

# TRANSFORMER TECHNOLOGY<sup>MAG</sup>

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## Better Solutions for a Changing World

# Oils & Fluids

Interview with Peter Grolmus, CTO at EkoFluid GmbH: Driving Innovation in Transformer Oil Treatment  
Oil as a Main Insulation Component in Liquid Filled Power Transformers: Quality and Consistency of Product  
Technology Insights: The Essentials of Transformer Fluid Testing

## bioTRANSOL TRANSFORMERS

IS THE ENVIRONMENTAL  
SUSTAINABILITY A  
RIGHT WAY TO GUIDE  
TECHNOLOGY?



Various uses of Biotransol [1]

Biotransol HF is a dielectric fluid intended to use as an insulation and cooling medium in electrical distribution and power transformers. It is a natural ester-based dielectric fluid based on renewable vegetable oils.

The fluid is readily biodegradable as per US EPA OECD 301B, environmentally friendly and non-toxic to aquatic life [1].

Photo: Atlas Transformer

### Introduction

Biotransol has been used by various transformer companies in their oil filled power transformers all over Asia and North America. Indian manufacturer Savita oils, with over 40 years of experience in manufacturing dielectric fluids, has managed to craft Biotransol to take technology in the direction of environmental sustainability. According to Savita, "Biotransol is your ideal dielectric fluid in applications requiring higher levels of efficiency, safety and environmental consciousness" [1].

### Biotransol benefits

Biotransol has several benefits over mineral oils. Efficiency, safety and eco-friendliness are some of them [1]. It has higher fire point, breakdown voltage and excellent biodegradable characteristics besides enhancing fire safety and environmental sustainability. The transformers manufactured using Biotransol as an insulating fluid can be used in high risk and highly populated areas.

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When you have less space, and more population in that area [like in Mumbai, India], it means you need to have a solution that is very safe.

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Ramchandran Pillai, Chief Corporate Operations T&D, Tata Power Co., Ltd. [2]



Oil-filled transformer

We don't just build to your satisfaction.



We build to exceed your expectations!

### Benefits of Biotransol [1]

#### Efficient

- Faster moisture extraction from paper insulation while maintaining BDV, thereby increasing performance and extending life of your transformer.
- Slows ageing of transformer by enhancing life of solid insulation material.
- Transformer load can be enhanced as a result of diminished paper ageing.
- Reduces maintenance time and cost.
- Less consumption of fluid relative to conventional oils.
- Lower insurance premiums as a result of superior safety properties.
- Lowers cost of clean-up and impact in case of accidental spillages.
- Delays asset replacement and capex by prolonging the life of an aged transformer after Retrofit.

#### Safe

- With a high Fire and Flash Point (>320°C, >300°C), Biotransol significantly reduces risk of ignition and fire in case of accident.
- Enhances safety for workers during installation, maintenance and condition monitoring.
- Minimum damage in the event of spillage, as a result of its biodegradable nature.

#### Eco-Friendly

- Designed from entirely renewable sources.
- Reduces carbon footprint by being completely biodegradable.
- Non-toxic and eco-friendly to the environment and aquatic life.



5,000/6,250 kVA FR3 oil immersed three-phase substation transformer

### Are we using Biotransol for manufacturing our transformers?

Atlas Transformer, a Toronto headquartered transformer company, has managed to use Biotransol in most of its oil-based transformers. This year we have delivered several natural ester filled transformers, meeting deadlines with high quality customer service. We have used FR3 fluid in all of our oil based transformers, allocating the benefits by reducing fire hazard and increasing life expectancy of its transformers [3].

One of the major Biotransol based projects that was delivered by Atlas Transformer this year for a Calgary based company includes a high voltage 5,000/6,250 kVA FR3 oil immersed three-phase substation transformer. One of its kind, with two pole 33 steps OLTC along with AVR, was engineered to high quality, manufactured, tested and delivered within 14 weeks after the approval was received [3].

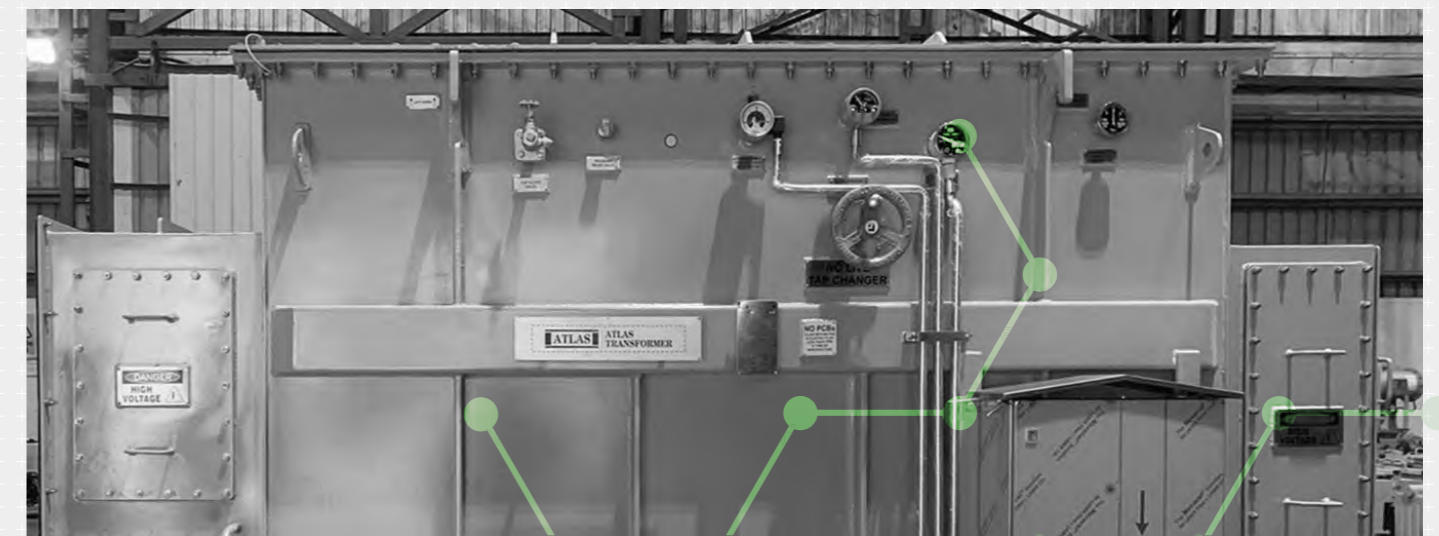
Our engineers have been working on the idea of creating technology that is eco-friendly without lowering the energy efficiency. Another great example of natural ester filled transformer that was manufactured and delivered by Atlas Transformer to an Ontario based customer is a 10 MVA transformer of voltage class 27.6/13.8 kV with five-legged core design. This oil filled transformer was airlifted by Cathay Pacific and considered as one of the heaviest shipments in their airlifting career. The transformer was manufactured, along with a spare unit, within four weeks. The first unit was airlifted to meet the urgency and the spare unit was shipped by sea and arrived in November [3].

**We don't just build to your satisfaction.**



**We build to exceed your expectations!**

Photo: Atlas Transformer



### Why are we not using mineral oil?

Although mineral oil is a low cost, readily available and great dielectric oil, many studies have shown that it has caused more harm to the environment in the past few years. The environmental damage is usually related to oil leaks during transportation, transformer explosions and fires.

### What is the vision of Atlas Transformer?

Atlas Transformer has changed their business model to accommodate eco-sustainability over profit. During its 30 years in transformer business, Atlas Transformer has recognized a large demand shift from Mineral oil-based transformers towards eco-friendly transformers. We at Atlas are engaged to provide products that are skillfully engineered for a high level of efficiency, resulting in low energy losses and exceptional build quality. Keeping that vision in mind, Atlas will continue to provide eco-friendly transformers as per market demands [4].

### Atlas Transformer - Power for every Application!

#### References

- [1] Biotransol Transformer Oil, retrieved from <https://www.savita.com/businesses/biotransol-hf.php>, 2020
- [2] Higher flash and fire points for improved fire safety, retrieved from <https://www.cargill.com/bioindustrial/fr3-fluid/fire-safety>, 2020
- [3] Atlas Transformer, LinkedIn, retrieved October 21, 2020, from: <https://www.linkedin.com/company/atlas-transformer>
- [4] Atlas Transformer, retrieved from: <https://atlastransformer.com/>, 2020

10 MVA oil-filled transformer of voltage class 27.6/13.8 kV with five-legged core design

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