

## Air Liquide Engineering & Construction

Air Liquide Engineering & Construction has been instrumental in oleochemical and biodiesel plant development over the years. In 2007, Air Liquide acquired Lurgi Group and its decades of development in oils and fats processing technologies. The firm has delivered more than 300 extraction and refining facilities, ranging from 100 tons per day (tpd) to 6,000 tpd. “We have built more than 70 oleochemical plants in the past 15 years,” says Etienne Sturm, business development director at Air Liquide Engineering & Construction in Houston. “All of them are still in operation.” Sixteen are complete fatty acid plants with feed capacities up to 600 tpd. “Our teams have been involved in plant expansion and upgrades as our customers grow,” he adds. “We’ve built 12 fatty alcohol plants, 28 glycerin recovery and pharma-grade glycerin distillation plants, including the world’s largest distillation unit of 600 tpd, and 75 biodiesel plants.”

Making recent headlines is Air Liquide Engineering & Construction’s agreement with Cargill to engineer and supply a 60 MMgy biodiesel plant in Wichita, Kansas, using its Lurgi process technology. “We established the current industry norm of 60 MMgy, still recognized across the industry today,” Sturm says.

“Through our R&D, we have been developing oleochemistry that adds value for our customers.” Air Liquide’s developments include technologies for on-spec, sediment-free biodiesel, even from feedstocks with 100 percent free fatty acids; a low-pressure process for fatty alcohols (around 75 bar); methyl ester hydrolysis; and glycerin to bio propylene glycol (Bio PG). Air Liquide’s aspirations for the North American market are supporting its biodiesel technology, expanding implementation of its solvent extraction technology, and further developing its commercially proven Bio PG technology.

“Our solvent extraction technology—Lurgi Sliding Cells—is well-suited for multi-feedstock operations because of its advanced control features and ability to handle high levels of fines,” Sturm says, adding that Air Liquide has built more than 200 units worldwide as large as 6,000 tpd. “We want our customers to benefit from its flexibility in operations and feedstock, higher safety standards and higher efficiency.”

Air Liquide’s Bio PG technology converts low-value crude glycerin into high-value propylene glycol worth about 70 cents a pound. “This technology provides a higher return on investment for owners—over 20 percent—



PHOTO: AIR LIQUIDE ENGINEERING & CONSTRUCTION

and is commercially proven, safe and more competitive than traditional propylene glycol,” Sturm says.

Sturm, who’s been with Air Liquide for 20-plus years, says Air Liquide brings a one-stop-shop to the U.S. market for all technologies—from oil extraction to various oleochemicals. “We excel in process integration and optimization, and we’re the only technology supplier to possess such a variety of technologies,” he says. “Air Liquide Engineering & Construction is a center of expertise for project execution. We can deliver full engineering and procurement if necessary, including the process guarantee. This represents a step forward for owners who want to reduce project risk.”




**Cryogenics & Lurgi technologies**

## Extending oleochemistry

### Glycerin to Bio Propylene Glycol

Our quest for extending oleochemistry never stops.

Air Liquide Engineering & Construction offers bio-based process of converting abundant glycerin to a fast growing outlet with:

-  five-fold increase in product value
-  highly competitive drop-in alternative to conventional propylene glycol
-  commercially proven licensed BASF technology
-  safe, sustainable process
-  reduced environmental footprint

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Air Liquide Engineering & Construction leads the oleochemical market through its portfolio of Lurgi technologies

