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Neste Oil Quarterly Magazine | 03.2007

NEW GROWTH

NExBTL Renewable Diesel will soon be available.

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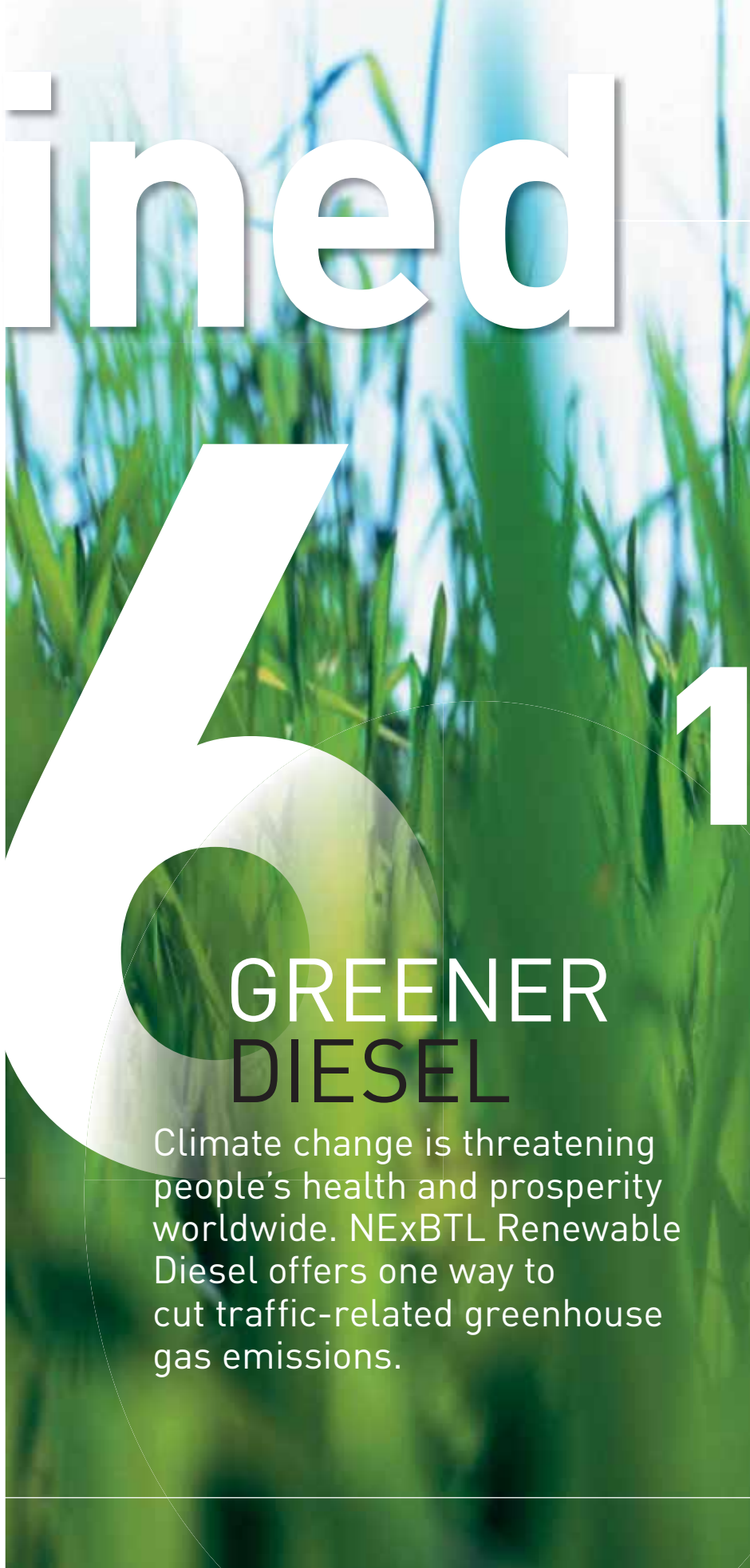

GREENER DIESEL

Climate change is threatening people's health and prosperity worldwide. NExBTL Renewable Diesel offers one way to cut traffic-related greenhouse gas emissions.

50 YEARS OF REFINING

FINLAND'S first oil refinery, at Naantali, celebrated 50 years of operation in mid-August. The refining expertise that has been built up over the past five decades represents a core resource for today's Neste Oil – and is a cornerstone of our cleaner petroleum product strategy, together with broadening our feedstock base and supplying premium-quality products.

THE NAANTALI refinery was started up under the close supervision of the technology supplier. In-house experts quickly learnt how to get the best out of the facility. And it only took eight years before the company was ready to start up a second refinery, at Porvoo.

TODAY, Neste Oil is known in the oil world as a small, but highly expert and innovative company. We have always taken good care of our facilities and been ready to invest in upgrading their capabilities. R&D success has enabled us to launch new, lower-emission, premium-quality products, and enhance our production processes over the years.

JUNE MARKED the latest stage in this development, with the start-up of a major new sulfur-free diesel line at Porvoo, based on upgrading low-value heavy fuel oil. Despite being is one of the most sophisticated plants of its type anywhere, the commissioning process went smoothly, thanks to the range of expertise we have available today. The project, which took some four years to implement, is the largest single investment in the company's history and is expected to pay itself back in well under 10 years.

NExBTL Renewable Diesel is our biggest star, however. It is a high-quality fuel that really has the potential to slow climate change without compromising vehicle performance.

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2 "Strong cash flow and solid refinery profitability will enable us to make major investments in new production facilities," says CFO **Petri Pentti**.

17 Base oil produced at Beringen in Belgium is selling like hot cakes across Europe, and is ideal for premium lubricants and motor oils.

A WARM HOME

PRODUCTS – info and test data for oil-heated homes.

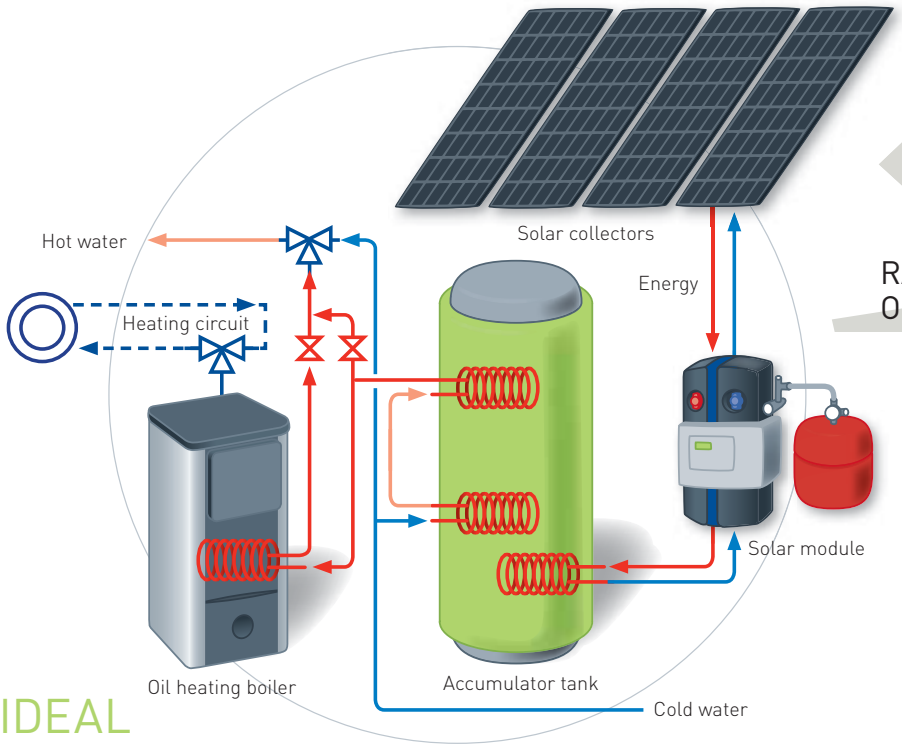
This 195m² house at the Hämeenlinna housing fair is heated by bio-oil and solar power.

1 **HEATING OIL IS SULFUR-FREE TODAY.** Like modern traffic fuels, today's heating oils contain so little sulfur that they are virtually sulfur-free. Tempera heating oil, for example, contains a maximum of 0.1% by weight of sulfur.

2 **SUMMER-GRADE OIL IS IDEAL FOR STORAGE TANKS INSIDE.** Tempera 3 heating oil, a summer grade, is ideal for use where the temperature at which it is stored does not go below -3 °C. In practice, this means that you can use Tempera-3 year-round if your oil tank is inside a building or insulated underground.

3 **USE FUEL OIL IN COLDER CONDITIONS.** If your storage temperature can be expected to fall below -3 °C, Tempera Green fuel oil is recommended for heating purposes. Tempera Green is available in three grades: Tempera Green -0/-10, Tempera Green -15/-25, and Tempera Green -29/34. All grades are sulfur-free and comply with the new EN590 specifications. These grades are recommended when storage tanks, whether above or below ground, are not insulated and where fuel pipes run in unheated spaces.

See the web edition: www.neste.fi → Home heating → Services



SUNOIL IS IDEAL FOR OLD AND NEW PROPERTIES

A growing number of people remodeling their homes, as well as house builders, are choosing solar heat to complement their oil heating systems. An efficient oil boiler, combined with a solar system, can cut heating costs significantly.

In a combination system, solar energy is used to provide sufficient hot water for household use during the summer months, and in parallel with oil during the spring and fall. The solar heat system is completely automatic and charges its accumulator tank whenever possible, from March through October. A high-efficiency oil heating unit provides additional heat as and when needed.

A pump starts up when the heat in the system's solar collectors rises above that of the temperature in a building's accumulator tank – and stops again when the temperature has reached an agreed level or when no more sun is available that day.

The system is ideal for both large and small buildings, as the number of collectors can be increased or reduced as needed. In larger set-ups, an oil heating boiler is supplemented with a separate solar accumulator tank holding between 700 and 1,000 liters of water. Smaller systems can use a compact SolarMax boiler accumulator. Developed by Neste Oil, this combines an efficient oil heating boiler with a 300-liter solar-heated water tank.

SOLAR POWER AND BIOFUEL IN UNISON

This year's Finnish Housing Fair in Hämeenlinna, held from mid-July to mid-August, saw the launch of a novel design heated by a combination of solar energy and biofuel produced from renewables.

"The house is the first of its type in the world," according to **Marja Wieru** of Neste Markkinointi.

"The operating costs of the biofuel system, based on Neste Oil's NExBTL (Next Generation Biomass to Liquid) technology, are higher than those of a standard heating oil-based system, as the product and its raw materials are more expensive. Tomorrow's needs and how a system like this is taxed will decide the potential of this type of approach. The situation today is a little strange, as all the attention is being given to traffic emissions and setting boundary or target values for traffic.

"The sun can provide sufficient energy in Finland to cover about half the hot water needed in this type of house annually. That's quite a big saving in financial terms."

RADIATOR-BASED OIL HEATING

This type of system makes it possible to use any energy source in addition to oil. A dual-fuel boiler can fire wood or another solid fuel alongside oil. Systems can also be extended, if desired, by adding solar heat input.

A TWO-YEAR SERVICE PERIOD

Modern oil boilers and burners are both safe and trouble-free, and do not require frequent maintenance. The recommended service period is normally two years. The better condition a system is in, the more efficient it will be, and the lower your heating costs.

CO_2 AND H_2O

Improved burner technology and the use of low-sulfur heating oil have reduced the emissions generated by oil-fired heating systems significantly. Carbon dioxide and steam make up the major part of the combustion gases released when burning heating oil today. Heating oil has a very high thermal value and burns efficiently in a modern system. With modern oil heating systems use 90-95% of the energy in the fuel can be used.

TYPICAL USAGE: 2,000 LITERS A YEAR

The cost of installing a water-based central heating system is roughly the same, regardless of energy source. A new single family home of 150-200 square meters housing four people is likely to use an average of 2,000 liters of heating oil a year for space heating and hot water. Construction costs run between €8,000 and €12,000, depending on the type of house and technology.

NExBTL Renewable Diesel production is being started up. Choosing the new fuel will be an important step forward – ethically, economically, and socially.

Refining for THE COMMON

TEXT OLLI MANNINEN | **PHOTOS** CORBIS/SKOY

When NExBTL Renewable Diesel comes on the market, it will have been tested many times over.

One of the key benefits of the fuel is that its greenhouse gas emissions, calculated over its entire life cycle, will be 40-60% lower than those of fossil diesel fuel – thanks to the production technology used and the performance it offers.

Concerns about the harm caused by greenhouse gases have grown as research on what these emissions result in has moved forward. The more greenhouse gases accumulate in the atmosphere, the greater the heating effect resulting from solar radiation. Global warming is predicted as likely to have a dramatic impact on conditions worldwide. And the most significant greenhouse gas produced by human activity is carbon dioxide, CO_2.

USING TAXES AND CHARGES TO LIMIT EMISSIONS. Traffic is the source of 20% of greenhouse emissions in Europe today, and is the most problematic source as well.

"That's why, beginning last fall, the EU has begun developing a more integrated approach to measures aimed at reducing emissions," says Finland's Minister of Transport, **Anu Vehviläinen**.

In addition to EU measures and legislations, national initiatives will also be called for, she says.

"Solutions addressing mobility and different modes of transport are of central important at national level. How people drive, for example, and how fast they drive, is also important. We need to develop the way we tax traffic, transport, and fuel, as well as the way we pay for using them."

Vehviläinen says that the biofuels developed by Neste Oil are more than just an interesting innovation that could generate export earnings.

"Developing and introducing biofuels and other alternative fuels, such as biogas, is set to have a positive impact on employment and the economy generally, both regionally and locally. The cost efficiency and benefits of biofuels and other alternative fuels need to be looked at from a broad perspective." →

GOOD

BIODIESEL!
A series of articles
on the birth of a new fuel.
Part 3: Development for
the common good

See the Web edition:
www.nesteoil.fi → media →
publications → Refine Online

"BIOFUELS AND ALTERNATIVE FUELS COULD OPEN UP COMPLETELY NEW DEVELOPMENT AND EXPORT OPPORTUNITIES."

Anu Vehviläinen, Finnish Minister of Transport


ILKKA SAVOLINEN

THERE ARE NO EASY SOLUTIONS. Our understanding of the reality of climate change has grown in recent years, thanks to a steady and growing flow of research on the phenomenon. Like many natural phenomena, however, it is a complex one, and there are no easy solutions to controlling it, according to Professor **Ilkka Savolainen** of VTT Technical Research Centre of Finland.

"There are always checks and balances in the natural world. Fine particles, for example, help prevent warming, but at the same time they're a major factor in increasing the incidence of lung and heart conditions."

MORE INFORMED DECISION-MAKING. Taking the right decisions to achieve the best solutions is time-consuming and difficult, for business and academics.

"Political decision-makers do not know enough about biofuels, for example, and are wary about taking decisions on them, as a result," says **Juhani Ruuskanen**, Professor of Environmental Sciences at the University of Kuopio.

COMPANIES ARE MOVING IN THE RIGHT DIRECTION. Slow decision-making on environmental issues is partly the result of the way these issues are addressed, says Finnish parliamentarian **Heidi Hautala**.

"We haven't been able to build a decision-making mechanism that takes account of the entire environmental policy agenda. Environmental issues are spread across a number of ministries, and these ministries need to put their power games aside for a while and concentrate on developing better ways of working together and taking decisions together. We also need to agree common criteria for life cycle analyses."

Hautala expects global solutions to climate change to be slow in coming until a truly all-embracing international agreement can be reached.

"Ensuring that the EU stays ahead in pushing things forward is the best way to reach such an agreement, I believe."

The response of the business world to the challenge of climate change has been a step in the right direction, she says, although the tough targets set by the EU have been a major factor here. Neste Oil has also been active in moving things ahead, she says. →


HEIDI HAUTALA

"I HOPE THAT NESTE OIL WILL ALSO SUPPORT NON-TECHNICAL SOLUTIONS FOR CURBING TRAFFIC EMISSIONS AND VOLUMES."

Heidi Hautala
Finnish MP

CLIMATE CHANGE
RESEARCH, 1800-2010

1800 The French mathematician and physicist, **Joseph Fourier**, discovered in 1827 that the atmosphere lets light through very effectively, but not thermal radiation, which is transformed into light on the ground.

In 1896, the Swedish chemist, **Svante Arrhenius**, proposed a theory on how energy generation-related emissions resulting from the industrial revolution could increase the level of CO_2 in the atmosphere and increase the planet's temperature.

1950 **Gilbert Plaas** showed that even a small increase in CO_2 would accelerate the phenomenon. **Hans Suess** identified the CO_2 in the atmosphere generated by man in his radiocarbon dating studies on mummies. In 1957, **Roger Revelle** proposed a generally accepted theory that the world's oceans absorbed CO_2 so slowly that the molecules resulting from emissions could remain in the atmosphere for as long as 100 years.

1960 Technology for measuring CO_2 developed further, and showed conclusively that manmade emissions are increasing the levels of CO_2 in the atmosphere.

1980 The United Nations founded the Intergovernmental Panel on Climate Change (IPCC) in 1988. Over 2,000 researchers from around the world take part in the IPCC's activities. The IPCC has published four climate reports so far, the latest of which can be found here: http://ipcc-wg1.ucar.edu.

1990 Debate on climate change moved beyond the scientific community into the international political arena and the public domain following the UNCED conference in Rio de Janeiro in 1992. The conference saw the signing of a number of international environmental agreements.

2000 The Kyoto Protocol came into force in 2005 when 55 countries, responsible for over 55% of emissions by the world's industrialized nations, ratified the agreement. The US and Australia opted out.

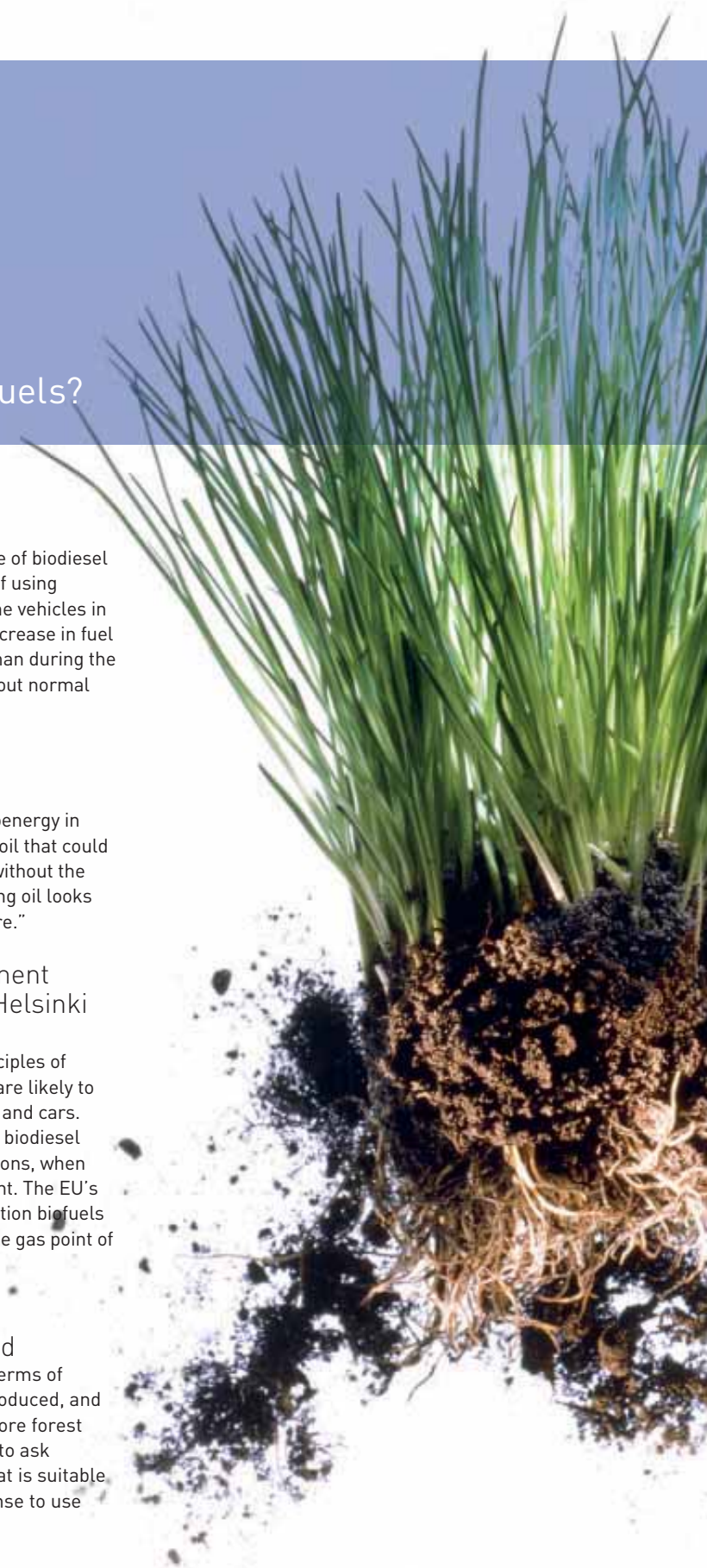
The latest IPCC report states that greenhouse gas emissions resulting in global warming are primarily the result of the use of fossil fuels, changes in land use, and agriculture.

Glaciers, sea ice, and snow cover are all retreating, and the permafrost is beginning to melt in some areas as well. Sea levels are projected as likely to rise by 0.17 meters on average in the 2000s. Long-term changes have already been observed in rainfall, marine salinity, and wind conditions around the world.

2010 The first target period contained in the Kyoto Protocol will end in 2012. Negotiations are now under way on future climate policy.

ON THE **ROAD** AND AT **HOME**

What are your expectations of biofuels?



1 **Matti Tikkanen,** Vice President, Transport Services at Itella Logistics

"We were the first Finnish logistics company to start trial use of biodiesel in January this year. This will give us first-hand experience of using biodiesel in Finnish conditions at different times of the year. So far, the vehicles in the trial have performed reliably, and we haven't seen a significant increase in fuel consumption. In some cases, consumption has actually been lower than during the comparable period in 2006. We have 10 vehicles in the trial, carrying out normal deliveries in Greater Helsinki."

2 **Eero Kourula,** Marketing Manager, Finnish Oil and Gas Federation

"Oil-heated buildings are ideal for promoting the use of bioenergy in Finland. We have close to 260,000 family homes heated by oil that could use bio heating oil as such or blended with conventional heating oil, without the need for any additional investments or changes in logistics. Bio heating oil looks set to offer an energy-efficient and reliable source of heat in the future."

3 **Martti Tiuri,** Emeritus Professor, Department of Electricity and Data Communications, Helsinki University of Technology

"Today's cereal-based biofuels do not comply with the principles of sustainable development, as they compete with food production and are likely to push food prices up. There is not enough arable land anyway for food and cars. Studies by VTT have shown that bioethanol produced from barley and biodiesel produced from oilseed rape actually increase greenhouse gas emissions, when their entire life cycle and associated byproducts are taken into account. The EU's emphasis on increasing biofuel usage is premature. The next-generation biofuels based on biomass fiber will be more advantageous from a greenhouse gas point of view. They're also not based on field crops either."

4 **Sampo Soimakallio,** researcher, VTT Technical Research Centre of Finland

"From an environmental point of view, what's critical in terms of NExBTL is how the palm oil used to produce it is itself produced, and what impact production has on food production, for example. Will more forest land be cleared to grow it or will fallow land be used? We also need to ask ourselves whether it is ethically acceptable to use a raw material that is suitable for human consumption for fuel production. It would make more sense to use biomass waste fractions that cannot be used for other purposes."

"WE WILL CUT GREENHOUSE EMISSIONS EQUIVALENT TO DRIVING 42,000 VEHICLES AROUND THE WORLD."

Simo Honkanen, Neste Oil

MARKKU SAVIKKO

→ Industry has had to adapt to the environmental challenge, and has begun to do something, rather than just fight it, she continues.

"No direct limits have yet been placed on traffic, households, or the service sector. In all fairness, though, we can't just demand that industry cuts back on its emissions. We all have a part to play."

MAKING A PROFIT FROM ETHICAL INVESTMENTS. A number of international financial companies have set up climate change funds to enable investors to profit from progress made in combating climate change.

"A couple of these have been set up in Finland as well, and interest in sustainable development funds is beginning to grow," says the **Markku Savikko**, Managing Director of the Finnish Association of Mutual Funds.

Neste Oil was one of the first to join the Fine Carbon Fund, an initiative for purchasing carbon reduction, in May this year. The fund will enable investors to purchase emission reductions from CDM and JI projects designed to reduce greenhouse gas emissions in developing countries and transition economies.

EVERYONE CAN CONTRIBUTE. Neste Oil is committed to being a strong player on the clean fuel market, says the company's **Simo Honkanen**.

"NExBTL Renewable Diesel is a natural extension to the range of low-emission fuels produced by our refineries. By using a biofuel like this, we can help combat the challenge of climate change."

Independent studies have shown that Neste Oil's NExBTL is a better alternative in terms of greenhouse gas emissions than fossil diesel or conventional biodiesel fuels produced using esterification technology.

"Alongside the properties of the end-product, it's as least as important to understand the impact involved in the entire life cycle of producing a fuel. The principle of sustainable development calls for producing products that have a minimal degree of impact on the environment during the early stages of their life cycle."

Although traffic-related CO_2 emissions are growing proportionally the fastest, alongside those from generating electricity, biofuel solutions can only help cut a small proportion of global CO_2 emissions.

"Through the fuels we choose and the way we drive, though, we can all make a contribution."

SELECTING RAW MATERIALS CAREFULLY. Understanding the life cycle and origin of the raw materials it uses, and working with responsible partners who believe in similar principles, is an integral part of Neste Oil's approach to sustainable development.

The bulk of the greenhouse emissions linked to NExBTL are associated with the early stages of palm oil production. A number of efforts are being made to introduce more environmentally compatible methods into the production chain, and Neste Oil is a member of the Roundtable of Sustainable Palm Oil (RSPO).

"We require our partners to ensure that their production methods comply with RSPO standards," explains **Kaisa Hietala**, from Neste Oil's feedstock procurement organization.

She emphasizes that the palm oil that will be used as a major feedstock for producing NExBTL diesel is also suitable for use by the food industry, which is why Neste Oil has targeted identifying alternatives that do not compete with the food industry as soon as possible.

"We're in a transition stage at the moment, and we've got a number of projects under way to find new alternative sources of feedstock for our needs."

Work on algae, for example, is progressing, and a project has been started with forest products company, Stora Enso, aimed at beginning wood-based biofuel production in the next few years. |

NEW STATIONS **IN RUSSIA**

TWO NEW Neste service stations have been opened along the Murmansk highway near St. Petersburg. One of these, close to the Finnish border, will also sell diesel fuel for heavy vehicles. Both will be open around the clock and feature a shop and a fast food counter.

NEXBTL TO BE INTRODUCED IN STOCKHOLM

NEXBTL RENEWABLE DIESEL is to be trialed in Stockholm in a joint emissions reduction initiative coordinated by Neste Oil and the logistics division of Swedish Post, Posten Logistik, shipping company Waxholmsbolaget Ångfartygs, Volvo Penta, and Scania. The project is part of an EU effort due to last until the end of 2010 and is similar to one beginning this fall involving Neste Oil, the Helsinki Metropolitan Area Council (YTV), and Helsinki City Transport.

RAISIO TO SUPPLY PORVOO WITH **RAPESEED OIL**

THE RAISIO GROUP will supply Neste Oil with 10,000 tonnes of rapeseed oil for its NExBTL Renewable Diesel plant at Porvoo this year. Neste Oil has already contracted to buy virtually all the byproduct tallow produced by the Finnish food processing industry as raw material input for biodiesel production. The NExBTL plant has a capacity of 170,000 t/a, and will be joined by a second plant of similar capacity towards the end of 2008.

A **SOLID** UNDATION

TEXT MATTI REMES | **PHOTOS** KAISA RAUTAHEIMO

Petri Pentti seems a very relaxed man, although, as Neste Oil's Chief Financial Officer, he has obviously been busy recently, thanks to the company's record-breaking investment program. Pentti is responsible for ensuring that the Group's finances are up to dealing with the challenge of the program, which is designed to extend Neste Oil's refining capabilities significantly.

"The new diesel line we've built at Porvoo has cost approximately €750 million, and the new biodiesel plant there has cost around €100 million. On top of these projects, we've carried through a number of smaller ones as well."

And that is not all, as Neste Oil has announced that it plans to invest billions of euros in its refining business over the next 10 years, particularly in biodiesel.

PERFECT TIMING FOR INVESTORS. Despite its major investments, Neste Oil's capital structure is in good shape, says Pentti.

"Our leverage ratio has stayed well within our target range of 25-50%, and we've also been able to pay the type of dividend that we've said we would, equivalent to at least a third of our net result."

This is good going, not least when one remembers that the new diesel line was originally budgeted at €530 million. Pentti admits that the steep rise in steel prices and other construction costs was particularly challenging.

A capital investment program valued at around €1 billion during the last few years has not given **Petri Pentti** any sleepless nights. The stronger cash flow and improved refinery profitability that will be generated will form a solid foundation for the future and future projects, he believes.

"OUR NEW DIESEL LINE WILL INCREASE OUR OVERALL REFINING MARGIN BY MORE THAN USD 2 A BARREL."

"We were never in any doubt, though, about going ahead with the project as planned. The timing of the completion of the plant couldn't have been better, as the demand for premium-quality diesel fuel is growing all the time, and the proportion of diesel vehicles on Europe's roads is rising rapidly."

MAINLY COVERED BY CASH FLOW. The start-up of the new diesel line will have a major impact on Neste Oil's profitability. Heavy fuel oil that was previously sold at a loss will now be refined into a true value-added product that is very much in demand in Europe.

"We expect the new line to increase our total refining margin by more than USD 2 a barrel. If we refine 100 million barrels a year, that means our sales margin will increase by over USD 200 million."

The bulk of the costs of the investment program will be covered by the Group's cash flow, while some will be covered by the proceeds of the sale of non-core assets, such as Neste Oil's holding in the Russian oil production company, Severtek, and service station properties in Finland.

"We need to keep our debt at a level where the cost of servicing it does not rise too high and undermine our potential to see our investments through."

A POTENTIALLY RISKY INDUSTRY. Given the inherent risks of the oil industry, a company like Neste Oil needs to hedge its market risks in particular.

"We need to hedge ourselves against sudden changes in petroleum product prices, for example. Our industry is especially susceptible to unexpected developments in world politics and the global economy."

Without this type of hedging, even small changes in prices or exchange rates would be immediately reflected in Neste Oil's profitability. A 10% change in the euro-dollar exchange rate could have a €100-125 million impact on the company's operating profit, for example.

The market prospects for the immediate future are relatively stable, however, and higher crude prices have not impacted demand for petroleum products.

"Refinery capacity utilization figures are high, and we're very busy."

PREMIUM QUALITY IS A COMPETITIVE EDGE. The competition between oil refiners is tough. Compared to other Western European refiners, Neste Oil's refining margin is USD 3-5 a barrel higher. The more a refiner is able to refine premium-quality products from cheaper and more 'difficult' feedstocks, the better he is likely to succeed.

"Our new diesel line will further strengthen our competitiveness here. We now have a product palette that means we will be among the last that need to cut our output, regardless of how the market develops."

In addition to high-quality diesel and biodiesel, Pentti is also very positive about the success of Neste Oil's specialty products, such as its base oils, used in premium-quality lubricants, and its fuel components.

"Although our competitors have also invested in diesel capacity, for example, we do not expect to see a major growth in overall refining capacity in the near future. The major players will be focusing their investments upstream, on oil and gas production. Successful investments are all about predicting which products will be in most demand 10 years or more from now."

KEEPING INVESTORS UP-TO-DATE. Updating investors on how the company's investments will impact its future profitability is an integral part of Pentti's job as CFO.

"We've got some very positive feedback from investors that our investment decisions are very much in line with market expectations, and the market likes our focus on raising our added value."

Neste Oil is still a new company for investors, says Pentti.

"That's why we still need to get our name out there, both at home and abroad. Being accurate, open, and easily approachable in our reporting and overall communications is important."

Neste Oil had some 55,000 shareholders as of the end of June. The Finnish state owns half of the company's shares, Finnish institutional investors 14%, and private individuals 7%. Around 29% of Neste Oil shares are held by international investors.

"A quarter of these are in North America, a quarter in Britain, a quarter in the other Nordic countries, and a quarter elsewhere in Europe."

Pentti estimates that around 25 banks and other financial institutions follow Neste Oil on a regular basis. The majority of the company's international investors specialize in various aspects of the oil business.

Correcting inaccurate or out-of-date information also forms part of IR activities.

"There are still a number of people who think that Neste Oil is involved in crude production, for example. We have completely divested this part of our business, though, and refining and refining margins are what we're about today." |

PETRI PENTTI

CFO

| Born: 1962 in Oulainen
| Education: M.Sc. (Econ)
| Career: Joined the company in 2004. Prior to this, he served with Finnair for 15 years, of which the last five as CFO, and for three years with Wärtsilä in corporate finance.
| Motto: When you stick with the truth, you never have to remember what you've said.
| Family: Wife and two daughters aged 13 and 15, and an 18-month-old field spaniel.
| Hobbies: His daughters' music, boating, the family's summer cottage, and keeping fit.

NEW **PRODUCTS**

NEW WINDSHIELD CLEANER
Voltera Summer is a new product ideal for keeping windshields clean between spring and fall. A liter of concentrate is sufficient for 10 liters of cleaner. The product is fragrance- and alcohol-free, biodegradable, and can be mixed with other windshield cleaners.

ENVIRONMENTALLY FRIENDLY HYDRAULIC OIL
Produced from renewable raw materials, Neste Biohydrauli Longlife is a fully synthetic oil designed for extended oil change intervals. It will not thin over time and provides excellent protection against wear and tear, is biodegradable, and complies with the latest EU environmental standards. The product is ideal for harvesters and excavators, wastewater treatment plants, lumber processing equipment, asphalt machines, and use on board ships and at ports.

NEW DEVELOPMENTS IN STORE AT NAANTALI

THE TECHNOLOGY at the Naantali refinery is to be comprehensively updated through a series of major investments aimed at enhancing the efficiency of a number of refining processes. Engineering has already been started and will involve some 250,000 man-hours of work. Decisions on the investments will be made at the end of 2008.

DIESEL ECO 20 ARRIVES AT OKQ8 STATIONS

NEXBTL Renewable Diesel is due to go on sale in Sweden this autum, following an agreement between Neste Oil and Sweden's largest service station network, OKQ8. 20% of the fuel will be included in Diesel ECO 20, to be marketed as 'Better for the environment, cars, and car owners'.

BIODIESEL PRODUCTION TO BE RAMPED UP

CONSTRUCTION of the first NExBTL Renewable Diesel plant at Porvoo has been completed on-time and on-budget. Production will be ramped up on a phased basis to meet the strong demand for the innovative new fuel.

A second NExBTL plant is under construction at Porvoo and progressing to plan, and is due to be up and running at the end of 2008. Both plants will have a nameplate capacity of 170,000 t/a.

NEW **MANNERHEIM FILM** STARTS SOON

SHOOTING on a film on the life of Marshal Mannerheim is due to begin soon in Finland and Russia.
The initiator association Champion of Liberty, the director **Renny Harlin** and the producer **Markus Selin** will trace the soldier's and statesman's role in securing Finland´s independence. The film will have its premère at the end of 2009.

NEW **DIESEL LINE** OPERATIONAL

THE NEW DIESEL LINE at Porvoo entered commercial production at the end of June after a slightly extended start-up. The project lasted just under four years and cost some €750 million.

The new line is expected to begin making a positive contribution to Neste Oil's overall refining margin from the third quarter onwards.

REACH COMES INTO **FORCE**

UNDER the EU's new REACH regulatory framework, which came into force at the beginning of June this year, companies must register the chemicals they use and show that they are safe to use. This covers all the products, feedstocks, and chemicals used and produced by Neste Oil, except crude. The company has launched a REACH implementation project to ensure that registration is completed between 2008 and 2010.

A TANKFARM OF unique base oil

TEXT MANU MARTTINEN | PHOTOS ULLA SHEMEIKKA

Although their main use lies in motor lubricants, base oils are also employed in niche markets, from candies to lip gloss.

"There goes another 'cigar'," says **Johan Bloemen**, Purchasing/Logistics Officer with Neste Oil in Belgium, pointing to one of the trucks in the seemingly endless stream from Neste Oil's base oil plant at Beringen to the port of Antwerp.

In oil industry slang, a cigar refers to a tanker truck, and comes, not surprisingly, from their distinctive cylindrical shape. Trucks like these are a very common sight on Belgian roads, particularly near plants like that at Beringen and a port like Antwerp, with its extensive refining and petrochemical infrastructure.

"We ship around 8,000 tanker truckloads of base oil a year around Europe from Beringen and Antwerp." →

THE BER
PAO PLA

The base oils in question are either polyalphaolefins (PAO) or Enhanced High Viscosity Index (EHVI) oils, two of Neste Oil's specialty products, produced at Beringen and Porvoo respectively and sold under the Nexbase brand. Both are premium-grade products and used primarily in lubricants and motor oils.

"Today's products are a clear step up from earlier oils. Just think. When I got my first car, I had to change my oil every 5,000 kilometers, while today I can drive 25,000 kilometers without needing an oil change or a top-up."

DEMAND OUTSTRIPPING PRODUCTION. The demand for base oil is growing strongly, particularly in Europe. Sales of EHVI are increasing by around 15% annually, and PAO is selling well too, although volumes are more stable.

Current production levels are falling behind market demand, according to **Ivo Smeets**, Managing Director of Neste Oil N.V. in Belgium.

"We need to increase our production quickly if we're to keep pace with the growth of our European customers."

An increase of 10,000 t/a is 'in the pipeline' at the PAO plant in Beringen, and is waiting for the necessary permits from the local authorities. Smeets is also hopeful that Neste Oil's long-planned EHVI plant project in Bahrain will finally move ahead in 2007.

A full 93% of PAO output from Beringen and EHVI from Antwerp LBC storage goes to customers in Europe today, compared to 75% three years ago.

"Given today's strong demand in Europe, it doesn't make sense to export these base oils further afield."

Production at the Beringen plant began in 1991, and reached 50,000 t/a in 2001.

Neste Oil has around a quarter of the European market for PAO, and 14% of the global market. Three other major producers are active on the PAO market: ChevronPhillips, ExxonMobil, and Ineos.

COLORLESS AND ODORLESS. PAO is a synthetic base oil, used to produce premium-quality lubricants and motor oils. Sulfur-free, colorless, and completely odorless, PAO is produced

“Safe operations are the foundation of our competitiveness and that of our partners,” says Johan Bloemen. “Everyone benefits: our customers, our neighbors, and the environment.” On the left, Pieter Leenaers.

40 MILLION TONS OF BASE OIL A YEAR

- Four groups
- Group 1: mainly for industrial use. This accounts for the bulk of production today (approx. 30 million t/a), although the trend is moving down in the future.
- Global annual base oil production is some 40 million t/a, equivalent to 1% of global oil production
- Groups 2-4: mainly for automotive use. Neste Oil’s EHVI is Group 3, and PAO Group 4

Ivo Smeets (47) is a chemical engineer, and also has a degree in environmental science.

Base oil accounts for around 80% of the content of a typical premium-quality lubricant. The other 20% comprises additives.

at Beringen from 1-decene, an alphaolefin obtained from ethylene. It offers excellent resistance to oxidation and is thermal stable, at both low and high temperatures.

LOTS OF MARKET POTENTIAL. The market for synthetic base oils is still really quite small, according to Smeets, and base oils account for only a couple of percent of Neste Oil's net sales.

The market is definitely growing, though, he says, particularly as a result of EU efforts to control vehicle emissions. Automotive manufacturers need ever-better motor oils and lubricants to produce the more energy-efficient engines expected today.

"We've decided to concentrate on two premium-quality base oils, and the tougher the regulations get, the better for us."

GOOD FOR THE ENVIRONMENT. The traffic on the motorway to Antwerp often snarls up these days, and the journey from Beringen that used to take about half an hour can take as much as an hour and a quarter, says Bloemen.

Caught in this type of traffic, it is easy to understand the need to reduce vehicle emissions, especially as cars and trucks are such an important part of modern life. |

Consumption of petroleum products in all their forms needs to be cut, and products themselves need to be more environmentally friendly.

A lot of debate has focused on biofuels, diesel engines, and hybrid vehicles, but relatively little has been devoted to the relative environmental friendliness of motor oils and lubricants. The higher the quality of the lubricants used in a vehicle, the lower its tailpipe emissions and the less frequently it requires an oil change.

Looking ahead, it should be possible to produce base oils from renewable feedstocks in the future, says Ivo Smeets. |

PAO IN COSMETICS AND FOOD PRODUCTS

High-purity, food grade PAO is used not only in food products – to give candy its shine and extend the shelf life of candy and dried fruit and prevent items sticking to each other – but also in cosmetics, such as face and body lotions and hair gel. Nexbase PAO is identified as E907 in the European additive classification system. Around 2% of output from the Beringen plant is used in non-petroleum products.

See the web edition:
www.nesteoil.fi → media → publications → Refine Online

EHVI'S HOME BASE LIES IN ANTWERP

A series of giant white storage tanks dominate LBC Tank Terminal's site in Antwerp. Each of the tanks behind the company's sales executives, **Frans Melchers** and **Jürgen Spaenhoven**, can hold some 4000 cubic meters of EHVI base oil from Porvoo.

"You'd need around 105 tanker trucks to empty one of these tanks."

WORTH A SMILE. Chemical storage facilities like this are doing good business today, as the demand for these types of products increases. Worldwide, the capacity utilization of LBC's tank farms rose to over 95% last year.

LBC has a total of 241,500 cubic meters of storage tank capacity in Antwerp, and numbers many large chemical and oil companies among its customers. Neste Oil is one of the largest, and uses 16 tanks to hold 50,000 cubic meters of base oil.

The tank contains EHVI produced at the Neste Oil Porvoo refinery in Finland, before its onward shipment by truck, barge, ship, and rail to customers across Europe. Trucks and barges are loaded during the day, and rail wagons at night. In addition to product storage, LBC also handles the paperwork associated with deliveries where needed. All their operations for Neste Oil are coordinated from the Base Oils Global Customer Service centre in Beringen.

LBC – LIQUID BULK CHEMICALS

- The world's second-largest chemical storage services provider
- 2.2 million m^3 of storage capacity
- 12 terminals in Europe and the US
- Product throughput of 10.9 million t/a
- Net sales of €129 million and an operating profit of €50 million in 2006
- 599 employees

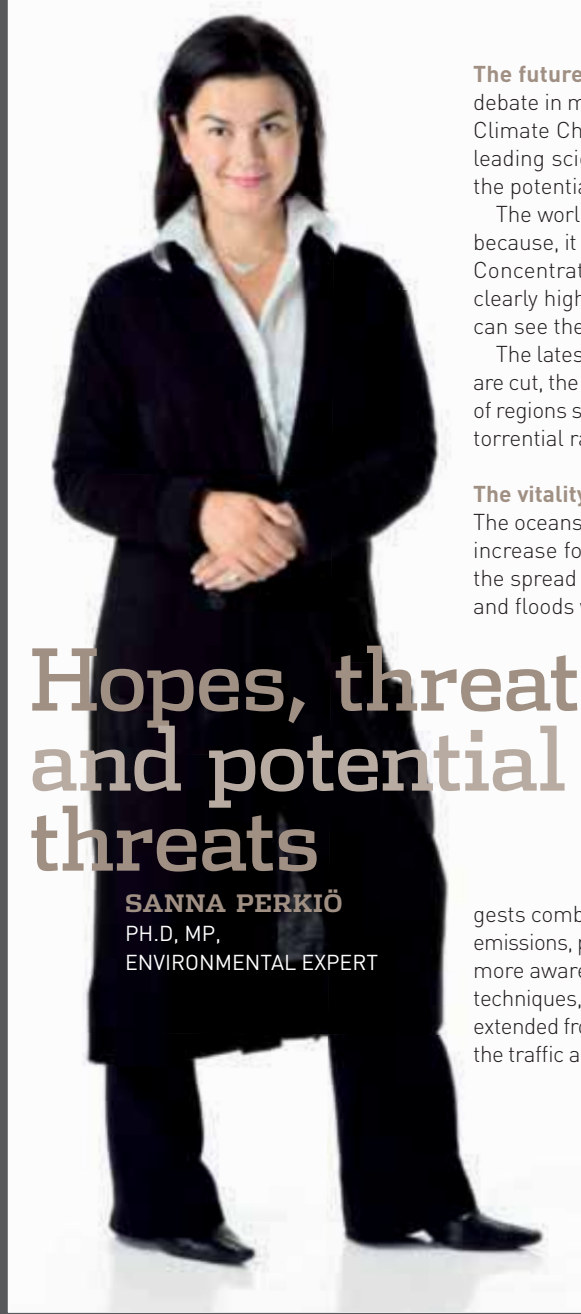


PHOTO PIIA ARNOULD

Hopes, threats, and potential threats

SANNA PERKIÖ
PH.D, MP,
ENVIRONMENTAL EXPERT

The future of the world we live in has come to the fore of public debate in many ways this year. The UN's Intergovernmental Panel on Climate Change, for example, has published three reports in which leading scientists have assessed the impact of climate change and the potential for cutting emissions.

The world's temperature has risen 0.74 °C over the last 100 years, because, it is said, of the use of fossil fuels, agriculture, and land use. Concentrations of greenhouse gases in the atmosphere today are clearly higher than at any time over the last 650,000 years. All of us can see the change that has taken place in our climate.

The latest IPCC report says that, unless greenhouse gas emissions are cut, the atmosphere will heat up by 0.2 °C within a decade. The size of regions suffering from drought will increase, as will the incidence of torrential rain and mudslides, and the availability of fresh water.

The vitality of numerous ecosystems will be further undermined. The oceans will become more acidic. A small rise in temperature will increase food production, while a larger one will reduce it, and see the spread of malnutrition and illness in poor countries. Heat waves and floods will kill more people.

In Northern Europe, the need to heat buildings will be reduced and crop and forest growth will improve, although winter floods will worsen. Anyone in Finland last winter will remember the difficulty mills had to get their timber out of the forests because of the soft ground; while ski resorts in the Alps were in difficulties because of low snowfall.

But there is cause for hope too. The IPCC suggests combating climate change by putting a price on carbon dioxide emissions, protecting low-lying land from rises in sea level, encouraging more aware food- and leisure-related choices, changing agricultural techniques, and innovating new legislation. Reducing emissions can be extended from energy generation to buildings and industry. Solutions in the traffic area include second-generation biofuels, more fuel-efficient aircraft, and more advanced electric and hybrid cars.

Finland's policy on climate is to face up to the country's responsibility in reducing greenhouse gas emissions. This will bring us new challenges, but is that such a bad thing, after all?

Celebrations in the air


1


2


3

The Naantali refinery celebrated 50 years of operation this summer. The guest of honor was the President of the Republic, **Tarja Halonen** **[1]**, who is seen above accompanied by the Chairman of Neste Oil's Board of Directors, **Timo Peltola** (left), and the company's President & CEO, **Risto Rinne**. Other guests included senior local and national government representatives and executives from many of Neste Oil's partners **[2]**.

Visitors to the Naantali Music Festival in June enjoyed a Sibelius concert by **Elina Vähälä** and **Ralf Gothoni** in Raisio Church **[3]**.

4

6 **The Total Cello Ensemble** was on hand to entertain guests at the 50th anniversary of the Naantali refinery and the Naantali Music Festival. Over 1,000 guests visited the refinery over the two-day event. This year's festival featured artists such as Camerata Ireland, conducted by **Barry Douglas**, attracted a record 18,400 visitors.

6

4 **The inauguration** of the new diesel line and the NExBTL Renewable Diesel plant at Porvoo, an investment totaling some €850 million, took place in June, as did the 40th anniversary of the Technology Center there. The joint event attracted guests from local and national government, the European Commission, Neste Oil's partners, and the financial communities. The program was hosted by **Sanna Mämmi**.

5 The theme of the **Avanti XXIII Summer Sounds** festival in Porvoo was entitled the 'Hall of Mirrors'. The Carnival of the Animals concert was a hit with the kids.

7 **Neste Green diesel**, which contains 25% NExBTL Renewable Diesel, proved a success with the organizers' support and rescue vehicles at this year's Neste Oil Rally. 300,000 fans and 450 Neste Oil partners cheered **Marcus Grönholm** to a historic seventh victory.

5

7

ALL SQUARED AWAY ON DECK

Safety and fitness are essential in a modern ship – to ensure the safety of those on board and that of the vessel.

TEXT KIRSI RIIPINEN | **PHOTOS** NESTE OIL

A CALM sea and a brilliant sunset some time in the early 1900s. A melancholy melody plays in the background, and sailors lean on the railing remembering their loved ones on the quayside when they cast off. When the ship reaches her first port of call, the sailors send their first letters home – and when they reach more exotic climes some weeks later, their longing for home turns to raucous sea shanties and hopping from bar to bar, sometimes with a dusky foreign beauty on their arm.

Romanticized images like these easily bring a smile to the lips of **Otto Vuorinen**, who is responsible for assessing the vessels that Neste Oil time charters for its needs. The day-to-day work of the sailor has always been something very different, although the stories have always been colorful. →

"HAVING THE RIGHT KNACK WITH NAVIGATION, ON-BOARD TECHNOLOGY, PAPERWORK, AND SAFETY IS IMPORTANT."

"People tend to think that sailors know the world like the back of their hands. In reality, the time vessels spend in harbor today is very short. Unloading or loading takes place rapidly, during one day at the most. And today's sailors keep in touch with loved ones by email, like the rest of us."

NAVIGATION AND TECHNOLOGY. Although technology has made the life of the mariner much easier over the years, careful navigation is as important as it has ever been.

"The routes we use through the Finnish archipelago, for example, are pretty narrow, and navigating them in the winter in particular calls for a lot of expertise, in addition to the latest equipment," he says.

Today's mariners need to be the master of numerous systems covering the entirety of a ship's operations, from berthing to discharging and loading. Similar 'system' skills are needed to deal with the paperwork and bureaucracy that is part and parcel of shipping today.

Deck officers and crew are responsible for navigation and the ship's load, the engine department for its engines and equipment, and the galley department for keeping everything else running and feeding everyone.

A HEALTHY CREW IS A SAFE CREW. Legislation today requires that every ship must have a safety management system in place.

"Safety is even more of a priority on board a tanker, because of the cargoes we carry," continues Vuorinen.

Safety at work and work permit issues are reviewed regularly at morning in toolbox meetings. Everyone must know how they can esure their own safety and that of their unit.

Equally essential for overall ship safety is to monitor

"SIX WEEKS ON AND SIX WEEKS OFF STRUCTURE OUR YEAR."

the health of the crew. Crews are given a medical examination every two years to check that they are up to serving at sea.

A LONG CAREER. Safety forms the core of the familiarization program that new members of a crew go through when joining a ship – rescue procedures and fire drills in particular.

"It's very important that everyone knows what they need to do in an emergency. Safety thinking really can make all the difference when it comes down to it."

The fact that the turnover of crew on board Neste Oil's ships is low is positive, according to Vuorinen, particularly from a safety standpoint.

"On-board procedures really become part of your blood during a long career, and working together like this bonds people on board together as a team. Training is also important, and people realize this."

TYING UP. What then are the biggest risks facing today's mariners, **Paavo Wihuri**, who heads up marine safety at the Finnish Maritime Administration?

"Officers and crew are faced with the same illnesses and problems that everyone is today in the West. Not enough exercise and a rich diet can easily increase the risk of coronary conditions or a heart attack."

Of course, during rough seas, there is the added danger of slipping on a wet or icy deck.

Getting a good night's sleep, keeping fit, and eating healthily are among the best medicines for a mariner, says Wihuri. Following safety procedures at all times is also important.

Looking at the statistics, it seems to be safer today to work at sea – at least on Neste Oil's ships – than on land, in industry or construction, at least.

"We've improved our safety performance three years in a row. By Finnish standards, we're doing well, but by the best international standards we've still got some way to go."

THE CALL OF THE GYM. The small community on board ship works in shifts, day and night, weekdays and weekends and holidays. Four hours on watch are followed by eight hours off and then another four hours on.

Crew members normally spend six weeks at sea on average, followed by six weeks off. Some assignments can last up to three months. Three months on board ship are followed by three months home leave. Many mariners like their work precisely because of this rhythm.

Even when you are not on watch, you cannot go far, which is why activities, such as the gym, are so important. Every member of today's crews also has their own cabin and TV.

There are still relatively few women on board, however.

"And the few that are rarely have young children. Women tend to work on board before they start a family or later when their children have grown up and left home." |

FUTURE TRENDS

NANOMETER* ACCURACY

TEXT SATU OJALA AND JATTA HYTÖNEN | **PHOTOS** SEPPO SAARENTOLA AND NESTE OIL

Four major cutting-edge technologies have been developed in the Finnish oil refining industry since the beginning of the 1990s – **unique innovations**, internationally speaking.

DATA ON GASEOUS molecules modified in the presence of hydrogen and a range of process-specific catalysts in the upper sections of a series of reactors tens of meters high is fed back down to the operators in the plant's control room – and is used to manage the overall process and ensure that the process performs to spec.

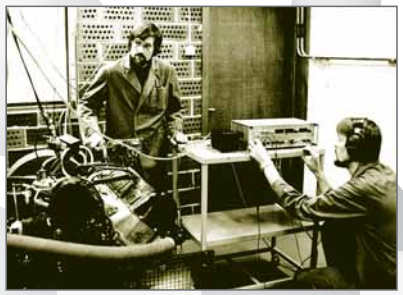
The plant in question is the new NExBTL plant at Porvoo, and the man standing next to the operator is Neste Oil's Vice President, Corporate Stakeholder Relations **Harri Turpeinen**.

"The entire line was designed and completely modeled on-screen, based on laboratory and bench-scale test data. That means lower development costs and a faster commissioning process."

Porvoo's new NExBTL Renewable Diesel plant has proved a similar success, despite being the first of its kind anywhere. When it shifts up to full output, the plant will produce 170,000 t/a of premium-quality biodiesel.

These are just the two latest examples of a technology development effort at Neste Oil that has lasted 40 years, and that has produced products and processes that are both cost-effective and environmentally friendly. A similar version of the first NExBTL plant is already under construction alongside the first. |

*nanometer = one millionth of a millimeter.



Timeline: R&D milestones

1948 Neste founded to secure Finland's oil supply

1957 Finland's first oil refinery completed at Naantali, where R&D begins

1965 Porvoo refinery completed

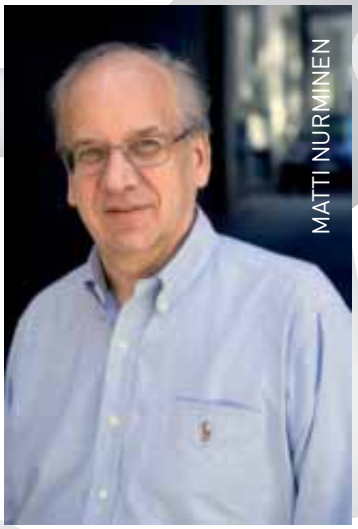
1967 Technology Center opened

1980 Production of the MTBE (methyl tert-butyl ether) gasoline component begins using licensed technology

1982 Launch of the Neste Alfa range of lubricants

1985 Unleaded City Gasoline launched

1988 Launch of Futura advanced gasoline



Modeling new **TECHNOLOGIES ON-SCREEN**

Neste Jacobs has been an in-house engineering resource and partner for Neste Oil's R&D in developing new refining technology since the 1960s.

"Modeling and advanced trouble-shooting and problem-solving are among our specialties," says **Matti Nurminen**, who works in Engineering Services at Neste Jacobs.

"We have about 20 people closely involved in technology development, and a staff of about 450 to design new plants.

"One obvious reason for developing a new technology is that a suitable one just doesn't exist. That was the case with synthetic lubricants, for example. There wasn't a commercial technology available, so we developed our own."

"OUR COMPUTER-MODELED TECHNOLOGY IS SURE TO WORK IN PRACTICE, AS THE LATEST PROJECTS AT PORVOO SHOW."

A number of plants around the world are based on technology licensed from Neste Oil. For licensed processes, Neste Oil prepares the basic design for plants, while normally the customer's consultant engineer handles the details.

"We can offer the very latest technology and sophisticated automated solutions, including simulator-based operator training."

LAB WORK IS CRITICAL

A NExBTL Renewable Diesel plant can produce fuel from a very wide variety of vegetable oil and animal fat, much more flexibly than conventional biodiesel units. The choice of feedstocks depends on their availability, price, life cycle, and origin

Under 10 million tons of the approximately 145 million tons of vegetable oil produced worldwide annually is used in producing biodiesel, mainly rapeseed oil and soy oil. Given the likely level of future demand, however, vegetable oil is likely to prove insufficient as a source of raw material quite quickly.

"The high level of demand for suitable feedstock will be a major challenge for researchers," according to **Pauliina Uronen** of Neste Oil's R&D.

A lot of work is being done, as a result, on plants suitable for energy use and as alternative feedstock sources. Neste Oil is concentrating on organic material unsuitable for food use.

"Sustainability is an important criterion we use in when studying potential raw material sources."

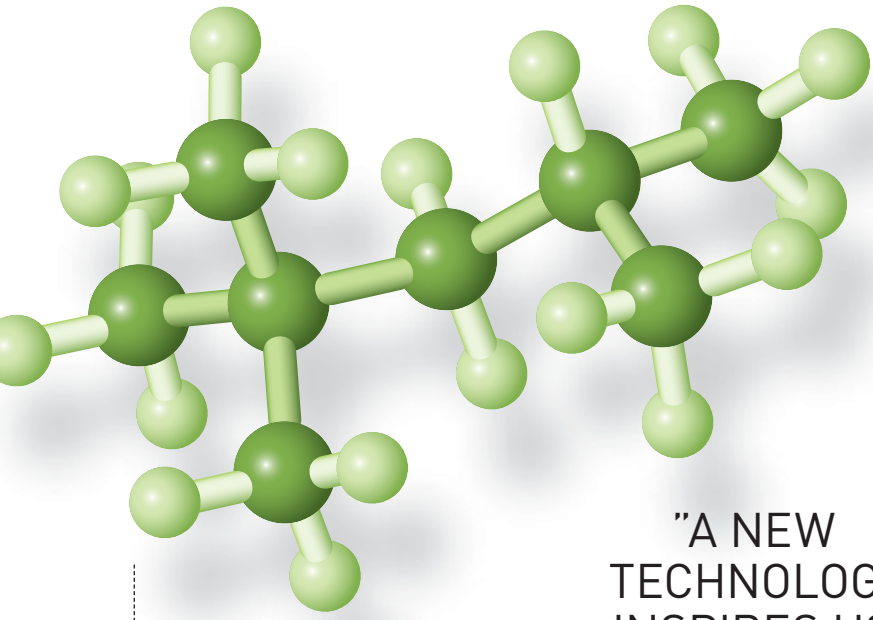
One of these sources is algae. The very large number of algae species means that they offer a lot of potential.

"Algae are very interesting, as they grow so fast. Single-cell algae double their biomass many times in a single week. And some types can contain very high levels of lipids," she says.

NExTAME technology: tert-amyl methyl ether, produced from C5 hydrocarbon and methanol, designed as an octane booster for gasoline and to enhance combustion and reduce the use of components leading to ozone formation and cut tailpipe emissions.

NExOCTANE technology: developed to produce iso-octane for the US market, when MTBE began to be phased out because of storage-related issues. Joint venture plant in Canada converted to the new technology, and licenses sold to producers in Texas and California.

NExETHERS technology: used to produce a variety of products. MTBE (methyl tert-butyl ether) – an oxygenate used as a gasoline component like TAME – is produced from isobutene and methanol, for example. An MTBE plant was built at Porvoo at the end of the 1990s.



1990 New product development strategy: cleaner fuels. Emissions Laboratory established at Porvoo, sale of technology licenses begins

1991 MTBE oxygenate added to City Futura gasoline Production of synthetic PAO base oil started

NExTAME technology

1992 Launch of Tempera Green, a virtually sulfur-free heating oil

1993 Futura City Diesel launched, low in aromatics and virtually sulfur-free. Sale of leaded gasoline in Finland ended.

1994 New Futura grade launched, with lower sulfur and benzene content. Launch of a reformulated competition fuel: Futura Green Racing.

1995 Futura Green gasoline for small engines launched

1997 VHVI (Very High Viscosity Index) base oils

1999 Exports of sulfur-free gasoline start, and low-sulfur gasoline marketed in Finland

”A NEW TECHNOLOGY INSPIRES US.”

2000 NExOCTANE technology developed

2004 Launch of sulfur-free gasoline and diesel fuel

2005 NExBTL

2006 TAEE bioether developed, produced from biomass-derived ethanol

2007 New diesel line (PL 4) and NExBTL plant commissioned at Porvoo.

Check out the online version:
www.nesteoil.fi → media → publications → Refine Online

OIL WILL LAST AT LEAST ANOTHER 40 YEARS

Fuels will be produced in 10 years' time by breaking down crude oil into ever-smaller constituents and creating new components from these, according to **Outi Krause**, Professor of Chemical Technology at the Helsinki University of Technology.

"The technology for refining heavier types of crude has been in existence for some time, but it has not be economically feasible to use so far. Multistage processes are inherently more expensive to run. But as the world's oil reserves are depleted, it will become more important to extract everything you can from what you produce, even resources such as oil shale."

The latest process technology can eliminate sulfur and nitrogen from product streams and produce lower-emission fuels, she continues.

More miles per gallon. Oil was predicted to run out at the beginning of the twenty-first century 30 years ago. Current estima-tes indicate that reserves will last for at least another 40 years.

"We do need to address consumption, though. We can't expect traffic and transport levels to drop, so we need to get more miles per gallon out of what we refine," says Krause.

Close cooperation between automotive manufacturers and the oil industry will be important here, and Krause believes that hydrocarbons will remain the main source of traffic fuels, at least, for many years to come. Alternative energy sources will play a big part in reducing the amount of oil used for heating purposes, however.

NExBTL Renewable Diesel, a second-generation product, was originally developed in the 1990s, and has come into its own today, with the growing requirement to increase the use of renewables. NExBTL can be used year-round, blended with conventional diesel or as a 100% product.

[A SMOOTH-RUNNING **ENGINE**]

Changing your oil at specified intervals lengthens your engine life, keeps it clean, reduces fuel consumption, and cuts tailpipe emissions. Oil change intervals vary between 5,000 and 120,000 kilometers, depending on engine type and driving conditions.

1 How do I choose the right motor oil?
The right choice depends on conditions, viscosity, and quality. The smaller the SAE number, the thinner the oil. Engines need to be able to start even at temperatures below zero, and oils need to be able to lubricate engines at high temperatures, and when heavily loaded. API and/or ACEA classification information specifies the suitability of an oil for different types of gasoline, diesel, or turbocharged engines. Automotive manufacturers always include the minimum motor oil requirements and viscosities for their engines in vehicle manuals. The classification system is also explained in a booklet available at Neste service stations.

2 Why are oil changes important?
The properties of a lubricant decline over time, and the amount of contaminants increases. Oil changes at the recommended interval remove these contaminants and restore full lubricant performance. The additives contained in lubricants keep engines clean and prevent corrosion, keep wear to a minimum, and extend engine life. A well-running engine and catalytic converter reduce tailpipe emissions and fuel consumption.

3 Can you mix mineral oil and synthetic oil?
Different oils designed for the same purpose and complying with the same quality standard can generally be mixed. Mixing oils designed for different applications, such as gasoline and diesel engines is, however, not recommended.

4 Can you use diesel motor oil in a gasoline engine?
Yes, you can, if it meets the API an ACEA standards or quality requirements stated by the vehicle manufacturer. Check these in your manual. Diesel engine oils intended for heavy vehicles and machinery are not generally suitable for more modern gasoline engines.

5 What do API GL-4 and GL-5 mean?
The API classification system defines an oil's ability to prevent wear and tear in an engine. The higher the number, the more effective it is. The highest grade oil, GL-5, is generally used in the rear axle of rear wheel drive vehicles. GL-4 oil is normally sufficient for the transmissions of front wheel drive vehicles.

MORE INFORMATION: **www.nesteoil.com**/Products and services/Lubricant recommendations

Hydropower, peat, wind, or nuclear? A group of young people from Kuopio in eastern Finland has been taking a look at some of the more environmentally friendly energy options.

Going to the source

A group of teenagers from Kuopio spent part of their 2006-2007 school year focusing on energy issues, working with their teacher and as part of a project with Finland's Youth Academy and Neste Oil to develop a more environmentally aware generation of consumers, students, and transport users.

We popped in to talk to them just before school broke up for the summer vacation.

THINKING FOR YOURSELF. The group selected energy as the focus of their attention because of its topicality and the fact that a number of power plants are not far from their school. The project gave the group the chance to visit two of them: the Juankoski hydropower station and the Haapaniemi peat-fired plant.

"It's much easier to understand what things are all about when you get to see how energy is generated on the spot," says **Ruut Korpinen**.

Although energy issues were also covered in physics and chemistry classes, plant visits and teamwork on the subject encouraged the group's members to look at the subject in more detail and weigh up the alternatives, according to homeroom teacher **Eija Niiranen**.

"This type of approach helps make something like energy, which is part of everybody's daily life, that much more approachable, and encourages young people to form their own opinions about it."

Energy conservation is an important issue during these times of climate change, even for schoolchildren, believes social studies teacher, **Tero Rönkkö**, who says that environmental studies have been included in the syllabus for all eighth graders as a result

And has the energy project affected students' own lives?

"Well, I certainly turn off lights more often than I did before, and unplug my cellphone charger when I'm not using it," says **Simo-Heikki Kornio**.

MORE WIND POWER. During their class trip in May, the group visited Denmark to look at wind power there and Loviisa near Helsinki to see the nuclear power plant there.

"We didn't have to put on any radiation suits or anything, but it was still a lot more interesting than I thought it would be," says **Roni Järvikallio**.

"The visit to Denmark was great," adds **Siiri Karppinen**.

During the week-long trip, which was funded in part by yard sales and discos organized by the young people themselves, the group prepared a number of group presentations on wind power and read up on the subject.

INSPIRING. The project was the first of its type so far in Kuopio, and one of the participants, **Riikka Marjamaa**, designed a special light bulb logo for it.

A number of other teachers have been very interested in the progress of the project, says Eija Niiranen, and she expects more students to 'sign up' in the fall.

"It would be good to start with new seventh graders, to give us more time to plan events and see them through." |

TEXT MINNA TAKKUNEN | PHOTOS PENTTI VÄNSKÄ

THE GROUP'S VISIT TO THE JUANKOSKI HYDROPOWER STATION INSPIRED RONI JÄRVIKALLIO TO COME UP WITH THE FOLLOWING POEM:

Water, water, full of power,
source of all things electric.

Water's song ranges high and low,
without the energy it gives, we'd be all the poorer.

Mules were once the power behind the builders
who built the power, joking on and off.

No smoke rises from the stack by the rapids,
that's positive for sure,
no need to be afraid of the water any more.

NEW OPPORTUNITIES FOR **YOUNG PEOPLE**

The national

Homma program, developed and coordinated by Finland's Youth Academy, was launched in August 2006, and is designed to offer young people between 13 and 19 new opportunities in their free time and at school. Young people can apply for a Homma grant for a range of activities, from making a demo to organizing a theme day. Neste Oil is one of the program's main sponsors.

Young people in the program are responsible for developing, planning, organizing, and assessing their projects themselves. This encourages them to develop a range of skills, such as creativity, determination, and planning.

The best projects were highlighted in the spring at a special Homma Gala, where a clothing design project entitled Early Summer by a group from Suomussalmi was awarded the main prize of €3,000.

Neste Oil began working with the Youth Academy in February this year, says HR Coordinator **Päivi Saarikko**.

"We want to help young people in the program grow into aware, dynamic adults."

Neste Oil's sponsorship also covers Note, an initiative for developing new project ideas for school subjects or club activities. Neste Oil provides teaching material on renewable diesel NExBTL, for example, and arranges school visits.

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www.nesteoil.fi → media → publications → Refine Online
www.nuortenakatemia.fi

THIS SERIES OF ARTICLES WILL PROFILE THE VARIOUS SERVICES NESTE OIL OFFERS ITS CUSTOMERS

SERVICES

HEATING OIL
www.neste.com

ORDERS AND ENQUIRIES
Heating oil
+358 800 1 9000
(toll-free)
Weekdays 7.00–18.00
Fax +358 800 1 9004

NESTE OIL INFO
+358 800 196 196
(toll-free) 24 h/day

Weekdays 8.00–16.00
oilproducts.oil@nesteoil.com

One-stop online shop → orders and order calculators → service and inspections → heating equipment → reminders → installation service

TEXT JONI MÄKITALO

ORDERING HEATING OIL ONLINE

Neste Oil's domestic website in Finnish and Swedish – www.neste.fi – has been developed as a one-stop shop for customers wanting to order heating or fuel oil, check out the latest prices and news, and register a change of address, among other things. The Web-based service for heating oil users has been up and running for a number of years now.

"We want to offer customers a variety of ways of doing business with us, so that everyone can find the one best suited to them," says **Asko Mäisti**, Departmental Manager at Oil Heating Services.

"One person might prefer to phone, another use the Web. Many combine the two and check out what they want and order online and follow up by phone."

About a third of oil storage tank inspections are now ordered online.

"Some products, such as heating control units and oil monitors, are virtually all ordered online today."

Flexibility is the name of the game, especially online."People don't want to run around the houses for just one or two things. That's why we've concentrated on producing an online service that is very easy to use."

[Factbox: www.neste.fi]

More than **1.3** million visitors a year | Handles more than **20 %** of home orders | **Most popular services:** Calculating and ordering Tempera heating oil | Oil heating services | Ordering lubricants and reading up on recommended lubricants | Product and user safety information | Neste service station search | Online maps | Neste Oil card applications

Marko Törri and Milla Stenfors

TUNING **THE SOFTWARE**

Development Managers **Milla Stenfors** and **Marko Törri** are part of the team responsible for Neste Oil's online services. "We regularly study the customer 'experience', and the feedback we get has been very positive," says Stenfors.

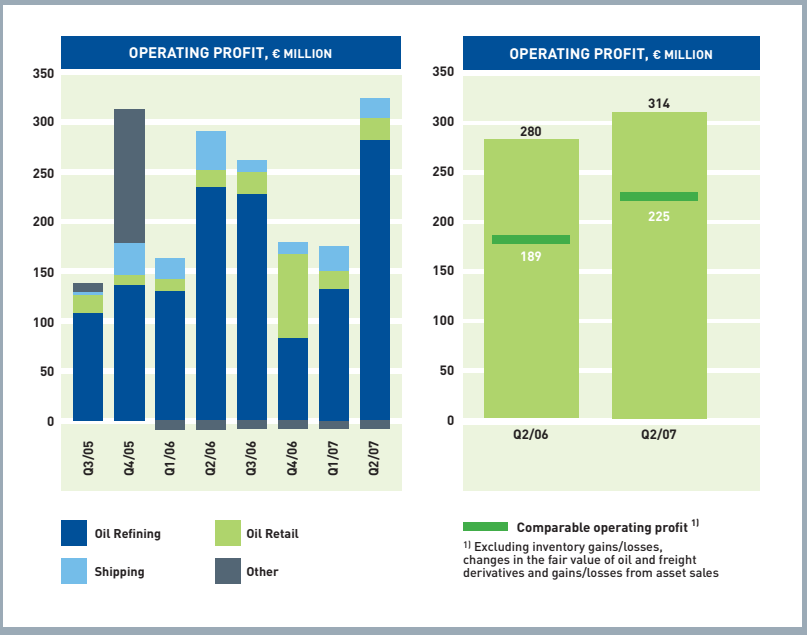
Usability is the key word in developing online services, she continues. When you get that right, people can find what they want easily and access it easily too.

A straightforward approach is important for a smooth system, as is a direct link to the underlying IT platform.

"When a customer orders a delivery of Tempera heating oil online, for example, the order goes directly to where it's supposed to.

"Our Internet site gives customers access to a wide variety of useful product and service information, including material specifically designed for motorists. Our search function for Neste service stations and map engine are among the most popular features of the site."

4–6/07



2x

THE BEST QUARTER SO FAR
Neste Oil's operating profit during the second quarter totaled €314 million: €280 million), and its comparable operating profit, €225 million, an increase of 19% on the 2006 figure of €189 million. Sales in the second quarter totaled €3,207 million (3,518 million).

The comparable operating profit was positively impacted by a record-high total refining margin of USD 11.92/bbl. Oil Refining posted a comparable operating profit of €205 million (178 million), Oil Retail €16 million (15 million), and Shipping €12 million (5 million).

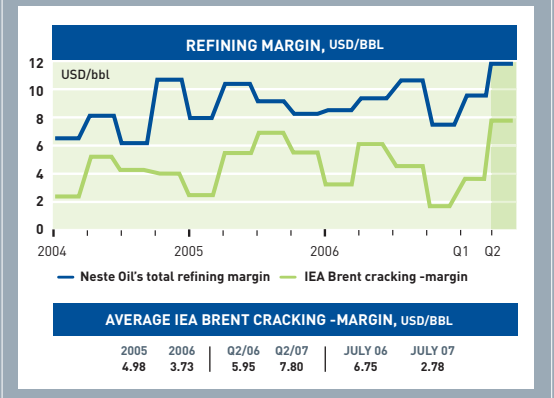
Profit before taxes was €304 million (277 million) and earnings per share €0.88 (0.76). Operating profit in the first half totaled €478 million (433 million).

The rolling twelve-month ROACE at the end of June was 17.0% (15.4%), compared to the company's minimum long-term target of 15%

KEY FIGURES € million, unless otherwise noted	4–6/07	4–6/06
Sales	3,207	3,518
Operating profit before depreciation	359	317
Depreciation, amortization and impairment charges	45	37
Operating profit	314	280
Comparable operating profit*	225	189
Profit before income tax	304	277
Earnings per share, EUR	0.88	0.76
Capital expenditure and investment in shares	77	133
Net cash from operating activities	460	278
	30 June 2007	**30 June 2006**
Total equity	2,184	1,825
Interest-bearing net debt	776	1,119
Capital employed	3,032	3,032
Return on capital employed pre-tax, %	32.3	31.5
Return on equity, %	32.2	36.0
Equity per share, EUR	8.52	7.09
Cash flow per share, EUR	1.38	0.50
Equity-to-assets ratio, %	47.2	38.5
Leverage ratio, %	26.2	38.0
Gearing, %	35.5	61.3

***Comparable operating profit**
excludes inventory gains/losses, gains/losses from sales of fixed assets, and unrealized changes in the fair value of oil and freight derivative contracts from the reported operating profit.

An exceptionally strong market



THE GASOLINE market remained exceptionally strong in the second quarter, on the back of high demand and reduced supply caused by refinery outages. Higher exports to West Africa and the Middle East and low inventories in the US kept gasoline margins wide. Diesel, jet fuel, and heating oil margins remained stable. The continued growth in the number of diesel vehicles in Europe kept diesel margins strong, despite high inventories.

Crude oil prices continued to rise, mostly supported by solid gasoline demand, as well as production cuts by OPEC, maintenance shutdowns in North Sea oil fields, political instability, and investor activity. A tight market increased demand for heavier crudes and narrowed the price differential between Russian crude and Brent.

Tough competition continued on the Finnish retail gasoline market. Neste Oil's sales volumes increased in the Baltic Rim area by 28% compared to the second quarter of 2006. Crude freight rates in the North Sea and the Baltic were similar to those in the second quarter last year.

key indicators

The Neste Oil Rally attracted a big crowd in early August.

OPERATING PROFIT =

Profit of the sale of products and services, profit from other business activities, such as capital gains on the sales of shares and tangible fixed assets, and Neste Oil's share of the profit of its affiliates and joint ventures. Changes in the market value of oil and currency derivatives are also included.

COMPARABLE OPERATING PROFIT =

excludes inventory gains/losses, gains/losses from sales of fixed assets, and unrealized changes in the fair value of oil and freight derivative contracts from the reported operating profit.

SHARE PERFORMANCE =

A total of 120,209,954 Neste Oil shares were traded in the second quarter, totaling €3.3 billion. The share price reached €29.13 at its highest and €25.42 at its lowest, and closed the quarter at €29.13. At the end of June, the Finnish state owned 50.1% of outstanding shares, foreign institutions 28.3%, Finnish institutions 15.3%, and Finnish households 6.4%.

CONTACT INFORMATION

For more investor-related information, please contact IR Manager **Juha Rouhiainen** on tel. +358 10 458 5132 or via email juha.rouhiainen@nesteoil.com.

FOR MORE FINANCIAL INFORMATION
www.nesteoil.com → investors

comment

SOLID SET **OF Q2 RESULTS**

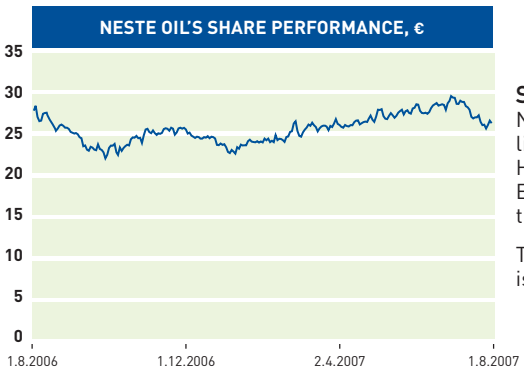
ANDREW BOWMAN
Analyst,
Morgan Stanley

Neste Oil reported second-quarter results broadly in line with market expectations. The results outlined a solid quarter for the company, with a comparable EBIT of €225 million, up 19% compared to Q2 2006.

AS EXPECTED, Neste Oil's refining margin benefited from the strength in the US gasoline market during the first half of the quarter, with the margin being reported at USD 11.92/bbl (USD 9.48/bbl in Q2/2006). The new diesel project, which will add over USD 2/bbl once fully operational, is expected to make a visible contribution to the margin during the third quarter. Neste Oil's retail and shipping segments both had consistent quarters, in line with market expectations.

BIODIESEL EXPANSION remains a key focus, as the company looks to build on its two developments at the Porvoo refinery in Finland and its plans to build a facility with OMV in Austria. An announcement is likely on up to two more biodiesel production plants in the near future, as the company has said that it is already in the planning and design stage for these units.

LOOKING AT Q3, the refining environment is going to be a lot more challenging than Q2, with the benchmark refining margin in July clearly lower than between April and June.



SHARE =
Neste Oil is listed on the Helsinki Stock Exchange under the symbol **NES1V.**

The ISIN code is **FI0009013296.**


Each liter towards
a refined future.
Everyone of us must make our own contribution towards a cleaner world. We at Neste Oil promise to refine the world's cleanest diesel fuel and to develop new, more environmentally sustainable innovations for people who wish to make an impact by filling up rightly. We intend to be the world's leading developer and producer of low environmental impact traffic fuels.
For more information, visit www.nesteoil.com
NESTE OIL
refining the future