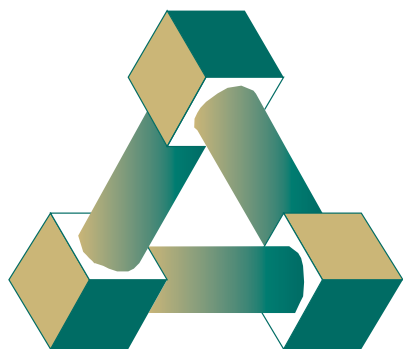


# ENGINEERING & DESIGN SERVICES

**PROCESSES**  
**UNLIMITED**   
International, Inc.



Alternative Fuels  
Energy  
Power Generation



## Processes Unlimited International Inc. Alternative Fuels, Energy & Power Generation

Processes Unlimited's experience goes back over two decades with a continuing progression of large-scale engineering, project management and start-up successes with steam and gas turbine plants. ProU has rapidly expanded its scope of large-scale projects to include process industries, electric utilities, and independent power producers. For example, we have provided mechanical, civil and structural services as well as electrical power and controls engineering for more than a dozen General Electric Power Systems projects around the globe. Most of these included field support, start-up and commissioning.

ProU's typical scope of activities extends from feasibility studies through to operational evaluations, and encompasses these major components of expertise:

- Site location assistance, civil engineering and site preparation
- Emissions studies, air pollution control engineering and monitoring
- Fuel storage, treatment and delivery systems
- Starting and fire protection systems
- Lubrication and cooling systems
- Air inlet and exhaust structures and silencers
- Electrical distribution and switchyard design
- Control systems, including remote communication links
- Emergency outage recovery management

### Clients

- American Petrofina
- Bayer
- Credit Service
- Duke Energy
- EnerTech
- Fram Fuels
- General Electric
- Georgia Power
- Global Green Solutions
- International Biofuels
- Microgy
- New Gas Concepts
- Public Service of New Hampshire
- Recycle USA
- Siemens
- Southern Company
- U.S. Corp of Engineers
- Valero
- Wisconsin Public Service

### Studies, Feasibility, Engineering, Energy Balances and Startups

- Carpet Industry
- Corp of Engineers
- Printing
- Pulp and Paper
- Refineries
- Municipal Waste
- Pharmaceuticals
- Universities

### Fuels

- Oil
- Coal
- Coke
- Municipal Waste
- Tires
- Wood
- Bio-Refinery Waste
- Rendered Fats/Oils

### Technology

- Feedwater Systems
- Baghouses
- Steam Turbines
- Gas Turbines
- Gas Compression
- Scrubbers
- Stacks
- Wasterwater
- Steam Piping
- HRSG
- Condensers
- Solid Fuel Handling
- Fly Ash Handling
- Lime Handling



# Clients

Alternative Fuel	Conceptual design, permitting support and owners engineering services for Oxford Energy for installation of two power generation plants fired solely on discarded whole tires, a 12 MW facility in Modesto, CA and a 26 MW facility located in Sterling, CN. These facilities were the first and second US installations based on whole tire incineration technology licensed through Fichtner, a German engineering firm based in Stuttgart, Germany.
Coal Fired	A detailed study and estimate to replace existing coal fired steam plant equipment with a new coal fired steam plant that would supply 1,000,000 pph of steam for process and power needs for the Corn Products facility in Bedford Park, IL.
Waste Coal Fired	A detailed study, estimate and permit support for Inter-Power of New York for the Halfmoon power plant located near Albany, NY. This included installation of three steam boiler trains fired with waste coal to provide 200 MW of electrical power and 400,000 pph of process steam.
Coal to Wood	A detailed study and estimate to re-commission 3 X 18 MW steam turbine for the White Pine Copper refinery located in White Pine, MI. The re-commissioning included upgrade of the existing cooling water spray pond and conversion of three retired coal fired boilers to wood fuel.
Banker's Engineer	Banks engineering services for Credit Suisse of New York providing annual review of the 270 MW Coso Geothermal Power Plant located at the Naval Air Weapons Station - China Lake in California including the review of performance, budgets, projects and maintenance.
Banker's Engineer	Banks engineering services for Credit Suisse of New York providing review of project progress and approval of requests for payment of the environmental upgrade of geothermal non-condensable gas handling system at the 270 MW Coso Geothermal Power Plant located at the Naval Air Weapons Station - China Lake in California. This new system used licensed chelate scrubbing technology to convert H <sub>2</sub> S in the non-condensable gases into elemental sulfur made available for soils enhancement

Turbine Generators	Engineering design and field support, including piping tie-ins, design and stress analysis; electrical power and control; cooling tower structural, mechanical and controls design; turbine and generator control system tie-ins; field investigations and field support for \$25 MM project.
Factory Mutual	The insurance underwriter for this facility brought ProU to assist FM in understanding and dealing with the situation, and in assisting the plant in restoring operations in the steel mill. Specifically, ProU was asked to review the temporary electrical power distribution changes needed for temporary operations at the TRICO plant, assisting the insured with developing and choosing options for temporary power, expediting the manufacturing and delivery of replacement transformers, and evaluating the continued risks to operations.
Siemens Power	<p>Texas Utilities – Audited two coal fired power sites, Monticello (2 - 630 MW and 1 - 850 MW units) and Big Brown (2 - 630 MW units), to add additional instrumentation for a preventative maintenance system. The work included site walk downs to determine the installation requirements for each instrument, the field routing of the cabling for the instruments and a capital cost estimate for the project.</p> <p>Ameren UE – Modified existing unit programming and hardware to allow remote start, stop, generator load control and remote status and alarming for two sites: Audrain (Vandalia, IL) with 8 - 80 MW GE 7EA gas turbines and Raccoon Creek (Flora, IL) with 4 - 75 MW GE 7EA gas turbines. Assisted in the graphic modifications at the Goose Creek site (Monticello, IL) with 6 - 75 MW GE 7EA gas turbines. Each site required all modifications to be made and implemented on site.</p> <p>Ameren UE – Modified/installed hardware to allow remote alarming and monitoring for 3 Siemens gas turbine units at the Venice site (Venice, IL).</p> <p>Trans Alta – Assisted Siemens in walk downs and preparing a proposal for replacing the control systems for boiler and turbine controls on a total of 8 - 350 MW coal fired power units in Edmonton, Alberta Canada for a total value to Siemens of \$40M over 5 years. The project has the potential to grow to include instrumentation.</p>

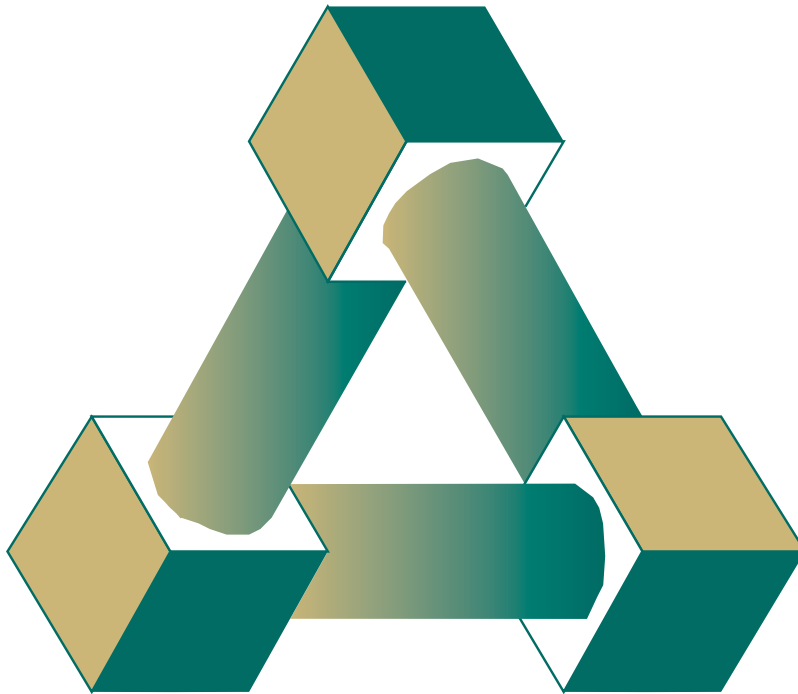


# Clients

Biogas	Working with Microgy, ProU provided the detailed design that moved licensed technology from concept to start-up of the world's largest cow manure to pipeline quality methane facility in Stephenville, Texas. The project converts the manure from 10,000 head of cattle into enough gas to supply 10,000 homes.
Biogas	Working with a confidential client in Georgia, ProU is providing project development services for cow manure to biogas plant. In addition to providing pipeline quality biogas as green energy to displace natural gas, the facility will address manure management as well as crop nutrient management to become an integral part of the overall dairy operation. ProU developed the conceptual design, participated in site selection, identified raw material supplier, identified investors, estimated the investment cost, and developed the project pro forma.
Ethanol	While corn to ethanol is maturing into standard designs for large facilities, ProU is working with a confidential client in the Southeast to apply this process on a smaller scale that makes a lot sense. ProU has provided a preliminary design and estimate to make ethanol from consumer waste that was destined for the landfill. Not only is the project economically viable, it returns control of the waste to the owner, extends the life of the landfill and displaces fossil fuels.
Waste Wood	ProU has a history of converting raw wood into consumer goods such as particle board and paper, and managing the wood waste as fuel to raise steam for manufacturing as well as power generation. Working with a variety of clients, ProU is leveraging our experience with wood into alternative energy projects.
Biomass (Green Energy)	Working with Public Service of New Hampshire, ProU as a turnkey partner with Cianbro, provided the detailed design, procurement, programming, startup and commissioning of the wood fuel handling system for a wood fired circulating fluid bed boiler installed in Portsmouth, New Hampshire. This project was recently awarded Power Magazine's Marmaduke Award of Excellence in O&M. The project is one of the largest Biomass boilers in the U.S.

Wood Pellets	ProU provided bankers engineering service for review of a new wood pellet mill facility proposed for installation. Our experience led to the conclusion that proposed innovations would not reduce to practice and help investors make the right decision early.
Pyrolysis	Working with Eprida, ProU is providing detailed design to develop a research wood pyrolysis unit operated at the University of Georgia into a demonstration pilot plant to move the operation toward commercialization. This unique operation converts woody waste into synthetic gas that can be used to provide thermal or electrical energy and char for use as a soil enhancer.
Simple Cycle	Detailed design of a simple cycle power plant. This included installation of a GE 7EA combustion turbine providing 80 MW of electrical power for peaking capacity.
Combined Cycle	Detailed design of a combined cycled power plant. This included installation of a GE LM6000 combustion turbine providing 50 MW of electrical power for use or dispatch plus a heat recovery steam generator and duct burner capable of providing 200,000 pph of process steam.
GE Power	Ras Abu Fontas — Assisted in the electrical, mechanical and controls coordination of multiple design contracts and design of the balance of plant systems for a new power facility in Doha, Qatar. The facility included 3 - 280 MW GE gas turbines and 2 heat recovery steam generators (HRSGs). We also assisted in on site construction support for electrical, mechanical and controls construction.
Alternative Fuel	Working with FRAM Fuels LLC, ProU provided detailed design of a new wood pellet mill facility located in Georgia that will convert local hardwood and softwood to fuel for sale to European markets. Wood pellets serve as an alternative to fossil fuels with significantly lower "greenhouse gas" emissions.
Alternative Fuel	Working with Bountiful Applied Research Corp, ProU is providing detailed design to develop a research lignin separation unit operated at the University of Georgia into a demonstration pilot plant to move the operation toward commercialization. This patented process precipitates lignin from wood cooking liquors that can be used as a feed stock to other alternative energy operations while adding or augmenting chemical recovery of pulping operations.





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