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Hans J. Rath · Christoph Egbers (Eds.)

Advances in Fluid Mechanics and Turbomachinery

With 138 Figures



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Preface

This special volume contains several articles written in honour of Professor Ingolf Teipel on the occasion of his 65th birthday.

Professor Teipel was born on March 15th, 1933 in Wissen/Sieg. He started his school career in Betzdorf/Sieg. From 1943 to 1951 he went to the Gymnasium in Betzdorf, where he obtained his school-leaving exam after only 8 years. In 1951 Professor Teipel started his studies in Mechanical Engineering at the Technical University of Aachen and got his diploma at the Aerodynamic Institute in 1956. Then Professor Teipel decided to join the research group of the Institute of Theoretical Gasdynamics at the Deutsche Versuchsanstalt für Luft- und Raumfahrt (DVL), the famous institute of Professor Oswatitsch, where he spent about 13 years until 1968.

At the Technical University of Aachen he finished his dissertation devoted to spherical-symmetric shock waves and he obtained his doctorate in Mechanical Engineering in 1960. Some years later he went as a guest scientist to the Aerospace Laboratories of Dayton, Ohio, USA. In 1965 Professor Teipel finished his habilitation work with a paper on unsteady transonic pressure forces at the Technical University of Aachen, where he received the *venia legendi* in fluid mechanics. In this year, Professor Teipel was given the freedom of the state Tennessee, USA.

In 1968 he changed his place of work and he followed an offer as a Professor at the Institute of Mechanics at the Technical University of Hannover, where he was responsible for the Fluid Dynamics Department. In 1969 Professor Teipel followed an offer as guest professor at the University of Strathclyde in Glasgow, Scotland. In 1987 Professor Teipel went to Tokyo Denki University, Japan, as a visiting professor.

Many students and co-workers gained from Professor Teipels excellent ability as a teacher and as a scientist. Most of them owe their successful career in industry and science to him.

Some of his friends have expressed their best wishes and respects which are contained in this volume in the form of scientific

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contributions. The papers in this volume are mostly in the area of computational fluid dynamics (CFD), which is Professor Teipel's favorite field of research. Furthermore, to some extent this volume contains also contributions from the field of new experimental methods and diagnostics applied to fluid dynamics, combustion and turbomachinery. The contributed papers cover diverse topics such as, pipe flows, shock tube flows, compressor flows as well as velocity and turbulence measurements of flow conditioners. There is also a survey article on recent flow computations on high performance computers. Articles are also devoted to liquid-liquid systems, rotating fluid flows and combustion diagnostics.

The editors would like to express their gratitude to all the contributors for this volume. We are also thankful to Dr. Merkle and Mrs. Grünewald-Heller and their colleagues at Springer-Verlag, Heidelberg, for their friendly cooperation in producing this volume.

Bremen, December 1997

Hans J. Rath
Christoph Egbers

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