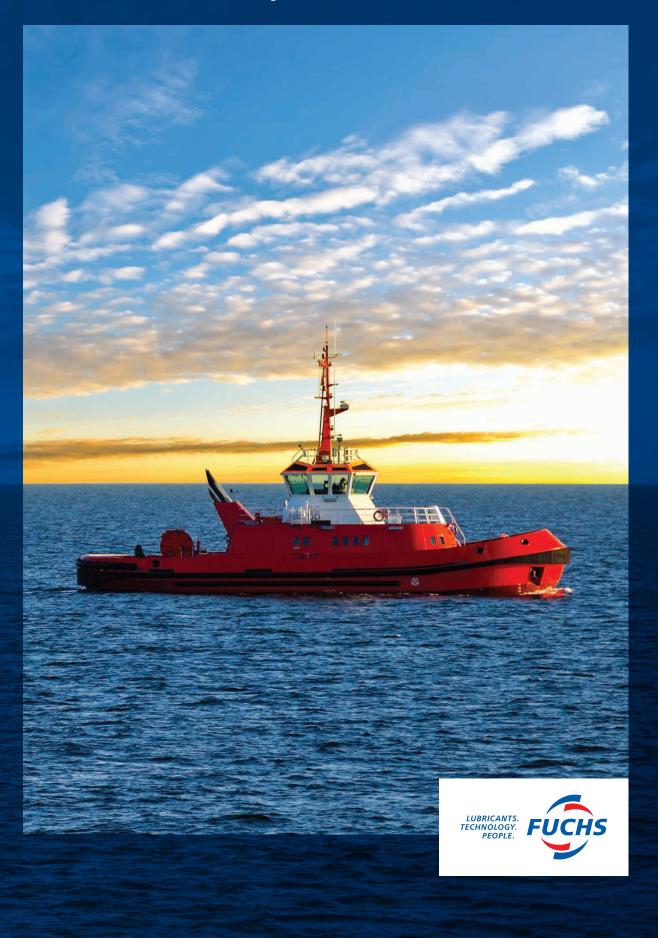
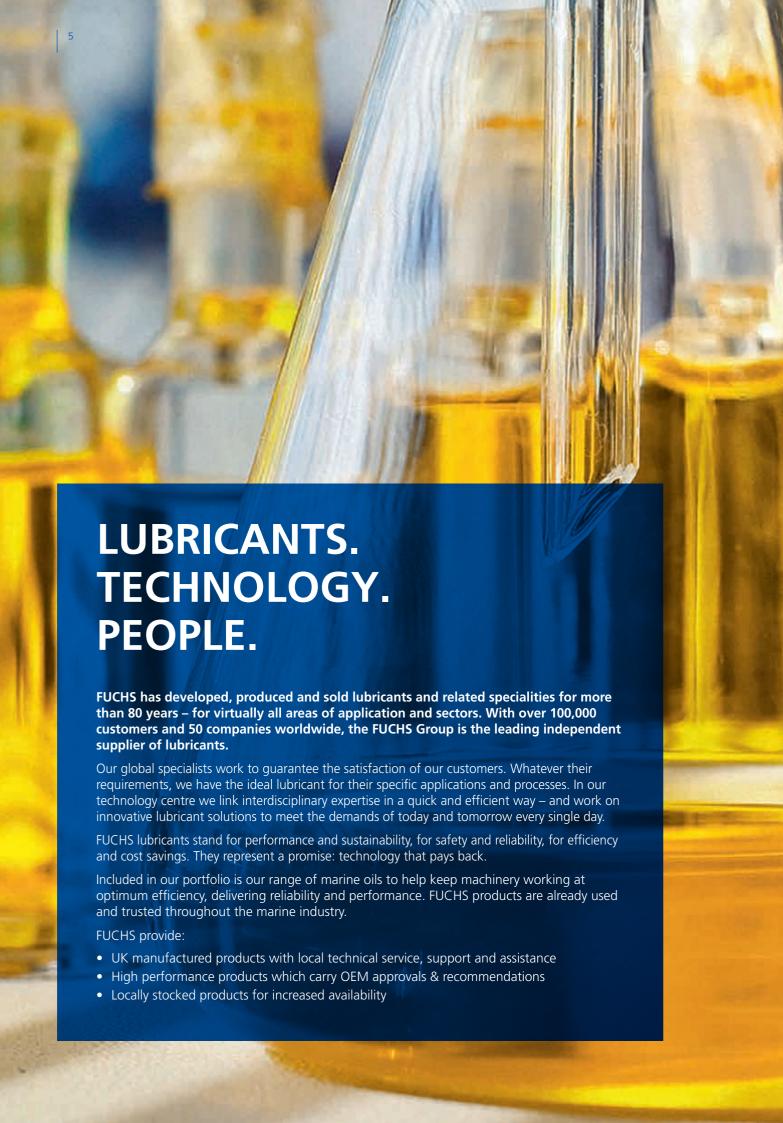
# **Lubricant Solutions for the Marine Industry**





### **Marine Lubricants**

FUCHS LUBRICANTS offer a wide range of lubricants to suit the specific needs of the marine industry.

### **Gear Oils**

The RENOLIN CLP products are industrial gear oils of the latest generation, having outstanding extreme pressure characteristics (EP/AW properties) and an extremely high load carrying capacity. They are industrial gear oils with excellent demulsifying properties which can be used in all types of enclosed gear drives with circulation or splash lubrication systems.

The RENOLIN CLP products offer extraordinary wear protection. They surpass the requirements in the standard FZG A/8,3/90 scuffing test as well as the more severe FZG test A/16,6/140 (double velocity -16.6 m/s - and increased starting oil sump temperature - 140°C). The RENOLIN CLP products offer an extremely high micro-pitting protection (load stage "high" in the load stage test as well as the endurance test). They offer excellent wear protection for roller bearings. The wear rates in the FAG FE8 test are extremely low under these extreme test conditions (7.5 rpm, 80°C, 80 h, 80 kN). The latest additive technology guarantees excellent wear protection and excellent corrosion protection (steel and copper-containing materials). The RENOLIN CLP products have good elastomer compatibility, stressed static and dynamic elastomers are lubricated and protected

from wear. The lifetime of the components is increased. RENOLIN CLP oils can improve equipment reliability and increase productivity.

- Excellent corrosion protection
- · Low foaming, superb air release
- Excellent demulsifying properties (water and water containing fluids are rapidly separated)
- High oxidation resistance
- Extremely high load-carrying capacity, extreme pressure, anti-wear performance
- Excellent bearing wear protection (under mixed friction conditions) FE8
- Excellent protection from scuffing, excellent wear protection FZG
- Excellent micro-pitting resistance in the load stage and endurance test
- High Brugger wear protection
- Excellent elastomer compatibility (static and dynamic)
- . Good compatibility with paint materials

Product: Gear Oils	ISO VG	Viscosity Index	DIN 51 517-3 (2011) CLP	ISO 6743-6 CKC /CKD	ISO 12925-1: CKC /CKD	AGMA 9005/E02: EP	AIST 224	David Brown S1 53.101	Siemens / Flender, Bocholt, Germany, Flender BA 7300, table A	Müller Weingarten AG, Germany DT 55 005, 10/2003
RENOLIN CLP GEAR OIL 68	68	99	•	•	•	•	•	•	•	•
RENOLIN CLP GEAR OIL 100	100	98	•	•	•	•	•	•	•	•
RENOLIN CLP GEAR OIL 150	150	96	•	•	•	•	•	•	•	•
RENOLIN CLP GEAR OIL 220	220	96	•	•	•	•	•	•	•	•
RENOLIN CLP GEAR OIL 320	320	95	•	•	•	•	•	•	•	•
RENOLIN CLP GEAR OIL 460	460	95	•	•	•	•	•	•	•	•
RENOLIN CLP GEAR OIL 680	680	88	•	•	•	•	•	•	•	•
RENOLIN CLP GEAR OIL 1000	1000	94	•	•	•	•	•	•	•	•

# **Hydraulic Fluids**

Proper function and operating safety are largely influenced by the quality of the hydraulic medium. The operating fluid must also seal, cool and lubricate. The RENOLIN B HVI series has been formulated on the basis of highly ageing-resistant solvates containing additives that increase the aging resistance. They are zinc containing HVLP hydraulic and general lubricating fluids according to DIN 51524-3. Mineral oil-based, demulsifying.

- Low foaming tendency
- Good air release properties
- High ageing resistance & viscosity index
- Good corrosion protection & shear stability
- Very good viscosity-temperature behaviour
- Very good wear protection
- Wide service temperature range

Product: Hydraulic Fluids	ISO VG	Viscosity Index	Pour Point	DIN 51524-3, HVLP	ISO 6743-4, HV	ISO 11158	Denison HF0	Bosch Rexroth	Vickers	US Steel	Cincinnati Milacron
RENOLIN B 15 HVI	15	151	-45	•	•	•	•	•	•	•	•
RENOLIN B 32 HVI	32	152	-48	•	•	•	•	•	•	•	•
RENOLIN B 46 HVI	46	150	-45	•	•	•	•	•	•	•	•
RENOLIN B 68 HVI	68	153	-36	•	•	•	•	•	•	•	•
RENOLIN B 100 HVI	100	140	-24	•	•	•	•	•	•	•	•

## **Engine Oils**

Developed to meet the lubrication requirements of high performance diesel, turbo charged and naturally aspirated engines, operating under severe conditions. Ideally suited for use in stationary engines, generator sets and certain marine diesel engines, particularly where fuels of higher sulphur level may be used. See table below.

Product: Engine Oils	MONOGRADE	MULTIGRADE	SAE 40	SAE 30	APICD	APICF	API CI-4/SL	API CI-4	API CI-4	TBN	ZINC FREE	ACEA E7	ACEA E9	CAT ECF-1-a	CATECF 2	CAT ECF 5	CATT0-2	MIL-L-2104B	MIL-L-2104C	MIL-L-2104D
MARWAY 1040	•		•			•				10.6										
TITAN MARINE 40	•		•		•	•				14.0								•	•	
TITAN PSW 20 SAE 40	•		•			•				20.0										
TITAN RAILGEN 13 SAE 40	•		•		•	•				13.0	•									
MARWAY 1030	•			•		•				10.6										•
TITAN MARINE 30	•			•	•	•				14.0								•	•	
TITAN TRUCK PLUS 15W-40		•					•					•		•	•		•			
TITAN CARGO 15W-40		•						•	•			•	•		•	•				

## **Stern Tube Lubricants**

High performance stern tube lubricants are extremely important in marine applications to help prevent corrosion and bearing/seal wear.

FUCHS can offer environmentally aware stern tube lubricants as part of our expanding biodegradable product range.

Product: Stern Tube Oils	SIMPLEX THYSSEN KUPP	WARTSILA DEEP SEA SEALS	Cederwall & Söner AB	Heimdal Propulsion	OECD 301 B	EU ECO LABEL
STERNWAY BIO 100	•	•	•		•	
STERNWAY 220	•			•		
PLANTOGEAR 100 S	•					•
PLANTOGEAR 150 S	•					•

## **Biodegradable Lubricants**

The rapidly biodegradable PLANTO products are based on synthetic esters or vegetable oils. They achieve and exceed the requisite technical performance, particularly in comparison with conventional mineral oil-based lubricants.

FUCHS offers rapidly biodegradable hydraulic oils and industrial gear oils based on saturated, synthetic esters for applications in the marine sector. The products deliver outstanding performance and fulfill the technological and ecological requirements of VGP (2013 Vessel General Permit legislation).

Our PLANTOSYN HVI and PLANTOGEAR S ranges have been awarded the EU Ecolabel and can therefore be used for all applications in the marine sector in accordance with VGP.

#### **PLANTOGEAR HVI-SERIES / S-SERIES**

Rapidly biodegradable and environmentally friendly, high performance gear oils based on saturated synthetic esters.

#### **PLANTOGEL ECO 2 S**

Readily biodegradable EP multi-purpose grease.

#### **PLANTOHYD S-SERIES**

Environmentally compatible lubricating and hydraulic oils based on partly saturated synthetic esters.

#### **PLANTOSYN HVI-SERIES**

Environmentally compatible hydraulic oil based on fully-saturated synthetic esters.

WARTSILA	MWM DEUTZ	MAN B&W ALPHAM	MAN DIESEL	GE GENERATION 4LL	GM - EMD GENERATION 5	LMOA GENERATION 5	CATERPILLAR 3600	ROLLS ROYCE	BERGEN MOTOR	GLOBAL DHD-1	CUMMINS CES 20076/7/8	CUMMINS CES 20081	DETROIT DIESEL 93K215	DETROIT DIESEL DDC93K218	DEUTZ DQC III-10	MACK EO-N	MAN M 3275-1	MB-APPROVAL 228.3	MTU DDC TYPE-2	RENAULT RLD / RLD-2	RENAULT RLD-3	VOLVO VDS-3	VOLVO VDS-4
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## **FUCHS Lubricants**

# Innovative lubricants need experienced application engineers

Every lubricant change should be preceded by expert consultation on the application in question. Only then the best lubricant system can be selected. Experienced FUCHS engineers will be glad to advise on products for the application in question and also on our full range of lubricants.

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