A variety of feedstocks are playing a key role in weaning the United States from its oil dependence. JatroDiesel is an emerging leader in turning these unheralded feedstocks into high-quality biodiesel across the United States and beyond.

Greener investment return

The move to automation represented a milestone for JatroDiesel and demonstrated the company’s commitment to significant cost reduction. The company has now built fully automated plants from California to Maryland with the help of automation and instrumentation from Siemens. According to JatroDiesel, every one of its plants featuring Siemens automation provides significant reductions in capital costs, involving everything from start-up and programming to cabling and wiring.

An additional $1.5 million in operating expenses is cut using automation and instrumentation that enable streamlined staffs to deliver unprecedented accuracy and reliability in the production process. Manual plants require four to eight technicians per shift. JatroDiesel operations require only two employees for biodiesel production.

“Sitrans Coriolis flowmeters, for example, enable operators to introduce exact levels of oils, catalyst, and methanol into the reactors, which can save $300,000 to $500,000 annually in a 5-million-gallon-a-year operation,” says Raj Mosali, JatroDiesel’s president and CEO. The simplicity of Siemens technology has allowed JatroDiesel to reduce training to a week or less, compared to the month or more it takes to prepare a worker to manage the manual process. This fact alone provides a huge return on a customer’s investment. Siemens automation has also eliminated the need for plant personnel to understand the process complexities.

Process quality assurance

JatroDiesel production begins when feedstock tankers are unloaded into processing tanks with methanol and sodium methylate, which helps in the conversion of fats and oils to biofuel. A single Simatic S7 315-2DP controller enables JatroDiesel to produce 2 to 10 million gallons of biodiesel per year. The controller operates and monitors a variety of Siemens gear and instrumentation, and is programmed to follow a variety of feedstock formulas for...
JatroDiesel is an emerging leader in biofuels production

high-quality biodiesel. Five Sitrans FC Coriolis flow-meters measure the movement of liquids throughout the process, while more than 10 Sitrans pressure transmitters, including the Sitrans P DSIII and the Sitrans Z, and 40 Siemens Sitrans TH400 temperature transmitters constantly provide critical data from the storage and purification tanks.

Fourteen Sitrans Probe LU and four Sitrans LR level devices provide continuous ultrasonic and radar level measurements on storage tanks, while Pointek CLS200 level switches offer overflow protection in the process area.

Thirteen Micromaster 400 series variable-frequency drives, connected to a Profinet network, are used to alter process flow, and a single Sipart PS2 valve positioner controls temperatures in the distillation column, where the methanol and fats or oils are first mixed.

The controller tracks and records all plant activity, and a Simatic TP277 touchpanel, featuring WinCC flexible software, provides a full-color window into the entire operation, as well as a virtual control panel with the flexibility and expandability to meet future demands. All authorized personnel can remotely access, update, and troubleshoot their plants from home or virtually anywhere in the world. The system also offers online trending and alarms, which help keep process parameters in line for top-quality production.

Effective plant operation

The JatroDiesel founders decided that their automation systems would operate over a Profinet network. Profinet network wiring allows the plants to operate in a clean environment without inaccurate control or spill incidents. “While a typical biodiesel plant installation has more than 600 cables running from field devices to the control room, a JatroDiesel plant has just nine Profinet cables that bring everything together. It’s amazingly effective and efficient — saving significant time and money,” states Jorge Fernandez, JatroDiesel automation expert.

The distribution process

When fuel distributors arrive at a JatroDiesel plant, management knows the company has done all it can to produce the highest-quality biodiesel on the market, with the assistance of Siemens technology. Distributors load their trucks for the trip to final processing, where the biofuel is mixed with petroleum diesel to form the final product ready for the pumps at truck stops, ship and train yards, and gas stations nationwide.

Some JatroDiesel partners are currently building larger and more complex biodiesel factories, and company executives are excited to know that Siemens has the technology and knowledge to ensure successful biodiesel production. “We must produce a very consistent biodiesel product, and we wouldn’t be able to do that without Siemens automation, that’s for sure,” says a JatroDiesel partner executive.

Key points

Siemens Technology Advantages:
- Less wiring and cabling throughout the facility
- Shorter training periods for plant operators
- Simple integration between hardware devices
- Constant monitoring of facility processes for a quality product

info contact

www.siemens.com/biofuels
rich.chmielewski@siemens.com