

# David E. Bruderly, P.E

**CLEAN POWER ENGINEERING COMPANY** -- Gainesville, FL (June 1989 to present)  
**dba BRUDERLY ENGINEERING ASSOCIATES, INC.**

**President** -- Provides marketing and sales support and services to manufacturers and developers of “environmentally friendly” technology and infrastructure services, with emphasis on renewable energy and transportation fuels such as compressed and liquefied natural gas, biogas, landfill gas, compressed and liquid hydrogen, and electric and hybrid electric technologies. Clients include TrenFuels, US Dept. of Energy, US Air Force, Florida Energy Office, Utah Energy Office, Pennsylvania Energy Office, Defense Advanced Research Projects Agency, Cryenco and Jack B. Kelly Company. Sales \$1.6 M.

**ROY F. WESTON, INC.** -- Gainesville, FL (April 1988 to June 1989)

**Office Manager** - Opened WESTON's office. Developed staff of 8 professionals and technicians responsible for site planning and development, remediation, and permitting. Sales exceeded \$400,000.

**ENVIRONMENTAL SCIENCE & ENGINEERING, INC.** -- Gainesville, FL (1974 to 1988)

**Vice President** (1985 - 1988)

Director, Hazardous Waste Programs - Developed over \$14 million in new contracts with industry, USEPA, and state agencies; sponsored new offices in Princeton NJ, Atlanta GA, and Washington DC; and founded a new subsidiaries to perform asbestos monitoring, inspection, engineering, and construction services for remediation of soil and groundwater contamination.

Executive Committee, TEXSTOR - Founding director of a joint venture with PB-KBB to develop a geologic repository for solidified hazardous waste in a salt diaper (salt dome) in East Texas.

**Associate Vice President** (1982 - 1985)

Director, Hazardous Waste Programs - Responsible for development of business plan and implementation of marketing and sales effort targeted at hazardous waste project opportunities with all ESE clients. My sales exceeded \$3 million. Initiated ESE's corporate health & safety training and medical monitoring programs.

**Project Manager** (1980 - 1982)

Responsible for management of \$8 million in power plant siting and licensing projects for Atlantic City Electric, Potomac Electric Power Company, and Florida Power Corporation.

**Group Leader - Water Resources** (1976 - 1980)

Responsible for start-up, technical direction and management of a group of 20 water resource engineers, geohydrologists, oceanographers, environmental engineers and technicians. The group performed site investigations and engineering studies for water supply, waste treatment and disposal, water quality management and environmental impact assessment projects for industrial, utility and defense clients. I managed projects valued at \$1 million. I directed proposals valued at \$12 million and won contracts worth over \$8 million.

**Project Engineer** (1974 - 1976)

Responsible for industrial waste treatment engineering studies for phosphoric acid plants, food processing plants, organic chemical plants and coal fired electric power stations. Chaired rewrite of Corporate Policy and Procedure Manual.

**HARBOR BRANCH FOUNDATION** -- Ft. Pierce, FL (1973 to 1974)

**Engineer/Chief Mate, RV Johnson** - Responsible for surface ship operations and engineering support for the JOHNSON-SEALINK manned research submersible with diver lock-out capability and for tethered, remotely piloted submersibles.

**ROY F. WESTON, INC.** -- Houston, TX (1972 to 1973)

**Project Manager/Engineer** - Opened WESTON's first office in Texas. Designed and operated package wastewater treatment systems and prepared permit applications for petrochemical, shipboard and offshore oil platform applications. Developed environmental impact assessments for a proposed oil refinery in the Caribbean. Responsible for \$100,000 in new authorizations.

**THE PROCESS COMPANY, INC.** -- Houston, TX (1971 to 1972)

**Project Engineer** - Responsible for site investigations, waste sampling, laboratory analysis, and operation of waste treatment systems. Responsible for \$10,000 in new authorizations.

**NAVAL RESERVE OFFICERS SCHOOL** -- San Antonio, TX (1971)

**Instructor** - Responsible for instruction in oceanography and underwater acoustics required for with anti-submarine warfare operations.

**COLUMBIA UNIVERSITY** -- New York, NY (summer 1970)

**Mate, RV Manning** - Cruise to measure (in-situ) dissolved oxygen survey in New York Bight.

**LAMONT GEOLOGICAL OBSERVATORY** -- Palisades, NY (1969 to 1970)

**Mate/Engineer, RV Robert D. Conrad** -- Watch officer responsible for ship navigation and engineering operations in the Pacific. Supported deep ocean sediment coring; manganese nodule surveys; continuous seismic, gravity, magnetometer and bathymetric surveys. Provided operational support to General Motors for installation of a deep-water (20,000 feet) tri-moor acoustic array.

**EDUCATION**

MS	1971	Ocean Engineering	Columbia University
BS	1969	Marine Engineering	US Merchant Marine Academy

**REGISTRATIONS**

Registered Engineer – Florida #23139 – since 1977  
Certified Scuba Diver  
Retired Naval Officer (LT-USNR) and Merchant Ship Officer (3<sup>rd</sup> Mate/2<sup>nd</sup> Engineer)

**PROFESSIONAL/CIVIC ACTIVITIES**

Clean Fuel Florida Advisory Board  
Energy Subcommittee, Governor's Commission for Sustainable South Florida  
Past President -- Florida Engineering Society, North Central Florida Chapter  
Founding Member – ISO Technical Committee 197, Hydrogen Energy Systems  
Market Development Committee, Natural Gas Vehicle Coalition  
Past-Director -- Florida Defenders of the Environment  
Founding Director -- Sustainable Alachua County

Founding Director – Cross Creek Initiative  
Past-Chair, Treasurer, Internal Affairs -- Suwannee-St. Johns Group, Sierra Club  
Past-Treasurer, Gainesville Co-Recreational Soccer League  
Ethics Committee, Florida Bar, Environmental & Land Use Section  
Member -- AAAS -- American Association for the Advancement of Science  
Member -- American Society of Civil Engineers  
Member -- Society of Automotive Engineers  
International Association of Hydrogen Energy

Son David and daughter Heidi have four grandchildren. Recreational activities include soccer, tennis, golf, skiing, fresh & salt water fishing, canoeing, camping, surfing and floating the Ichetucknee.

## **KEY PROJECT EXPERIENCE**

### **Energy & Industrial Facilities**

Project Manager for environmental planning and licensing of Cumberland Unit I, a 260 MW pulverized coal unit for Atlantic City Electric.

Project Manager for planning and licensing of water supply and wastewater management for proposed 3200 MW pulverized coal units in Gulf and Osceola counties for Florida Power Corporation.

Project Manager for environmental planning and licensing for Station H, a proposed 300 MW pulverized coal unit for Potomac Electric Power Company.

Project Manager for environmental planning of a 440 MW Integrated Coal Gasification Combined Cycle unit for Potomac Electric Power Company.

Project Manager for concept engineering and pilot plant design and construction for a biomass-to-energy facility for the Lake Apopka Natural Gas District and the Gas Research Institute.

Task Manager. Evaluated alternative sources of cooling water (river, lake, ground, or estuary) and assessed impacts of wastewater discharges and hydrologic modifications for 1,200 MW pulverized steam coal units, Florida Power Corporation, Crystal River Units 4 & 5. Work performed under U.S. EPA Third Party Agreement to comply with NEPA Environmental Impact Statement and State of Florida Power Plant Siting criteria.

Task Manager for stormwater impacts for the atmospheric fluidized-bed combustion test unit, U.S. Energy Research and Development Administration, Morgantown, West Virginia.

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Task Manager -- Ideal Basic Industries Water Resources / Dredge & Fill Permits for Cement Kiln at Theodore Industrial Park Ship Canal, Mobile Bay, Alabama and Limerock Mine and barge loading terminal on the Alabama River.

Project Engineer for evaluation of wastewater management alternatives for the Gainesville Regional Utilities Deerhaven Unit I, 60-MGW oil fired electric power plant.

Director for comprehensive environmental monitoring and assessments for proposed industrial waste management facility in Liberty County, Texas.

Sampled emissions from kiln burning petroleum coke to make lightweight expanded aggregate.

### **Hazardous Waste and UST Site Remediation**

Project Director for Contamination Assessments, Remedial Action Plans and Technical Support at five Florida Turnpike Fuel Plazas - Field work included soil gas surveys to estimate the extent of subsurface hydrocarbon migration and installation and sampling of monitor wells to confirm the extent of the 1 ug/l benzene plume. Over 25,000 gallons of free product was recovered from wells.

Project Manager for Contamination Assessment and implementation of Remedial Action for CSX Transportation at an abandoned coal tar creosote tie-treating facility. Negotiated final consent order with FDER, including "no action" provisions. Scope of work included geophysical investigation; ground water monitoring; risk assessment; demolition and removal of structures; and excavation of subsurface sumps, tanks, and piping. Developed bid plans and

specifications, evaluated proposals, and served as owners' representative during removal activities.

Project Director for rapid response Contamination Assessments / Remedial Action at four Florida DOT properties condemned for highway right-of-way.

Project Director for Contamination Assessments, Risk Assessments and Feasibility Studies at 22 Florida DER Lead Hazardous Waste Sites.

Project Director for subcontract for Remedial Engineering Management (REM III) services at uncontrolled Hazardous Substances Disposal Sites within EPA Regions I-IV. Executed 26 assignments to conduct RI/FS studies, remedial designs, remedial actions and assessments of solid waste management units.

Project Director for subcontract to provide 24-hour response to Florida DER for environmental emergencies including spills, accidents, and uncontrolled hazardous material incidents.

Project Director for fast track feasibility study, risk analysis, design of interim remedial actions, and monitoring of excavation and offsite disposal of lead contaminated soils at the Sapp Battery NPL site.

Project Director for remedial response strategy at an abandoned coal gas plant. Negotiated remedial action plan with state regulatory agency and adjacent property owners.

Project Director for emergency response at the Tyson's Dump NPL site for the design, fabrication, erection and start-up of a 40 gpm packed tower air stripper for removal of volatile organic contaminants from leachate. Contaminants removed included toluene, xylene and 1,1,1-trichloropropane. System was online within 10 days after authorization to proceed.

Project Director for location of buried drums at the FDOT Borrow Pit in Fairbanks, Florida using remote sensing techniques; sampling and analyses of wells during preliminary assessment; oversight of drum removal; and post closure monitoring.

Hazardous Waste Program, Program Director-- Coordinated corporate resources to meet requirements of clients needing hazardous waste management services. Directed development of health and safety training, marketing, design engineering, and waste clean-up and disposal service capabilities.

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## **Solid Waste Management**

Project Director for an assessment of hazardous substances and wastes generated at Free Trade Zones in Cairo, Port Said, and Alexandria, Egypt. Developed draft environmental protection guidelines for projects funded by the U.S. Agency for International Development.

Project Director for development of coal ash landfill design criteria for Crystal River Units 4 and 5, Florida Power Corporation. Developed design criteria to satisfy Chapters 17-3 and 17-4 FAC with bench scale leachate formation testing, geophysical and geological investigations, onsite ground water quality monitoring, aquifer tests and modeling of ground water flow and leachate transport.

Project Engineer for evaluation of feasibility of barge transport of solid waste to landfill sites through the Chicago Ship Canal.

Evaluated feasibility of establishing a treatment facility for ship-and barge-generated waste oils, oily wastewater, and ballast water in the Houston-Galveston area.

Project Engineer for evaluation of a proposed site for location of a sanitary landfill and resource recovery facility for the City of Galveston, Texas.

Evaluated feasibility of siting a regional medical waste management incinerator in North Florida.

## **Industrial Waste / Water Treatment and Disposal**

Project Engineer for preparation of a wastewater permit application for the expansion of Bordon Chemical Company's Four Corners, Florida phosphate mine.

Project Engineer for sampling of waste waters from naval and commercial shipyard dry docks in California and Virginia.

Project Engineer for evaluation of wastewater management alternatives for Gulf Oil Chemicals styrene monomer chemical plant in Geismar, Louisiana.

Project Engineer for development of water and fluoride balance for process water system and storage ponds for wet process phosphoric acid plants.

Collected and analyzed data in support of EPA Effluent Guidelines Study for the organic and petrochemical industries, SIC Code 2815 and 2818.

Project Engineer for technical review of marine sanitation devices and feasibility of installation on 13 different types of ships and boats.

Project Engineer for technical assessment and market analysis for packaged wastewater treatment systems developed by Thiokol Chemical Corporation.

Engineer for design of treatment system for waste oils and wastewaters from Bethlehem Steel Corporation Sparrows Point barge and tanker cleaning facility.

Project Engineer for development of process flow diagrams and instrumentation plans for a test facility for shipboard oil-water separators.

Project Engineer for water and wastewater sections of the Development of Regional Impact for a proposal wet process phosphoric acid plant.

Project Manager for development of waste loads and wastewater treatment data for the Florida citrus industry.

Project Engineer for wasteload characterization for the miscellaneous foods and beverages industries.

Project Engineer for studies to characterize liquid and solid wastes generated by offshore oil activities, commercial ships, and marine terminals in the Gulf of Mexico.

Project Engineer. Detailed design review of prototype modular biological sewage treatment system using extended aeration with accelerated gravity solids separation.

## **Water Resources and Water Quality Management**

Project Director. Development of design treatment criteria to remove flocculent sediments and algae from Lake Apopka, Florida. Collected representative water and sediment samples and performed onsite pilot tests to determine settling rates and flocculent aid dosages. Developed concept design for pump intake structures and settling basins sized for 100 mgd.

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Task Manager. Water supply, wastewater, stormwater and dredge & fill permits for a cement kiln at the Theodore Industrial Park Ship Canal (Mobile Bay) and limestone quarry on the Alabama River and tributary watersheds.

Project Manager for Tallahassee-Leon County area wide Water Quality Management Study. Measured stormwater events and estimated annual mass loadings of nutrients, solids and metals in Lake Munson and Lake Jackson urban watersheds. Measured total and dissolved phosphorous loading to Megginniss Arm. Evaluated feasibility of retention basin-wetlands systems for nutrient removal from stormwater.

Project Manager for Macon-Bibb County Areawide Water Quality Management Study. Conducted baseline water quality monitoring program in Ocmulgee River watershed. Developed recommendations for erosion control ordinance.

Project Engineer. Estimated point and non-point source loads from urban and rural areas of four counties adjacent to Tampa Bay. Estimated waste load allocations for lake, reservoir, river, and estuarine segments.

Project Director for design of leachate testing program to determine quality of stormwater runoff from proposed phosphate mine in Manatee County, Florida.

## **Natural Gas Vehicle Deployment**

Prepared US Trade & Development Agency implementation plan for \$1.1 billion investment program to improve air quality by development of NGV infrastructure in Mexico City.

Business planning for Tren\*Fuels and FleetStar to develop networks of proposed public access NGV fuel stations in Texas, California, Nevada, Arizona, Florida, Georgia, the Carolinas, Virginia, Maryland, New Jersey, Pennsylvania, and New York.

Prepared NGV business plan for investor owned electric utility. NGV programs included CNG, LNG, and LCNG technologies.

Served on government, market, and technical committees for NGV Coalition.

## **Hythane Refueling Station and Vehicle**

Measured and evaluated emissions from use of hydrogen enriched natural gas in GM vans. Vehicle emissions testing performed by USEPA National Emissions Testing Laboratory in Ann Arbor, Michigan and the New York City Environmental Office. Program sponsored by the Pennsylvania Energy Office in association with APCI, National Fuel Gas Distribution Corporation, and Hydrogen Components, Inc.

## **Hydrogen Hybrid and Electric Vehicles**

Developed two-year program to evaluate performance of eight battery electric vehicles in commercial applications in Florida.

Designed compressed hydrogen gas fuel system for prototype PEM hydrogen fuel cell vehicle.

Served as operating engineer on diesel hybrid-electric powered oceanographic research ship -- the RV Robert D. Conrad.

Marketing and sales for electric vehicle products made by Solectria Corporation.

## **Liquid Hydrogen and Liquid Methane Fuels**

Member, US Delegation to ISO TC197. Served on Working Groups formed to develop international standards for liquid hydrogen storage tanks for vehicles and fuel stations.

Supported development of small-scale LNG liquefier and fuel station for heavy-duty trucks.

Developed LNG vehicle training manuals with Jack B. Kelley Company for the National Renewable Energy Laboratory.

Developed program plan to demonstrate deployment of niche applications of hydrogen energy systems in Florida.

Developed business plan to recover liquid methane and carbon dioxide from landfill gas and biogas from anaerobic sludge digesters.

Prepared technical and cost analysis of alternative methods of producing and delivering liquid and gaseous hydrogen fuels to wholesale fuel suppliers for sale to commercial and retail customers.

## Major Publications / Conference Presentations

Bruderly, D.E. and Piskura, J.P. " Solid Waste, Liquid Waste, Air Pollution, and Noise Pollution Management Planning for Ports," Presented at the Third International Conference Pollution Control, Montreal, June, 1973.

Bruderly, D.E. "Marine Aspects," Handbook ed. by Frank Cross, P.E., "Industrial Plant Siting," Technomic Publishing Co., Inc., 1975.

Bruderly, D.E., "Industrial Site Selection in the Coastal Zone," presented at the George Washington University Continuing Engineering Education Program, March, 1975.

Bruderly, D.E. Crane, J.D., and Riggenschach, J.D., "Feasibility of Reducing Hydrocarbons in the Effluent of a Styrene Monomer Facility," presented at the 32nd Annual Purdue Industrial Waste Conference, May, 1975.

Bruderly, D.E., "Sewage Treatment," Frank L. Cross, Editor, 1974. "Marine Environmental Engineering," Technomic Publishing, Inc.

Bruderly, D.E., "Hydrogen - The Clean Fuel of Tomorrow is Available Today," presented at the 83rd Annual Meeting of the Air & Waste Management Association, June 1990.

Bruderly, D.E., "Hydrogen - The Clean Fuel of Tomorrow is Needed Today," presented at the 8th World Hydrogen Energy Conference, July 1990.

Lynch, F., Fulton, J., Raman, V., Hansel, J., and Bruderly, D., "Hythane -- An Ultraclean Transportation Fuel", presented at the 10<sup>th</sup> World Hydrogen Energy Conference, July 1994.

Bruderly, D.E., "Global Climate Change: What Does This Mean to Florida?," Florida Engineering Society Journal, April 1998.

Bruderly, D.E., "Hydrogen Fuels: Pollution Prevention Strategy for the Marine Industry," 2<sup>nd</sup> Annual Statewide Pollution Prevention Conference, June 1998.

Bruderly, D.E., "Sustainable Living in Florida: Can We Go Beyond Compliance?," ELUS 12/18/05

Workshop, Florida Bar Environmental and Land Use Section, October 1998.

Bruderly, D.E., "Hydrogen Energy Systems: Roadmap for Cost-Effective Pollution Prevention and GHG Reduction Strategies," presented at the Air & Waste Management Association 2<sup>nd</sup> International Conference on Global Climate Change, Oct. 1998.

Bruderly, D.E., "Hydrogen Energy Systems: Sustainable Pollution Prevention and Greenhouse Gas Reduction Strategies," presented at the 9<sup>th</sup> Canadian Hydrogen Conference, February 1999.

Bruderly, D.E., "Florida Hydrogen Energy Initiative," presented at the 1999 Annual Conference, Florida Section, Air & Waste Management Association, September 1999.

Energy Policy Recommendations, Governors Commission for Sustainable South Florida, 1997.

"Hydrogen as an Energy Carrier", presentation to the Florida Public Service Commission, 2001.

Cornerstone Report to Florida Legislature, Clean Fuel Florida Advisory Board, January 2003

Public Interest Law Conference, Energy Panels, March 2002 and 2003.

Candidate for U.S. House of Representatives, Florida District 6, July to November 2002. Many presentations on energy and environmental policy.

Energy Policy Session Chair, National Hydrogen Association 13<sup>th</sup> Annual Meeting, March 2003.

"Hydrogen Energy Systems and the Electric Utility Industry" Southeast Green Power Conference, Orlando, FL May 2005.