

In Memoriam: Professor Claus A. Busse

Professor Claus A. Busse, who passed away at the age of 90, was a pioneer in heat pipe science and technology. He belonged to the first generation of scientists, who devoted most of their scientific activities to heat pipes and made major contributions to their fundamental understanding, design, and development.

Professor Busse was born on June 08, 1928 in Sondershausen, Germany. After finishing high school in 1946, he worked as a radio technician in Bremen. From 1949, he studied Physics at the University of Göttingen, graduating with a Ph.D. in Theoretical Physics in 1954.

After graduation he was first employed in industry, working in the area of electronic devices and later in nuclear reactor technology. In 1959, he was appointed as a German delegate to EURATOM in Brussels, Belgium, the newly founded European organization for the joint development of nuclear reactor industry. In 1961, he moved to the Joint Research Center of the Commission of the European Communities (now: European Commission) in Ispra, Italy. There he started his research work on heat pipes in 1965. He established one of the first heat pipe research groups in Europe which soon obtained a leading position. His early work was related to high temperature liquid metal heat pipes (sodium, lithium, and silver) in the frame of thermionic energy conversion for space applications. A major focus was corrosion in liquid metal heat pipes. He investigated particularly the corrosion phenomena and mechanisms of lithium heat pipes which became the topic of his Habilitation thesis, defended at the University of Stuttgart, Germany, in 1970. Apart of this research, Professor Busse made great contributions to both the development of heat pipe theory and sophisticated experimental heat pipe investigation. Moreover, he developed heat pipe blackbodies for high precision thermometry. His major achievements can be summarized as:

- study of laminar flow in cylindrical tubes with mass injection and suction, and in connection with that: determination of the subsonic pressure recovery in cylindrical heat pipes and determination of the sonic and viscous limits in heat pipes,
- determination of the wet point in heat pipe capillary structures,
- investigation of the axial dry-out limit of gravity-assisted heat pipes with capillary flow,
- development of a microzone evaporation model for axially grooved heat pipes and determination of the evaporator heat transfer coefficient,

- development of gas-controlled co-axial heat pipes with extremely high isothermality and temperature stability as blackbodies for thermometry applications.

Since the 1970 years, in parallel to his research work at the Joint Research Center, Claus Busse closely collaborated with IKE (Institute of Nuclear Technology and Energy Systems) at the University of Stuttgart, Germany. There he gave lectures on heat pipe theory. In 1981, he was appointed as an Extraordinary Professor. He supervised seven Ph.D. candidates, four of them in collaboration with IKE.

During the last period of his employment with the Joint Research Center (1988–1993), Professor Busse took responsibility for the Process Engineering Unit (Division) and was Deputy Director of the Institute for Safety Engineering. A field that attracted his particular scientific interest was thermal runaway reactions which are highly important safety problems in chemical and metallurgical industries.

Professor Busse was a founding member of the International Heat Pipe Conference (IHPC) Committee in 1972. The first IHPC took place in Stuttgart in 1973. In 1976, he organized the second IHPC in Bologna, Italy. In 2010, at the 15th IHPC in Clemson, SC, Professor Busse was honored with the George Grover Medal for his outstanding contributions to the development of heat pipe science and technology.

Professor Busse died on June 10, 2018. He is survived by his wife Liesel, their four daughters, and nine grandchildren.

On behalf of the Committee on Joint International Heat Pipe Conferences and Symposia,

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