bubbly flow characteristics applying a new electrode-mesh tomograph

11:45\*\* **J. Zschau** (FZR): Fast wire-mesh sensors with 10,000 frames / s

12:15 End - time for more discussions & visits

\* No print version of the paper submitted

\*\* The presentations of H.-M. Prasser and J. Zschau are merged to one paper in the proceedings: **H.-M. Prasser, E. Krepper, D. Lucas, J. Zschau** (FZR), **D. Peters, G. Pietzsch, W. Taubert, M. Trepte** (Teletronic Ingenieurbüro GmbH), Fast wire-mesh sensors for gas-liquid flows and decomposition of gas fraction profiles according to bubble size classes.