

# ENERGY, OIL & GAS

Incorporating

**Energy & Mining**

INTERNATIONAL

A WORLD OF RESOURCES

## Driving forward

PROCESS TECHNOLOGY  
PIONEER LUMMUS CONTINUES  
TO BUILD MOMENTUM, THANKS  
TO INVESTMENTS IN ITS  
PORTFOLIO AND CORE  
COMPETENCIES

### **Cybersecurity**

As cyber-attacks on critical infrastructure continue to soar, it is imperative that OT security is no longer an afterthought

### **Solar**

Why the oil and gas industry should consider tapping into the benefits of renewable energy for its own power needs

# Driving the energy transition forward

By creating technologies that increase energy efficiency and lower carbon footprints, while reducing costs and enhancing performance, Lummus Technology has carved out a strong reputation over the years – 115 of them, to be exact



**It has been a year since** we last spoke with Leon de Bruyn, President and CEO at Lummus Technology (Lummus), a global leader in developing process technologies that, as the company puts it, make modern life possible. Modern life is an interesting collocation.

At a glance, it describes the present moment; however, probe a little deeper and you can feel the weight of modernity pressing down: industry, technology, and adjoining contemporary crises like climate change. Lummus seeks to investigate that imposing intersection between modernity and

sustainability, focusing on innovative process technologies that support a low or zero carbon future, as well as supplying proprietary equipment, catalysts, and digital and lifecycle services to customers in the downstream energy industry. It is evident that Lummus has continued to

build momentum over the course of the past year. “In the last year or so, we went from creating a basis for the company, following an acquisition by Rhône Capital and the Chatterjee Group, which fundamentally established us as a standalone business, through financial, operational, and cultural



adjustments, to now firmly building on our future against the backdrop of a global energy transition,” explains Leon. “Operationally, we have changed our model to become more customer-centric. We have also harmonized our business around three core markets – polymers, petrochemicals, and clean fuels – and adapted a third pillar of services to enhance our customers’ operations.

“From a technological standpoint, we have aggressively expanded our portfolio and refined our core competencies in polymer technology,” he continues. “Indeed, essentially, we want to build out a competitive advantage, cementing our position as a global leader in the field by adding more logical and sustainable expansions to our framework, and offer more value to customers by providing value across multiple disciplines: process technology, catalyst services, proprietary equipment, and digital consultancy.”

Though Leon admits there is still much ground to cover, Lummus has been incredibly busy over the last 12 months. For instance, it has built new strategic businesses such as Green Circle and Lummus Digital.

More recently, though, the process technology pioneer announced a revolutionary Net Zero ethane cracker, which not only represents an industry first but can also

negate CO<sub>2</sub> emissions from new or existing ethylene plants.

The next generation design constitutes part of the company’s overarching decarbonization strategy to reduce greenhouse gas emissions from all its technology and is now available for commercial use. “On that project, we knew from the outset that we wanted to challenge the status quo,” asserts Leon. “Prior to our discovery, the consensus was that there was always going to be CO<sub>2</sub> production in a cracker. With the backdrop of the energy transition in mind, we sought to cut CO<sub>2</sub> emissions from ethylene plants. First, our customers wanted it and second, we always aim to be ahead of the curve. By offering a definitive way to make petrochemical manufacturing more sustainable, we are achieving both by making what is typically a very carbon intensive process more environmentally friendly.”

In an astonishing feat of engineering, Lummus was able to defy expectations and design a Net Zero cracker that produces ethylene to the same use and efficiency specifications without emitting any CO<sub>2</sub> – there is no combustion of methane gas throughout the entire process. “To achieve that result, we had to make a lot of design changes, but we remained undeterred; passion fueled

the entire project,” details Leon. “We said that we wanted to make a Net Zero ethylene cracker to assist our customers in their energy transitions and we went out and did it. This technology makes up part of a comprehensive decarbonization strategy that we are currently putting in place to reduce the carbon footprint of our entire portfolio. It is, quite simply, something we must do. In fact, everyone must.”

Operating holistically through this wider network of companies, then, Lummus is firmly supporting the downstream energy industry in its transition towards a carbon neutral circular economy. Another entity operating under the Lummus brand to decarbonize the company’s extensive asset portfolio is Green Circle.

“In short, Green Circle is an incubator for new technologies,” explains Leon. “By utilizing our robust R&D centers, we are able to upscale revolutionary but nascent technologies in collaboration with scientific partners. Smart innovations are delivered to us, and, through Green Circle, we take that technology from its initial laboratory stage to a demo stage; after that, we then progress to a semi-commercial scale before fully developing it into a commercialized entity that can be integrated with existing infrastructure.

“We are fast-tracking the commercialization of these low and zero carbon technologies,” Leon summarizes. “That is important because we cannot afford to spend another ten-to-15 years stuck in the mire of development. Such

**T&D FABRICATION INC**

T&D Fabrication Inc is a privately-owned, full-service engineering company, with a 75,000-square-foot manufacturing shop onsite, located only a few miles from the heart of Tulsa, Oklahoma. We have been servicing some of the world’s largest producers of oil, gas, and LNG for nearly 30 years. Our mission is to be, first, a partner to our customer, and second, to set the bar for quality standards in this industry. We are the solutions company. Bring us your problem, and we will turn into your most trusted partner.



## T&D

**FABRICATION, INC.**

T&D Fabrication, Inc. was born as an ASME pressure vessel manufacturing shop and has grown into a design, engineering, and custom fabricating company. We strive to be the best in getting quality projects out the door in a timely manner.



**Services**

- Design
- Process engineering
- Mechanical engineering
- Drafting
- Fabrication
- Project management
- Logistics coordination

- Blasting
- Painting
- Insulation
- Refractory installation
- Instrumentation and electrical assembly and startup

**Products Offered**

- ASME Custom Pressure Vessels
- Contactor Towers
- Glycol Regeneration systems
- Dehydration systems
- Flash Drums
- Rich Lean Heat Exchangers
- Chillers,
- Deethanizer towers
- Depropanizers
- Debutanizers,
- Shell/Tube Heat Exchangers
- Tube and Tube exchangers

- Compressors scrubbers
- Fuel Gas Scrubbers
- Filter/Separators
- Coalescing Filters
- Line Heaters
- Absorbers
- Adsorbers
- Pig launchers and receivers
- Tray Towers
- Compressor Packages
- Meter Skids
- Water bath heaters.







Building Quality Pressure Vessels Since 1995

T&D Fabrication, Inc.  
Telephone – (918) 352- 8031  
Email – terry@tdfab.org

Terry Martin – CEO  
Cell – (918) 740 – 0063  
Email – terry@tdfab.org

Charity Ellis – Business Development  
Cell – (918) 729 - 6026  
Email – charity@tdfab.org

www.tdfab.org



Enter Green Circle. In less than a year, the Lummus subsidiary had the technology market-ready. With a low carbon footprint, moreover, the new method of sustainable rubber production has hinted towards an industrial paradigm shift.

whole reason they entered this industry was to make the world a better place – and by driving this energy transition forward and developing sustainable technologies, they are proudly fulfilling that.”

Lummus Technology  
[www.lummustechnology.com](http://www.lummustechnology.com)  
 Services:  
 Fuel and chemical process technologies

After completing a successful preliminary study in 2021, Lummus and Synthos have agreed that the bio-butadiene technology is ready for implementation and the latter has committed to building a plant that can process 40,000 metric tons of bio-butadiene per annum – twice as much as was originally planned – which stands as a testament to the trust that partners place in Lummus and its engineering capabilities.

“Clearly, the energy transition is becoming more and more important,” reflects Leon. “Yet it is also being amplified by the geopolitical and energy balance changes that we are currently seeing around the world; we must find solutions that take these into account and then begin to rapidly decarbonize our operations – as a company and as a species. We have many new initiatives in the pipeline, which will act to increase the role we are already playing in creating a more circular economy.”

“Going forward, we want to continue pioneering solutions that will help our customers move away from fuel production and pivot to petrochemical production,” he concludes. “As it stands, refinery assets will either be shut down – which, frankly, would be a waste – or they will be repurposed and used for alternative means. By focusing on the latter, our incredible engineers can put their passion to work and make a difference; the

technologies are essential to the future of our planet, and we must integrate them via a comprehensive decarbonization strategy. It is also worth noting that, while our collaborators excel in the science behind these technologies, we can offer them the essential engineering and technological expertise necessary to commercialize, de-risk, and integrate their new assets with existing ones. Without that know-how and upscaling ability, these scientific developments could be left in limbo.”

One example of Green Circle’s early success that Leon cites is Braskem, the largest biopolymer producer in the world. Through this partnership, Lummus is delivering green ethylene technology at scale, accelerating the use of bioethanol in the production of chemicals and plastics. He also cites Synthos, a Polish petrochemicals producer and leader in the global synthetic rubber market, as an example of Green Circle’s early success. Synthos recently endeavored to move away from fossil fuel-derived feed stocks to a low carbon alternative: bio-butadiene created via bio-derived ethanol technology. Though Synthos was able to develop the scientific technology to convert bio-derived ethanol to the monomer used in rubber production, the company needed additional support to commercialize these investments and upscale them for third-party use.



The Armstrong-Chemtec Group has been privileged to be a supplier to Lummus Technology for nearly 60 years. Armstrong Ethylene, Ethane, and Propylene Vaporizers provide the utmost in reliability, safety, and quality for Lummus-licensed processes.



[www.armstrong-chemtec.com](http://www.armstrong-chemtec.com)  
[www.armstrong-chemtec.com/products/cryogenic-vaporizers.html](http://www.armstrong-chemtec.com/products/cryogenic-vaporizers.html)

**CCB FABRICATORS INC.**

**INDUSTRIAL FABRICATION**

Call us (361) 387-7900

**ABOUT US**  
 CCB is a A.S.M.E coded fabrication company who provides industrial welding and fabrication services of unmatched quality and turnaround time of process and alloy piping, structural steel, vessels, skid mounted systems and more.

**OUR SERVICES**

- Process piping
- Skids
- Vessels
- Maintenance
- Structural steel
- CNC burn table
- Sub Arc
- Installation

AUTHORIZED MANUFACTURER

Location: 4515 US-77 Robstown, TX  
 Email: admin@ccbfab.com  
 Web: www.ccbfabricators.com