



Renewable Energy Capabilities



CUSTOM CONTROL & AUTOMATION SOLUTIONS
since 1979

THREE DECADES OF EXPERIENCE

For over three decades, Control & Power Systems' (CPS) in-house staff has engineered, designed, programmed, fabricated, installed, formally tested and validated thousands of process automation skids and control systems. Every CPS system is built and programmed to the highest quality standards. CPS' commitment to on-time delivery and the pursuit of customer satisfaction is uncompromising.

Automation Software Solutions

CPS software development and testing follow the industry proven "V model" for the GMP and non-GMP software systems that are developed and deployed. CPS is highly experienced in:

- **PLC/DCS Programming**
- **MMI & SCADA Based Systems**
- **S88 Batch Control**
- **Batch Reporting**
- **Data Historian**
- **21 CFR Part 11 Compliance**
- **RFID - Wireless**

Engineering & Design Expertise

CPS provides all of the engineering and design capabilities needed for manufacturing, process skids and automation systems.

- **Process Design**
- **P&ID**
- **3-D Mechanical Design**
- **Electrical and Power**
- **CAD Drawings**
- **Mechanical Skid Design**
- **Lifecycle Documentation**
- **Structural Design**
- **Functional Requirement Specification (FRS)**
- **Control Strategy Development**
- **Hardware Specification (HDS)**
- **Software Specification (SDS)**
- **Detailed Design Specification (DDS)**
- **Instrumentation Specification**



Project Management

CPS understands all phases of managing and implementing complex projects. Project manager's focus on high value, on-time solutions that meet each client's specific requirements.

Start-up Support

- **Calibration**
- **Commissioning**
- **Loop Tuning**

Fabrication/Installation

- | | |
|------------------------------------|------------------------------|
| • Custom Skid Fabrication | • Explosion Proof |
| • Control Panel Fabrication | • Welding |
| • UL508A / 698A / 698B | • Piping & Tubing |
| • CUL, CE Certification | • Pneumatic Systems |
| • Instrumentation | • Hydraulic Systems |
| • Intrinsically Safe | • Painting |





Recent Projects

Innovation Fuels, Inc. 20 MMGY Biodiesel Plant Newark, NJ

CPS has designed, programmed and installed Phase One process automation at the 20 MMGPY Innovation Fuels Inc (IFI) biodiesel plant in Newark, NJ. The plant, originally built as a terminal on the Passaic River in 1890 and converted for biodiesel production in 2006, was previously operated manually. During the current upgrade, acid esterification reactors were added to diversify the feedstock capabilities. IFI realized that the upgraded, more complex plant, would be more difficult to operate manually and engaged CPS to automate the entire operation in phases. Phase One includes the operation of two acid esterification reactors and two transesterification reactors, each of approximately 100,000 gallon capacity and the operation of the waste water treatment system. The challenges in this project were working within the parameters of an existing plant that had been based on even older components. Subsequent phases will completely automate all aspects of the plant from feedstock receiving to product shipping. CPS designed the automation system based upon AB ControlLogix PLCs, Citect SCADA, Yokagawa and Endress & Hauser instrumentation fully programmed to match the Innovation Fuels' defined sequences of operation. Phase One was commissioned in June 2010

Renewable Biosystems, LLC. (RBL) Advanced Oil Extraction Technologies Fairfield, New Jersey

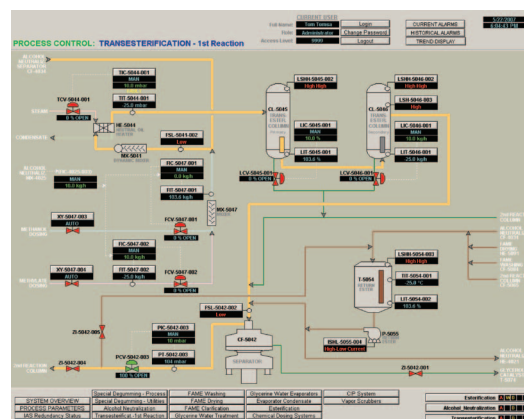
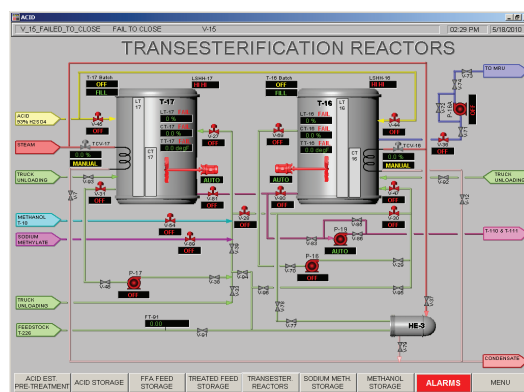
The RBL technology extracts oil from organic waste streams through a patented process that involves size reduction, heat and centrifugation. The RBL machines process up to 15 metric tons per hour of organic waste and extracts oil that is suitable for further processing into biodiesel or renewable diesel. CPS has been selected to fabricate these advanced oil extraction machines for RBL. When completed these skids are approximately 10 feet wide, 50 feet long and 12 feet high. The process includes a sophisticated CPS-designed automation and instrumentation package allowing for streamlined operator interface and telemetric monitoring from the RBL head office.

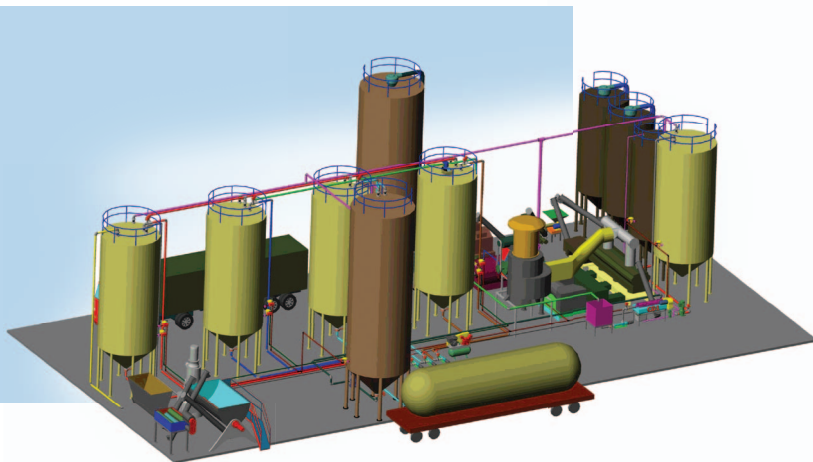
Cellulosic Ethanol Plant USA

CPS has been engaged to provide the controls and instrumentation package for an Extended Validation Run (EVR) for a DOE backed Cellulosic Ethanol plant. As part of the EVR upgrade project, new process equipment, instrumentation and discrete controls will be installed and connected to the SIMATIC PCS-7 DCS utilizing SIMATIC NET network components; Profibus DP, Profibus PA, AS-i bus and Industrial Ethernet.

The new process equipment being designed, installed, instrumented and controlled by the Siemens DCS include a Packaged Boiler System, Waste Water Evaporator Skid, Distillation Rectifying Column, Dry Cooler System, Chiller Unit and IK Fermenter System. CPS is providing the software design engineering, instrumentation installation and calibration, DCS Programming, Graphical User Interface, startup & commissioning services, and operator training.

A second planned EVR scheduled for January, 2011, will add a second process stream and will require a major reconfiguration of the existing and new equipment. CPS has been selected to develop the new control strategy which will require additional re-tasking of process vessels and systems to incorporate the second processing stream and integrate three new process systems being installed as part of the second EVR.

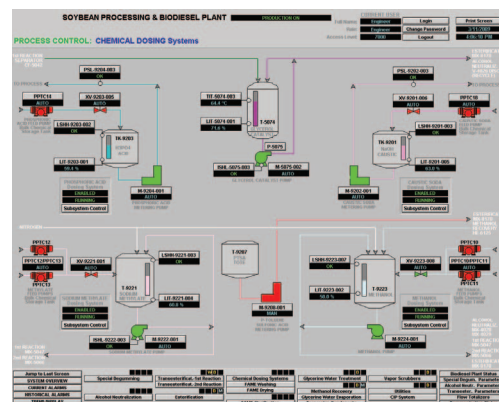




CPS designed, programmed and installed the automation system for the integrated Louis Dreyfus commodities soybean oil extraction and biodiesel project in Claypool, Indiana. The control system utilizes AB - ControlLogix software with Wonderware ArchestraA Technology. The system controls and monitors the entire biodiesel production operation including the glycerin, water and methanol recovery processes. The plant produces over one million tons of soybean meal and 90 million gallons of soybean oil annually. This plant was commissioned in April 2008.

Coming off the successful start-up in Indiana, CPS also designed, programmed and installed the automation system for the similarly sized integrated Louis Dreyfus plant in Argentina. The project included the design and installation of a sophisticated PLC control system utilizing Siemens PLCs and HMI with Wonderware ArchestraA Technology. The commissioning date for this plant was July 2008.

CPS was selected for these projects on the basis of our experience with biofuels, fuel blending, fuel metering, fuel additives, and the control systems being utilized. For these projects CPS supplied design engineering, system programming, fabrication, installation supervision, instrumentation calibration, startup services, and operator training.



CPS has been engaged to provide the engineering and process design expertise to prepare preliminary P&IDs associated with the Waste-to-Energy Facility. The facility is sized to process 900 tons/day of food waste and provide for 6 MW of base load generating power on a 24/7 basis. In addition, the facility will produce other useable products, including biogas, heat, high-quality compost and a nitrogen-based fertilizer.

CPS produced an Instrumentation & Control Design Manual (ICDM) that includes:

- Instrumentation & Control System Narrative inclusive of sequence of operations.
- Specification of control equipment such as PLCs, SCADA/OIT Software, Servers, Workstations, field control devices, instrumentation, control wiring & installation specifications.
- Preliminary design and layout of Control Panels, remote PLC and remote I/O processing Racks.
- Preliminary design and layout of Control Room and Electrical Room with MCC Bucket assignments as well as physical dimensions of equipment and work around space clearances.

Once the architectural plans and permitting are complete, construction for the facility is planned to begin October 2010. The facility is scheduled to go online the first quarter of 2012.



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