HOCHSCHULE ZITTAU/GÖRLITZ
FÜR TECHNIK, WIRTSCHAFT UND SOZIALWESEN (FH)

FACHBEREICH MASCHINENWESEN
Fachgebiet Technische Thermodynamik
Prof. Dr.-Ing. habil. H.-J. Kretzschmar
Dr.-Ing. I. Stöcker

Annual Report "Research in Progress" 1998

1. Development of equations for the backward functions $p = f(h,s)$ for water and steam and equations $v = f(p,T)$ for the critical and supercritical regions of water together with TU Dresden (Prof. A. Dittmann, Dr. Th. Willkommen, J. Trübenbach)
   - The backward equations $p = f(h,s)$ were completed and successfully tested in process modelling. They can be used in combination with the new industrial formulation IAPWS-IF97.
   - The equations $v = f(p,T)$ for the critical and supercritical regions can be used for calculating very accurate starting values in the iteration of the specific volume from the Helmholtz equation of the IAPWS-IF97 formulation.

2. Sub-program library FluidEXL for calculating thermophysical properties of water and steam in MS-Excel
   - The Graphic representation of the calculated values in different plots was developed.
   - The new industrial formulation IAPWS-IF97 was implemented.

3. Dialog program FluidDAT for the calculation of thermophysical properties
   - The Graphic representation of the calculated values in different plots was improved.
   - The new industrial formulation IAPWS-IF97 was implemented.

4. Program FluidDIA for generating camera ready thermodynamic diagrams
   - The new industrial formulation IAPWS-IF97 was implemented.
   - The quality of the generated diagrams was improved for publication.

5. Preparation of program packages including the new industrial formulation IAPWS-IF97 for the power industry
   - With regard to the interest of the industry to the new industrial formulation, program packages were set up and in process modelling implemented.

Publication:
Kretzschmar, H.-J.: Mollier h,s-Diagram.
Springer-Verlag (1998), ISBN 3-540-64375-3

Zittau, August 26, 1998

H.-J. Kretzschmar   I. Stöcker