Agenda

• Neste in Brief
• Premium hydrocarbon diesel fuel - not biodiesel
• Sustainability
• Production
• Performance
• Renewable Technology Growth
Neste has been ranked the 2nd most sustainable company in the world

2018 Global 100 Most Sustainable Corporations in the World, Jan. 2018
Neste in brief...

- The world’s largest producer of renewable diesel
- 880M gallons Annual production
- Total capacity increased to 1.3B gallons by 2022
- Major Supplier of Group III Base Oils
- $13.9 billion In revenue
Renewable Diesel
Premium Diesel Fuel
RENEWABLE DIESEL

Every molecule in Renewable Diesel is in Petroleum Diesel

NOT BIODIESEL

No molecules in Biodiesel are in Petroleum Diesel (Fatty Acid Methyl Ester)
“Renewable diesel should be treated the same as conventional CARB diesel for all purposes...”

“Renewable diesel should be treated the same as conventional CARB diesel for all purposes, including storage in underground storage tanks.

For purposes of this statement, conventional CARB diesel is petroleum-based diesel that meets specified aromatics, sulfur content, and lubricity standards, as well as ASTM international standard specification, ASTM D975-12a. Similarly, renewable diesel meets the definition of ‘hydrocarbon oil’ and the physical and chemical properties specified in ASTM D975-12a.

The renewable diesel samples tested well within the ASTM D975-12a specifications.”

Renewable Diesel is Diesel Fuel ... by definition
What is renewable diesel?

• A premium quality diesel that is a colorless, odorless, high cetane, cleaner burning, stable, diesel fuel
• Produced from 100% renewable and sustainable raw materials
• Pre-treatment of raw materials ensures near zero contaminants
Renewable Diesel Sustainability
Liquid Fuels & the Internal Combustion Engine: Revolutionary!

**Exponential improvements in:**
- Global Trade
- Public Health
- Living Standards
- Wealth & reduced poverty
- An effectively smaller world
Atmospheric CO₂ has also Grown Exponentially

For centuries, atmospheric carbon dioxide had never been above this line. The current level has significantly increased since the 1950s.
Burning Fossil Fuel Reintroduces Sequestered Carbon to the Biosphere

- Fossil Fuels are the sun’s energy from millions of years ago transformed into hydrocarbons below ground.
- Extracting and burning those hydrocarbons returns that ancient carbon to the biosphere as CO$_2$.
- There’s a lot of old carbon going back into the atmosphere and we really don’t know the impact.
Clearly it would be better, and more sustainable, to recycle solar energy with today’s CO$_2$.

-Renewable Diesel-
Renewable Diesel Production
Neste MY is refined from a mix of more than 10 different triglyceride wastes & residues and various vegetable oils.
Renewable raw materials provide up to 80% Carbon Intensity reductions

GHG Emission Reduction

Carbon intensities of different raw materials under CARB LCFS:

<table>
<thead>
<tr>
<th>Raw Material</th>
<th>Carbon Intensity (gCO2e/MJ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>17</td>
</tr>
<tr>
<td>Used Cooking Oil</td>
<td>33</td>
</tr>
<tr>
<td>Fish Fat</td>
<td>34</td>
</tr>
<tr>
<td>North American Tallow</td>
<td>37</td>
</tr>
<tr>
<td>Technical Corn Oil</td>
<td>39</td>
</tr>
<tr>
<td>Global Animal Fat</td>
<td>55</td>
</tr>
<tr>
<td>Soybean Oil</td>
<td>100</td>
</tr>
</tbody>
</table>

Units are all gCO2e/MJ
Triglycerides are Hydrogenated and Isomerized

Renewable Diesel is frequently called Hydrogenated Vegetable Oil (HVO)
NEXBTL Process

**Inputs**
Hydrogen and renewable feedstocks

**Pretreatment**
Renewable raw materials are sent through a pre-treatment unit for purification and removal of all metals and contaminants prior to the Neste MY production process to protect the catalyst.

**Hydrotreatment Unit (HDO)**
Is used to remove oxygen and break the feedstock into hydrocarbons.

**Isomerization Unit**
Allows for precise adjustment of cold properties down to arctic grade diesel fuel grades.

**Distillation**
is used to separate diesel, gasses, and naptha.

**Outputs:**
- Neste My Renewable Diesel
- Renewable Propane
- Renewable Naptha
Renewable Diesel Performance
Powertrain benefits

- High cetane (75-80) for greater pick up and improved cold start
- Less soot meaning fewer DPF regenerations and lower backpressure
- Near zero ash-forming components reduce ash accumulation and extend cleaning intervals
- Outstanding thermal stability reducing maintenance issues from deposits
- Quieter combustion
Fueling benefits

• Almost zero risk of water absorption or microbial growth
• Cold flow properties equal or better than petroleum diesel
• Non-polar, will not clear out debris in older fuel tanks
• Aromatic-free is less harmful to employees, handlers & environment
• Absolutely no changes to infrastructure, storage or handling required
“We have been using renewable diesel for some time now and we are thrilled with it. The best news is that there is no difference between traditional diesel and renewable diesel. From a performance standpoint it’s amazing.”

- Deborah Raphael, Director,
  San Francisco Department of the Environment
Renewable Technology
A Growing Opportunity
New Players Join the HVO Game

Renewable Base Oil

Patented New Technology

C_{31} 4.3 cSt  C_{33} 5.2 cSt  C_{35} 6.0 cSt

All products are isomerized for cold properties
Neste Renewable Jet Fuel

✓ Offers airlines an easy way to lower their carbon footprint and cut their emissions
✓ Meets ASTM D7566 specification
✓ High energy density
✓ Already available at scale
  ✓ Over a thousand commercial flights on Lufthansa
  ✓ Introduced to Oslo airport for ITAKA project