

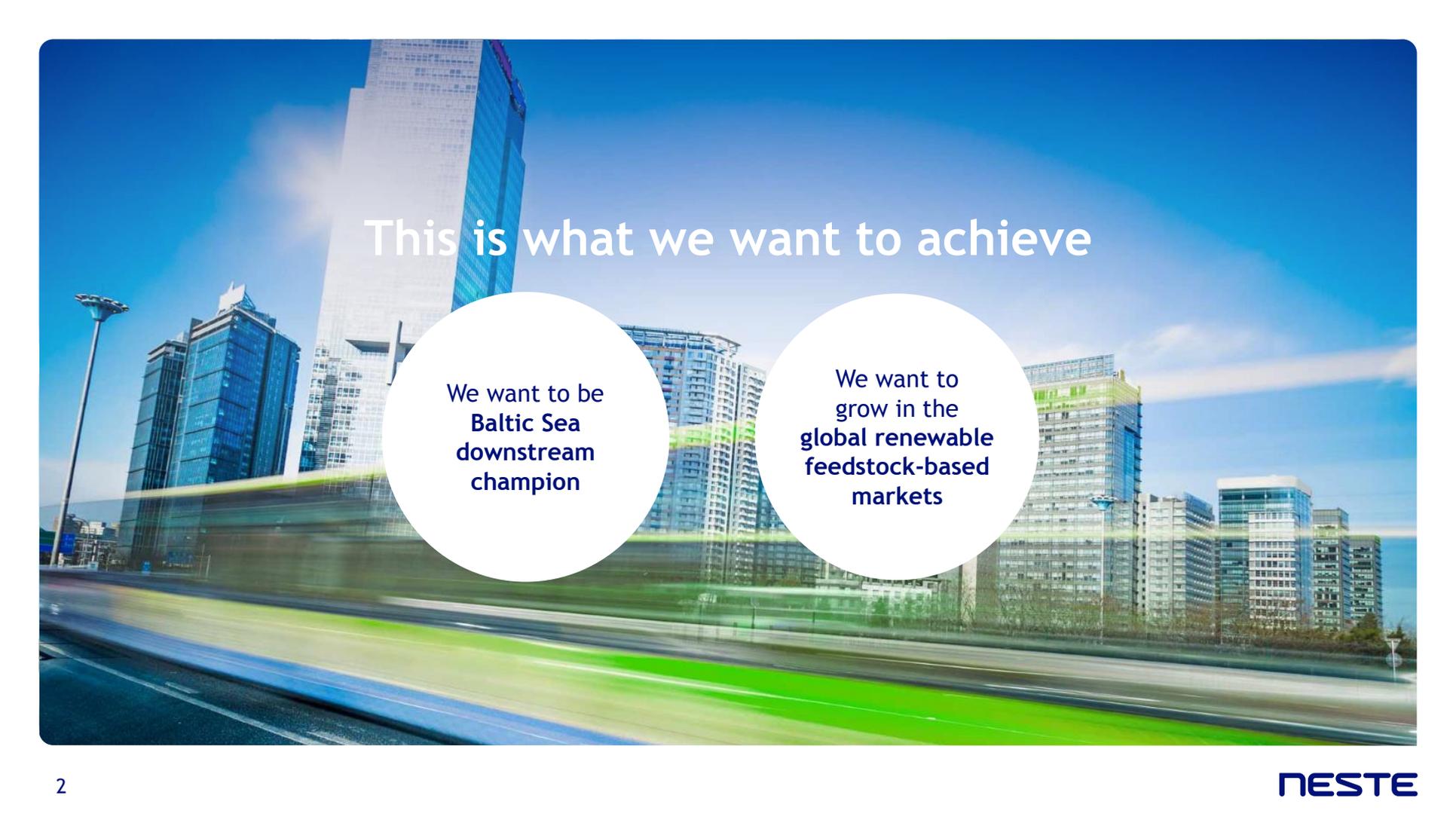


Neste

Cimac Cascades 2017
Helsinki

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Neste R&D, Products

NESTE

A blurred city street with modern buildings and a clear blue sky. The image is used as a background for the slide. The buildings are tall and modern, with glass facades. The street is blurred, suggesting motion. The sky is a clear, bright blue.

This is what we want to achieve

We want to be
**Baltic Sea
downstream
champion**

We want to
grow in the
**global renewable
feedstock-based
markets**

Neste in numbers

Revenue
**€ 11.7
billion**

Comparable
operating profit
**€ 983
million**

Largest owner
the Finnish
State (50.1%)

~ **5,000**
employees
in 15 countries

Several years in
the Global 100 list
of the world's
most sustainable
companies



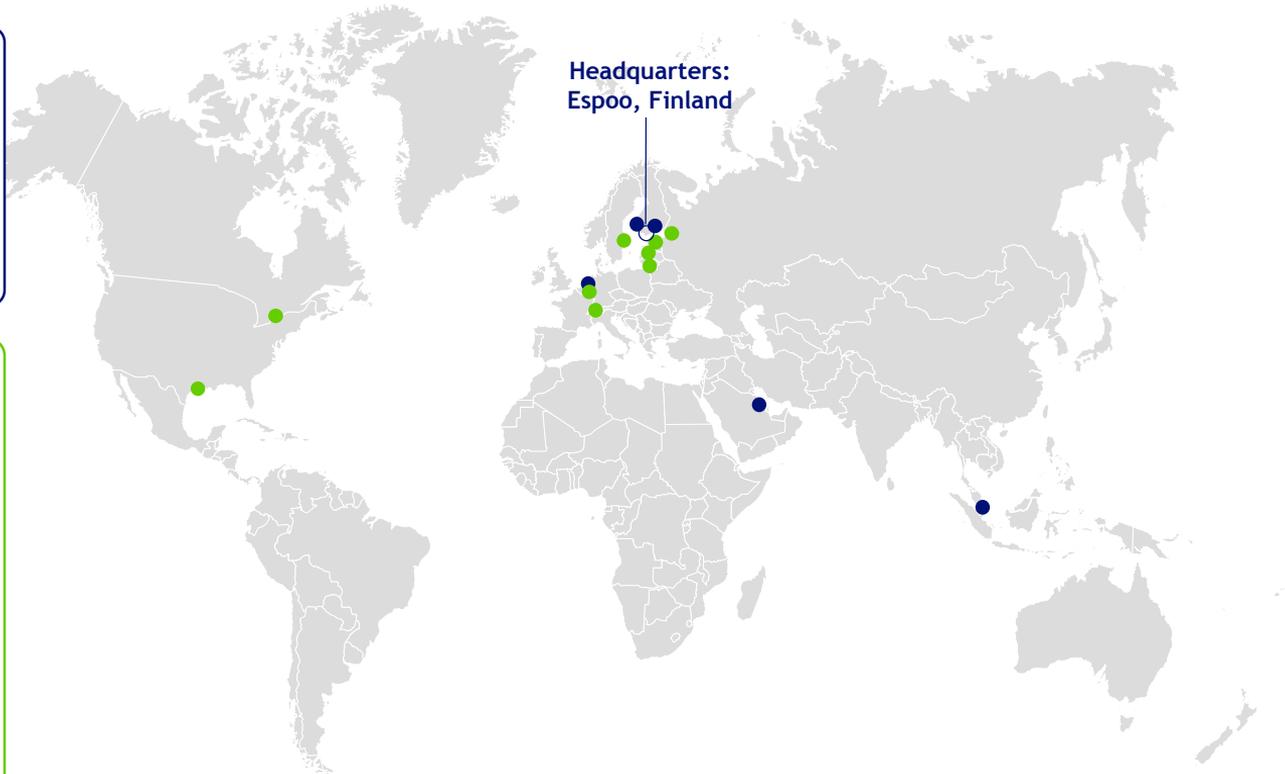
Neste globally

Production:

- Porvoo
- Naantali
- Rotterdam
- Singapore
- Bahrain (joint venture, Neste's share 45%)

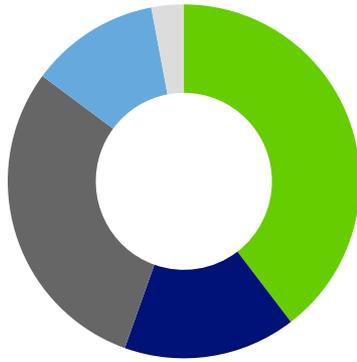
Sales and marketing:

- Espoo
- Stockholm
- Tallinn
- Riga
- Vilnius
- St. Petersburg
- Geneva
- Beringen
- Houston
- Toronto
- Singapore

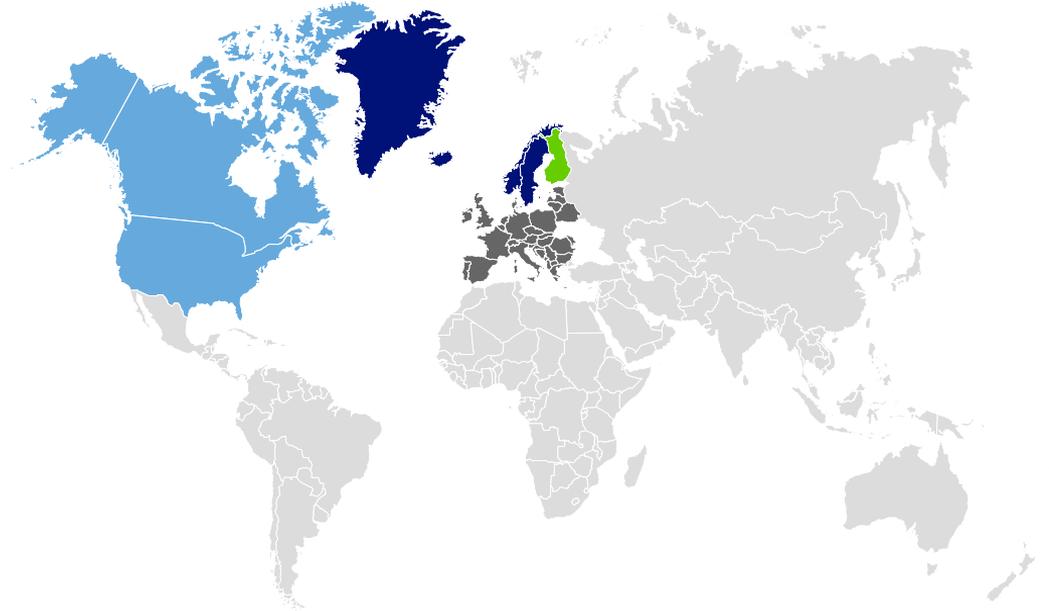


We operate on a global market

SALES BY REGION FROM IN-HOUSE PRODUCTION IN 2016 (2015)

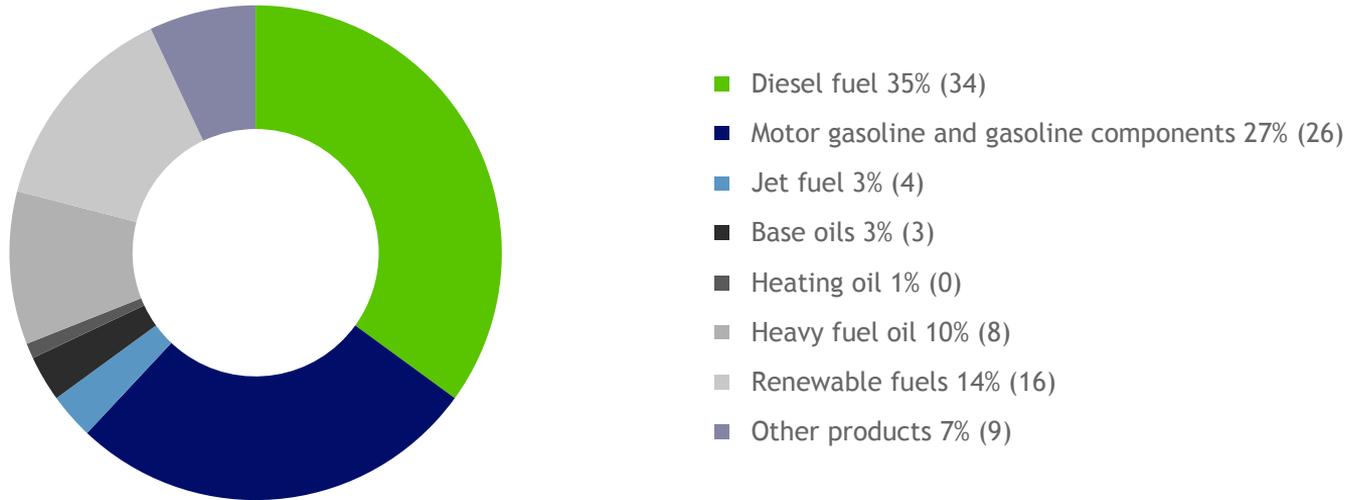


- Finland 40% (40)
- Other Nordic countries 16% (14)
- Other Europe 30% (34)
- USA and Canada 12% (8)
- Other countries 3% (3)



A wide range of premium-quality products

SALES BY PRODUCT FROM IN-HOUSE PRODUCTION IN 2016 (2015)



Cleaner solutions through the years

Lead-free and sulfur-free fuels



PRO DIESEL

Futura

Low-sulfur marine fuel



NESTE MY #RenewableDiesel

1980-2005

2007

2011

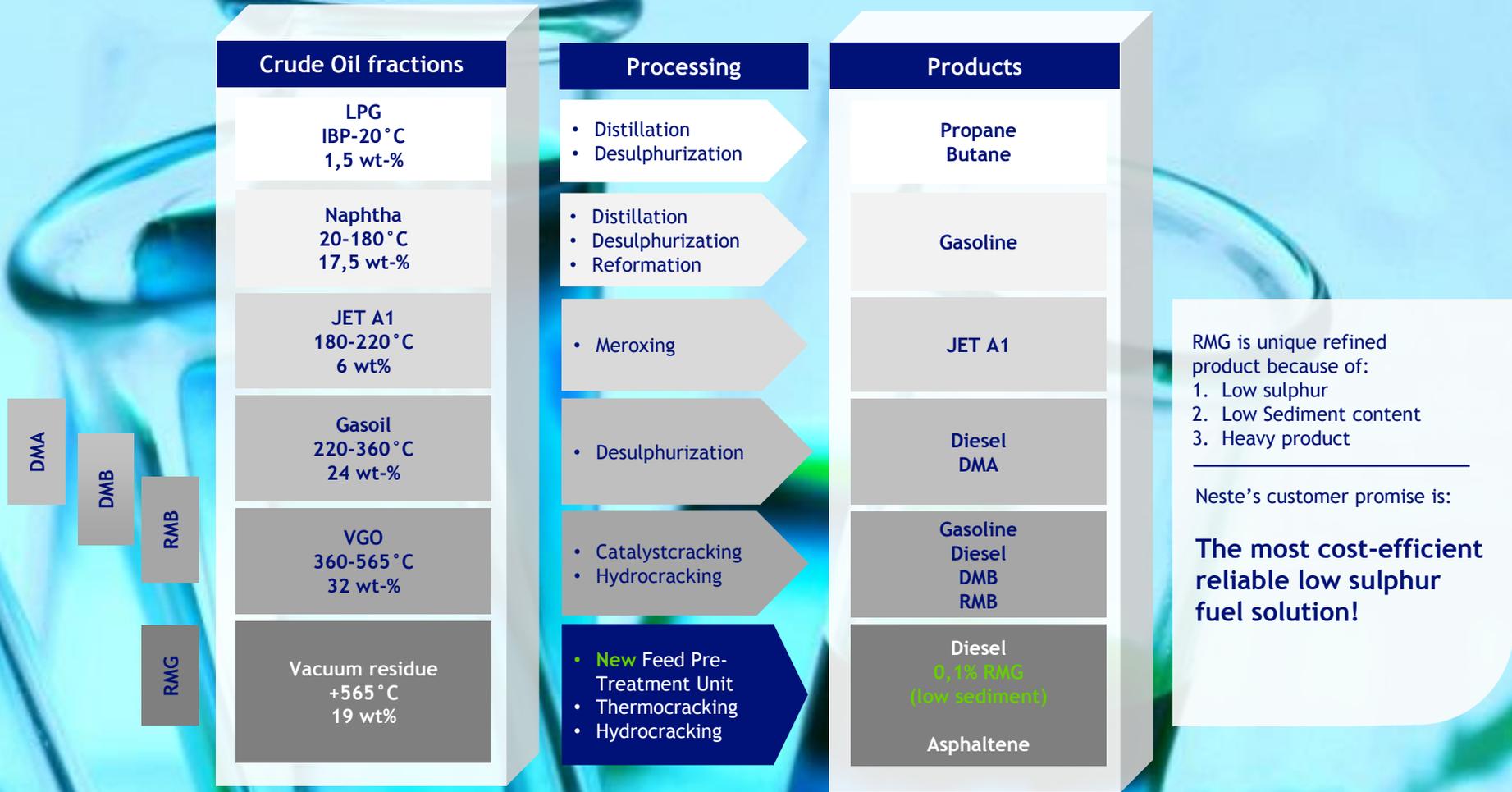
2013

2014

2015

2016

2017



Neste product stream

Sulphur limit
0.1% SECA
Jan. 2015

Heavy
distillate
bunker fuel
May 2015

0,1% sulphur
fuel oil
2018

High quality
renewable bunker
fuels 2020?→

Renewables

DMB

RMB

RMG

0,5% sulphur
fuel oil 2020? →

Fuel oil

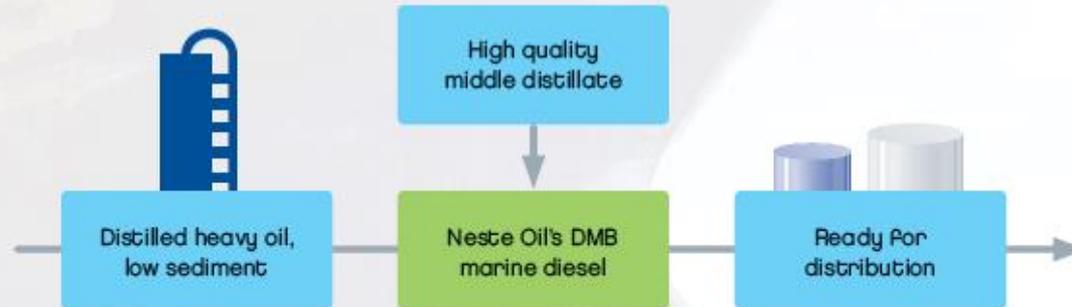
All products based on standard ISO 8217

DMA

Example: Neste DMB/RMB refining

DMB Production

Produced From low sediment distilled heavy oils
and good quality middle distillates
→ more processing compared to heavy Fuel oils

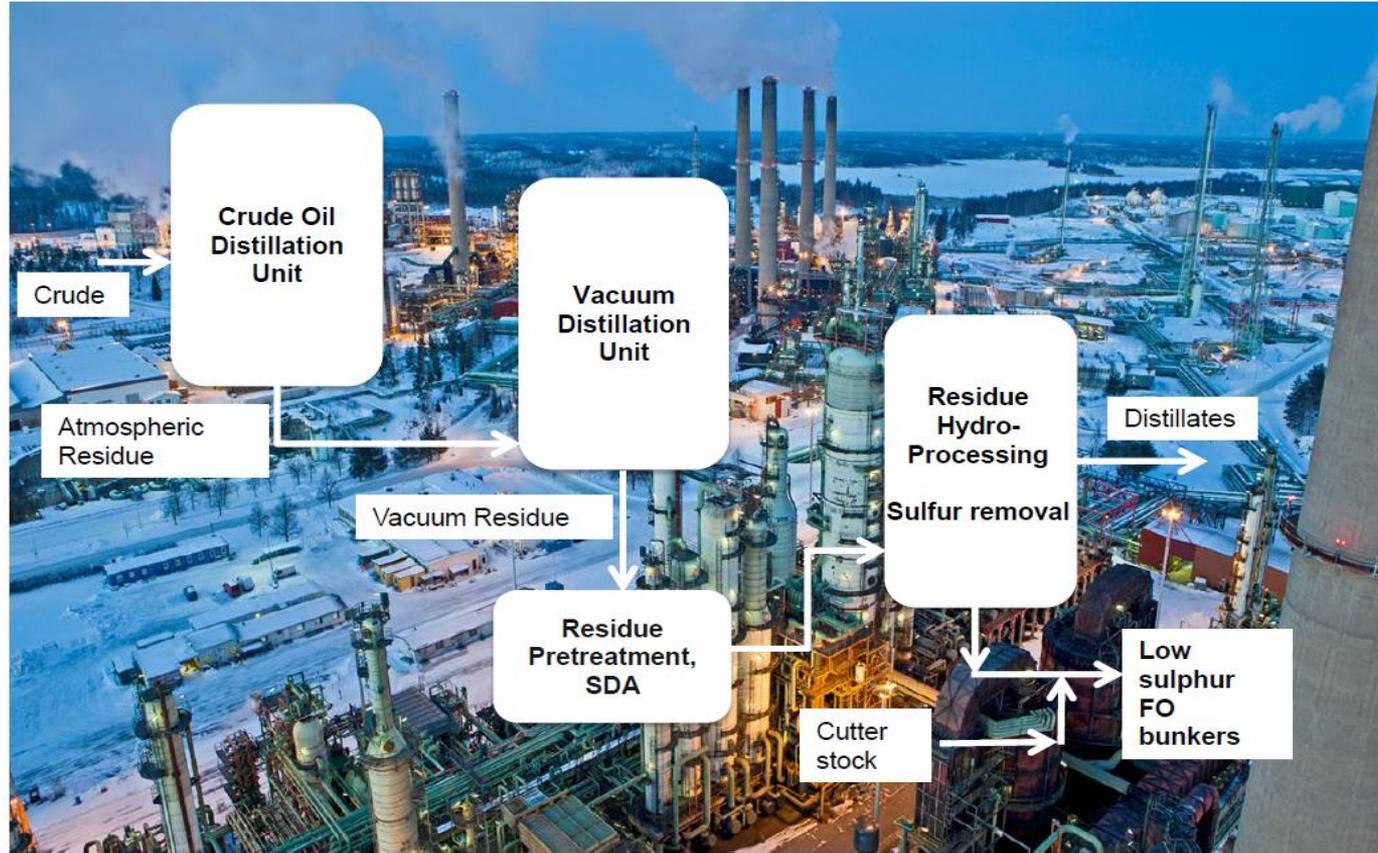


Excellent test results of Neste's MDO DMB

- Product was delivered to five ships at December 2014
- Total volume ~500 tons
- Tests in different types on engines: main engines, auxiliary engines and boilers
- Based on test, Neste MDO DMB proved to be a high quality product performing excellently as a bunker fuel
- Positive feedback from engine manufacturer

Porvoo refinery residue processing

- Residue upgrading to low sulphur FO bunkers



RMG will be the most cost efficient low sulphur Fuel

DMB

Viscosity 6 cSt@40 °C

Density 870 kg/m³

Pour point max:

- Summer: +10 °C
- Winter: +5 °C

Energy content 42,5MJ/kg

Distillate, no residue

No Sediment

No Asphaltenes

No Metals

RMB

Viscosity 12cSt@50 °C

Density 880 kg/m³

Pour point max: +25 °C

Energy content 42,6MJ/kg

Distillate, no residue

No Sediment

No Asphaltenes

No Metals

RMG

Viscosity 300cSt@50 °C

Density 920 kg/m³

Pour point max: +30 °C

Energy content 42,2MJ/kg

Carbon Residue 8,0wt-%

Low Sediment

Low Asphaltenes

Low Metals

0,1 % S FO product, typical properties

Characteristic	Specification ISO 8217 standard	Typical
Viscosity, cSt @ 50 °C	Max 380	150-300
Density, kg/m ³ @ 15 °C	max 991	920-940
CCAI	Max 870	< 870
Carbon residue, wt-%	Max 18	< 8
Energy content, MJ/kg	Not specified	> 42
Total sediment, wt-%	Max 0,1	< 0,1
Metals, mg/kg	Max	
- Vanadium	350	< 80
- Natrium	100	< 10
- Aluminium + silicon	60	< 30



Product is compatible with typical distillate bunkers



Global leader in renewable diesel

- Annual production capacity 2.4 million tons of Neste Renewable Diesel have been increased to 2.6 Mt
- Production based on Neste's proprietary NEXBTL technology
- Flexible and sustainable raw material base
- In 2016, Neste invested 70% of its R&D costs (total EUR 41 million) in the development of future raw materials, as well as research on NEXBTL technology and renewable products

Our renewable products

Neste Renewable Fuels



Neste
Renewable
Diesel

Neste
Renewable
Gasoline

Neste
Renewable
Propane

Neste
Renewable Jet
Fuel

Neste Renewable Chemicals



Neste
Renewable
Isoalkane

Neste
Renewable
Naphta

Neste
Renewable
Propane



Neste Renewable Diesel

- The highest quality diesel in the world
- Produced from waste and residue fats from food processing as well as vegetable oils with Neste's proprietary NEXBTL technology
- Using Neste Renewable Diesel significantly reduces greenhouse gas and tailpipe emissions
- Compatible with existing distribution systems and engines
- Meets even the toughest manufacturer requirements

Fully compatible with fossil diesel

	Conventional fossil diesel	Renewable diesel (HVO) e.g. Neste Renewable Diesel	Fischer-Tropsch (BTL)	Biodiesel (FAME / RME)
Raw material	Crude oil (mineral oil)	Flexible mix of raw materials (waste fats and vegetable oils)	Biomass	Vegetable oils and animal fats (mainly rapeseed oil)
Technology	Traditional refining	Hydrotreating	Gasification & Fischer-Tropsch	Esterification
End product	Hydrocarbon (gasoline, jet fuel, diesel)	Bio-based hydrocarbon (renewable diesel, jet fuel, bionaphta, biopropane)	Bio-based hydrocarbon (renewable gasoline, jet fuel, diesel)	Ester-based, conventional biodiesel
Chemical composition	C_nH_{2n+2} + aromatics	C_nH_{2n+2}	C_nH_{2n+2}	$\begin{array}{c} O \\ \\ H_3C-O-C-R \end{array}$

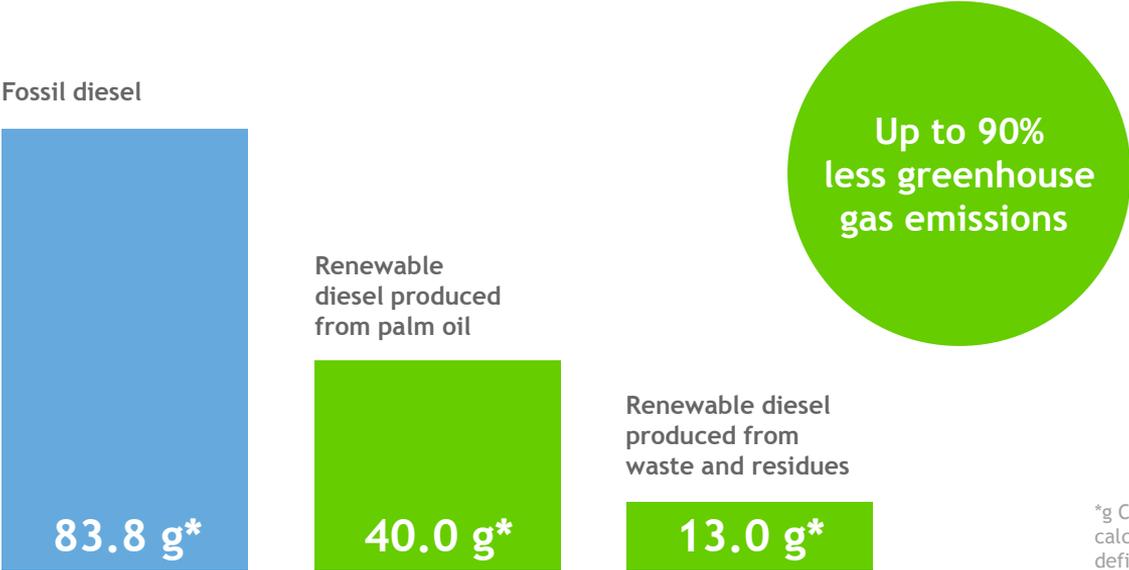
HVO = Hydrotreated Vegetable Oil, advanced biofuel, i.e. renewable fuel

BTL = Biomass to Liquid

FAME = Fatty Acid Methyl Ester, conventional biodiesel

RME = Rapeseed Methyl Ester, conventional biodiesel

Low-carbon Neste Renewable Diesel



*g CO2eq/MJ. Greenhouse gas balances calculated in accordance with the method defined in the EU RED Directive.

HVO reduces exhaust gas emissions

Helps to improve local air quality

Exhaust emissions compared to fossil diesel:

- NOx - 9%
- Particulates - 33%
- CO - 24%
- HC - 30%

Source: Average on over 40 scientific publications

Different biocomponents

Biodiesel (FAME)

- Esther
- Maximum 7% (ISO 8217)
- Challenges: Storage stability, microbial growth, material compatibility, water separation

Renewable diesel (HVO)

- Hydrocarbon
- Not limited (ISO 8217)
- Challenges: No challenges
- Stability similar to fossil diesel, good cold properties, good compatibility, doesn't absorb water

Other renewable hydrocarbons

- E.g. Co-feed
- Not limited (ISO 8217)
- Not different from fossil hydrocarbons

Neste Renewable Diesel (NEXBTL) marine use cases



2011 trial with Rotterdam Port Authority patrol boats running on 100% NEXBTL renewable diesel



NEXBTL renewable diesel is already sold to boat operators in marinas in Germany and Austria



The largest Norwegian ferry operator Fjord1 will start using 100% NEXBTL renewable diesel on two stretches in 2016



The US and Italian navy are already using different renewable diesel blends in their vessels

 Thank you!

