LYEN Propulsion system

FPP/CPP: 200kw~25,000kw
Tunnel thruster: 90kw~4000kw
Azimuth thruster: 300kw~4000kw

LYEN MARINE

LYEN **Expert of propulsion system**

With a great team of marine propulsion, LYEN's commitment is to design and produce the most reliable propeller system including CPP, FPP, PSF, tunnel thruster, Azimuth thruster and control system with good performance. This benefits from all of our technical advantages and also top material.

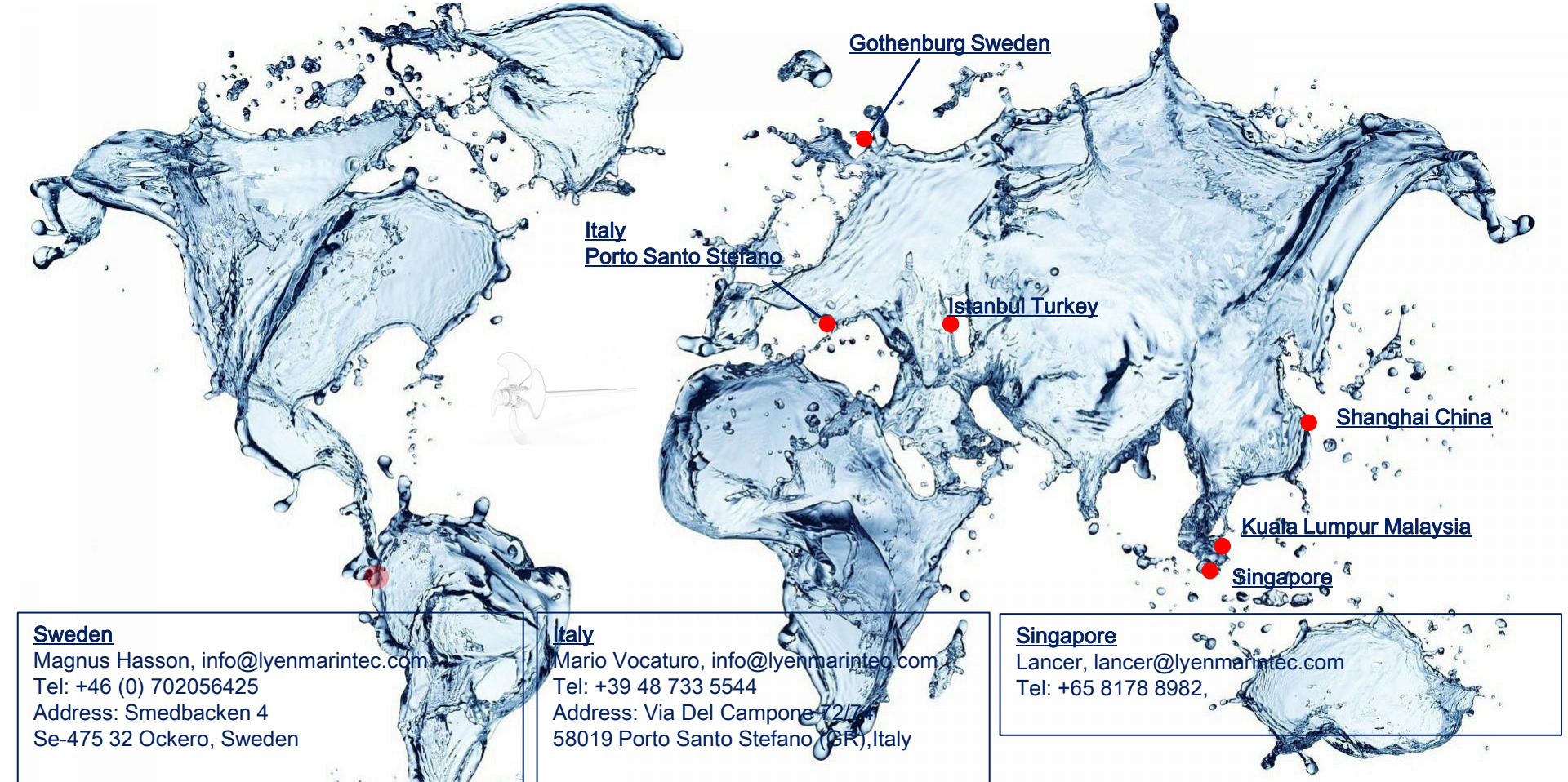
LYEN MARINE

www.lyenmarintec.com

Shanghai Marine Diesel Engine Research Institute --711 Institute

- SMDERI, founded in 1963, affiliated to CSSC Group, is the only state research institute on marine diesel engine in China.
- Large comprehensive entity of marine diesel engine and power device R&D, main propulsion package supplier. The revenue of SMDERI for 2023 was 18.3 billion RMB.

LYEN Service Network



Sweden
Magnus Hasson, info@lyenmarintec.com
Tel: +46 (0) 702056425
Address: Smedbacken 4
Se-475 32 Ockero, Sweden

Italy
Mario Vocaturo, info@lyenmarintec.com
Tel: +39 48 733 5544
Address: Via Del Campone 72/74
58019 Porto Santo Stefano (GR),Italy

Singapore
Lancer, lancer@lyenmarintec.com
Tel: +65 8178 8982,

China
Sales: Ni Ziqing, HP:+86 18019006668
A/S: Peng xiaofei, HP:+86 18964692228
Tel: +86 21 66979701, info@lyenmarintec.com
Address: No.188, Yuanming Rd. Minhang District
Shanghai China

Malaysia
MD: Misli Ismail, misli@lyenmarintec.com
Tel: +60 3413 12770 , HP: +60 19 3226741
Address: 9165B, 2nd Floor, Jalan Negara
Taman Melawati, 53100
Kuala Lumpur, Malaysia

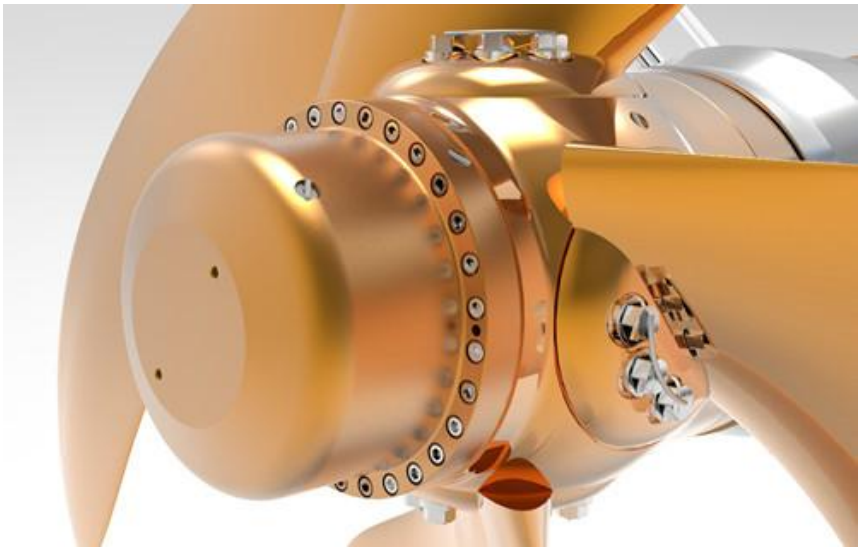
Turkey - Bulutlu
MD: Cem Bulutlu, info@lyenmarintec.com
Tel: +90 216 510 4797 , HP: +90 533 340 3210
Address: Aydinli Sb Mah. 9.Sk. TTM Apt No 2/Z01
Tuzla 34953 Istanbul Turkey

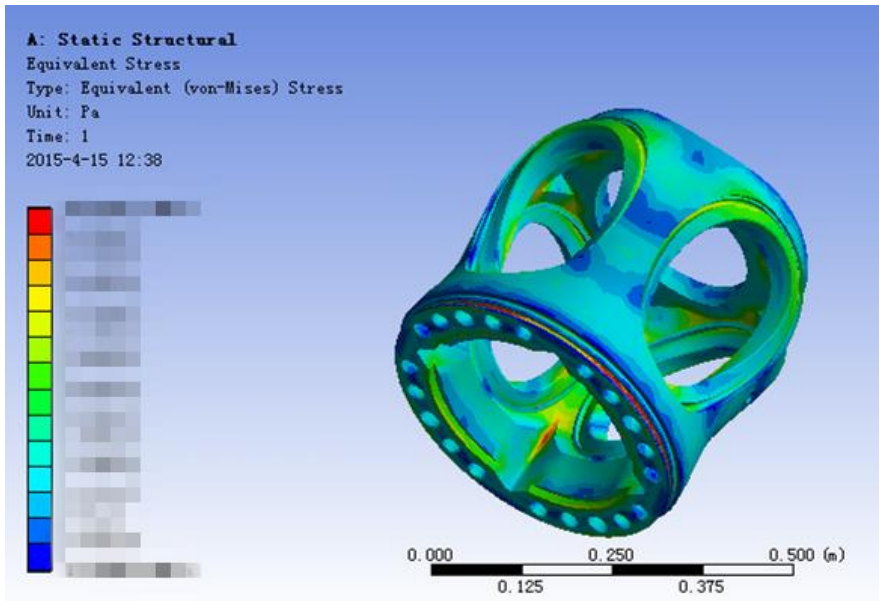
LYEN **All your money in your products**

Only 1st class material for all the components for longer life time.
Less risk of down time for the vessel.

1. In-house cylinder bolts design – Lower hub resis. and less cavitation.

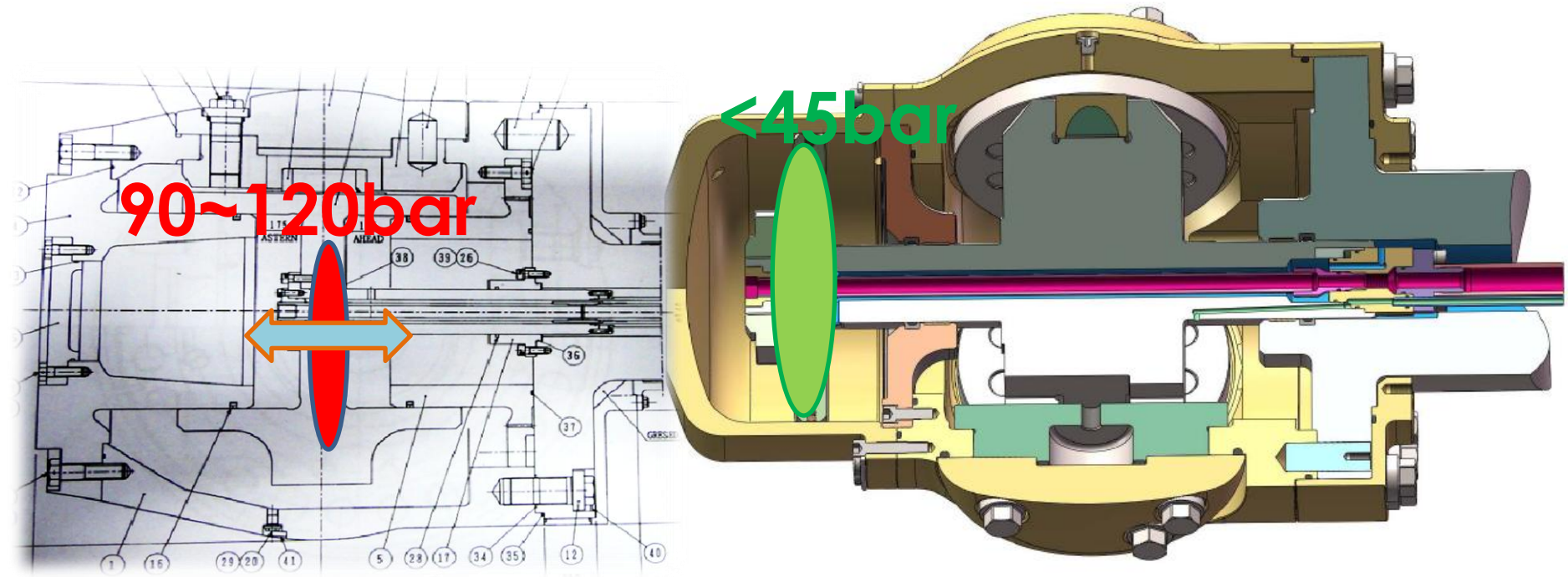
2. Heavy duty design – working well in the worst sea condition and for Longer life.





3. Low working pressure design – minimize the risk of oil leakage

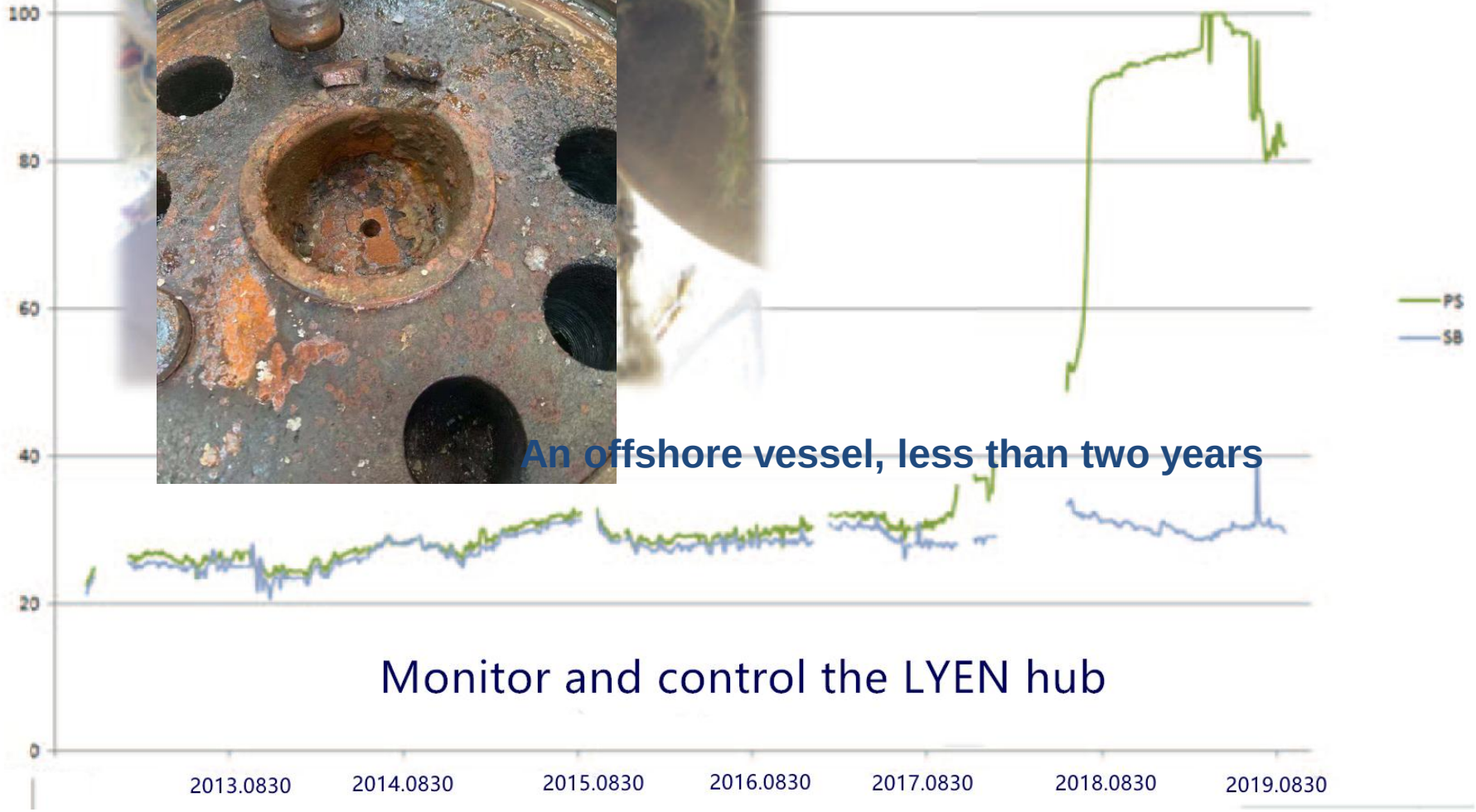
– Lower pressure on the bearing
less wear and tear



4. Light weight design for OD box – better for long term operation

– easier for installation & maintenance

7. Inte aturation detection (Health Detection)



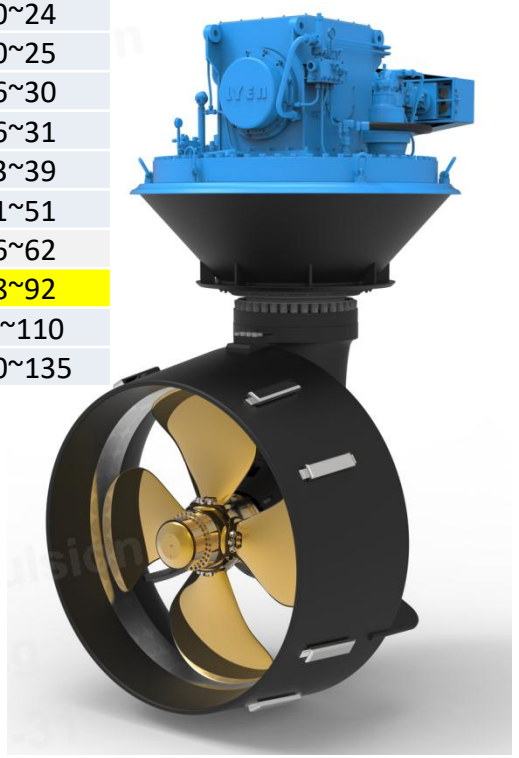
An offshore vessel, less than two years

Monitor and control the LYEN hub

Model list

Model	Maximum input power [kW]		Maximum propeller diameter (ducted) [mm]	Input shafts speed [rpm]	Calculated bollard pull [ton] *
	A/B rating	C/D rating			
LAT 1150	550	640	1150	1200-2300	20~24
LAT 1300	550	640	1300	1200-2300	20~25
LAT 1350	700	920	1350	1200-1800	26~30
LAT 1450	700	920	1450	1200-1800	26~31
LAT 1800	900	1120	1600~1800	750-1800	33~39
LAT 2000	1200	1540	1800~2000	750-1800	41~51
LAT 2300	1700	2100	2000~2300	750-1800	56~62
LAT 2600	**2000**	2550	2400~2600	750-1800	68~92
LAT 2800	2500	3160	2600~2800	600-1800	92~110
LAT 3300	3200	4100	2800~3300	600-1800	110~135

- Thrust deduction excluded
- Final model to be according to propeller diameter

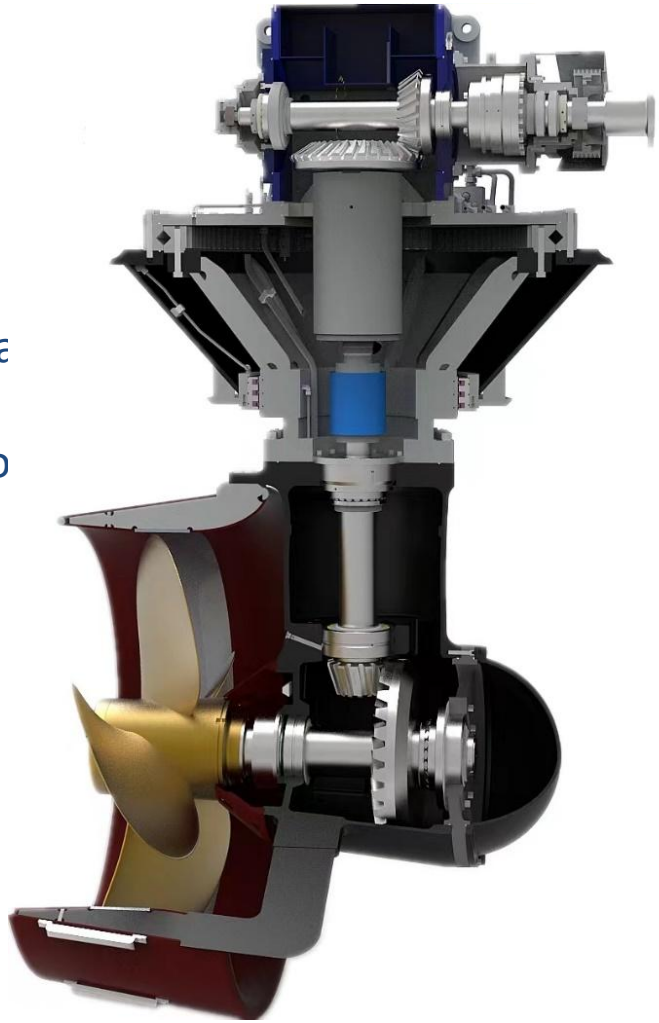


LYEN Azimuth Thruster (LAT)

Standard configuration:
Bevel gear: ATA, Finland
Bearings: SKF, Sweden
Seals: Lagesmit or equal
….
All 1st class component ma

Same standard material fo
LYEN Tunnel thruster

LYEN Azimuth thruster
Range: 300~4000kw

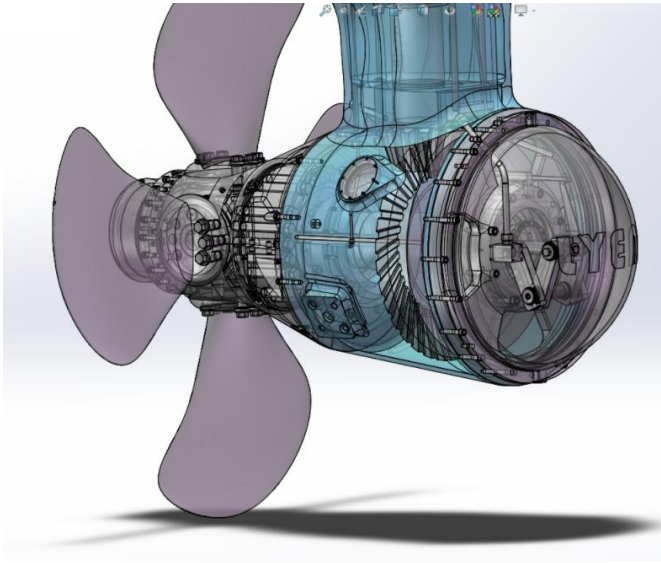


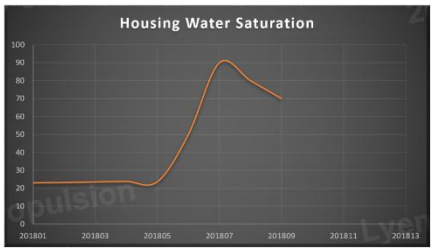
Technical advantage:

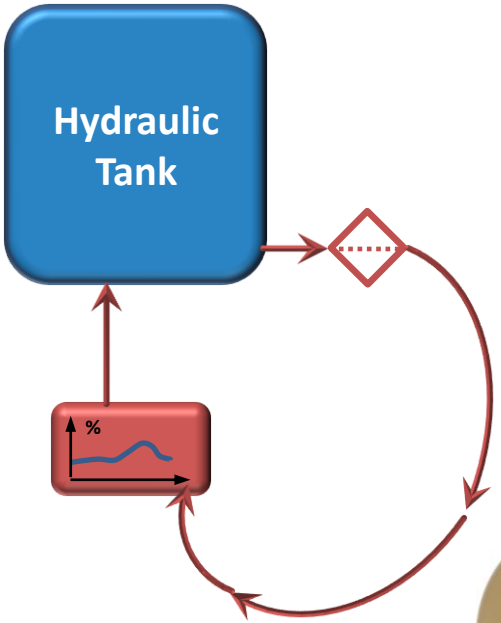
- Low working pressure(<50bar)
- Less wear and tear
- Low vibration and noise
- Health monitoring system
- Longer life time

….

Same for LYEN Tunnel Thruster…

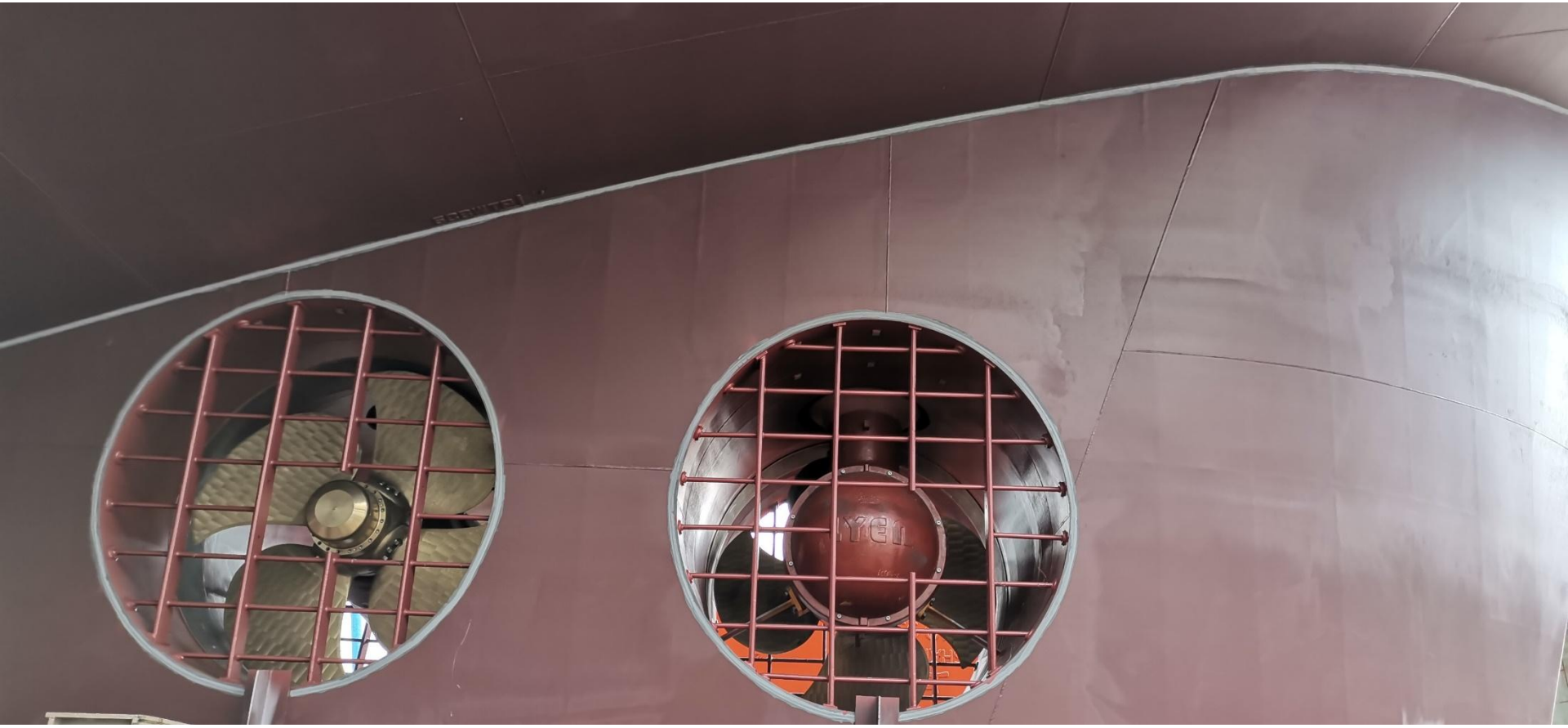






Continuously monitor the water saturation!

LYEN Tunnel Thruster (LTT)

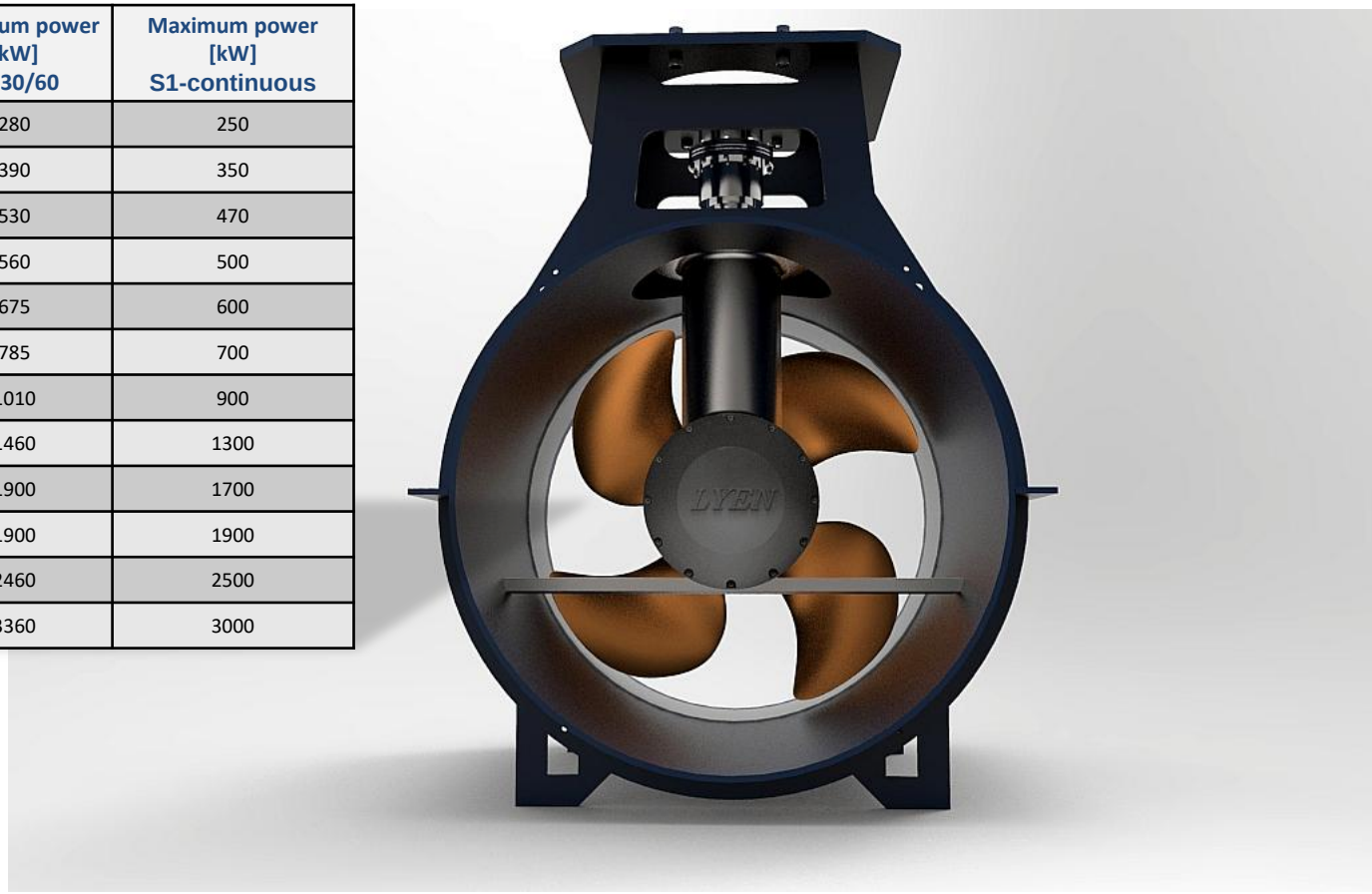


LYEN Tunnel thruster
Range: 90~4000kw

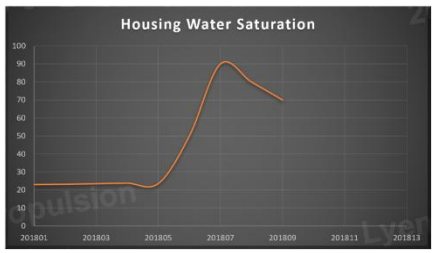
Better solution with bigger propeller
Lower tip speed, lower noise and vibration

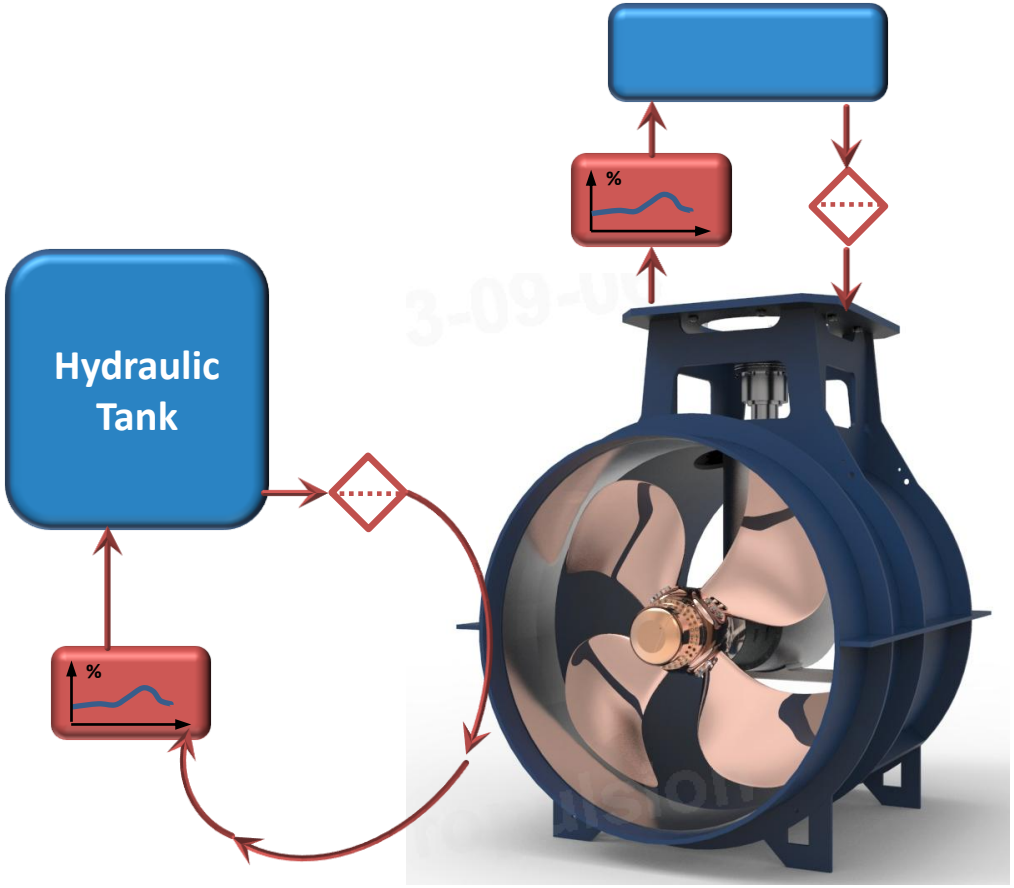
LYEN Thruster Model

Model	Propeller diameter [mm]	Maximum power [kW] S2-30/60	Maximum power [kW] S1-continuous
LTT-800	800	280	250
LTT-900	900	390	350
LTT-1150	1150	530	470
LTT-1300	1300	560	500
LTT-1350	1350	675	600
LTT-1500	1500	785	700
LTT-1600	1600	1010	900
LTT-1950	1950	1460	1300
LTT-2200	2200	1900	1700
LTT-2500	2550	1900	1900
LTT-2800	2850	2460	2500
LTT-3200	3200	3360	3000



LYEN Health Monitoring System





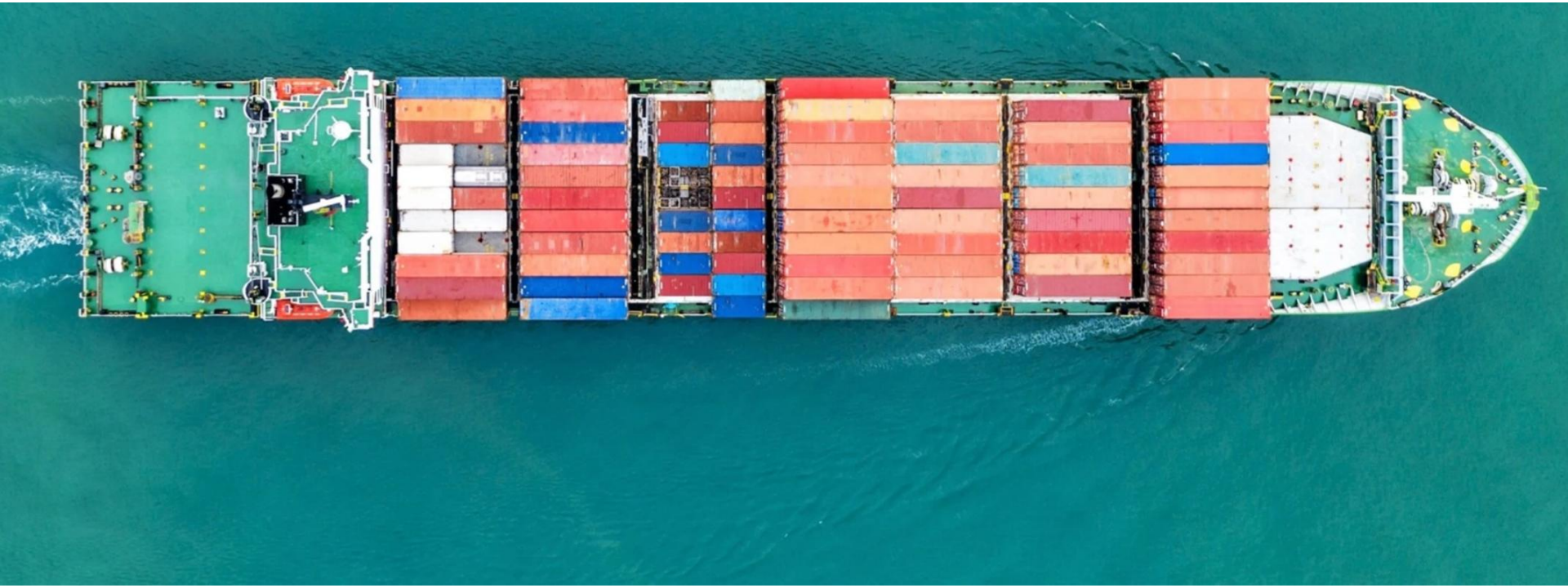
Continuously monitor the water saturation!

- Close loop control and data bus.
- High standard for all components.
- For CPP, FPP, Azimuth thruster and Tunnel thruster

LYEN Remote control system - Nebula

- Close loop control and data bus.
- High standard for all components.
- For CPP, FPP, Azimuth thruster and Tunnel thruster

MTU (2x3600kw) + ZF gearbox + LYEN propeller



Five 1800TEU Container Vessels

MTT Shipping&NSB Niederelbe Schiffahrtsgesellschaft mbH & Co.

LYEN CPP Bow Thruster (1000kw)

Multi-purpose Offshore vessel, DP2, 2x4500kw for main propulsion and 4X2400kw thrusters
Owner: Ministry of Transport of People's Republic of China

5xFishery Research vessel

Owner：ECSFRI CAFS, YSFRI CAFS, SCSFRI CAFS, SCSFRI CAFS

Main Engine Maker: CAT and Wartsila

Gearbox: Reintjes, CPP：LYEN

Fishery Research vessel

Owner：SCSFRI CAFS

Main Engine Maker: Wartsila

Gearbox: Reintjes, CPP：LYEN

5000dwt Research Vessel

Owner：Ocean University of China
Vessel Name/Hull no.:Dongfanghong 3#

Engine Power: 2x 2300kw
Propeller Dia.: 3300mm

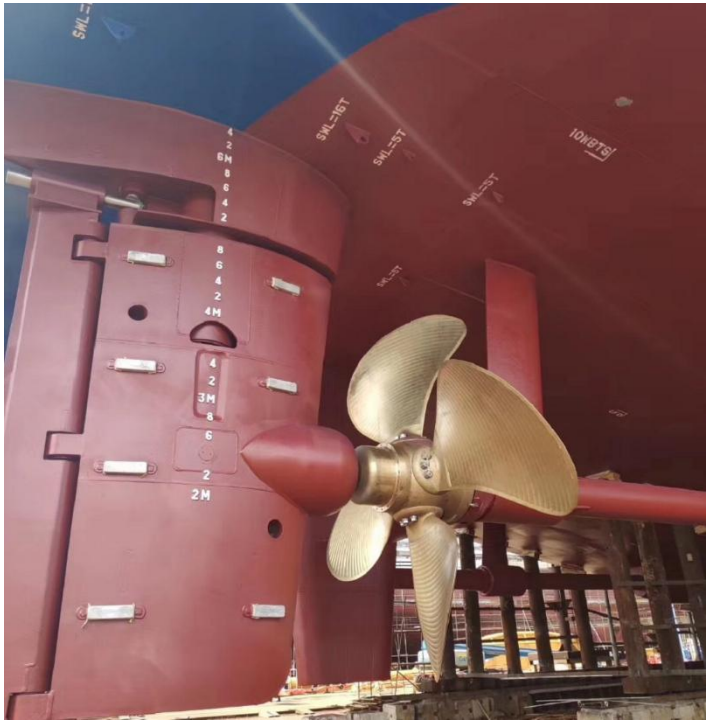
LYEN Better solution for water lub. shaft

Fiber glass reinforce cladding – anti corrosion by sea water
Higher toughness – protect shaft from crash
Bronze liner – protect the bearing

2000dwt Beacon vessel

Owner：China MSA

Wartsila Engine + Reintjes gearbox +LYEN CPP



Bohai Ferry 2700LM Ro-Ro Vessel
Main Engine: MAN B&W 9L32/40 2x4500kw
CPP: LYEN Propeller Dia.: 4600mm

Propeller efficiency:70.1%, Impulse pressure: 1.27kpa

COSCO 3000ml RORO vessel
Engine: MAN B&W 9L32/40 Power : 2x4500kw
CPP : LYEN Propeller Dia. : 4600mm

The South Pole Krill Trawler

M/E : MAN Power : 9000kw

CPP : LYEN Propeller Dia. : 5000mm LYEN Order.: LCP359

Harbour Tug Boat, Hybrid (Battery, no emission)
Azimuth : LYEN LAT-2200 LYEN Order.: LFAT376

Sing Kiong Hong Dockyard Sdn. Bhd.
Harbour tug boat

Lyen Marine

TIME SHEET FOR SERVICE ASSISTANCE

VESSEL NAME: SETIA UNGGUL
CUSTOMER: ALAM MARITIM
CONTACT PERSON: Rafizat IMO NO.: 9629900
TYPE OF PROP EQUIPT: CPP TEL NO.: +8601928 92602
WORK CARRIED OUT BY: Gaun
OUTWARD TRIP Started: 29th Nov. 2015, 04:00 Finished: 28th Nov. 2015 11:00 Total hours: 6.5hrs
HOMEWARD TRIP Started: 1th Nov. 2015 04:20 Finished: 1th Nov. 2015 19:50 Total hours: 16hrs

DAY		NORMAL WORKING TIME	TOTAL HOURS	OVERTIME	TOTAL HOURS	OVERTIME ORDERED BY	
MON							
TUE							
WED							
THU							
FRI							
SAT	28th/Nov			12:00 19:00	7hrs		Inspect CPP system both sides, start hydraulic pumps for pitch testing both sides pitch hunting about 1.5 setting parameters of ... pitch stable, setting feedback pitch indicator and STBD side Zero pitch during operating pitch much [illegible] oil leaking to outside seawater.
SUN	29th/Nov			09:00 16:00	7hrs		
TOTAL NORMAL WORKING TIME				TOTAL OVERTIME	14hrs		

OBSERVATIONS:
Remark
1. much oil leaking to seawater during ship sailing sterntube head tank overflow at the same time, all draws described for STBD side propeller, which means seal between hub and cylinder broken.
2. Sterntube oil leaking to outside sea when CPP hydraulic pump stopped (STBD side) which means aft sterntube seal or blade seal leaking.
3. pitch stable after setting parameters.

CUSTOMER REVIEWS:
Required details parameter setting for vessel references

CONFIRMATION OF ACCEPTANCE OF WORK CARRIED OUT AND CERTIFICATION OF ABOVE-MENTIONED NORMAL WORKING HOURS AND OVERTIME HOURS.

PLACE: Sg. Kuang, Kemaman. DATE: 29/11/2015 SIGNATURE:

M/V SETIA UNGGUL
ON: 334466
POR: PORT KELANG
GRT: 1470.00 / NRT: 441.00

ALAM MARITIM
M V SETIA UNGGUL - ANCHOR HANDLING TUG SUPPLY (AHTS) VESSEL

TIME SHEET FOR SERVICE ASSISTANCE

VESSEL NAME: SETIA IMAN
CUSTOMER: TH ALAM MANAGEMENT
CONTACT PERSON: Shafi Superintendent IMO NO.: 9587271
TYPE OF PROP EQUIPT: CPP TEL NO.: 60197925012
WORK CARRIED OUT BY: gavin
OUTWARD TRIP Started: Finished: Total hours:
HOMEWARD TRIP Started: 14th/Nov/2015 04:30 Finished: 15th/Nov/2015 02:00 Total hours: 21.5 hrs

DAY		NORMAL WORKING TIME	TOTAL HOURS	OVERTIME	TOTAL HOURS	OVERTIME ORDERED BY
MON	9th/Nov	08:00 18:00	8hrs	18:00 21:30	3.5hrs	
TUE	10th/Nov	08:00 18:00	8hrs			
WED	11th/Nov	08:00 18:00	8hrs			
THU	12th/Nov	08:00 18:00	8hrs			
FRI	13th/Nov	08:00 18:00	8hrs			
SAT						
SUN						
TOTAL NORMAL WORKING TIME		40hrs	TOTAL OVERTIME	3.5hrs		

Connect STBD side hub to shaft, torque flange bolts to 1100Nm, assemble cylinder, torque bolts to 360Nm, assemble blades of STBD side, torque to 1100Nm, 1bar pressure testing, no leakage found in half hour.
Assemble OD-box of port side, adjust OD-shaft run out to 0.05mm, renew O-rings and seals.
Assemble OD-box of STBD side, alignment OD-shaft run out to 0.05mm, renew O-rings and seals, fill oil to hub and move pitch by hand of port side. Replace display unit of ECR both sides, testing remote control function, no leakage found of the system.

OBSERVATIONS:

CUSTOMER REVIEWS:

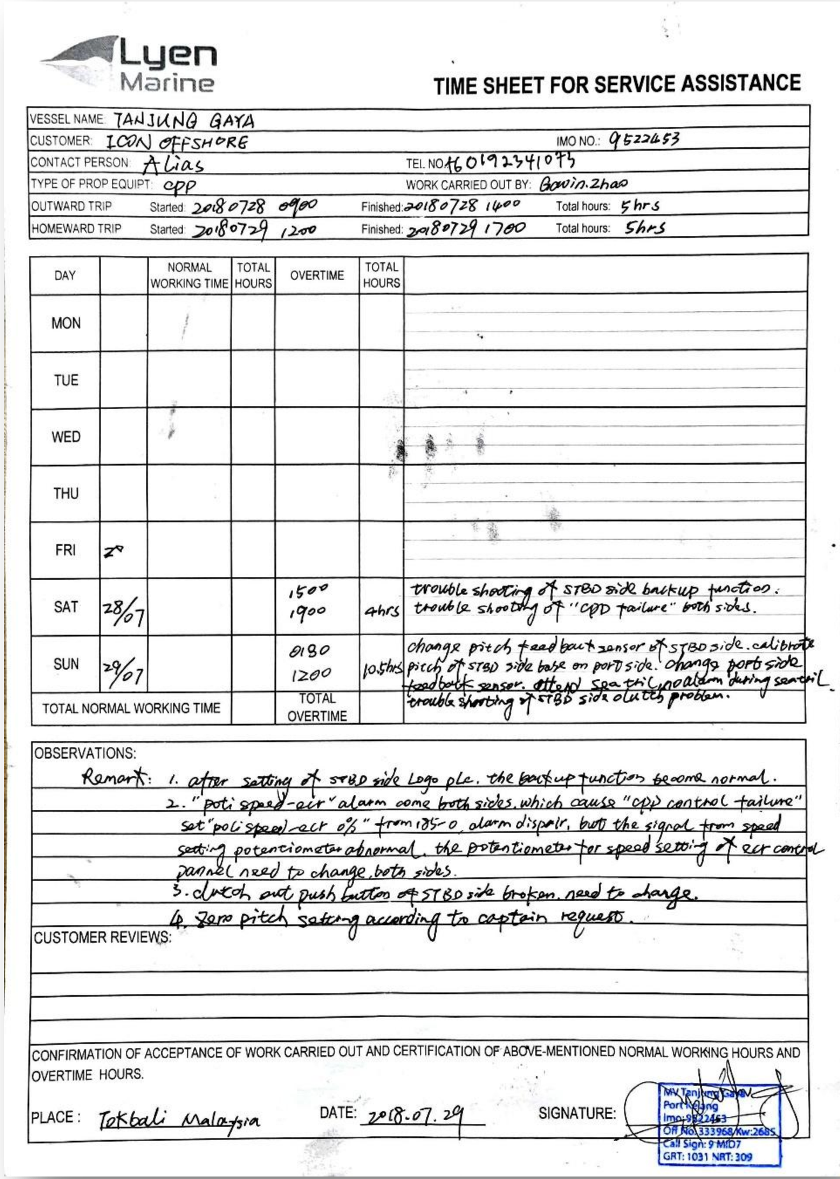
CONFIRMATION OF ACCEPTANCE OF WORK CARRIED OUT AND CERTIFICATION OF ABOVE-MENTIONED NORMAL WORKING HOURS AND OVERTIME HOURS.

M.V. SETIA IMAN PORT KELANG 9587271

PLACE: MMHE Pasir Gudang Malaysia DATE: 13/11/15 SIGNATURE: [illegible]

TH ALAM MANAGEMENT
M V SETIA IMAN - ANCHOR HANDLING TUG SUPPLY (AHTS) VESSEL (DP 1)

LYEN Ref. and Service



TIME SHEET FOR SERVICE ASSISTANCE

VESSEL NAME: TANJUNG GAYA					
CUSTOMER: ICON OFFSHORE			IMO NO.: 9522453		
CONTACT PERSON: Alias		TEL NO: +60192341073			
TYPE OF PROP EQUIPT: CPP		WORK CARRIED OUT BY: Gavin.Zhao			
OUTWARD TRIP	Started: 20180728 0900	Finished: 20180728 1400	Total hours: 5hrs		
HOMEWARD TRIP	Started: 20180729 1200	Finished: 20180729 1700	Total hours: 5hrs		

DAY		NORMAL WORKING TIME	TOTAL HOURS	OVERTIME	TOTAL HOURS	
MON						
TUE						
WED						
THU						
FRI	27					
SAT	28/07			1500 1900	4hrs	trouble shooting of STBD side backup function. trouble shooting of "CPP failure" both sides.
SUN	29/07			0130 1200	10.5hrs	change pitch feedback sensor of STBD side. calibrate pitch of STBD side base on port side. change port side feedback sensor. attend sea trial, no alarm during seatrial. trouble shooting of STBD side clutch problem.
TOTAL NORMAL WORKING TIME				TOTAL OVERTIME		

OBSERVATIONS:

Remark: 1. after setting of STBD side Logo plc. the backup function become normal.
2. "poti speed-ecr" alarm come both sides. which cause "CPP control failure" set "poti speed-ecr 0%" from 135-0, alarm dispair, but the signal from speed setting potentiometer abnormal. the potentiometer for speed setting of ecr control pannel need to change. both sides.
3. clutch out push button of STBD side broken. need to change.
4. zero pitch setting according to captain request.

CUSTOMER REVIEWS:

CONFIRMATION OF ACCEPTANCE OF WORK CARRIED OUT AND CERTIFICATION OF ABOVE-MENTIONED NORMAL WORKING HOURS AND OVERTIME HOURS.

PLACE: Tokbali Malaysia DATE: 2018.07.29 SIGNATURE: [signature]

MV Tanjung Gaya
Port Klang
Imo: 9522453
Off No: 333968/Kw: 2685
Call Sign: 9 MID7
GRT: 1031 NRT: 309

ICON OFFSHORE
M V GAYA- ANCHOR HANDLING TUG SUPPLY (AHTS) VESSEL

LYEN Ref. and Service

Lyen Marine

TIME SHEET FOR SERVICE ASSISTANCE

VESSEL NAME: BERKAT TENANG			
CUSTOMER: SHADDAD MARINE SDN BHD		IMO NO.: 9656618	
CONTACT PERSON: Hairul		TEL NO.: +60125615881	
TYPE OF PROP EQUIPT: ZF CPP		WORK CARRIED OUT BY: Gavin.Zhao	
OUTWARD TRIP	Started: 20180717 2300	Finished: 20180718 1200	Total hours: 13hrs
HOMEWARD TRIP	Started:	Finished:	Total hours:

DAY		NORMAL WORKING TIME	TOTAL HOURS	OVERTIME	TOTAL HOURS	
MON						
TUE						
WED	18/07	1400 1730	3.5hrs			Inspect propeller shafts. chrom liner. stern tube bearing and OD-box.
THU	19/07	0800 1800	8hrs			disconnect hoses and wires from OD-box. disassemble OD-box at both sides.
FRI	20/07	0800 1800	8hrs			clean inside components of OD-box with diesel oil. polish the OD housing which is rusty. polish rusty area of propeller shafts and put oil to protect from rusty.
SAT	21/07			0800 1800	8hrs	flushing propeller hub with new oil. cleaning inner oil pipeland put oil on it.
SUN	22/07			0800 1800	8hrs	turn blade disc with pipe to move pitch for testing. piston rod found rusty. and port side yoke found heavy corrosion through flange hole.
TOTAL NORMAL WORKING TIME				TOTAL OVERTIME		

OBSERVATIONS:

CUSTOMER REVIEWS:

CONFIRMATION OF ACCEPTANCE OF WORK CARRIED OUT AND CERTIFICATION OF ABOVE-MENTIONED NORMAL WORKING HOURS AND OVERTIME HOURS.

PLACE: Kemaman Malaysia DATE: 2018.07.31 SIGNATURE:

SHADDAD MARINE SDN BHD
AHMAD KHAIRUL AMZAD KUSHASHI
Service Technician
Supervisor

FLEET MANGEMENT LIMITED
M V INDIA EXPRESS- ANCHOR HANDLING TUG SUPPLY (AHTS) VESSEL

LYEN **Ref. and Service**

Lyen Marine™

Lyen Marine

HEET FOR SERVICE ASSISTANCE

VESSEL NAME	GARDE ONE MAN JUNG 6		
CUSTOMER		IMO NO	9717747
CONTACT PERSON	WAN AHMAD SAFWAN	TEL NO	019-4883277
TYPE OF PROP EQUIPT	NGP 68 / NCT136	WORK CARRIED OUT BY	
OUTWARD TRIP Started	06:00 19/1/2020	Finished 21:00 19/1/2020	Total hours 15hrs
HOMEWARD TRIP Started		Finished	Total hours

DAY		NORMAL WORKING TIME	TOTAL HOURS	OVERTIME	TOTAL HOURS	
MON	20/1/2020			08:00–17:00	8hrs	Take off portside and STBD hydraulic Coupling The portside propellershaft take out in workshop
TUE	21/1/2020			08:00–17:00	8hrs	The STBD propeller shaft take out in workshop. The stern thruster motor take off. and stern thruster take out to workshop
WED	22/1/2020			08:00–20:00	10hrs	The portside and STBD. blade take off. The propeller shaft pipe and Hub. and cylind take off.
THU	23/1/2020			08:00–17:00	8hrs	The blade. Hub bolt. cap propellershaft. ~~Flage~~ Flange cap Right blade disk. Right Yoke cleaning and measurment.
FRI	24/1/2020			08:00–17:00	8hrs	The blade Hub bolt Cap propellershaft Right blade disk Right Yoke coloring flaw detection and thruster propeller shaft bering take out
SAT	25/1/2020			08:00–17:00	8hrs	The port Side and STBD. Hub bolt cap propeller Right blade ~~Fore~~ disk Right Yoke clean port side Hub fix Connetion propeller shaft
SUN	26/1/2020			08:00–17:00	8hrs	The STBD Hub install and Connet propeller shaft The stern thruster propeller shaft Hub open clean
TOTAL NORMAL WORKING TIME				TOTAL OVERTIM		

OBSERVATIONS

CUSTOMER REVIEWS

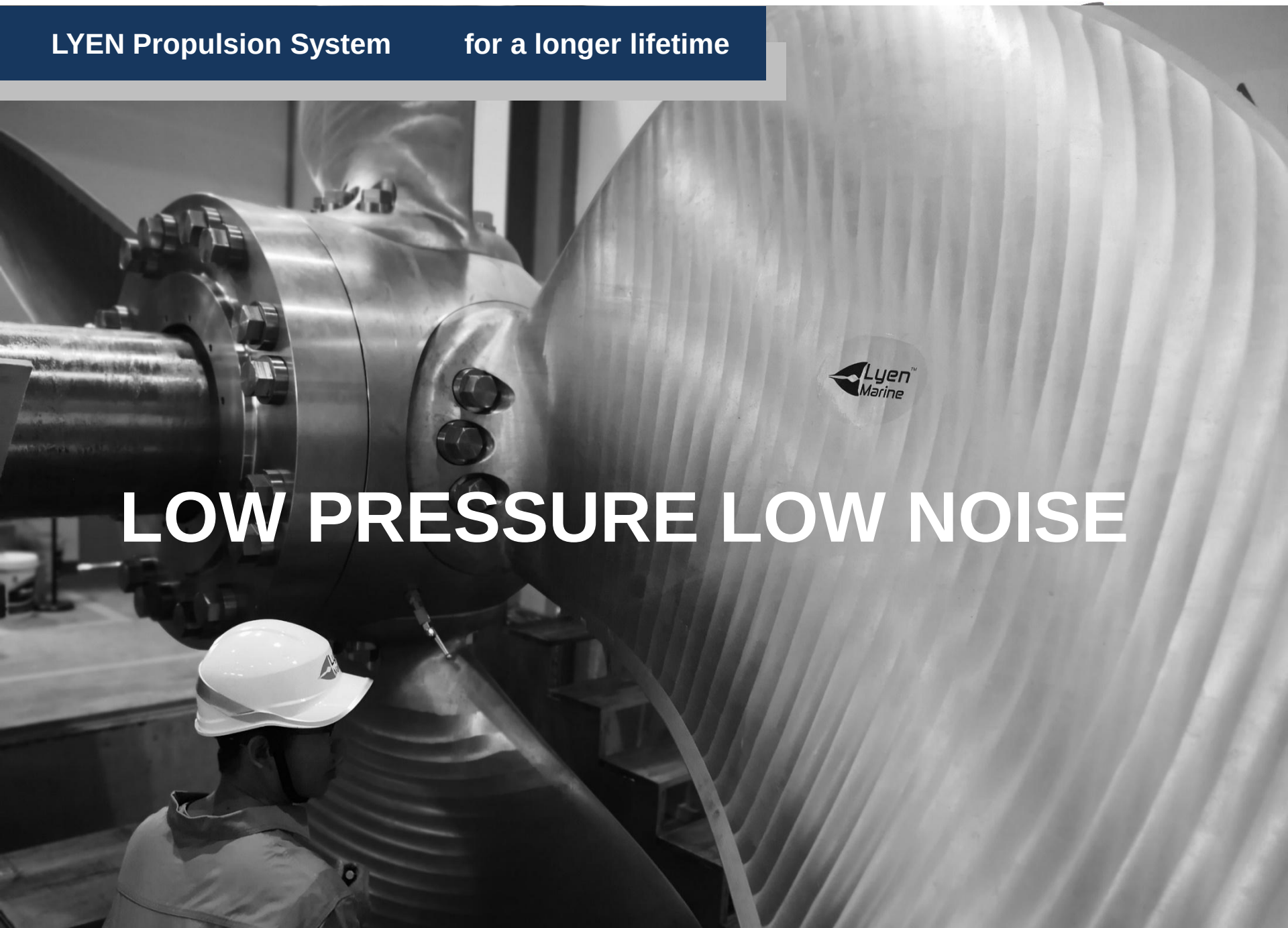
CONFIRMATION OF ACCEPTANCE OF WORK CARRIED OUT AND CERTIFICATION OF ABOVE-MENTIC WORKING HOURS AND OVERTIME HOURS

PLACE MMHE DATE 05/02/2020 SIGNATURE [signature]

Wan Ahmad Safwan Zakaria
Technical Superintendent
Grade One Offshore Sdn Bhd

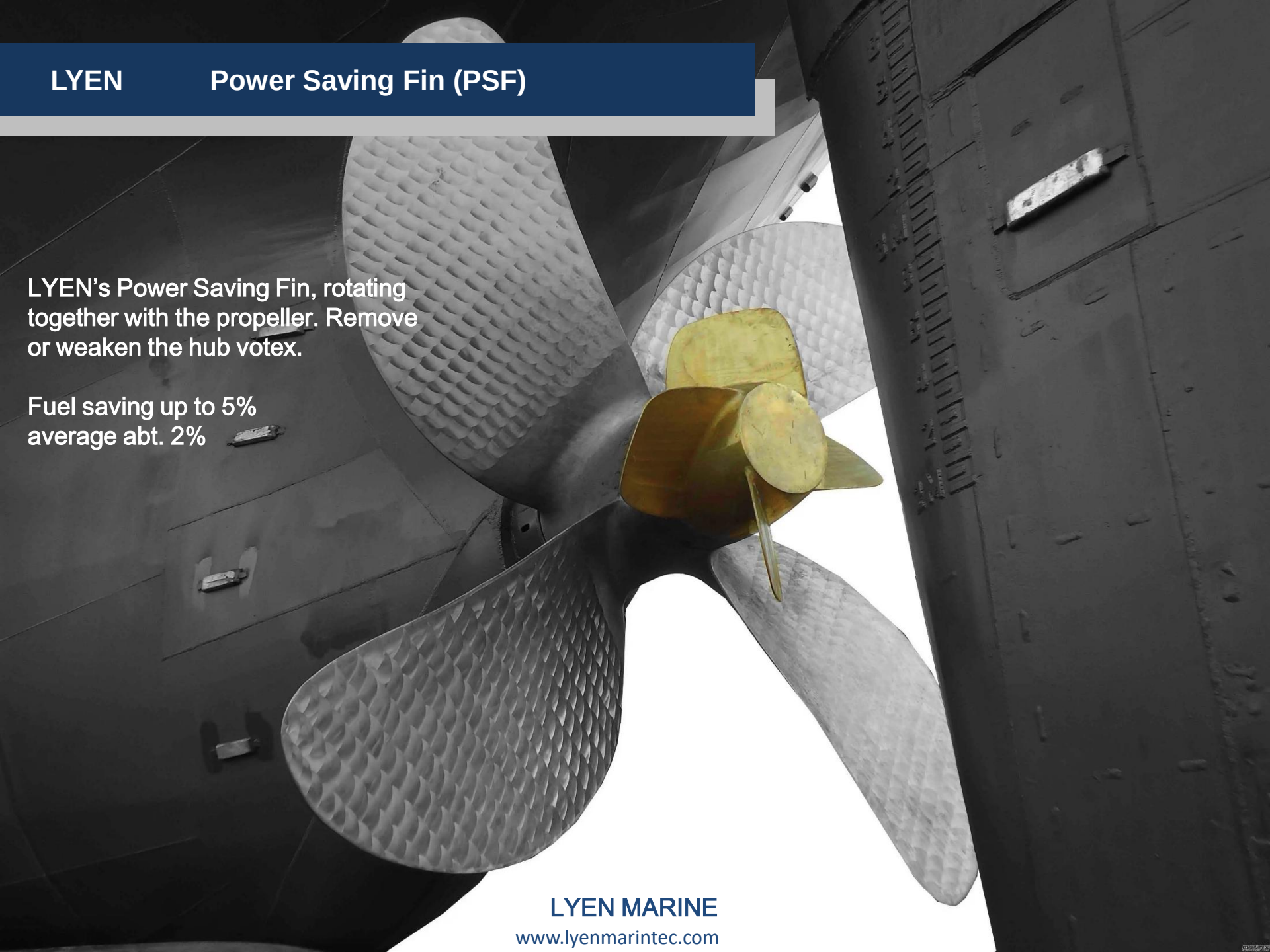
GARDE ONE MANJUNG 6
ANCHOR HANDLING TUG VESSEL

LYEN Propulsion System for a longer lifetime



LOW PRESSURE LOW NOISE

LYEN Power Saving Fin (PSF)

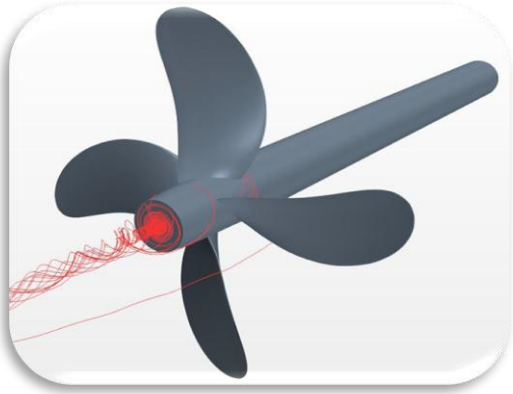


LYEN's Power Saving Fin, rotating together with the propeller. Remove or weaken the hub votex.

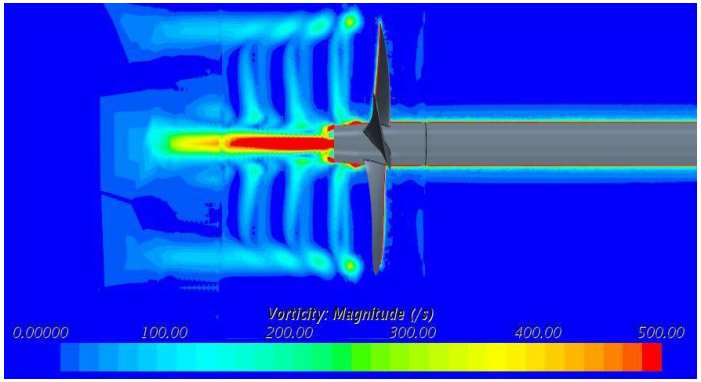
Fuel saving up to 5%
average abt. 2%

LYEN MARINE
www.lyenmarintec.com

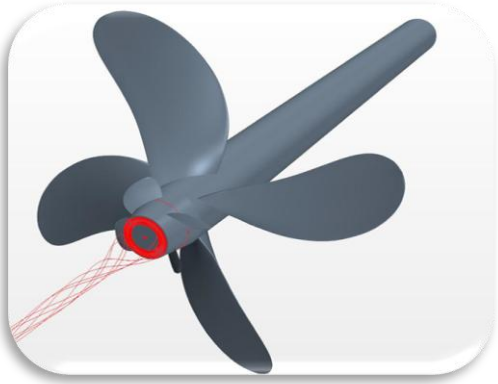
LYEN PSF saves the power by weakening the hub vortex



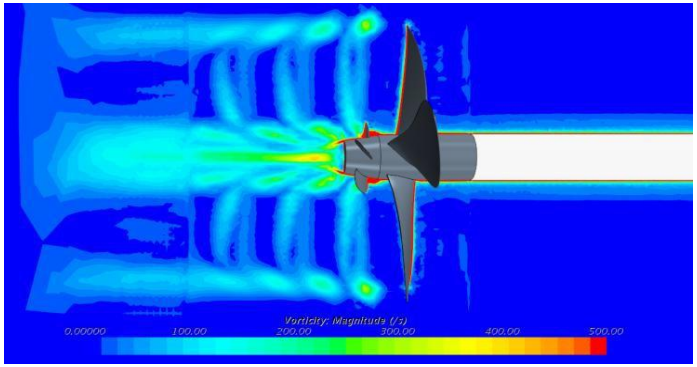
Without LYEN Power Saving Fin (PSF)



- Tailor-made for retrofit or new building vessels
- Easy installation
- Average ~2% saving

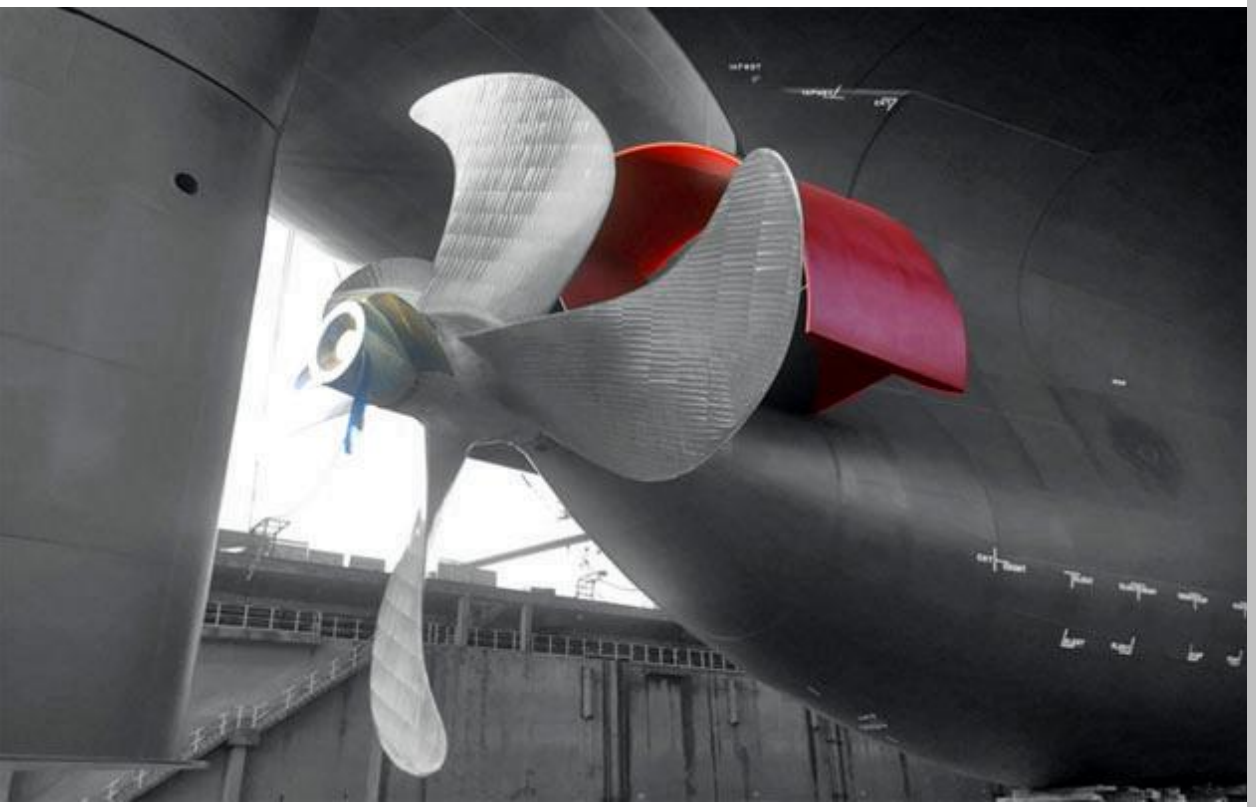


With LYEN Power Saving Fin (PSF)



LYEN Pre-Duct Fuel saving 3~7%

Pre-Duct
Wake-equalising duct



A bulker with PSF and Pre-Duct

Improvement of propeller efficiency from more axial flow and more equal velocity distribution over the disc area.

Easy install, even for the current Vessels.

Uniform flow reduces propeller Excited vibrations.

Improve steering quality from More straightened flow to the Rudder.

Lower cost and higher efficiency Compared to Kort-duct.

LYEN Upcoming…

LYEN Upcoming…

LYEN Upcoming…