

TECHNICAL SESSION IV – SUMMARY

Progress in Materials: Spallation Targets and Advanced Coolants

Guenter Bauer (FZJ, Germany) and Joachim Knebel (FZK, Germany)

Papers presented:

Four papers submitted from Germany-Korea, Germany-China, USA-Russia, Switzerland-France-Italy-Germany and six papers from Italy, Germany, Spain, India, Belgium, and USA

Total

10

Overall theme of work presented

Provide validated data and tools in the area of

- materials,
- thermalhydraulics,
- engineering design,

to enable the design of ADS components, mainly the spallation target.

Approach chosen

- Fundamental experiments and physical model development
 - corrosion experiments in controlled environment;
 - irradiation experiments including Russian ADS steels;
 - thermalhydraulic measurement techniques for Pb-Bi;
 - supporting thermalhydraulic experiments & calculations.
 - Applied large scale experiments
 - CIRCE at ENEA, KALLA at FZK, other.
 - Design validation of spallation targets
 - next generation spallation source projects (ESS, SNS, JSNS);
 - international MEGAPIE initiative;
 - VICE experiment in support of MYRRHA.
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Target design options

- Closed / open spallation target system.
 - Windowless option:
 - flow configuration at surface;
 - evacuation of vacuum space;
 - retention of volatile spallation products.
 - Solid window option:
 - coolability and flow shaping;
 - radiation effects including gas production;
 - corrosion / erosion / cavitation issues.
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Status and next steps

- Status:
 - scientific work is at a very advanced stage;
 - strengthen interdisciplinary interaction;
 - international collaboration have proven to be very effective.
 - Next steps:
 - build-up of common data base;
 - build-up of common design tools;
 - define design standards and criteria.
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Status and future

Emphasise international projects such as MEGAPIE and MYRRHA to realise an international ADS in the near future.
