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Summary of Qualifications

28 years of experience in energy engineering, including combined cooling, heating, and power; new technologies for space heating and cooling; global warming impacts of CFCs, HCFCs, HFCs, and non-fluorocarbon refrigerants and insulations; and transport modeling.

Work History and Accomplishments

- 1980 to present** **Oak Ridge National Laboratory, Oak Ridge, Tennessee**
Engineering Science and Technology Division, Cooling, Heating and Power Group
- Principal investigator in screening analysis of CHP in federal buildings
 - Manager for development of computer models for screening CHP applications
 - Principal investigator in evaluations of alternative thermodynamic cycles in commercial unitary heating and cooling equipment
 - Provided technical assistance in the development of CHP installations at an Army base, a Navy hospital, and a National Park Service facility
 - Provided technical assistance in the design and installation of a fuel cell-based CHP system at ORNL
 - Provided analysis of laboratory measurements on the performance of an ammonia/water generator-absorber-heat exchanger (GAX) absorption heat pump

Energy Division

Refrigeration Systems Group

- Principal investigator for thermal comfort measurements in occupied and unoccupied residential buildings
- Principal investigator in three projects on the global warming impacts resulting from the phaseout of CFCs and HCFCs in refrigeration, heating, and cooling equipment; plastic foam insulations; and solvent cleaning processes
- Participated in the Air Conditioning and Refrigeration Technology Institute's 21st Century initiative for development of new technologies to address national building and energy goals
- Principal engineer in the development of computer spreadsheets for computing annual energy use and refrigerant inventories of supermarket using direct expansion and secondary loop refrigeration systems
- Principal investigator in adapting computer software to implementing the Lee-Kesler-Plocker equations of state
- Lead engineer in evaluations of the energy use impacts of phasing out CFCs and HCFC-22
- Assisted in the development of computer models for the steady-state and annual performance of electric air-to-air heat pumps

- 1974 to 1980** **Computer Sciences Division**
Applied Physics Group
- Assisted in the development of computer models to compute the dispersion of chemicals, radionuclides, and sediments from the operation and maintenance of power plants on coastal estuaries

Education and Training

M.S., Mathematics, 1974, University of Kentucky
B.S., Mathematics, 1971, College of William and Mary

Representative Publications

- S. Fischer, *Integrated Systems: Gas and Electric Driven Technologies for Buildings*, Federal Technology Alert, 2000.
- S. Fischer and S. Labinov, *Not-In-Kind Technologies for Residential and Commercial Unitary Equipment*, ORNL/CON-477, March 2000.
- S. Fischer, *Ultrasonic Humidifiers: Technology for High Efficiency, Low-Maintenance Air Humidification*, Federal Technology Alert, DOE/EE-0180, November 1998.
- S. Fischer, "Status Report on a Survey of Alternative Heat Pumping Technologies," Proceedings of the 1998 International Refrigeration Conference at Purdue, July 1998.
- S. Fischer, J. Sand, and V. Baxter, "Global Warming Impacts of Ozone-Safe Refrigeration, Heating, and Air Conditioning Technologies," 1997 International Conference on Ozone Protection Technologies, Baltimore, Maryland, November 12-13, 1997.
- S. Fischer and J. Sand, "Total Environmental Warming Impact (TEWI) Calculations for Alternative Automotive Air Conditioning Systems," pp. 105-115 in *Proceedings of the SAE International Congress & Exposition*, February 24-27, 1997.
- S. Fischer, "Technology Alternatives to CFC/HCFC Vapour Compression," 1:207-214 in *Proceedings of the 5th International Energy Agency Conference on Heat Pumping Technologies: Heat Pump 96*, September 22-26, 1996.
- S. Fischer, "Comparison of Global Warming Impacts of Automobile Air-Conditioning Concepts," pp. 508-515 in *Proceedings of the 1995 International CFC and Halons Alternatives Conference*, 1995.

Other Pertinent Information

- Member American Society of Heating, Refrigeration, and Air Conditioning Engineers
- Incoming secretary of ASHRAE TC9.5
- Served in advisory roles to the United Nations Technical Options and Technical and Economic Assessment Committees on the Montreal Protocol
- Assisted a major automobile manufacturer in assessments of environmental impacts of refrigerants and air conditioning technologies
- Served in advisory roles to a major fast-food restaurant chain concerning safety and environmental impacts of natural and fluorocarbon refrigerants
- Wrote or contributed to over 60 technical papers and reports, including refereed journals, international journals, technical reports, technology briefs, Internet web sites, and trade magazines.

Certification of Accuracy

This resumé has been certified for accuracy by Steven K. Fischer on February 21, 2002, and by Philip D. Fairchild, ORNL Group Leader, Combined Heating Cooling and Power, on February 21, 2002.