



Driving **CLEANER** traffic

UPM BIOFUELS

A man with short dark hair and a light beard, wearing a light blue button-down shirt, is driving a car. He is looking back over his right shoulder towards the camera. The background is bright and slightly blurred, showing the interior of the car and some greenery outside.

WE ARE MAKING ADVANCED BIOFUELS



Join us on the journey
towards a **cleaner** world.

The world's first commercial biorefinery producing renewable diesel and naphtha fuels from forest industry residue.

UPM has succeeded in creating an unprecedented production process and products – an achievement that is perhaps not all that surprising, as it comes from an organisation that describes itself as The Biofore Company, a driver of the new bioindustry.



We are

1st

in the world

UPM Biofuels has already won a number of international prizes, including the European Commission's Sustainable Energy Europe Award 2014. In 2017, UPM Biofuels was chosen among 25 unique exemplar cases of the Nordic bioeconomy. UPM Biofuels has also been selected as a model example for the climate change objective in the UN's Sustainable Development Goals.

This kind of innovation is required for Europe to meet its climate targets and improve energy independence.

Difficult equation, **perfect** solution

While fossil fuels may not last forever, the emissions they generate appear limitless. What is needed now are new sources of renewable energy that will meet the rising demand for energy and help tackle climate change.

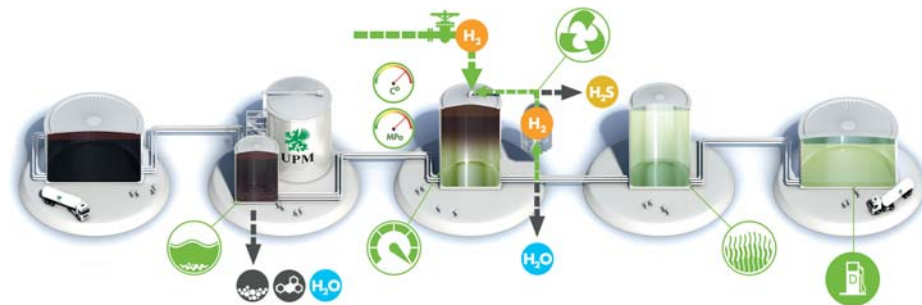
UPM's innovative advanced biofuel UPM BioVerno is a textbook solution to the problem: it is made using forest industry residues sourced from sustainably managed forests.



UPM BioVerno offers the same high quality as the traditional fossil fuels it replaces. In fact, it is significantly better as UPM BioVerno generates up to 80% fewer greenhouse gas emissions compared to fossil fuels. UPM BioVerno diesel also reduces tailpipe emissions, such as nitrogen oxides and fine particles, that harm the local environment.

We're making **120 million** litres annually

AN INNOVATIVE PROCESS



1. Crude tall oil

2. Pre-treatment

3. Hydrotreatment

4. Fractionation

5. Renewable diesel
and naphtha



UPM BioVerno
– renewable
diesel and naphtha



UPM BioVerno fuels, diesel and naphtha, are made using renewable wood-based raw materials in Lappeenranta, Finland. They have been awarded the Finnish Key Flag Symbol in recognition of their Finnish origins.

UPM BioVerno diesel is considerably more advanced than traditional biodiesels as it is compatible with all diesel engines, including cars, trucks and marine vessels, without any modification. UPM BioVerno is usable on its own but is primarily used in blends with fossil fuels. With 80% lower CO₂ emissions and lower tailpipe emissions, it is clearly superior to fossil fuels.



Up to

80%

lower emissions

UPM BioVerno diesel has been tested by a number of independent research centres and proven to work just like ordinary diesel.

UPM BioVerno naphtha is an ideal biocomponent for gasoline and for replacing fossil raw materials in various innovative future products such as bioplastics.

Sustainability – **Second nature** to UPM Biofuels

More than a century ago wooden spools were manufactured at the Kaukas mills. Today, novel biofuel production at the same site relies on brand new technology and meets completely different needs. But one thing remains the same – wood. Wood-based crude tall oil, a residue from pulp production, is used to produce advanced biofuels.



Renewable wood is UPM's most important raw material and the company is committed to sustainable forestry. UPM's biofuels are globally unique and their sustainability is verified by several sustainability certifications.

ISCC (International Sustainability and Carbon Certification) certifies the sustainability of all our operations covering our products for both biofuel (ISCC EU) and biomaterial (ISCC PLUS) uses. Our production chain is also certified by RSB (Roundtable on Sustainable Biomaterials), which evaluates sustainability based on 12 principles approved by several stakeholders, such as NGOs and UN representatives.



The **home** of UPM BioVerno

1. Research Centre

- Developed the UPM BioVerno production process to generate renewable diesel and naphtha from tall oil

2. UPM Lappeenranta Biorefinery

- EUR 179 million investment by UPM
- Renewable diesel and naphtha output 120 million litres per year
- By-products: pitch (renewable fuel/chemical industry raw material) and turpentine (bio-based aroma chemical for fragrances)
- Employs 100 people and indirectly provides employment for 150 others

3. Pulp mill

- Pulp for paper manufacturing and export
- Tall oil for renewable diesel and naphtha production

4. Bioenergy plant

- Electricity and steam for the mills – electricity and heat for local homes in Lappeenranta

5. Saw mill

- Sawn timber for construction and further processing
- Woodchip for pulp production

6. Paper mill

- Paper for magazines and marketing materials



Kaukas Mills

Each year, UPM Kaukas mills in Lappeenranta receive more than 5 million cubic metres of timber, sourced mainly from Finland's sustainably managed forests. The mill site uses every part of the wood efficiently, producing pulp, sawn timber, paper and energy.

The UPM Research Centre in Lappeenranta specialises in the development of fibre raw materials and production processes. An innovative process developed at the centre utilises crude tall oil, a residue of pulp production, to manufacture renewable diesel and naphtha fuels.

The biorefinery produces 120 million litres of UPM BioVerno diesel and naphtha annually. UPM BioVerno fuels are made without harvesting any extra wood.

UPM

At UPM, we are driving the shift to a new bioeconomy by promoting a sustainable, innovation-driven and exciting future with our Biofore strategy. Some 19,000 staff across our production plants in 12 countries are making this strategy a reality and generating annual turnover of around EUR 10 billion.

www.upm.com

UPM Biofuels

Biofuels are an essential part of our Biofore strategy. Our innovative, wood-based biofuels and production technologies support sustainable development. UPM's biofuels are frontrunners in quality, usability and sustainability, delivering substantial reductions in greenhouse gas and tailpipe emissions compared with fossil fuels.

www.upmbiofuels.com



Powered by UPM BioVerno

– low emission renewable
diesel and naphtha



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