

Session I

**Heat exchanging components for process heat application
- design requirements and R & D programmes**

- No 1 Status of the R&D program in the field of the heat carrying and heat transfer components of the PNP-project
H. Mausbeck, W. Jansing; Interatom GbmH; FRG

- No 2 Design requirements on HTR main components for process heat application
K. Dumm; Interatom GmbH; FRG

- No 3 Helium/helium heat exchangers and hot-gas ducts for the PNP-project according to the BBC/HRB-concept
H. Schmitt, B. Jürgens, J. Knaul; Hochtemperatur-Reaktorbau GmbH; FRG

Session II

Status of the design and construction of intermediate He/He heat exchangers

- No 4 Recent research and development of intermediate heat exchanger for VHTR plant
A. Shimizu, N. Matsumura, H. Nishikawa, S. Yamada; Industries, LTD; Japan

- No 5 Development of a helium/helium intermediate heat exchanger (He/He-IHX) with helical coil tube bundle
A. Czimczik; L. & C. Steinmüller GmbH; FRG
G. Hirschle; Gebr. Sulzer AG; Switzerland

- No 6 Improved spacers for high temperature gas-cooled heat exchangers
L. A. Nordström; Swiss Federal Institute for Reactor Research; Switzerland

- 5
- No 7 Life time test of a partial model of HTGR helium-helium heat exchanger
M. Kitagawa, H. Hattori, A. Ohtomo, T. Teramae,
J. Hamanaka, M. Itoh, S. Urabe; Ishikawajima-Harima Heavy Industrie Co., Ltd.; Japan
- No 8 Development, construction and analysis of the URKO intermediate heat exchanger, R. Exner, M. Podhorskiy; Balcke-Dürr AG; FRG
- No 9 Development of a new type of high-temperature-insulation-material and its application in the PNP-project
R. Burger, R. Ganz; Didier-Werke AG, FRG
- No 10 Seismic analysis of a helical coil type heat exchanger
I. Nishiguchi, O. Baba, H. Yatabe; Japan Atomic Energy Research Institute; Babcock Hitachi K. K.; Japan

Session III

Design, construction and performance of steam generator

- No 11 Design and development of steam generators for the AGR power stations at Heysham II/Torness
A. N. Charcharos, A. G. Jones; National Nuclear Corporation Ltd.; UK
- No 12 Monitoring and performance analysis of AGR boilers during commissioning and power raising
M. El-Nagdy, R. M. Harrison; Nuclear Engineering Department; Babcock Power Ltd.; UK
- No 13 Experience with the commissioning of helically coiled advanced gas-cooled reactor boilers
D. B. Kettle; CEGB-Generation Development and Construction Division; UK

No 14 Investigations of the gas-side heat transfer and flow characteristics of the AGR steam generators
J. Lis; Central Electricity Research Laboratories; UK

No 15 Effect on inlet and outlet shell side flow and heat transfer on the performance of HTGR straight tube heat exchangers
D.P. Carosella; GA Technologies; USA

Session IV

Design, development and fabrication of steam reformers

No 16 Status of an in-line reformer design for modular HTGR
R. Gluck, W. H. Whitling, A. J. Lipps; General Electric Company; USA

No 17 Development and fabrication of a helium heated steam reformer
W. Panknin, W. Nowak; L. & C. Steinmüller GmbH; FRG

No 18 Assembly and operation experience of the EVA II - steam reforming bundle
H. F. Nießen, R. Harth; Kernforschungsanlage Jülich GmbH;
W. Kessel; Rheinische Braunkohlenwerke AG; FRG

Session V

Metallic materials and design codes

No 19 Evaluation of materials for heat exchanging components in advanced helium-cooled reactors
F. Schubert; Kernforschungsanlage Jülich GmbH; FRG

No 20a Pressure vessel design codes: A review of their applicability to HTGR components at temperatures above 800°C
P. T. Hughes; General Electric Company; USA
K. Bieniussa; Gesellschaft für Reaktorsicherheit GmbH,
H. H. Over; Kernforschungsanlage Jülich GmbH; FRG

- No 20b Status of design code work for metallic high temperature components
K. Bieniussa; Gesellschaft für Reaktorsicherheit; FRG
H. J. Seehafer; Interatom; FRG
H. H. Over; Kernforschungsanlage Jülich GmbH; FRG
P. Hughes; General Electric Company; USA
- No 21 Oxide films on austenitic HTR heat exchanger materials as a tritium barrier
H. P. Buchkremer, R. Hecker, H. Jonas, H. J. Leyers, D. Stöver; Kernforschungsanlage Jülich GmbH; FRG
- No 22 Effect of creep-fatigue damage relationships upon HTGR heat exchanging design
D. P. Carosella, M. M. Kozina, J. H. King, M. Basol; GA Technologies; Combustion Engineering Inc.; USA

Session VI

Design and construction of valves and hot gas ducts

- No 23 The Klinger hot gas double axial valve
J. Kruschik; Klinger Engineering; Austria;
H. Hiltgen; Interatom GmbH; FRG
- No 24 Two layers thermal insulations tests for designing of hot gas ducts
T. Nakase, S. Midoriyama, K. Roko, A. Yoshizaki; Kawasaki Heavy Industries, Ltd.; Japan
- No 25 Status of the development on hot gas ducts for HTRs
H. Stehle, E. Klas; Interatom GmbH; FRG
- No 26 Graphite and carbon-carbon components for hot gas ducts in the HTR
G. Popp, U. Gruber, H. Böder, K. Janssen; Sigrí Elektrographit GmbH; FRG

No 27 Research on thermal insulation for hot gas ducts
P. Bröckerhoff; Kernforschungsanlage Jülich GmbH; FRG

Session VII

Description of component test facilities and test results

No 28 Facility for endurance tests of thermal insulations
R. Mauersberger; Hochtemperatur-Reaktorbau GmbH; FRG

No 29 Construction and performance tests of helium engineering demonstration loop (HENDEL) for VHTR
M. Hishida, T. Tanaka, H. Shimomura, K. Sanokawa;
Japan Atomic Energy Research Institute; Japan

No 30 Testing of high-temperature components in the KVK
W. Jansing; Interatom GmbH; FRG

No 31 WKV-operation experiences with heat exchanging components of a nuclear gasification pilot plant
R. Kirchhoff, K. H. van Heek; Bergbau-Forschung GmbH; FRG

No 32 The test facility EVA II/ADAM II -
Description and operational results
R. Harth, H. F. Niessen, V. Vau;
Kernforschungsanlage Jülich GmbH; FRG

No 33 Modification of the AVR to a versatile nuclear test facility for high temperature components
H. Barnert, N. Kirch, E. Ziermann;
Kernforschungsanlage Jülich GmbH;
Arbeitsgemeinschaft Versuchsreaktor GmbH; FRG

No 34 Heat removal by natural circulation in gas-cooled rod-bundles
M. Hudina; Swiss Federal Institute for Reactor Research; Switzerland

Session VIII**Manufacturing of heat exchanging components**

- No 35 Manufacture of steam generator units and components for
the AGR power stations at Heysham II/Torness
J. R. Glasgow, K. Parkin; Nuclear Systems Limited; UK
- No 36 The use of bimetallic welds in the THTR steam genera-
tors
U. Blumer, H. Fricker, S. Amacker; Sulzer Brothers Ltd.;
Switzerland
- No 37 GMA-narrow gap welding of PNP-hot gas collectors
K. Iversen, A. Palussek; Interatom GmbH; FRG
- No 38 Forged hollows (alloy 617) for PNP-project
F. Hofmann; Vereinigte Deutsche Metallwerke AG; FRG