Case Study

How We Identified **Next-Generation Thermal Management Fluid** Opportunities for EV & Energy Transition Markets

Objective

An industry leader in electrified mobility and clean energy solutions partnered with us to uncover growth opportunities in the fast-evolving Electrified Transmission Fluid (ETF) market. Together, we aimed to pinpoint next-gen fluid chemistries and innovation pathways that elevate thermal and dielectric performance for future-ready EVs and renewable systems.

Our Strategic Approach

To assess evolving innovation trends, material chemistries, and market dynamics in the thermal management fluids segment, IeB took a targeted, technology-driven approach—integrating technology benchmarking, materials evaluation, and market segmentation to define clear strategic positioning.

Technology & Innovation Assessment

Analyzed the latest advancements in oil-based and dielectric fluid formulations, emphasizing their role in efficient heat dissipation and electrical insulation for EVs, hybrid systems, and renewable energy applications.

Material Chemistry Evaluation

Assessed emerging formulations with enhanced thermal conductivity, viscosity stability, and electrical insulation to meet the performance demands of next-generation electric drivetrains.

Market Segmentation by Key Players

Analyzed the market across key applications and players—covering EVs, wind turbines, and industrial systems. Leading participants such as ExxonMobil, Dow, Castrol, Lubrizol, and 3M were benchmarked alongside emerging innovators in dielectric and bio-based formulations, revealing collaboration and differentiation opportunities in the growing ETF market.

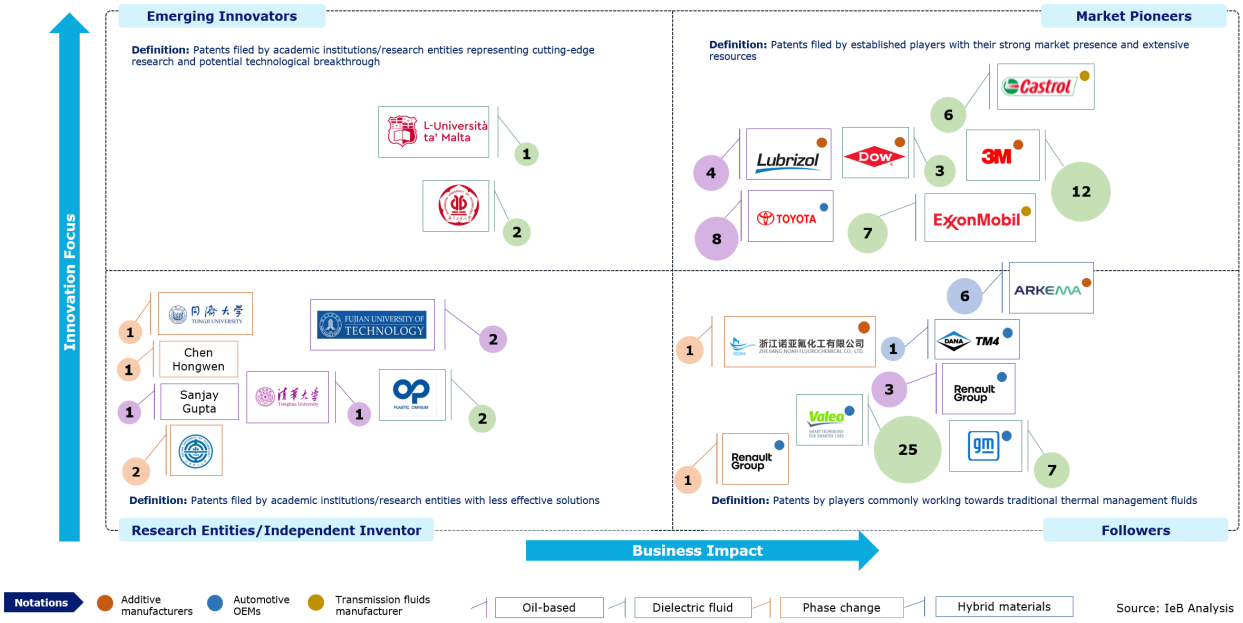
Strategic Recommendations

Suggested that the client prioritize oil-based heat transfer methods and invest in the development of new electrified transmission fluids with advanced dielectric properties, positioning them as a technology leader in the evolving EV and energy transition markets.

Snippets

Executive Briefings – Innovation Matrix

Analyst commentary: IeB findings suggest that the market pioneers, SMEs, and academic institutions are predominantly filing patents related to dielectric fluids for thermal management in electric vehicles, whereas few R&Ds and companies are working with other areas such as wind turbine thermal management

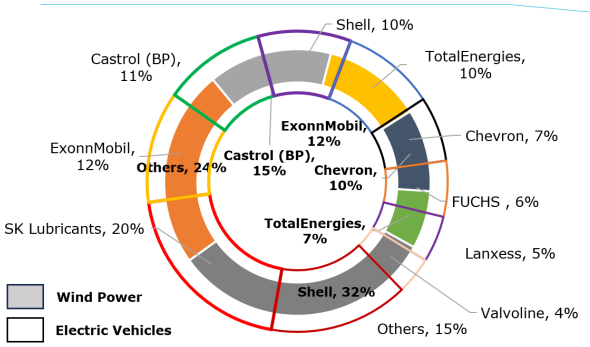


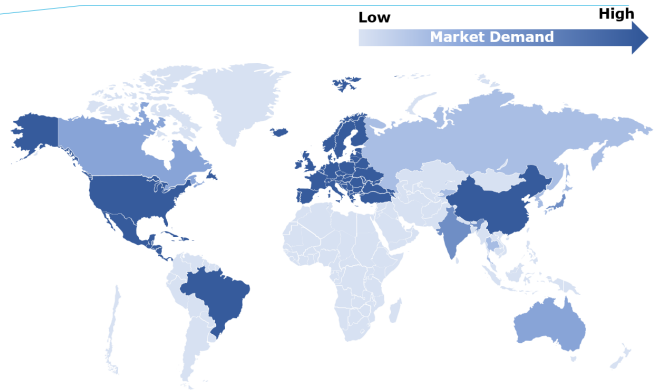
Source: IeB Analysis

Executive Briefings – Market Segmentation by Key Players

Analyst commentary: The demand for non-aqueous thermal management fluids is increasing in both wind energy and electric vehicles owing to their improved cooling and efficiency; These fluids prolong the life and performance of critical components like wind turbine gearboxes and EV batteries; The demand for cutting-edge thermal solutions is growing as both sectors evolve

Market Segmentation by Players - Non-aqueous Thermal Management Fluids





IeB' Perspective

- The increasing need for renewable energy and electric vehicles is driving the global push toward sustainability; This desire has increased the need for non-aqueous thermal management fluids, which provide better thermal stability and longer lifespans than conventional fluids
- The global adoption of non-aqueous thermal management fluids in the wind energy sector is significant, as cost concerns are minimal in this high-investment industry; Given the expensive machinery involved in this sector, these fluids are extensively utilized to enhance the lifespan of equipment, justifying their use despite high component costs
- According to IeB analysis, the global demand for non-aqueous thermal management fluids in electric vehicles will primarily come from North America and Europe; These regions are characterized by strict regulations and significant technological advancements, which drive the efficient use of these fluids across various components of electric vehicles

Source: IeB Analysis

Impact

- Identified **polyolefins (polyalphaolefins, metallocene polyalphaolefins) and ester (phosphate esters, vegetable oil-based esters)** dielectric fluids as key enablers for superior heat dissipation and insulation in EVs and renewable systems.
- Delivered a data-backed market forecast, revealing that non-aqueous thermal management fluid demand will likely surge from **679 million litres in 2023 to 1,986 million litres by 2030.**
- Helped the client focus on R&D and investment priorities around next-generation ETF innovations, strengthening its competitive position in the clean mobility and sustainable energy sectors.

Conclusion

Through a detailed evaluation of material chemistries, market potential, and technology trends, IeB helped the client define a clear innovation roadmap in the thermal management fluids domain. The insights enabled the client to align R&D investments with high-growth applications and reinforce its leadership in advanced fluid technologies for electrified and sustainable energy systems.

Ingenious e-Brain

Ingenious e-Brain is a global research advisory and management consulting firm that helps businesses future-proof their operations by addressing complex challenges with sustainable, strategic, and expert-led solutions. With a global network of over 300 domain experts, analysts, scientists, and consultants across 5 offices in 4 countries—we bring world-class research capabilities and a proven track record of delivering 5,000+ projects across various industries.

With over 13 years of proven excellence, we have successfully tackled business challenges for Fortune 500 and Global 1000 corporations, industry leaders, manufacturing giants, startups, investors, universities, and top companies across domains such as healthcare, sustainability, chemicals, advanced materials, automotive, energy, food & beverage, consumer packaged goods, and high-tech industries, particularly in the field of intellectual property and innovation.

Our services empower organizations to accelerate innovation, optimize R&D portfolios, and navigate complex intellectual property (IP) challenges, all while scaling operations with resilience. We support clients at every stage of the innovation process—from product launches and IP co-creation to market intelligence, consumer sentiment analysis, and gathering actionable customer insights through surveys.

We are located at

India (HQ)
207-208 Welldone TechPark, Sohna Road Sector 48, Gurugram, Haryana 122018

+91 124 429 4218

Delaware (USA)
8 The Green, Suite B, Dover, DE 19901

+1 302 450 1418

California (USA)
99 S Almaden Blvd, Suite 600, San Jose, CA

+1 347 480 2054

Germany
5th Floor, Hahnstrasse 70, Frankfurt am main, 60528

+49 335 2773 4678

For enquiries e-mail us at
contact@iebrain.com

Find more about us at
www.iebrain.com

Follow us on