Curriculum Vitae
John E. Batey, PE, President
Energy Research Center, Inc.

1. Education/Academic

Master of Science - Mechanical Engineering: Combustion, Heat Transfer, Fluid Mechanics, and Air Pollution Control, State University of New York, Stony Brook, 1973. Completed course work for PhD in Engineering.

Bachelor of Science - Engineering Science: Mechanics, Electrical Science, Materials Science, Applied Analysis, SUNY, Stony Brook, 1972.

2. Professional Organizations

- Registered Professional Engineer, New York, Connecticut
- American Society of Heating, Refrigerating and Air Conditioning Engineers - corresponding member Fuels and Combustion Technical Committee
- American Society of Mechanical Engineers, former member
- Oilheat Manufacturers' Association - Technical Director
- National Fire Protection Association - Member of Technical Committee for NFPA 31 - "Installation of Oil-Burning Equipment"
- Certified Asbestos Investigator - City of New York

3. Professional Experience

Mr. Batey has extensive experience in evaluating gas and oil combustion equipment and HVAC systems, and efficiency improvement and air emissions regulations in residential, commercial, and institutional buildings as a research and applications engineer. This includes:

- Completed a combustion efficiency test program as part of a National Science Foundation Study on 100 residential heating units in 1971.
- Principal Engineer and Laboratory Manager at **Brookhaven National Laboratory** for five years, where he developed and operated a test facility for evaluating oil-fired space heating equipment for the U.S. Department of Energy. This work included: test program design and operation, data analysis, preparation of engineering reports, and technical presentations.
- Authored two training books: Advanced Oil Heat - A Guide to Improved Efficiency completed in 1994 for Brookhaven National Laboratory, and A Guide for Efficient Oil Heating in Homes in 1981, co-sponsored by the U.S. Department of Energy and the oil industry as part of a national energy conservation program. Advanced Oil Heat is now used for a national certification program for oil heat service technicians.

Mr. Batey also supplied detailed engineering studies of mechanical systems in residential, commercial and industrial buildings including universities, hospitals, nursing homes, and industrial plants. These engineering studies involve detailed energy analyses of boiler plants, HVAC systems, metering, and electrical and lighting systems. **Energy studies** for large residential commercial and institutional building complexes to date including college campuses and health care facilities total over 10,000,000 square feet. This includes detailed testing and evaluation of burners, boiler plants and combustion equipment. Energy-saving equipment modifications are identified, evaluated, and recommended using the building energy use computer models, and include HVAC and boiler plant upgrades.

He continues to work with **Brookhaven National Laboratory** on their in-house combustion space-heating research projects.

- In 1985, 1994, and 1996, he assisted with developing multi-year research plans for residential heating equipment that prioritized the present research activities at Brookhaven National Laboratory.
- Past collaborative work with Brookhaven includes on-going programs to improve the thermal efficiency, and safety of residential oil heating equipment, and air emissions reductions.
    - **Combustion testing of Biofuel Blends** – Fall 2004, Fall 2005, Spring 2005
    - **Project Manager for Low Sulfur Demonstration Project in Homes** funded by the NYSERDA - 2000 to Present (BNL was subcontractor)
    - **Chairman of Carbon Monoxide Workshop** at the Oil Heat Technology Conference held at Brookhaven in April 1997
    - **Chairman of Technology Transfer Workshop** at the Oil Heat Technology Conference held at Brookhaven in May 1990.
    - Assisted with technical content and format **for Oil Heat Technology Conference and Workshops** held at Brookhaven National Laboratory.
    - Assisted with the development and analysis of **alternative venting systems** to improve efficiency.
    - Supplied engineering assistance and technical assessment of Brookhaven **oil heat atomization and combustion research programs**

Mr. Batey has completed and published many **engineering reports** based on data from Brookhaven National Laboratory, US Department of Energy, US Environmental Protection Agency, and other sources that characterize the performance of oil and gas heating equipment. He has supplied **expert testimony** to various regulatory agencies concerning topics that include: efficiency of oil and gas compared to other fuels, relative air pollutant emissions and environmental costs, economics of home heating, energy conservation

opportunities for gas and oil heated homes, safety issues, and new heating technologies. He has also prepared engineering reports and provided testimony as an **expert witness** on behalf of fuel companies, equipment manufacturers, and others on issues that include product liability, carbon monoxide exposure, equipment malfunctions, soot damage, and personal injury.

Mr. Batey has performed on-going research for more than 30 years on **Carbon Monoxide production** by combustion heating equipment in homes. In addition he has conducted many **seminars** on the recent advances in oil heating equipment performance and oil heat energy conservation opportunities.

4. Awards

Tau Beta Pi -- National Engineering Academic Honor Society

New York State Regents Scholar

National Award for Energy Innovation -- U.S. Department of Energy, 1990

Grant Award - New Energy Technology Program - State of Connecticut, 1997

5. Publications (Partial Listing)

Low Sulfur Home Heating Oil Demonstration Project Summary Report, John E. Batey and Roger McDonald, project funded by the New York State Energy Research and Development Authority, Contract No. 4204-IABR-BR-00, March 2005.

Flame Safety Testing of Biodiesel Fuel Oil Blends in Residential Oil Burning Equipment – Phase I Initial Screening Tests, John E. Batey, C.R Krishna, tests conducted at Brookhaven National Laboratory for the Massachusetts Oilheat Council, October 2004.

Combustion Testing of a Biodiesel Fuel Oil Blend in Residential Oil Burning Equipment, John E. Batey, prepared for the Massachusetts Oilheat Council and the National Oilheat Research Alliance, July 2003

Advantages of Low Sulfur Home Heating Oil, John E. Batey and Roger McDonald, Interim Report if Compiled Research Studies and Data Resources, prepared for the National Oilheat Research Alliance and the US Department of Energy, December 2002.

Research and Development: Still the Key to Oilheat's Future, John Batey, PE, Technical Director, Oilheat Manufacturers Association (OMA), Oilheating Magazine, January 2001.

New York State Premium Low-Sulfur Heating Fuel Marketplace Demonstration, A Project funded by the New York State Energy Research and Development Authority (NYSERDA), John Batey, PE, President, Energy Research Center, Inc., Oilheat Technology Conference at Brookhaven National Laboratory, April 2001.

Review of Recent Technical Accomplishments by the Oilheat Manufacturers' Association (OMA), John E. Batey, Oilheat Technology Conference at Brookhaven National Laboratory, March 1999.

Expanded Use of Residential Oil Burners to Reduce Ambient Ozone and Particulate Emissions, J.E. Batey, Prepared for the Petroleum Marketers Association of America, October 1997.

Oilheat Research Agenda - A Ten Year Blueprint for Residential Oilheat Research and Development in the Twenty-first Century, R.J. McDonald and J.E. Batey, Brookhaven National Laboratory, Draft Report, November 1996.

Oilheat Advantages Project - Engineering Analysis and Documentation - Efficiency, Clean Burning, Low Air Emissions, Economics, Safety, and Energy Conservation and New Technologies, Energy Research Center, Inc., for the Oilheat Manufacturers' Association, July to November 1994.

Oilheat Engineering and Technical Updates, Oilheat Manufacturers Association, published periodically by OMA.

Minimum Risk of Carbon Monoxide Exposure with Oil Heating Equipment, John E. Batey, Energy Research Center, Inc., prepared for Fuel Merchants' Association of New Jersey, published in Fueloil and Oil Heat, April 1995.

Oil Heat Efficiency Training Manual, United States Department of Energy, Brookhaven National Laboratory, for National Oilheat Certification Program, 1994

Prospects for Residential Oil Burners with Reduced Emissions, Thomas A. Butcher, Richard F. Krajewski, Yusef Celebi, Roger J. McDonald, and John E. Batey, presented at the Air and Waste Management Association Meeting, 1992.

Oil Heat Technology Transfer Plan, U.S. Department of Energy, Brookhaven National Laboratory, Draft Report, June 1990.

Venting Alternatives for Oil-Fired Residential Heating Systems, T. Butcher, J.E. Batey, Brookhaven National Laboratory, September 1989.

Proceedings of the 1987 Oil Heat Technology Conference and Workshop, “Potential Energy Savings By Direct Vent Oil Heating Systems", J.E. Batey, January 1988.

Preliminary Assessment of Direct Venting Technology for Oil-Fuel Heating Systems, Brookhaven National Laboratory, November 1986.

1985 Oil Heat Technology Conference and Workshop-Summary of Proceedings, R.J. McDonald, J.E. Batey, Brookhaven National Laboratory, BNL 52018, June 1986.

Triage of Oil and Gas Retrofits For Residential/Light Commercial Heating System, Brookhaven National Laboratory 38090, May 1986.

Oil-Fueled Equipment Research Program Plan, U.S. Department of Energy, Sept 1986.

A Guide to Efficient Oil Heating in Homes, J.E. Batey, National Oil Jobbers Council, Department Of Energy Grant No. DE-FG01-80CS23967, 1981.

Flame Retention Head Burner Efficiency Test Results and Analysis, Brookhaven National Laboratory, BNL 51321, November 1980.

Direct Efficiency Measurements and Analysis of Residential Oil-Fired Boiler Systems, R.J. McDonald, J.E. Batey, T.W. Allen, R.J. Hoppe, Brookhaven National Laboratory, BNL 51171, November 1979.

Reduction of Residential Fuel Oil Consumption by Vent Dampers, J.E. Batey, R.J. McDonald, R.J. Hoppe, Brookhaven National Laboratory, BNL 26467, May 1979.

Annual Fuel Usage Charts for Oil-Fired Boilers, A.L. Berlad, Y.J. Yeh, E.J. Salzano, R.J. Hoppe, and J.E. Batey, Brookhaven National Laboratory, BNL 50903, July 1978.

Direct Measurement of the Overall Efficiency and Annual Fuel Consumption of Residential Oil-Fired Boilers, J.E. Batey, et.al., Brookhaven National Laboratory Report 50853, January1978.

Brookhaven National Laboratory Burner-Boiler/Furnace Efficiency Test Project: Annual Fuel Use and Efficiency Reference Manual, J.E. Batey, R.J. Hoppe, T.W. Allen, and R.J. McDonald, Brookhaven National Laboratory, BNL 50816, December 1977.

Seasonal Performance and Energy Costs of Oil or Gas-Fired Boilers and Furnaces, A.L. Berlad, H.C. Lin, J.E. Batey, F.J. Salzano, W.S. Yu, R.J. Hoppe, and T.W. Allen, Brookhaven National Laboratory, BNL 50647, March 1977.

Energy Management in Residential and Small Commercial Buildings, J.E. Batey, Brookhaven National Laboratory, BNL 50576, July 1976.

Performance Evaluation and Economic Impact of Oil-Fired Residential Heating, Journal of Urban Analysis, 1, 95, 1972.

On Enthalpy Management in Small Buildings, Energy, 1, 1976.

Enthalpy Management In Buildings: An Analysis and an Integrated Approach, Brookhaven National Laboratory, BNL 20572, July 1975.

6. Reports (Partial Listing)

The Role of Home Heating Oil in Lowering Greenhouse Gases and Other Air Emissions in Connecticut, submitted to the Residential, Commercial and Industrial Working Group, Connecticut Climate Change Stakeholders Dialogue, prepared for the Independent Connecticut Petroleum Association, September 2003.

The Role Of Home Heating Oil in Lowering Greeenhouse Gases and Other Air Emissions in Rhode Island, submitted to the Buildings and Facilities Working Group for the Rhode Island Greenhouse Action Plan, December 2001.

Summary Report for Residential Fuel Cost Study, John E. Batey, for the Petroleum Marketers Association of America (PMAA), March 7, 2000.

Chimney Upgrades Contained in NFPA-31(1997) and Proposed Changes to the Standard, John E. Batey, for Massachusetts Oilheat Council, Oilheat Manufacturers' Association, PMAA, NEFI, Oilheat Institute of Rhode Island, and Maine Oil Dealers, October 1998.

Comparison of Heating Oil, Natural Gas, and Electricity Costs for Residential Heating, John E. Batey, for the Delaware Valley Foil Oil Dealers, June 1998.

The Role of Home Heating Oil in Lowering Greenhouse Gases and Other Emissions in New Jersey, John E. Batey, for the New Jersey Greenhouse Gas Emissions Banking Advisory Group, May 1998.

Comparison of Residential Water Heater Efficiencies, John E. Batey, for Mass Oilheat Council, and Oilheat Manufacturers Association, February 1998.

An Overview of Carbon Monoxide Risks in Homes, John E. Batey, Energy Research Center, Inc., for the Pennsylvania Petroleum Association, March 1995.

Preliminary Engineering Study of Heating Energy Use, Jewish Home for the Elderly, April 2, 1996

Engineering Study of Boiler Plant Efficiency and Heating Energy Use, Fairfield University, December 5, 1996

Calculation of Energy Costs, Cost Savings, and Payback Periods for Residential Heating Equipment, John E. Batey, Facility Energy Services, submitted to the U.S. Department of Energy, Energy Information Administration, November 1993.

Comparison of Air Pollutant Emissions From Residential Oil and Gas Burner and Other Combustion Sources in the U.S., John E. Batey, Facility Energy Services, Submitted to the US Department of Energy, November 1993.

Technical Assistance Energy Study for the Parker Jewish Geriatric Institute, July 1990.

Technical Assistance Energy Study for the Daughters of Jacob Geriatric Center, July 1989.

Energy Balance Study and Recommended Energy Conservation Projects for Eight Facilities Operated by the New York State Facilities Development Corporation, 1986.

Technical Assistance Energy Study for the Jewish Home and Hospital - Manhattan, May 1987.

Technical Assistance Energy Study for the Jewish Home and Hospital - Bronx, May 1987.

Boiler Plant Study for Staten Island Development Center, prepared for the New York State Facilities Development Corporation, July 1986.

Boiler Plant Study and Recommended Energy Conservation Projects for Letchworth Development Center, January 1987.

Energy Audit Report for Montclair State College, Technical Assistance Study funded by New Jersey Department of Energy, May 1984.

Energy Audit Report for New Jersey Institute of Technology, Technical Assistance Study funded by New Jersey Department of Energy, Nov 1983.

Preliminary Engineering and Economic Evaluation of On-Site Production of Electricity and Steam through Cogeneration, Yale University, New Haven Connecticut, Oct 1982.

Refining Cost Reduction Opportunities and Other Features Related to the Cogeneration of Electricity and Steam, Hospital of Saint Raphael, New Haven, Connecticut, October 1982.

Recommended Lighting System Modifications to Reduce Energy Consumption, Woolworth Building, 233 Broadway, New York City, June 1982.

Report on Boiler Efficiency Evaluation and Improvement to Reduce Fuel Costs, Third Street Music School Settlement, New York City, October, 1982.

7. Presentations (Partial Listing)

Oil Heat Technology Conferences, 1987, 1988, 1990, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2001, 2003, 2004 – Brookhaven National Laboratory
New England Fuel Institute Annual Meetings - 1993, 1995, 1999
Petroleum Marketers Association of America - 1979, 1991
American Society of Mechanical Engineers, 1979
U.S. Congressman Tom Downey - Oil Heat Advances, 1979
Oil Heat Institute of Long Island - 1978, 1992
New York State Energy Office - Oil Heat Retrofit Program - 1979
U.S. Department of Energy - Annual Review Meetings
New York State Energy Office
National Association of Oil Heat Service Managers
Association of Energy Engineers - New York City Chapter - 1987
Fuel Merchants Association of New Jersey - Annual Meeting 1987, 1992
New York State Energy Office - Advanced Residential Construction Conf, 1988
New York State Energy Office - Advanced Residential Construction Conference "Recent Advances in Oil Heat," October, 1989
Massachusetts Department of Public Utilities - Expert Testimony - 1991
New York State Public Service Commission - Expert Testimony - 1992
Nova Scotia Board of Public Utilities - Report - 1992
Mid-Atlantic Petroleum Distributors' Association - 1991
Independent Connecticut Petroleum Association - Seminar - 1992
New England Fuel Institute - Seminars - 1992, 1993, 1995, 1999
Virginia Petroleum Jobbers Association - Seminar - 1992
North Carolina Petroleum Marketers Association - Seminar - 1992
Canadian Oil heat Association Annual Meeting - 1993
National Oil Jobbers Council meetings – 1980 -1081
Petroleum Marketers Association of America - 1991, 1993
American Society of Heating Refrigerating and Air-Conditioning Engineers
Carbon Monoxide Seminars for Oil Heat Associations - 1994 to present
Buckley Energy Seminars, 1994, 1995, 1996, 1998
Oilheat Manufacturers Association (OMA) - Bi-annual Technical Presentations – 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003
Hydronics Institute Annual Meeting - Burner Committee - October 2000
Maine Global Warming Conference – The Benefits of Oil Heat
Maine Legislature Energy Committee on behalf of Maine Oil Dealers Association
Greenhouse Gas Working Group Meetings – Rhode Island, 2001-2004

Connecticut Governors Energy Advisory Panel – December 2002
Testimony to Rhode Island Legislature on oil heat and global warming – 2002
New York State Department of Environmental Conservation –Heating Oil Advances, May 2003
Combustion Testing of Biofuel Blends – National Biodiesel Board Meeting 2004
Combustion and Flame Safety Testing of Biofuel Blends – National Biodiesel Board Meeting 2005

United States Patents

Low Heat Transfer, High Strength Window Materials, May 30, 1978.
Boiler Optimization for Multiple-Boiler Heating Plants, September 12, l989.
Energy Tracking and Control System, patent pending