

Mission Critical Solutions: Biofuels

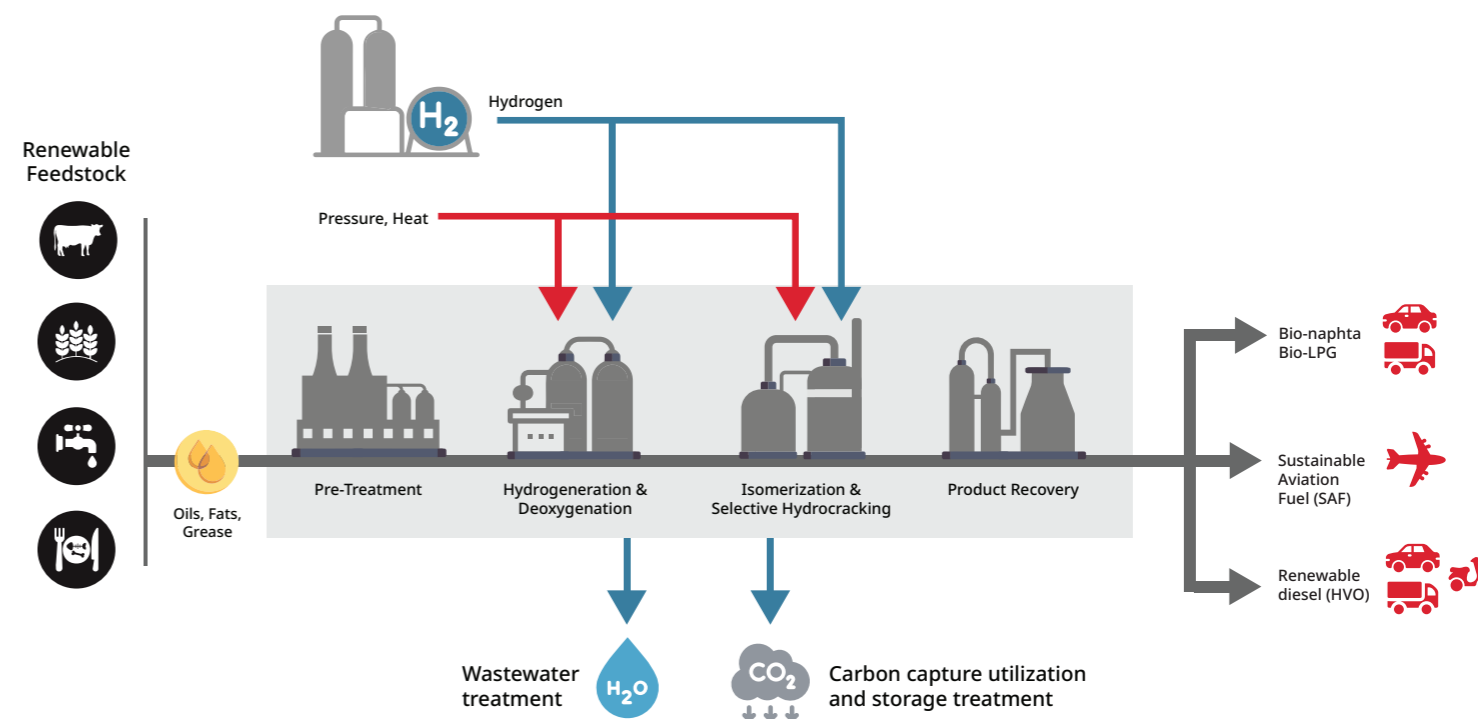


Biofuels and clean fuels are essential in the energy transition towards attaining carbon neutrality. Biofuels are derived from renewable sources such as plants, used cooking oils (UCO), algae or bio waste.

WHAT ARE BIOFUELS

Ethanol	A biofuel made by fermenting natural materials (corn, wheat, sugar, barley...) and mixed with regular gasoline (10-85%).
Biodiesel (FAME)	A biofuel known as fatty acid methyl ester (FAME), made from vegetable oils or animal fats via transesterification process. Blended with petroleum diesel (5-20%).
Renewable diesel (HVO)	This biofuel is a hydrotreated vegetable oil (HVO). High temperatures (300-450°C) and high hydrogen (H2) supply are required. Can be used as 100% drop-in replacement fuel .
Sustainable aviation fuel (SAF)	This biofuel is created using a similar process to renewable diesel. Blended with fossil jet fuel (10-20%). Development of a 100% replacement SAF is in progress.
Others...	Such as biogas, green ammonia, and methanol from green hydrogen, etc.

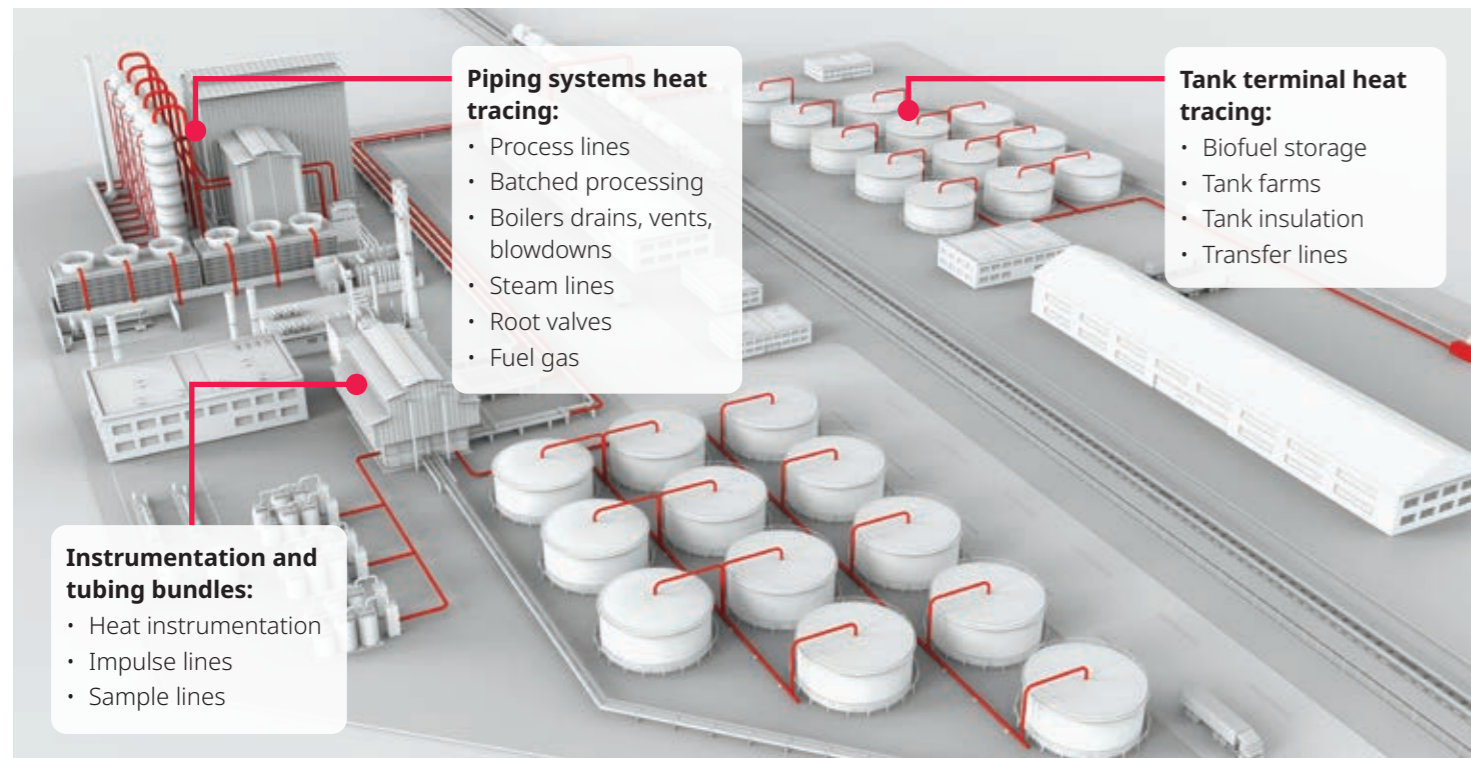
TYPICAL PRODUCTION PROCESS RENEWABLE DIESEL (HVO), SUSTAINABLE AVIATION FUEL (SAF)



TYPICAL PRODUCTION CHALLENGES AND HEAT TRACING SOLUTIONS

	Challenges	Solutions
	Renewable feedstock pre-treatment: Renewable feedstock with high water and oxygen content and other impurities requires thorough pre-treatment and a substantial hydrogen supply.	<ul style="list-style-type: none"> • Pipe freeze protection • Process temperature maintenance.
	Temperature sensitivity: Edible oils are sensitive to temperature fluctuations and viscosity challenges, and require precise maintenance temperatures within a narrow band.	<ul style="list-style-type: none"> • Process temperature maintenance for viscosity control (typically +50°C - +70°C) • Storage tank heating and insulation • Advanced control & monitoring • Long pipeline heating
	Diverse feedstock batches: A limited availability of feedstock results in variable batches and requires flexibility in heat tracing and temperature controls for process units and storage tanks.	<ul style="list-style-type: none"> • Advanced control & monitoring offering flexibility in temperature setpoints • Integrated data connectivity with client's central process control system (DCS), for real-time data analysis, trending, alarm management.

TYPICAL HEAT TRACING APPLICATIONS



WHY CHOOSE RAYCHEM



Bold highest quality products	Expertise optimal system design & installation	Reliable performance & lower cost of ownership
<ul style="list-style-type: none"> • The inventor of self-regulating heating technology and High Power Retention (HPR) Technology • Up to + 30 year design life • 10-year product warranty 	<ul style="list-style-type: none"> • 200+ expert designers • 6000+ installers • 600,000+ optimized EHT circuits with 3D integrated design & project management software TRACERLYNX 	<ul style="list-style-type: none"> • 600,000 km installed (15x around the globe) in the most remote and harshest environments • Advanced control & monitoring • Wide temperature ranges from -200°C to +1000°C

More information: chemelex.com

North America

Tel +1 800 545 6258
info@chemelex.com

Latin America

Tel +1 713 868 4800
info@chemelex.com

Europe, Middle East, Africa, India

Tel +32 16 213 511
Fax +32 16 213 604
info@chemelex.com

Asia Pacific

Tel +86 21 2412 1688
infoAPAC@chemelex.com



CASE STUDIES

Heat tracing solution for new major biorefinery. Heat tracing of unloading facility and underground pipelines to maintain animal fat at 50°C.

	Location: Port Arthur, Texas, USA	Completion date: 2023
	Applications: Longline heating	Technology: Raychem Skin-Effect Longline Tracing (STS), Fiber-optic distributed temperature sensing systems (DTS), Raychem Pipeline Supervisor (RPS)
	Contract scope: Engineering, Product supply, Commissioning and Start Up	

Conversion of a large midstream terminal facility. Interconnecting pipes, tanks, jetty's and piers were heat traced to enable the storage, blending and distribution of biofuels.

	Location: Northeast USA	Completion date: 2022
	Applications: Pipe freeze protection, Process temperature maintenance, Longline heating	Technology: Raychem Self-Regulating with High Power Retention (HTV), Power Limiting (VPL), Mineral Insulated (MI), Advanced Control & Monitoring
	Contract scope: Engineering and Product supply	

ExxonMobil upgrades tank terminals with nVent's Trac-Loc insulation solution for superior performance, energy efficiency, and longevity.

	Location: Rotterdam (NL), Antwerp (BE), Favylex (UK)	Completion date: 3 different projects completed between 2020-2024 (actual installation takes only 6-8 weeks)
	Applications: Replacement of traditional tank insulation with innovative Trac-Loc insulation system on large storage tanks contra terare sensitive biofuels and chemical fluids	Technology: Trac-Loc tank insulation panels using PIR (Poly Isocyanurate) closed-cell insulation material and aluminium cladding
	Contract scope: Engineering, Procurement, and Construction (EPC)	

French refinery adds sustainable aviation fuel (SAF) production with nVent's help.

	Location: France	Completion date: By end of 2025
	Applications: Electrical Heat Tracing (EHT) for freeze protection and temperature maintenance (25°C-95°C)	Technology: Self-regulating heating cables (HTV, XTVR), electronic thermostats (ETS-05) and panel
	Contract scope: Engineering, Procurement and site supervision services	

Raychem Tracer Pyrotenax Nuheat