

PANOLIN[®]+
Swiss Oil Technology

Kyoto ... Cancún etc.
a lot of talking
Paris – the breakthrough!

We believe in action:

GREENMACHINE[®]
the sustainable concept

PANOLIN[®]+
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PANOLIN helps you convert your machine into a green machine



- Since 30 years PANOLIN ECLs* help protect the environment
- Today PANOLIN helps you reduce your carbon footprint
- PANOLIN ECLs avoid several tons of CO₂ emissions from your machinery

***ECLs** = **E**nvironmentally **C**onsiderate **L**ubricants

PANOLIN ECLs

The following PANOLIN ECLs have environment-considerate properties such as:

- Biodegradability > 60 %, OECD 301 B/F, 28 days
- Aquatic toxicity:
 - OECD 201 Algae: EC₅₀, European Eco Label requirement > 100 mg/l
 - OECD 202 Daphnia: EC₅₀, European Eco Label requirement > 100 mg/l
 - OECD 203 Fish: LC₅₀, European Eco Label requirement > 100 mg/l



PANOLIN HLP SYNTH, PANOLIN BIOFLUID ZFH, PANOLIN TURWADA SYNTH

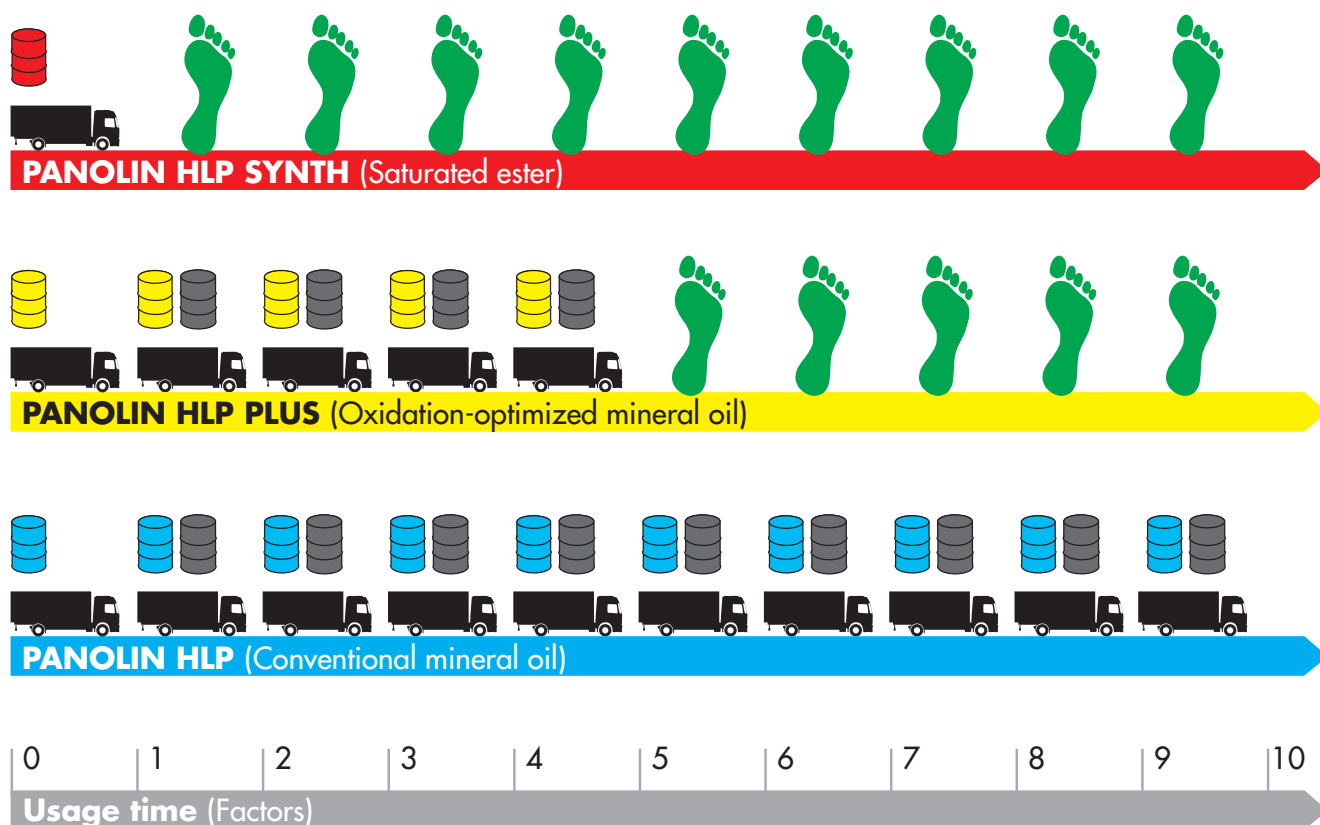


PANOLIN HLP SYNTH E, PANOLIN TURWADA SYNTH E, PANOLIN TURWADA S 220 LL

PANOLIN ECLs – technically mature

PANOLIN ECLs are fully synthetic high-performance lubricants with the following characteristics:

- Very good wear inhibition
- Superior oxidation stability, longer life span



Graphic:
Comparison of the various
PANOLIN product groups



Waste oil



Transport journeys



CO₂-savings

PANOLIN ECLs such as PANOLIN HLP SYNTH are suitable for long-term use up to lifetime filling.

The world will go green – Environmental awareness

Whether Kyoto, Copenhagen or Cancún – action speaks louder than words.

General target worldwide – CO₂ reduction/less greenhouse gases

The Paris conference on climate change was a success: mutual agreement was reached on a global climate treaty. For the first time all industrialized nations and emerging economies have now agreed to work together against climate change. Nearly 190 countries have already presented their climate protection plans.



Important climate protection goals

Paris 2015: limit global warming to less than 2 °C, or even 1.5 °C if possible. To reach that goal, net global greenhouse gas emissions must be reduced to zero in the second half of this century.

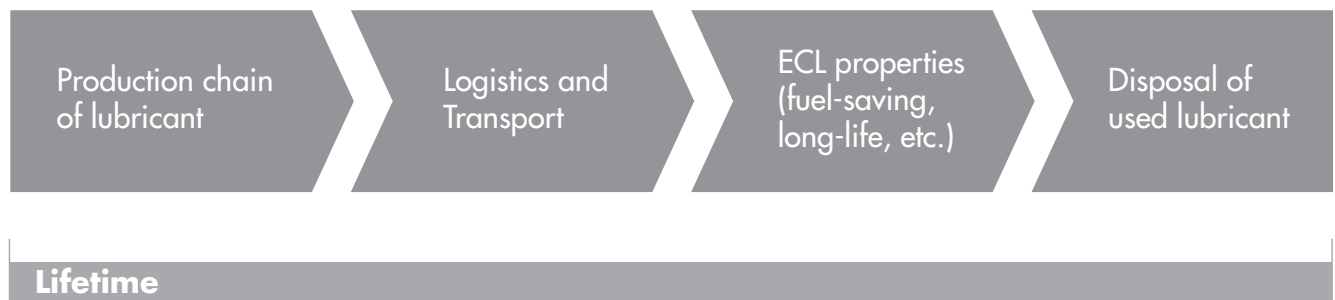
This means:

- Clearly less greenhouse gas (CO₂ emissions)
- Total energy consumption derived only from renewable resources (hydro/wind, solar, biomass) as far as ever possible
- Less energy consumption overall

Carbon Footprint

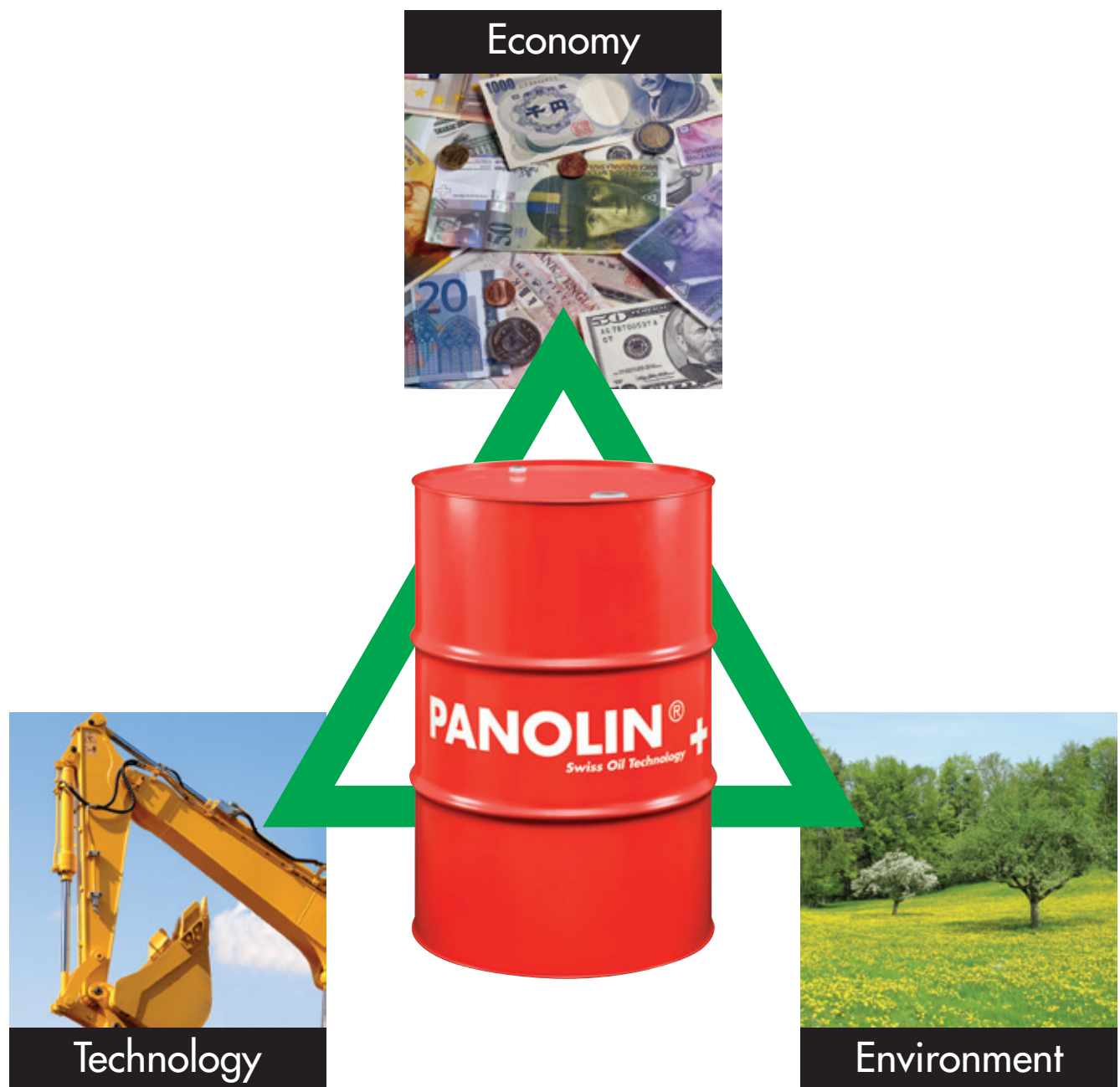
The «Carbon Footprint» is an exclusive measure of the total amount of carbon dioxide emissions directly and indirectly caused by an activity or accumulated over a product/machine lifetime – including subsequent recycling or disposal.

CO₂-relevant factors over the entire lifetime



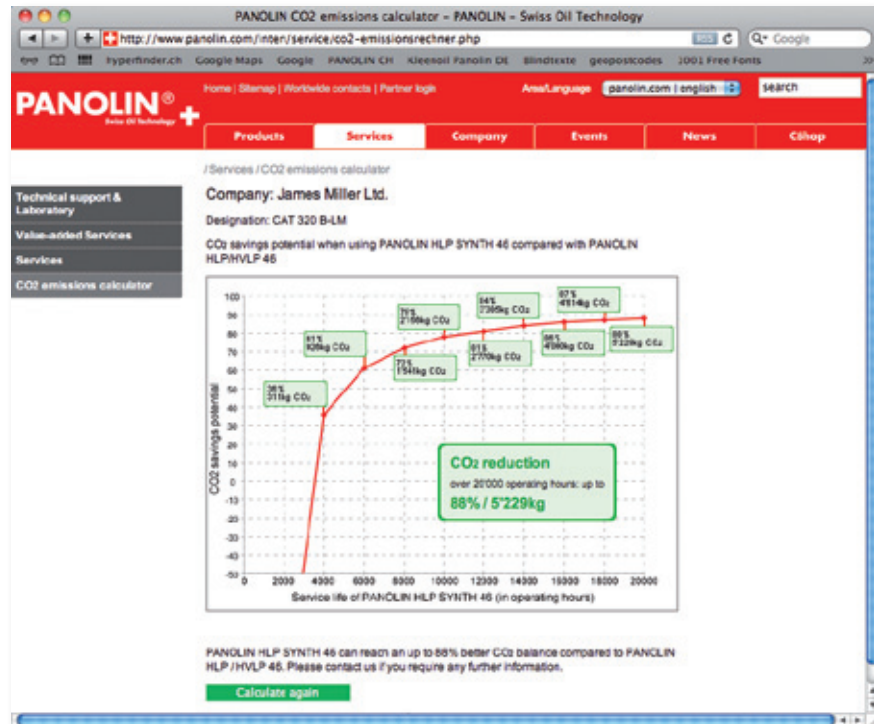
The PANOLIN GREENMACHINE concept reduces CO₂ emissions

PANOLIN GREENMACHINE – the sustainable concept



Our credo

Only economically viable, technically mature and environment-friendly concepts are truly sustainable



The emissions computer calculates CO₂ savings potential using PANOLIN HLP SYNTH 46 as against PANOLIN HLP 46. (We will gladly provide comprehensive calculation sheets, analyses and documentation on request.)

Takes account of the following processes in lifecycle analysis:

- Lubricant production chain
- Logistics and transport
- Fuel savings with optimized engine oils
- Waste oil disposal

Reference data, cooperation partners and information sources

Well-founded scientific analysis of CO₂ emissions has been enabled by the following cooperation partners and data sources:

- Fabrizio Noembrini, Dr. sc. techn. Dipl. Ing. ETH, Managing Director Energy Science Center, ETH Zurich
- Christian Lämmle, Dr. sc. techn. Dipl. Ing. ETH, CEO combustion and flow solutions GmbH, ETH lecturer
- Competence centers: ETH, PSI, EMPA and ART
- Swiss Federal Department of Energy
- Department for Environment, Food and Rural Affairs (DEFRA, UK)
- Internal analyses by PANOLIN

Part of the PANOLIN concept

GREENMACHINE®

PANOLIN lubricants with at least one of the following properties belong to the GREENMACHINE concept:



Biodegradable.

Biodegradability and/or negligible aquatic toxicity as confirmed by diverse tests and eco-labels.



CO₂ reduction thanks to longer oil-change intervals (conservation of resources) and/or to easy-running properties. PANOLIN ECL lubricants also reduce CO₂ emissions by enhancing machine operating efficiency.



Longer life of synthetic PANOLIN ECLs than comparable mineral oil products.

Well documented by field tests (some of which over a 10 to 20-year time span).



Fuel savings potential.



Only lubricants that are made of at least 50 % renewable natural resources, are biodegradable, and minimize CO₂ emissions, are eligible for the European ECO label.

Hydraulic fluids



PANOLIN HLP SYNTH

Fully synthetic readily biodegradable zinc-free ECL for hydraulic systems. Based on saturated ester. Enables much longer oil change intervals «lifetime filling». Applications: mainly as hydraulic oil for earth-moving, forestry and industrial machinery, steelwork and hydraulic structures.



PANOLIN HLP SYNTH ECO

Fully synthetic high-performance hydraulic fluid, zinc-free and environment-friendly, on synthetic ester basis with special additives Applications: mainly as hydraulic oil for earth-moving, forestry and industrial machinery, steelwork and hydraulic structures.



PANOLIN HLP SYNTH E

Fully synthetic zinc-free ECL for hydraulic systems. Based on saturated ester using naturally regenerative resources. For hydraulic applications where hydraulic fluids complying with the European Eco Label are prescribed.



PANOLIN HLP SYNTH E SPEC

Fully synthetic and readily biodegradable high-performance hydraulic fluid based on saturated esters from natural resources combined with special additives Applications: mainly as hydraulic oil for earth-moving, forestry and industrial machinery, steelwork and hydraulic structures.



PANOLIN POLAR SYNTH 30

Fully synthetic, zinc-free, high-performance bio-hydraulic fluid based on saturated esters. Specially for hydraulic systems operating at very low temperature. Miscible with PANOLIN HLP SYNTH at any ratio.



PANOLIN ORCON SYNTH E

Fully synthetic NSF-compliant ECL for hydraulic systems. Based on saturated ester using naturally regenerative resources. Applications: for the food, pharmaceutical and animal feed industries – and thanks to combined biodegradability and NSF H1 compliance: ideal for harvesters, drinking water power plants etc.

Engine oils

PANOLIN BIOMOT LD 10W/40

Fully synthetic long-life ECL (Environment Considerate Lubricant) for high performance diesel engines with long oil change intervals.



PANOLIN ECOMOT 5W/30

Synthetic diesel engine oil with excellent smooth-running properties (FE – Fuel Economy) for modern environment-considerate diesel engines up to EURO 6 classification.



PANOLIN BIOMOT LX 10W/40

Synthetic low-SAPS oil for modern environment-considerate diesel engines. Extremely low sulphate ash, phosphorous and sulphur content. Ideal for diesel engines with exhaust particle filter systems.



PANOLIN BIOMOT LE-X 5W/30

Fully synthetic, lowSAPS multigrade ECL for extremely heavy-duty diesel engines with long oil change intervals.



Turbine oils

PANOLIN TURWADA SYNTH

Fully synthetic ECL for turbines/governor hydraulics. Based on saturated ester. Applications: lubrication, bearing and governor oil in water turbines.



PANOLIN TURWADA SYNTH E

Fully synthetic ECL for turbines/governor hydraulics. Based on saturated ester using naturally regenerative resources. Applications: lubrication, bearing and governor oil in waterturbines where lubricant compliance with the European Eco Label is required.



PANOLIN TURWADA S 220 LL

Fully synthetic ECL for loss lubrication points on older water turbines. Based on ester using naturally regenerative resources.



Gear oils

PANOLIN BIOGEAR RS

Fully synthetic High-Pressure ECL for gearboxes, differentials and final drives in track maintenance machines.



PANOLIN BIOFLUID ZFH

Fully synthetic environmentally compatible UTTO for combined use in gearboxes, axles, hydraulic systems and retarders in agricultural, forestry and earth-moving machinery.



PANOLIN BIOFLUID LS

Fully synthetic readily biodegradable ECL for axles in agricultural, forestry and earthmoving machinery.



PANOLIN EP GEAR SYNTH

Fully synthetic readily biodegradable high-performance gear oil for industrial drives, roller and sleeve bearings.



PANOLIN EP GEAR SYNTH VTD

Fully synthetic readily biodegradable ECL specially developed for VOITH torque converters.



Chain oils/loss lubrication

PANOLIN CHAINLUBE B 80

High-performance ECL chain oil made of synthetic base oils and readily biodegradable saturated ester from naturally regenerative resources. Applications: summer and winter use for power saw chains and frame saws.



PANOLIN CHAINLUBE B 120

As CHAINLUBE B 80. Applications: mainly for summer use in forestry harvesters under tough conditions.



PANOLIN BIOTRACK E

ECL oil for railway wheel flanges and points, conveyor and drive chains, wire ropes and cables, based on saturated ester from naturally regenerative resources; good emergency running properties even with very thin lubrication film.



Greases



PANOLIN BIOGREASE EP 2

Fully synthetic yellow coloured multipurpose grease, readily biodegradable. Applications: for greasing points on vehicles and earth-moving machinery, water turbine guide vane bearings and screw pumps in sewage treatment plants, etc.



PANOLIN MARGREASE EP 0

Readily biodegradable EP fluid grease for automatic injection systems. Applications: rudders, stabilizers. Environmental compatibility: EPA Vessel General Permit 2013.



PANOLIN MARGREASE EP 2

Readily biodegradable EP universal lubricating grease for exposed applications. Applications: roller and slide bearings, conveyor and drive chains, steel ropes and cables, stabilizers. Environmental compatibility: EPA Vessel General Permit 2013.

The PANOLIN Labels

GREENMACHINE®



Benchmarking environmental consideration «GREENMACHINE», «GREENMARINE»

«Bio-Flower» and «CO₂ Reduction Footprint», are registered trade marks of the PANOLIN Group, Switzerland.

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