

INTEGRATED PROCESS TECHNOLOGIES AND CATALYSTS

Chevron Lummus Global

WHO WE ARE

Chevron Lummus Global (CLG), a joint venture between Chevron U.S.A Inc. and Lummus Technology, is a leading process licensor for hydroprocessing and residue upgrading technologies, alternative source fuels as well as a global leader in catalyst system supply.

Strong worldwide commercial presence.

Global catalyst supplier backed by advanced R&D and pilot plant facilities.

Proven expertise in complex, heavy feed, and integrated refinery operations.

BUILT ON THE STRENGTHS OF CHEVRON AND LUMMUS TECHNOLOGY

Technology Developed by Refiners, for Refiners

Global Process Technology Leader

- Integrated technologies and catalysts
- Margin-driven solutions
- High-performance catalyst solutions
- Expertise from design through optimization
- Flexible, future-ready configuration



HYDROCRACKING & HYDROTREATING

Process Technologies:

ISOCRACKING® Hydrocracking

SSOT: Single Stage Once Through
SSREC : Single Stage Recycle
TSREC: Two Stage Recycle

ISOTREATING® Hydrotreating



INTEGRATED CATALYST SOLUTIONS

High-activity hydrotreating catalysts for sulfur, nitrogen, metals, and aromatics removal

Hydrocracking catalysts optimized for distillate, naphtha, or petrochemical feedstock production

Catalyst systems tailored to severity, conversion, and product objectives

PERFORMANCE OUTCOMES

- Increased conversion and selectivity
- Improved Hydrogen Utilization
- Longer Cycle Lengths
- Premium Fuels Production

LUBE & DEWAXING TECHNOLOGIES

CLG's **ISODEWAXING® & ISOFINISHING®** technologies produce premium-quality base oils with excellent viscosity index, cold flow properties, and oxidation stability. Together, they enable efficient wax conversion, flexible feedstock processing, enhanced product finishing, and high-yield production of Group II, III, and III+ base oils.

- Premium Group II, III & III+ base oil production
- High viscosity index and superior cold flow
- Flexible processing of a wide range of wax feedstocks
- Ideal for white oil production and standalone applications
- Proven global commercial performance



INTEGRATED BASE OIL CATALYST SYSTEM

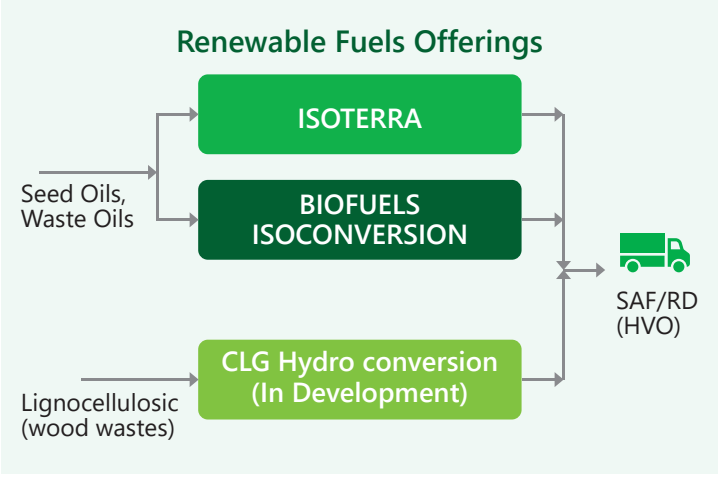
- Reduces pour point for enhanced low temperature performance
- Enhances color & oxidation stability for premium base oil quality
- Improves thermal stability & viscosity index (VI)

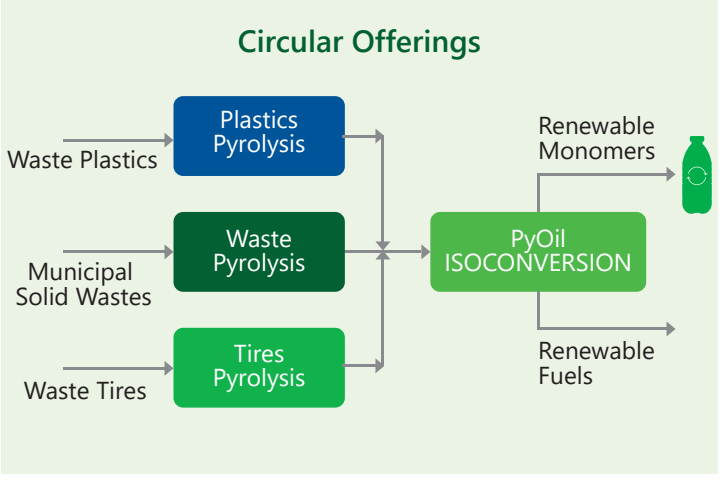
RENEWABLE FUELS TECHNOLOGIES & CATALYSTS

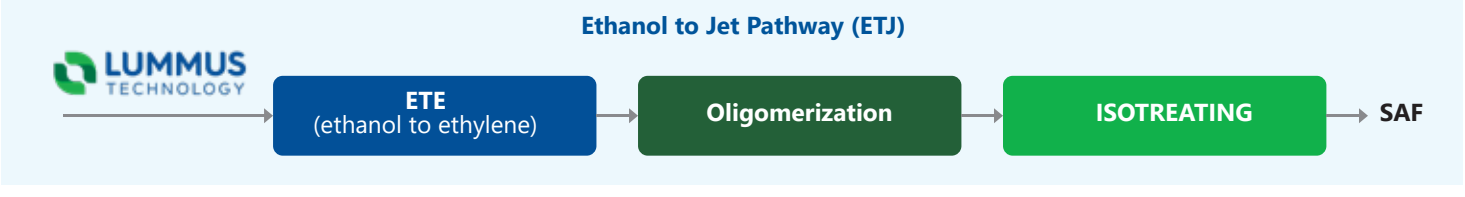
Enabling the Transition to Lower-Carbon Fuels

PROCESS TECHNOLOGIES

- Flexible pathways supporting evolving regulations & market demand
- Integration of renewable feedstocks with hydroprocessing operations
- Co-processing solutions within existing refinery assets
- Catalyst systems designed to maximize renewable fuel yields & quality
- Proven Reliability Across Challenging Feedstocks
- Reduced capital intensity
- Production of drop-in renewable fuels







FISCHER-TROPSCH LIQUIDS UPGRADING

CLG portfolio now includes Fischer-Tropsch Liquids Upgrading Solutions

- Upgrades FT-derived paraffinic hydrocarbons into high-value, fully finished products
- Delivering premium products including Group III/III+ base oils, SAF & jet/diesel fuels
- Proven FT hydroprocessing technologies commercially deployed worldwide



RESIDUE UPGRADING TECHNOLOGIES & CATALYSTS

Maximizing Value from Heavy Feeds

- **LC-FINING®** Resid Hydroprocessing
- **LC-MAX®** Ebullated-Bed Resid Conversion
- **LC-SLURRY®** Slurry Resid Conversion
- **LC-LSFO™** Low Sulfur Fuel Oil Production

- High-metals-tolerance catalyst systems
- Catalyst formulations designed for severe residue feeds
- Coke-resistant catalyst technologies that support higher conversion levels
- Catalyst systems optimized for throughput and run length

- Higher Liquid Yields
- Deep Residue Conversion
- Improved Economics From Low-Value Streams
- Reliable operation with challenging feedstocks

Turning heavy residues into higher-value opportunities through advanced catalyst innovation.

COKING TECHNOLOGIES

Flexible Heavy Residue Conversion

PROCESS TECHNOLOGIES:

- Delayed Coking solutions for heavy residue upgrading
- Flexible integration with upstream residue hydroprocessing technologies
- Conversion of low value resid into transportation fuels and valuable refinery products

INTEGRATED BENEFITS:

- Improved refinery bottoms management
- Enhanced overall refinery conversion
- Increased liquid product recovery
- Flexible operation across changing crude slates



Integrated evaluation of coking and residue conversion routes to identify the optimum refinery configuration and economics.

ADVANCED ICR 1001 PRETREAT CATALYST SYSTEM

Deep aromatics hydrogenation with nitrogen and sulfur removal.

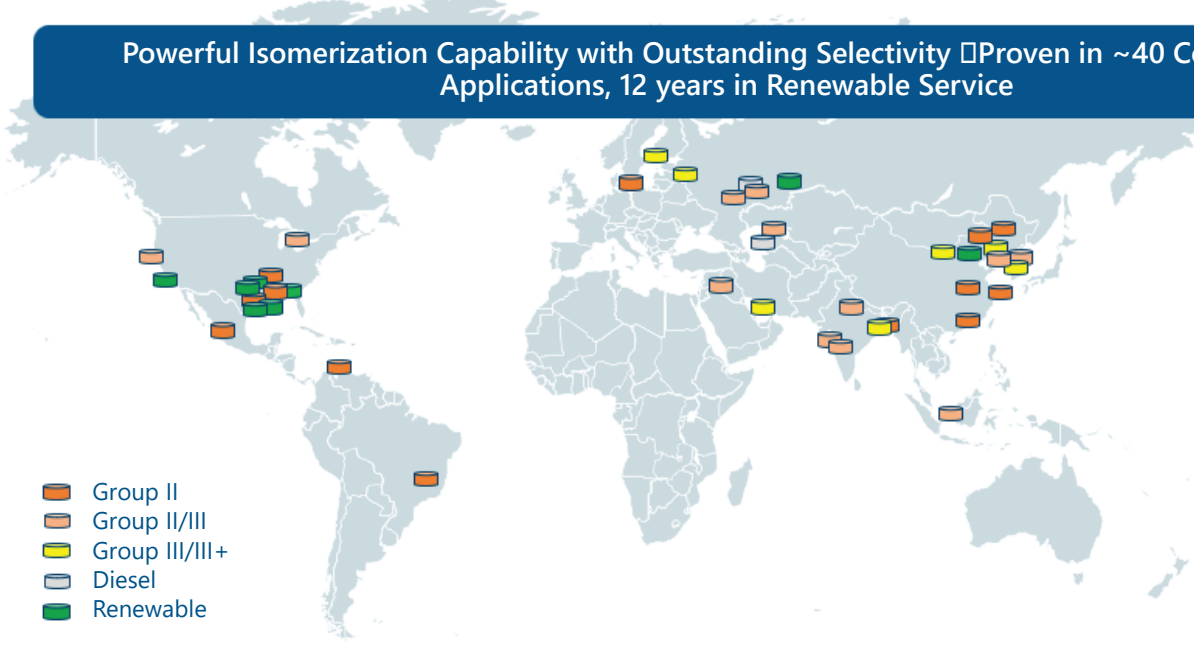
Reliable performance on the most challenging feedstocks.

Built for demanding hydrogenation services.

Optimized for hydrocracking and high severity ULSD units.

CLG'S PROVEN ISOMERIZATION CATALYSTS

Powerful Isomerization Capability with Outstanding Selectivity Proven in ~40 Commercial Applications, 12 years in Renewable Service



CLG's ICR 5th Generation ISODEWAXING® Catalyst wins Hydrocarbon Processing Award for Best Catalyst Technology

EnHanceTM Isomerization Catalysts

Key Component of ISOTERRA Technology

Leverage today's assets to produce tomorrow's fuels.

CLG REACTOR INTERNALS

ISOMIX-e
MIXING & DISTRIBUTION

- Ensures thorough gas–liquid contact
- Uniform distribution across catalyst bed
- Eliminates channeling & maldistribution
- Extended catalyst life & operating cycles
- Maximized catalyst utilization
- Enhanced overall reactor efficiency

ISOCATCH™
FILTRATION FUNCTIONALITY

- High efficiency removal of particulates and scale
- Protects downstream equipment and catalytic systems
- Ensures consistent stream cleanliness
- Improves reliability and operability
- Supports product quality consistency
- Low maintenance, cost effective solids management solution



INTEGRATED REFINERY & PETROCHEMICAL VALUE SCHEMES

Connected Solutions for Greater Asset Value

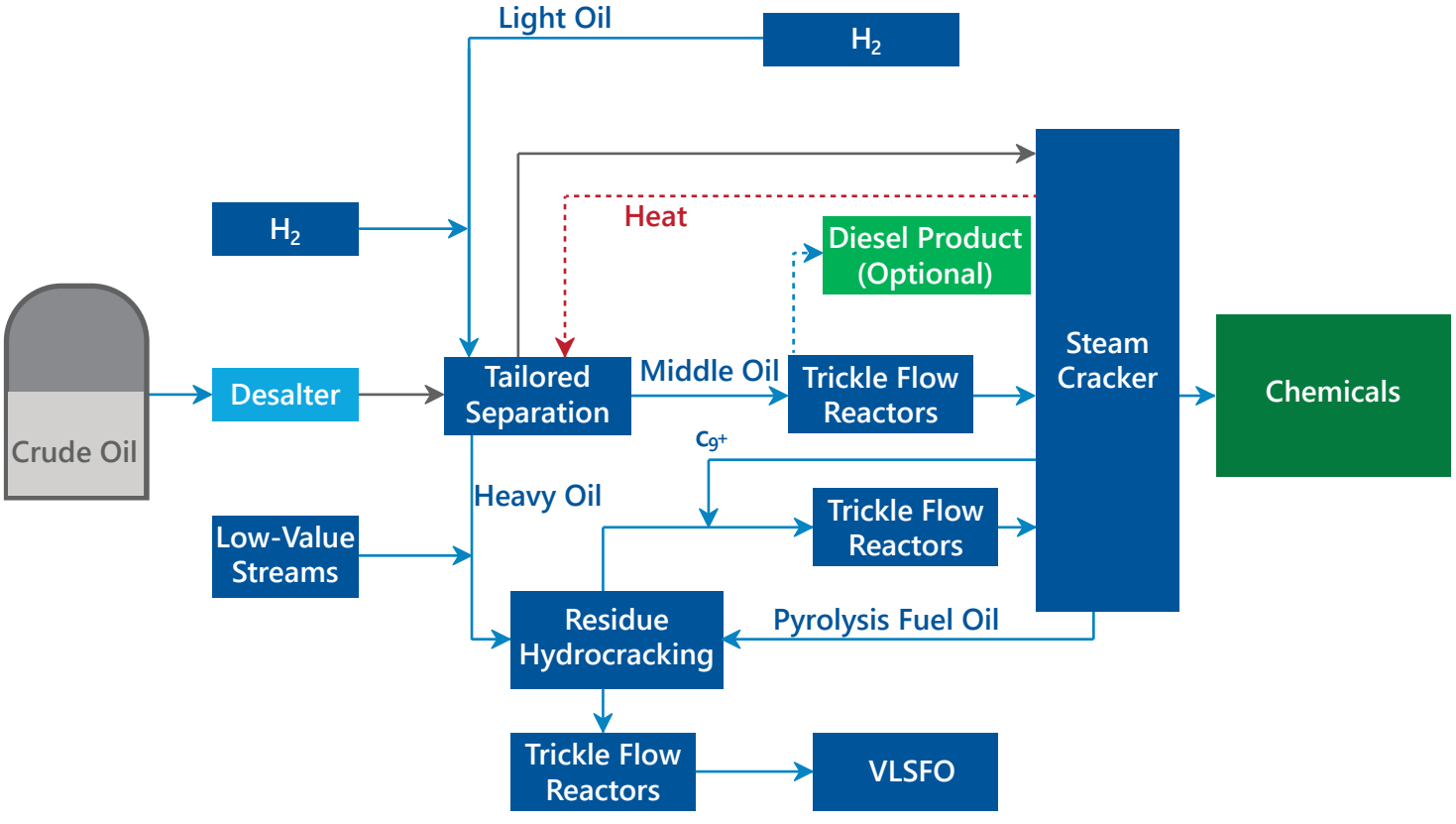
INTEGRATED CONFIGURATION

Residue + Distillate Integration

Distillate Hydrocracking + Lubes Integration

Resid Hydroprocessing + Hydrocracking

Refining + Renewables Integration



Oil to Chemicals

Redirects lower-value refinery streams to petrochemical feedstocks

Supports crude -to-chemicals and hybrid refinery -petrochemical configurations

Flexible integration paths that evolve with market requirements

TECHNOLOGY, EXPERTISE & LIFECYCLE PARTNERSHIP

R&D AND INNOVATION

- Advanced pilot plant facilities
- Material science expertise
- Data-driven optimization tools (digital monitoring, modeling)
- Catalyst development programs
- Collaboration with refineries for custom solutions

TECHNICAL SERVICES & LIFECYCLE SUPPORT

- Startup assistance
- Feedstock evaluation
- Turnaround planning support
- Catalyst selection & optimization
- Performance monitoring
- Troubleshooting and continuous improvement





CLG's integrated process technologies and catalyst solutions deliver reliable performance today and sustainable value for tomorrow.

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Partner with CLG to unlock greater value through integrated technology, catalyst expertise, and operational excellence.

LEARN MORE