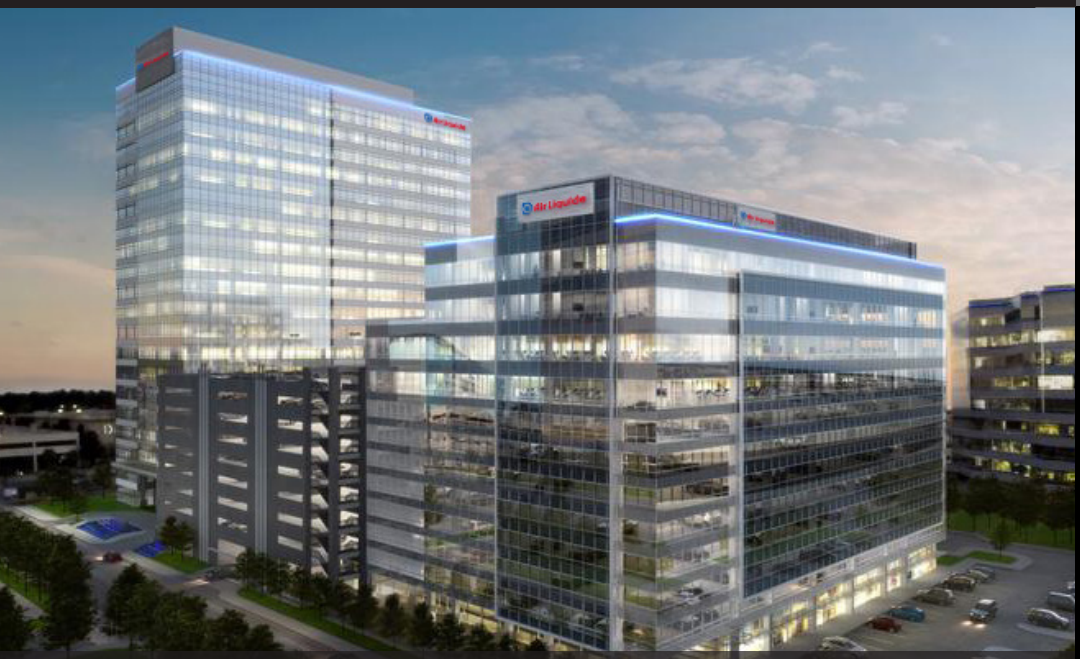
Air Liquide Engineering & Construction

OVER A CENTURY OF INNOVATION IN OILSEED PROCESSING AND BEYOND



Air Liquide's North American headquarters in Houston, TX. Photos courtesy of Air Liquide.

COMPANY PROFILE

Houston, TX
713-624-8000

Etienne Sturm
Director of Business Development

TECHNOLOGIES
Lurgi Sliding Cell Extractor
Natural Oil Refining
Biodiesel
Methyl Esters
Glycerin Distillation
Fatty Acids and Alcohols
Hydrogenation
Green Chemicals
Bio Propylene Glycol

engineering-airliquide.com

HISTORY | PHILOSOPHY | PRODUCTS

In 1902, French engineer George Claude successfully developed a new air liquefaction process. Along with his business partner, Paul Delorme, the two launched a public company called Air Liquide, for the research of Claude's processes.

Today, innovation continues at the heart of the company. Air Liquide Engineering & Construction builds the group's production units (mainly air gas separation and hydrogen production units) and provides external customers with efficient, sustainable, customized technology and process solutions.

Lurgi Technologies can be traced back more than 120 years to Frankfurt, Germany, to a company operating under the name Metallurgische Gesellschaft. As the company began to diversify in the early 1900s due to new business development in steam and absorption techniques, as well as its expertise in upgrading solid fuels and processing, it divided into subsidiaries and adopted the legal trading name, Lurgi.

More than a century later, in 2007, Air Liquide acquired the Lurgi Group. This acquisition combined Air Liquide's portfolio of cryogenics technologies with Lurgi's strengths in hydrogen, petrochemicals, oleochemicals, and biodiesel into one global business unit, Air Liquide Engineering & Construction.

According to Etienne Sturm, director of business development, "We first developed our technologies more than a century ago, and now we have more than 60 technologies across many product lines, including oleochemicals."

Today, Air Liquide is present in 80 countries with approximately 65,000 employees.

FOUNDED
1902

COMPANY TIMELINE

1902 Air Liquide is founded by Georges Claude and Paul Delorme.

1906 Lurgi Group begins adding production units internationally (Europe, 1906; Japan, 1907; Canada, 1911; United States, 1916).

1913 Air Liquide shares are traded for the first time on the Paris stock exchange.

1919 Metallurgische Gesellschaft divided into subsidiaries thanks to developments in steam and absorbtion techniques. Adopts the legal trading name, Lurgi.

1960 Air Liquide implements pipeline network strategy to link its gas production units by building a network of pipelines. As a result, production capacity grows tenfold in response to booming demand from large-scale industries.

1970 Air Liquide opens the Claude-Delorme Research Center to improve gas production techniques and developing applications for gases.

2007 Air Liquide acquires the Lurgi Group, which joined forces with its cryogenics engineering to form a global business unit, Air Liquide Engineering & Construction.

ETIENNE STURM

Air Liquide Engineering & Construction operates under the motto of "a technology partner of choice" to today's market. To achieve this, the company focuses on continually anticipating future needs and delivering innovative technologies to its customers across the entire engineering project lifecycle, from licensed engineering services proprietary equipment, high-end engineering, and design capabilities, to project management and execution services.

Additionally, Sturm says "the company attributes much of its success to its ability to deliver completely engineered solutions, either standard or custom made.

"Our preferred business model is to deliver a full engineering and procurement package," he says. "The main advantages of this package are that they remove a critical interface between engineering and equipment supply, thus providing a single point of responsibility and an overall performance guarantee. But, we can be flexible depending on customer needs," he adds.

According to Sturm, Air Liquide Engineering & Construction is unique as a one-stop shop for oilseed and specialty chemicals processing. "Most other providers in the industry are equipment centers, so they fabricate a piece of equipment and sell it," he says.

"We, on the other hand, focus on engineered process solutions. When customers go with equipment providers, usually they then need to hire an engineering company to do the plant design and buy equipment from different manufacturers. We have the ability to do all that in one shop." ▶

SLIDING CELL EXTRACTOR

In the oilseed industry, Air Liquide Engineering & Construction is known best for its Lurgi Sliding Cell Extractor, a technology for producing crude edible oils that can be used in food applications after refining.

Based on seed crushing and solvent extraction, the process can be applied to a wide range of feedstocks such as soybeans, canola, sunflower, and palm kernel. "The Sliding Cell Extractor uses a feedstock of oilseeds and has a capacity of up to 10,000 tons per day," explains Sturm. "After the seeds have been prepared, the oil is extracted with hexane."

A key feature of the technology is its adaptability. The extractor enables flexible operations, better stage separation, and has the capacity for rapid warm up after shutdown – in under 60 minutes. "The technology also is reliable, with the ability to handle a high level of fines, and it is safe – with features that avoid solvent backflow and back pressure, with zero water discharge."

This technology was first introduced in the late 1990s as a replacement of Lurgi's first-generation extractor. It has been continuously improved since then, he adds. Today, more than 200 units are in operation worldwide.

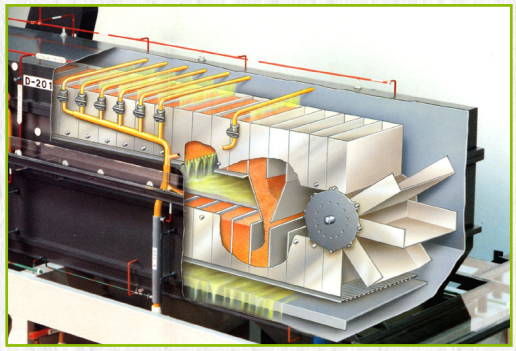
"We have assembled a local sales and technical team, based in Houston, TX," says Sturm, "which is dedicated to the U.S. oleochemical market. We bring a competitive advantage and are complementing the team as we speak with technical capabilities in oleochemicals, biodiesel, and extraction so that we can address our U.S. customers' needs."

Rob Nieminen, contributing writer

Biofuels Production Unit – Spain

Lurgi Sliding Cell Extractor – Mega Oilseed Complex, China

Glycerin Refining Production Unit – Argentina



Lurgi Sliding Cell Extractor

TEES | **PERDC**
PROCESS ENGINEERING RESEARCH & DEVELOPMENT CENTER
TEXAS A&M ENGINEERING EXPERIMENT STATION

Course	Date
Snack Foods Processing: Extruded Snacks & Tortilla Chips	March 24 - 29
Oil Mill Operators Short Course	March 31 - April 2
Trends in Margarine and Shortening Manufacture, Non-Trans Products	May 12 - 16
Membrane & Other Separations Technologies Short Course	May 19 - 23
Extruded Pet Foods and Treats Short Course	July 8 - 11
Vegetable Oil Frying: Live demonstrations, Oil Analyses and Product Evaluation	August 11 - 13
Aquaculture Feed Extrusion, Nutrition and Feed Management Short Course	August 25 - 30
Food Extrusion: Cereals, Protein & Other Ingredients	Sept. 29 - Oct. 4
Vegetable Oil Processing and Products of Vegetable Oil/Biodiesel	October 27 - 31
Vegetable Oil Extraction	November 10 - 14

For course description please visit
https://perdc.wpengine.com/events/