HOCHSCHULE ZITTAU/GÖRLITZ
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Research Activities on the Thermodynamic Properties of Water and Steam

Report "Research in Progress 2010"

1. Development of Fast Property Algorithms Based on Spline Interpolation
   - Algorithms for fast spline-interpolation methods were developed and applied to the calculation of thermodynamic properties of steam and carbon dioxide.
   - An algorithm for the generation of data grids with optimized data density for the user requirements range of state and accuracy is being developed.

2. Thermodynamic Properties of Humid Air
   - The results of the research project RP-1485 "Thermodynamic Properties of Real Moist Air, Dry Air, Steam, Water, and Ice" for the American Society of Heating, Refrigerating, Air-Conditioning Engineers (ASHRAE) were published in the journal "HVAC&R Research".
   - A comprehensive article on the properties of moist air was prepared for the "Journal of Engineering for Gas Turbines and Power".
   - The property library LibHuAirProp for calculating thermodynamic and transport properties for real moist Air, steam, water and ice was completed.

3. Thermodynamic Properties of Seawater and Sea Air
   - The property library LibSeaWa for calculating thermodynamic and transport properties of seawater was completed.
   - A comprehensive article on the properties of sea air was prepared for the journal "Ocean Science".

Recent Publications

- Herrmann, S.; Kretzschmar, H.-J.; Gatley, D.P.: Thermodynamic Properties of Real Moist Air, Dry Air, Steam, Water, and Ice. HVAC&R Research, 15 (2009), pp. 961-986
- Feistel, R.; Kretzschmar, H.-J.; Span, R.; Hagen, E.; Wright, D. G.; and Herrmann, S.: Thermodynamic Properties of Sea Air. Ocean Sci. (2010) 6, pp. 91-141

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- Herrmann, S.; Kretzschmar, H.-J.; Gatley, D.P.:
  Table 2 Thermodynamic Properties of Moist Air at Standard Atmospheric Pressure
  Table 3 Thermodynamic Properties of Water at Saturation
  In: 2009 ASHRAE HANDBOOK FUNDAMENTALS, Chapter PRINCIPLES, SI and I-P Editions, ASHRAE (2009), ISBN 978-1-933742-55-7

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H.-J. Kretzschmar