

FR3™ FLUID
FOR PEAK
PERFORMANCE

POWERING
GERMANY'S
FUTURE

MÜNCH ENERGIE
RELIES ON FR3™
FLUID FOR PEAK
PERFORMANCE





Münch Energie has chosen Cargill's FR3™ natural ester, a dielectric fluid that meets the company's high standards for environmental protection/sustainability (because it is made 95% from renewable resources) and improved, proven transformer performance. Their endorsement of FR3 fluid is backed by years of proven reliability and performance.

Situation

Redefining the electricity market in Germany is no small feat. That's exactly what Münch Energie, located in Rugendorf, Germany, has set out to do. Achieving this monumental task calls for sourcing the most-trusted, high performing natural ester dielectric fluid that aligns with the company's sustainability vision and keeps its transformers running at peak performance.

Since 2024, grüüün, the company's own energy provider, has been supplying more than 100,000 private households across Germany with electricity generated from renewable sources. Their mission is to transform the electricity market by making it transparent, fair, and sustainable, thereby completely redefining the industry.

"We consciously forego profit maximization and instead focus on efficiency, sustainability and long-term customer loyalty. The grüüün model protects people's quality of life and standard of living," says Thorsten Schliesche, Managing Director at grüüün.

End consumers receive electricity generated from fully renewable energy sources, primarily from the company's own photovoltaic and wind power plants, along with a 10-year price guarantee on the energy cost.

As Münch Energie embarked on transforming Germany's energy grid, they needed a tested and proven biodegradable fluid to keep pace. In 2021, they selected Cargill's FR3™ fluid, which has since become indispensable according to Michael Wunderlich, Head of Power Plant and Grid Expansion from Münch Energie.

Goal

Münch Energie's business model is rooted in sustainability, aiming to maximize ecological and economic value without compromise. As the company sees it, the energy supply of the future must be sustainable, secure and affordable. As pioneers in renewable energy, Münch Energie and grüüün sell electricity directly to consumers at nearly the cost of production, thus bypassing intermediaries.

This approach allows them to offer electricity generated from renewable sources more affordably. The company prioritizes efficiency and sustainability over profit maximization, maintaining small margins on the electricity and plant operations.

To diversify their portfolio, they are expanding wind power and battery storage and cooperating with PV parks to ensure round-the-clock supply for customers. Currently, they have over 650 MW of installations and plan to add 400 MW of capacity, including 36 MW from wind power. By the end of 2025, they aim to have more than 200 MW of large-scale battery storage.



Solution

Since 2021, Münch Energie has exclusively used FR3™ dielectric fluid for its environmental protection attributes (readily biodegradable according to OECD 301-B), sustainability benefits (made from 95% renewable resources), and enhanced transformer performance. Prior to this, Münch Energie relied on conventional mineral oils.

FR3 fluid, which is now the performance standard for Münch Energie and grüüün, is derived from over 95% renewable vegetable oil resulting in more reliable, higher performing and more sustainable transformers compared to transformers filled with mineral oil. Using bio-based FR3 fluid dramatically reduces the chance of environmental harm, allowing for simplified containment systems and reducing cleanup costs when compared with mineral oil.

“The use of FR3 oil is indispensable for Münch Energie,” explains Michael Wunderlich, Head of Power Plant and Grid Expansion from Münch Energie. “As the projects are often implemented in water-protection areas. Sustainability is very important to us as a company. It cannot be achieved with conventional mineral oil.”

Results

Since switching to FR3 fluid in 2021, Münch Energie and grüüün have realized key gains in three areas:

- Dimensioning of transformer stations due to temperature resistance
- Usability in water-protection areas
- Minimal overall price difference between conventional mineral oils and FR3 fluid

Dimensioning of transformer stations

Smaller, more compact transformers designs are able to be used due to the temperature resistance of FR3 fluid. FR3 fluid helps to increase the power density of the transformer and the substation.

Usability in water-protection areas

Many of Münch Energie’s projects are being implemented in water protection areas, where environmental regulations are stringent. Conventional mineral oil transformers would not be permitted or eligible for approval in these sensitive zones. FR3 fluid allows Münch Energie to build substations in these sensitive zones, minimizing environmental impact in ways that mineral oil never will as FR3 fluid is nonhazardous according to GHS regulations.

Minimal overall price difference

While the initial cost of FR3 fluid may be slightly higher compared to conventional mineral oil, its innovative transformer design ensures that the overall transformer expense remains comparable. FR3 fluid allows for a more compact transformer with the equivalent loading capacity. This creates a smaller substation footprint, easier transportation, and optimized weight management of the transformer.

Additionally, officials from both Münch Energie and grüüün commend their collaboration with the FR3 fluid team at Cargill as constructive, goal-oriented and friendly. The partnership highlights both Cargill’s Bioindustrial team with more than 80 years’ experience developing nature-derived solutions and Münch Energie’s commitment to their vision of ‘Preserving the Earth Together’.



Learn more about the benefits of **FR3™ fluid** and the power of a Cargill partnership by visiting [FR3fluid.com](https://www.FR3fluid.com) or contacting your local representative.