



Produce ultra-pure, low-carbon, high-performance fuels and chemicals from biomass and waste gases with DEFT Catalyst Technology.

License this proprietary catalyst in bundled packages that include controls, process technologies and other integrated services to enable bankable, buildable projects.

4 US Patents Issued

12,377,402

12,303,874

12,042,785

12,599,895

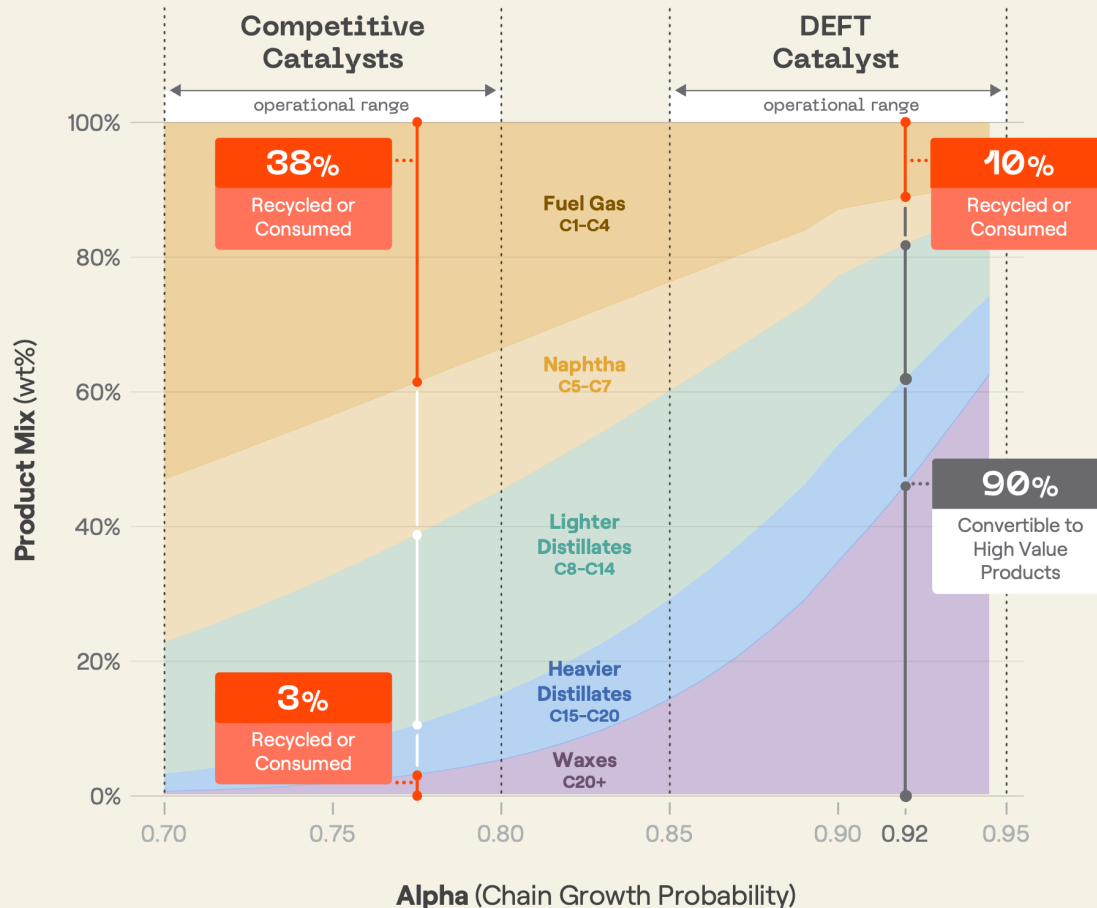
Dr. Rafael Espinoza leveraged 50 years' experience and 60 patents in Fischer-Tropsch catalyst development to design his strongest low-temperature, cobalt catalyst.

This catalyst delivers predictable high performance, robust mechanical strength, and thermal stability with precise control of porosity to maximize long carbon chains, product slate flexibility and yields.

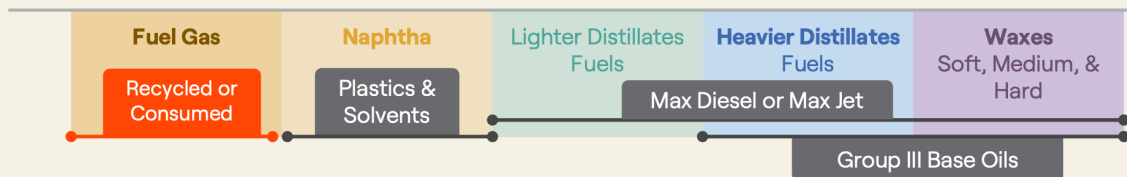
Produce more value. DEFT enables 90% more high value products with minimal material loss.

Catalyst Comparison (Raw Product Mix based on Alpha)

This figure compares the impact of alpha on product yields from the FT reactor, showing the DEFT catalyst operates above 0.9 alpha, whereas others operate below 0.8.



The high-alpha DEFT Catalyst maximizes carbon efficiency to liquids and produces a wax-rich C20+ product slate ideal for high-yield distillates or premium wax applications, while minimizing methane and light gas formation.



DEFT Catalyst Properties

Property	Value
alpha (α) - coefficient	0.89-0.94
Catalyst Shape	Trilobe ~ 1mm
Operating Pressure	25-35 bar (typical)
Operating Temperature	185-220 °C
Output Product	FBP > 580 °C; majority long-chain paraffins 75-80 wt% C20+; minimal light olefins and oxygenates. Suitable for hydrocracking to diesel/jet and premium wax applications.

Catalyst Longevity

DEFT catalyst changeouts are aligned with the plant turnaround cycle ~5 years to maximize the overall plant availability and profitability accordingly.

Our proprietary catalyst preparation process enhances crush strength, stability, and durability, extending the catalyst's operational life.

Catalyst regeneration can be performed in situ every 1 - 2 years as needed to restore performance between changeouts.

Scalable Reactor Design

Each reactor tube functions in parallel as part of an integrated module, allowing linear scaling by adding tubes while maintaining uniformity. The number of tubes is increased to achieve the desired capacity.

Modular reactor designs are configured with an optimal tube count, balancing fabrication, logistics, and economic considerations, and our FT reactor modules can be grouped into clusters to support industry-leading production capacities.





Technology and Project Support

Dimensional Energy provides technical support services to maximize value for our licensees, including start-up and shutdown assistance, performance monitoring, process optimization, troubleshooting, and turnaround planning.

Additionally, Dimensional Energy offers various add-on services to support successful projects including feedstock sourcing, offtake, financing and product upgrading.

A close-up photograph of a man with a beard and safety glasses, wearing a red hard hat and a dark blue work shirt. He is looking upwards towards a circular, recessed LED light fixture. The background shows industrial equipment and pipes.

Information about our team expertise,
performance guarantees and insurance
available upon request.

Let's talk about your project.

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