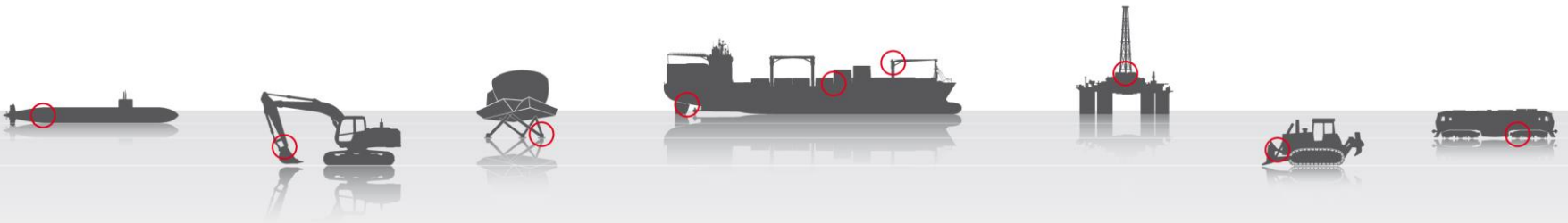
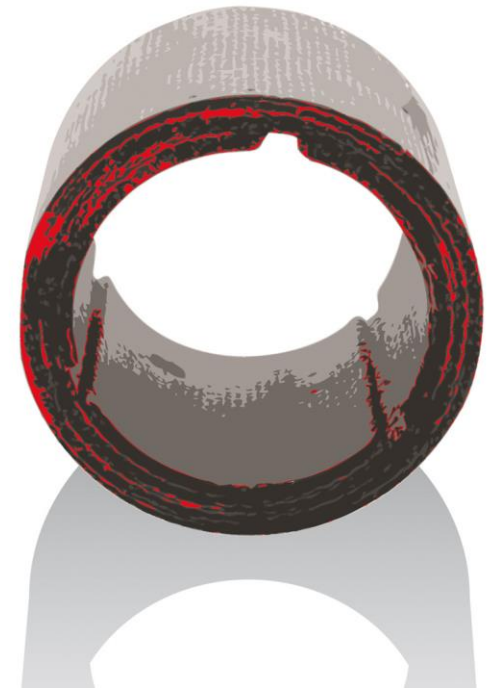


acm COMPOSITES

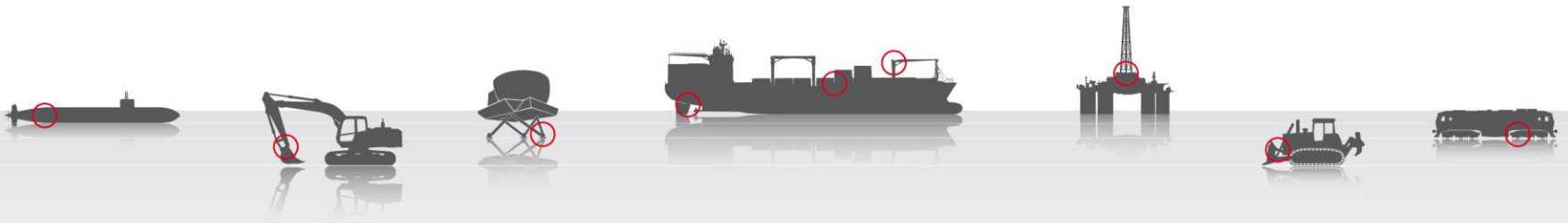


ACM Composites

ACM L2 Marine Water Lubricated Propeller
Shaft Bearings Presentation



acm COMPOSITES



ACM Composites
ACM L2 Marine
Notable References

ACM Composites

ACM L2 Marine Water Lubricated Propeller
Shaft Bearings Presentation

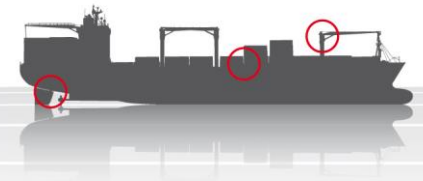
ACM Composites – History & Scope



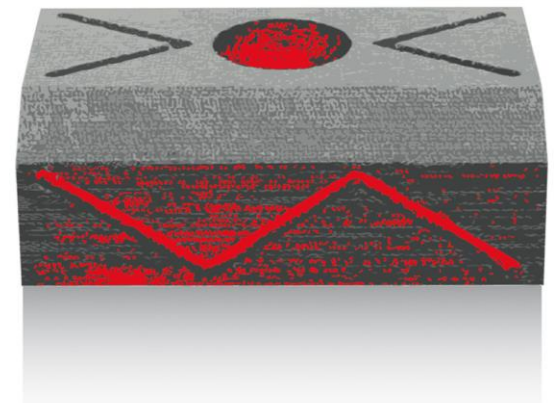
- ▲ Supplied marine market for over 25 years
 - ▲ Tube bearings
 - ▲ Shell bearings
 - ▲ Pametrada bearings
 - ▲ Stave bearings



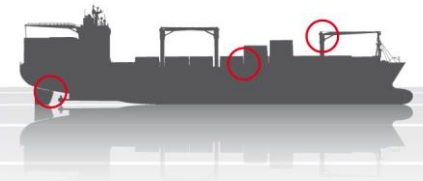
ACM Composites – History & Scope



- ▲ Service ten navies worldwide
- ▲ Have supplied over 7,500 vessels
- ▲ №1 marine composite
- ▲ Design, manufacture, after-sales
- ▲ Stand alone bearings or packages
- ▲ Available 24/7



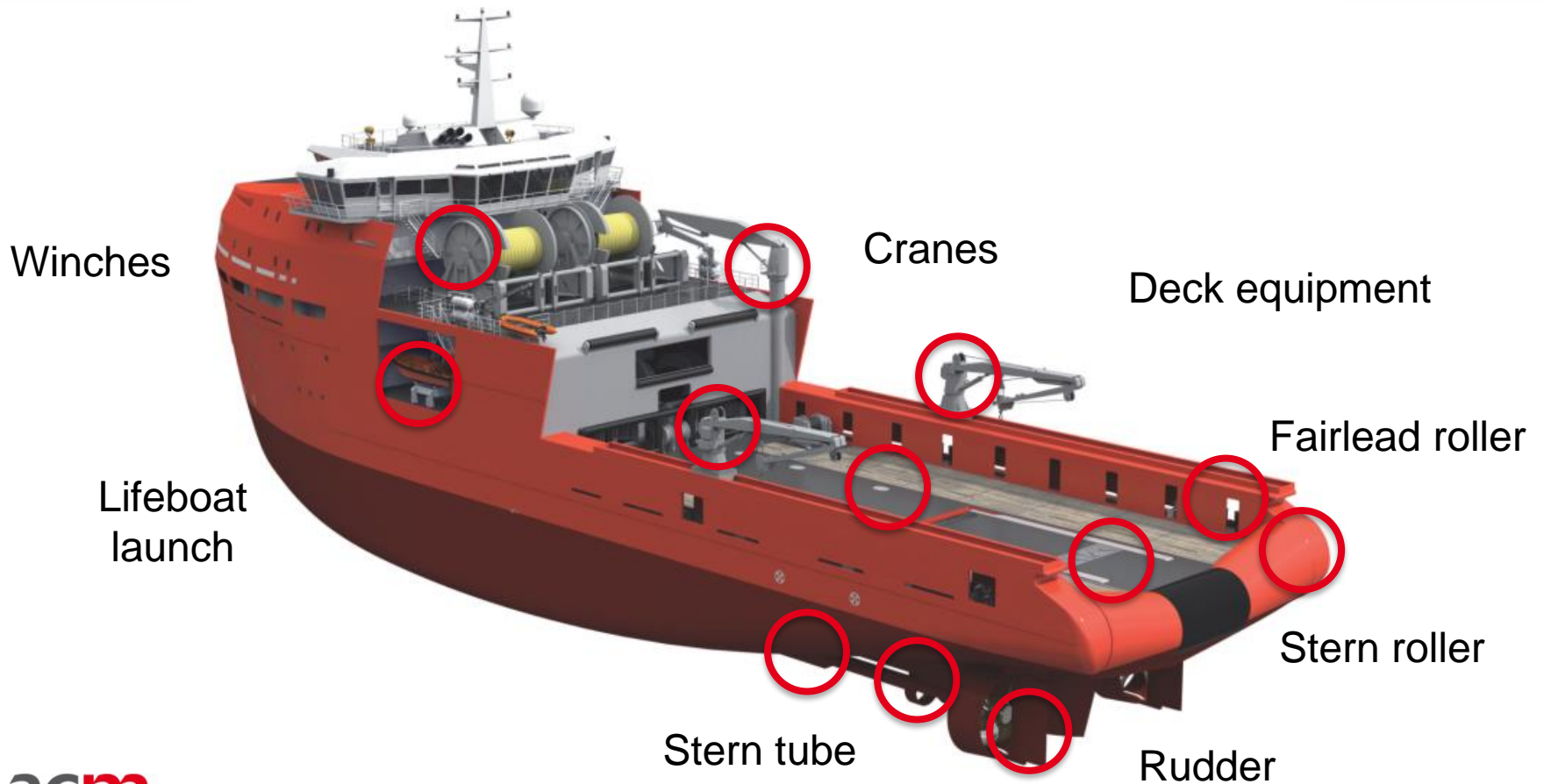
ACM Composites – Marine Applications



- ▲ Deck equipment
- ▲ Stern roller bearings
- ▲ Container support pads
- ▲ Hatch cover pads
- ▲ Fairlead rollers and winches
- ▲ Water lubricated stern tube bearings
- ▲ Retractable thrusters
- ▲ Rudder bearings
 - ▲ Upper/lower pintle, neck bush
 - ▲ Carrier bush & disk



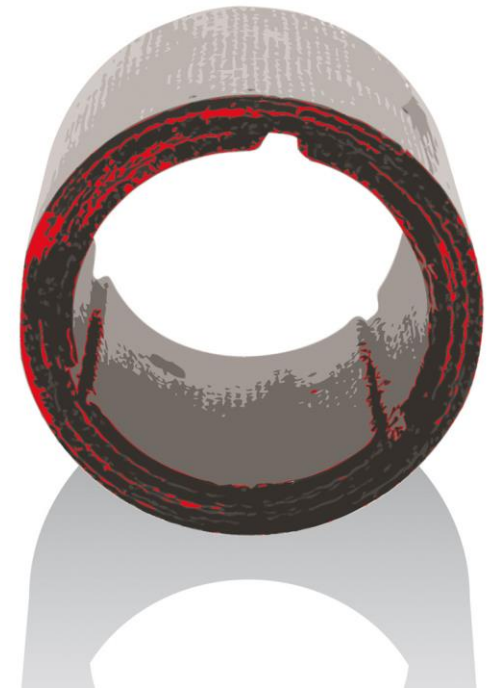
ACM Composites – Marine Applications



ACM L2 Marine



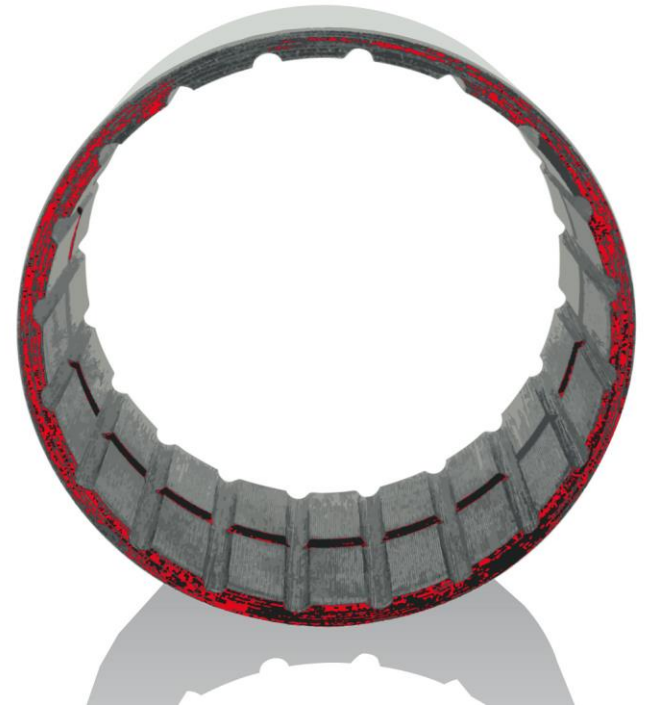
- ▲ Exclusively available from ACM Composites
- ▲ Result of extensive R&D
- ▲ Launched in 2001
- ▲ Semi-finished or finish machined
- ▲ Shaft diameter up to 1,250 mm
- ▲ Classification society approvals



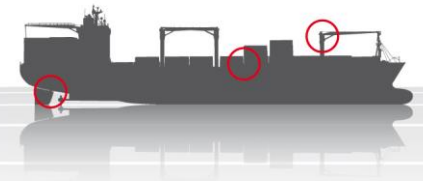
ACM L2 Marine – Advantages



- ▲ High load capability
- ▲ Very low swell
- ▲ Low wear characteristics – long life
- ▲ Can operate dry/grease/oil/water lubricated
 - ▲ EAL compatible
- ▲ Resistance to particle embedding
 - ▲ Shaft friendly



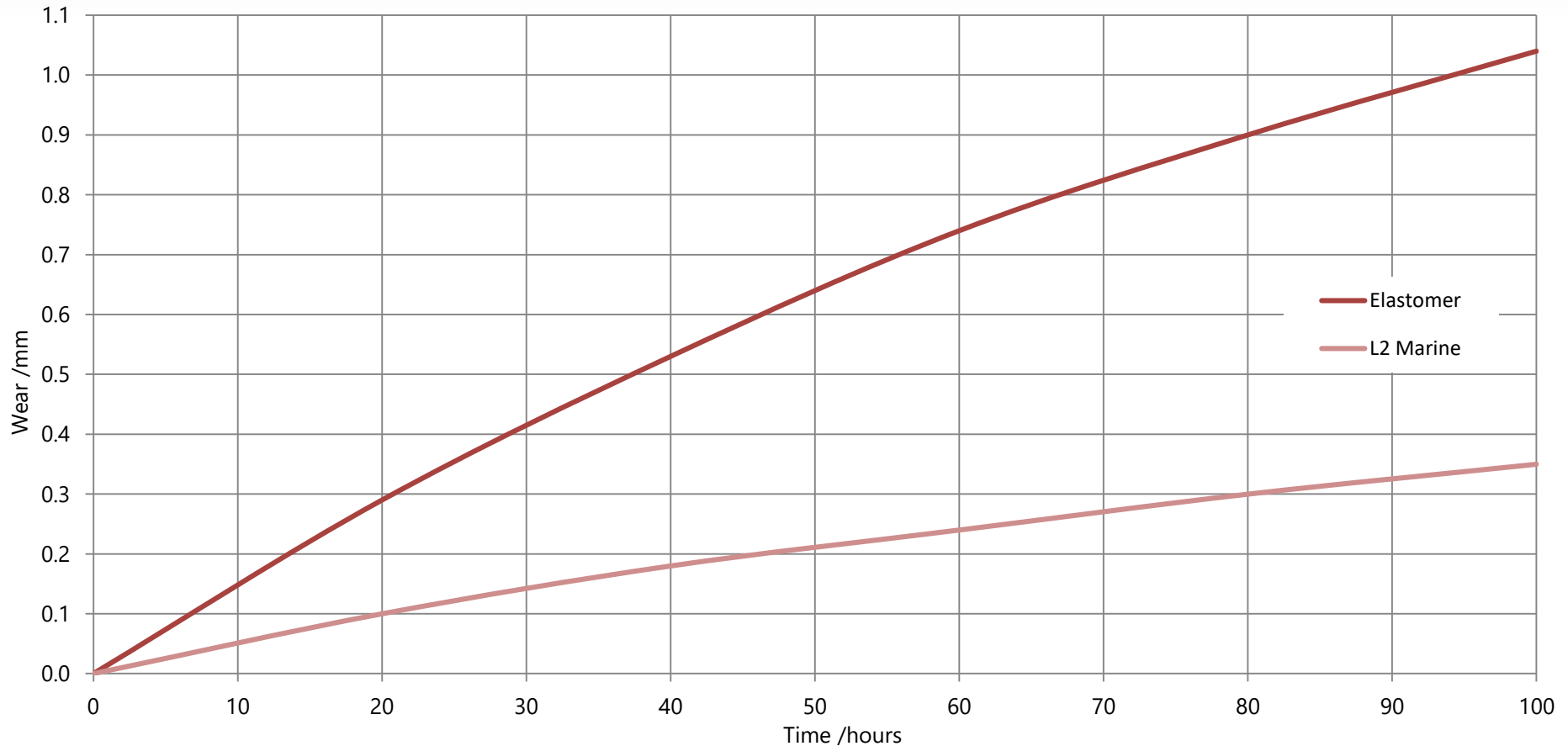
ACM L2 Marine – Advantages



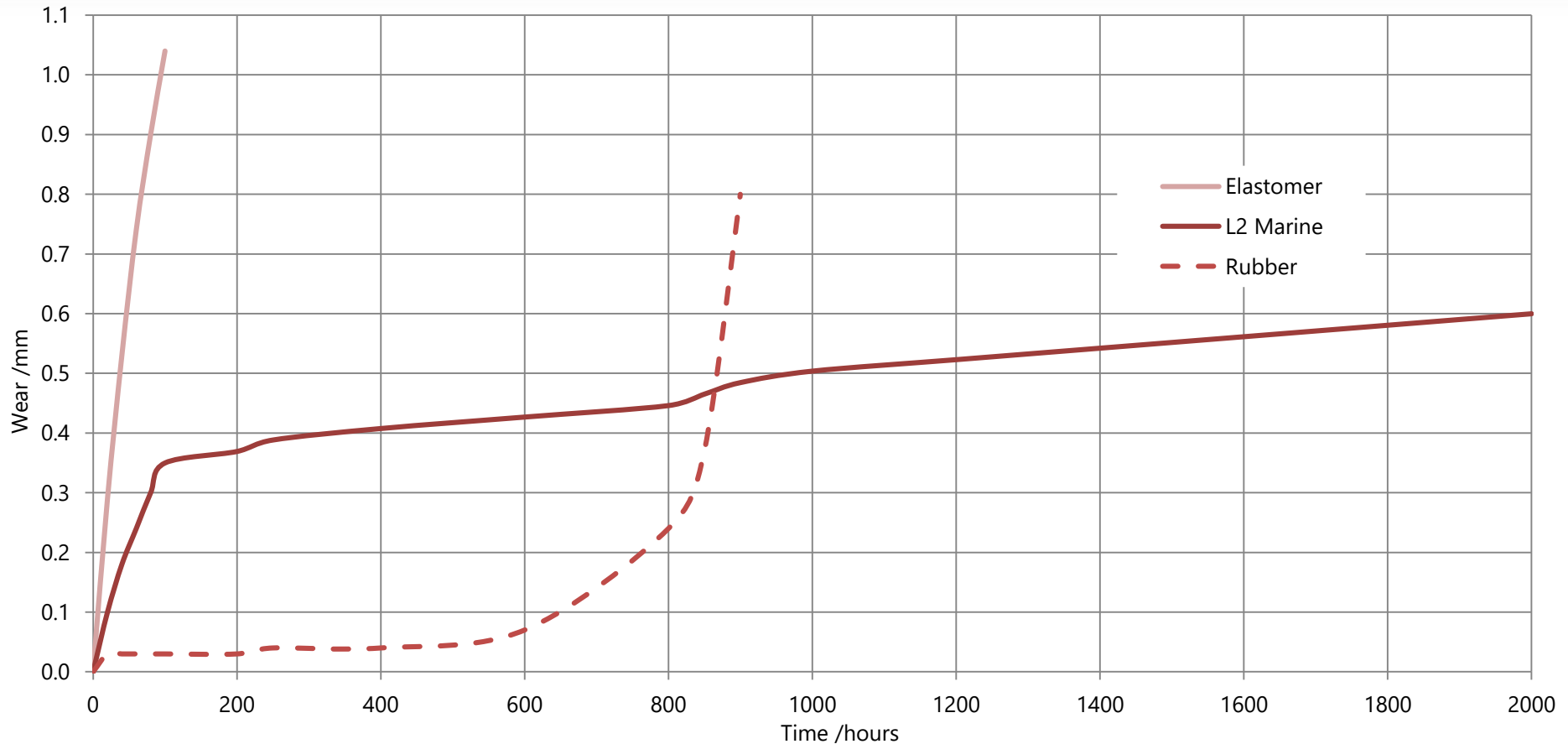
- ▲ Can be freeze fitted
- ▲ Short delivery time (repair 48 hours)
- ▲ Stock
- ▲ Competitive price



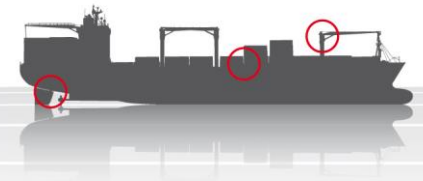
ACM L2 Marine – Wear (Grittied Water)



ACM L2 Marine – Wear (Grittied Water)



ACM L2 Marine – Comparison



Property	Unit	ACM L2 Marine	Alternative Polyester Composite	Synthetic Elastomer	Cotton Phenolic	Thermoplastic Polymer	Bronze
Compressive strength	MPa	>375	300	-	120	92	850
Compressive modulus	MPa	2,750	3,200	440	5,600	2,290	110,000
Rockwell	M	100	90	43	53	50	70 (HB)
Density	g cm ⁻³	1.3	1.3	1.2	1.58	1.38	7.8
Swell in water	%	<0.1	0.1	1.3	1.0	0.5	0
Thermal expansion coefficient	x10 ⁻⁵ °C ⁻¹	5.0	5.0	23	4.0	6.0	1.8
Liquid nitrogen freeze fit capability	-	yes	yes	no	yes	no	yes
Max operating temperature	°C	140	130	100	100	70	315
Min temperature	°C	-150	-150	-60		-40	
Friction coefficient (dry)	-	0.15	0.15	0.10 - 0.20	0.80	0.12 - 0.20	0.22
Class approval for dry running	-	yes	no	yes	no	no	no

Above values are typical.

Values for ACM L2 Marine are tested according to the relevant BS EN ISO standard

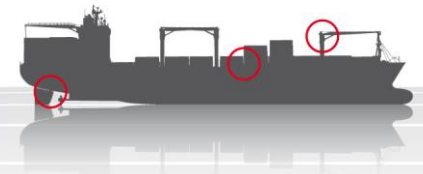
ACM L2 Marine – WL Stern Tube Approvals



ClassNK

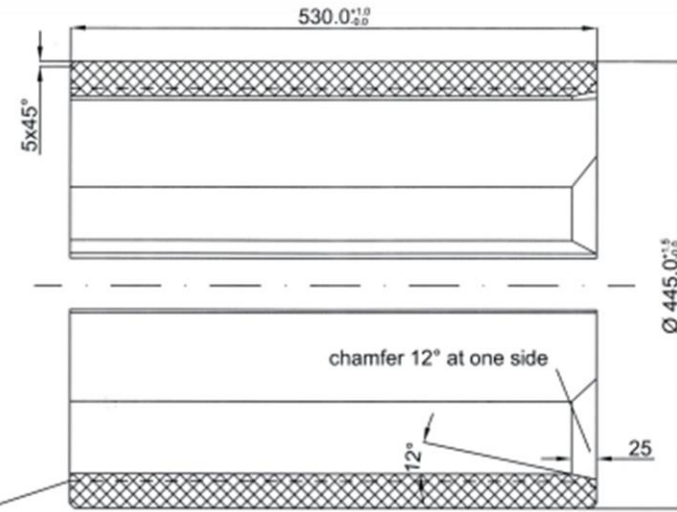
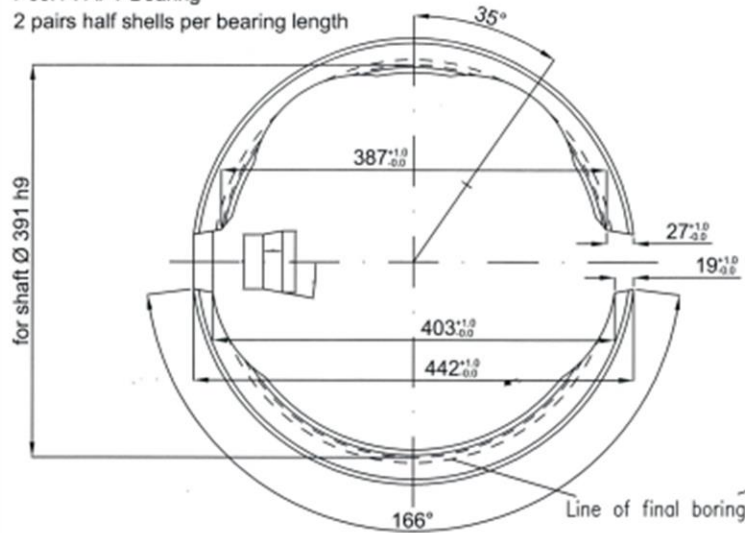


ACM L2 Marine – Design

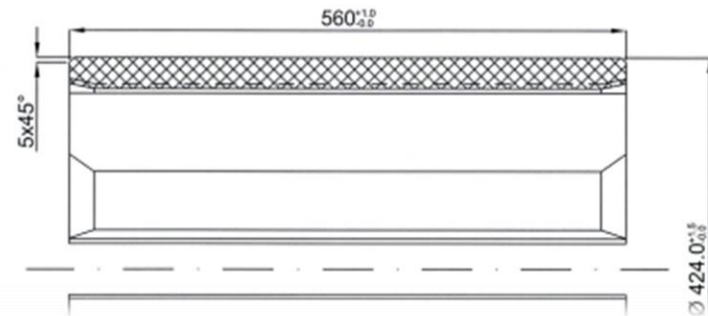
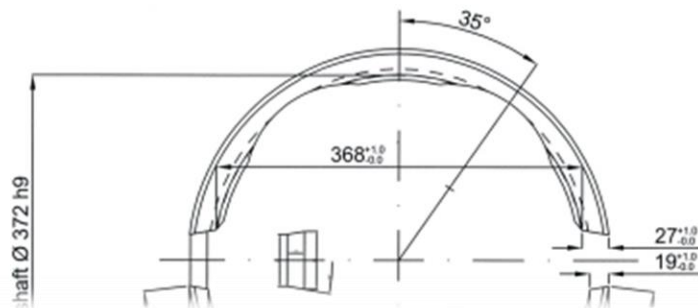


Pos. 1 : AFT Bearing

2 pairs half shells per bearing length



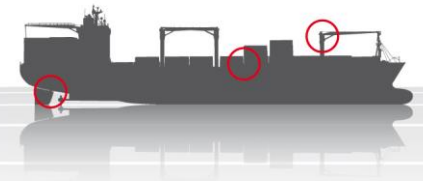
A - A



ACM L2 Marine – Tube Bearings



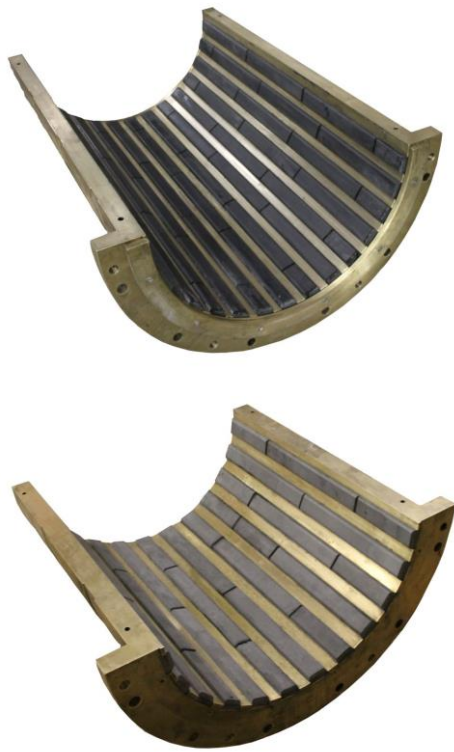
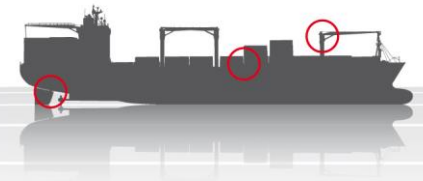
ACM L2 Marine – Shell Bearings



ACM L2 Marine – Stave Bearings

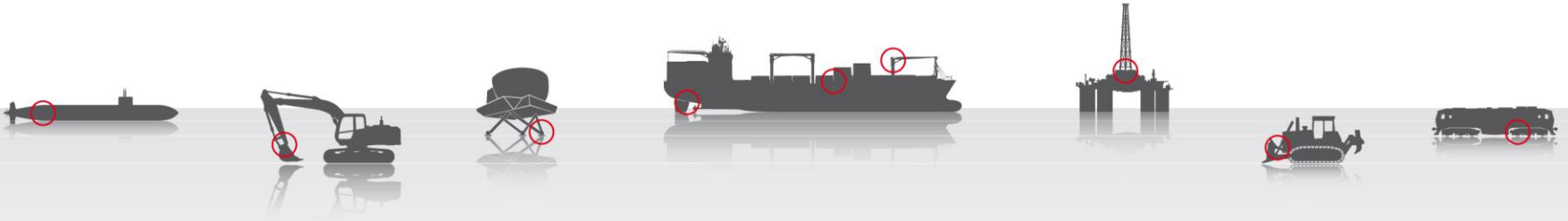


ACM L2 Marine – Stave Bearings



ACM L2 Marine – Packages

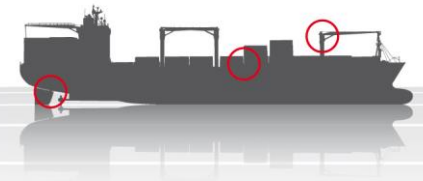




Notable References



ACM L2 Marine – References



- ▲ Mestre Simão
- ▲ 40 m ferry
- ▲ Launched 2013

- ▲ 220 mm shafts, twin screw
- ▲ 16 knots
- ▲ BV Class



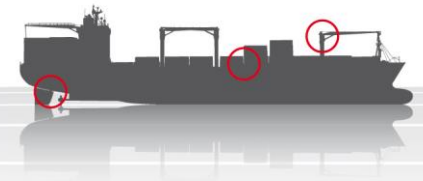
ACM L2 Marine – References



- ▲ Bravo Sapphire
- ▲ Offshore supply vessel
- ▲ Fitted 2012
- ▲ 250 mm shafts, twin screw
- ▲ 13 knots
- ▲ BV Class



ACM L2 Marine – References



- ▲ MV Guard Merlin
- ▲ Offshore tug / Supply vessel
- ▲ Fitted 2015
- ▲ 200 mm shafts, twin screw
- ▲ 48 m long, 12 knots



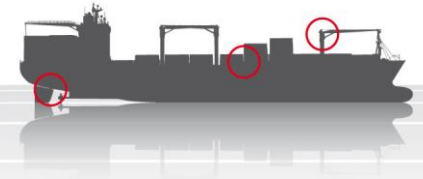
ACM L2 Marine – References



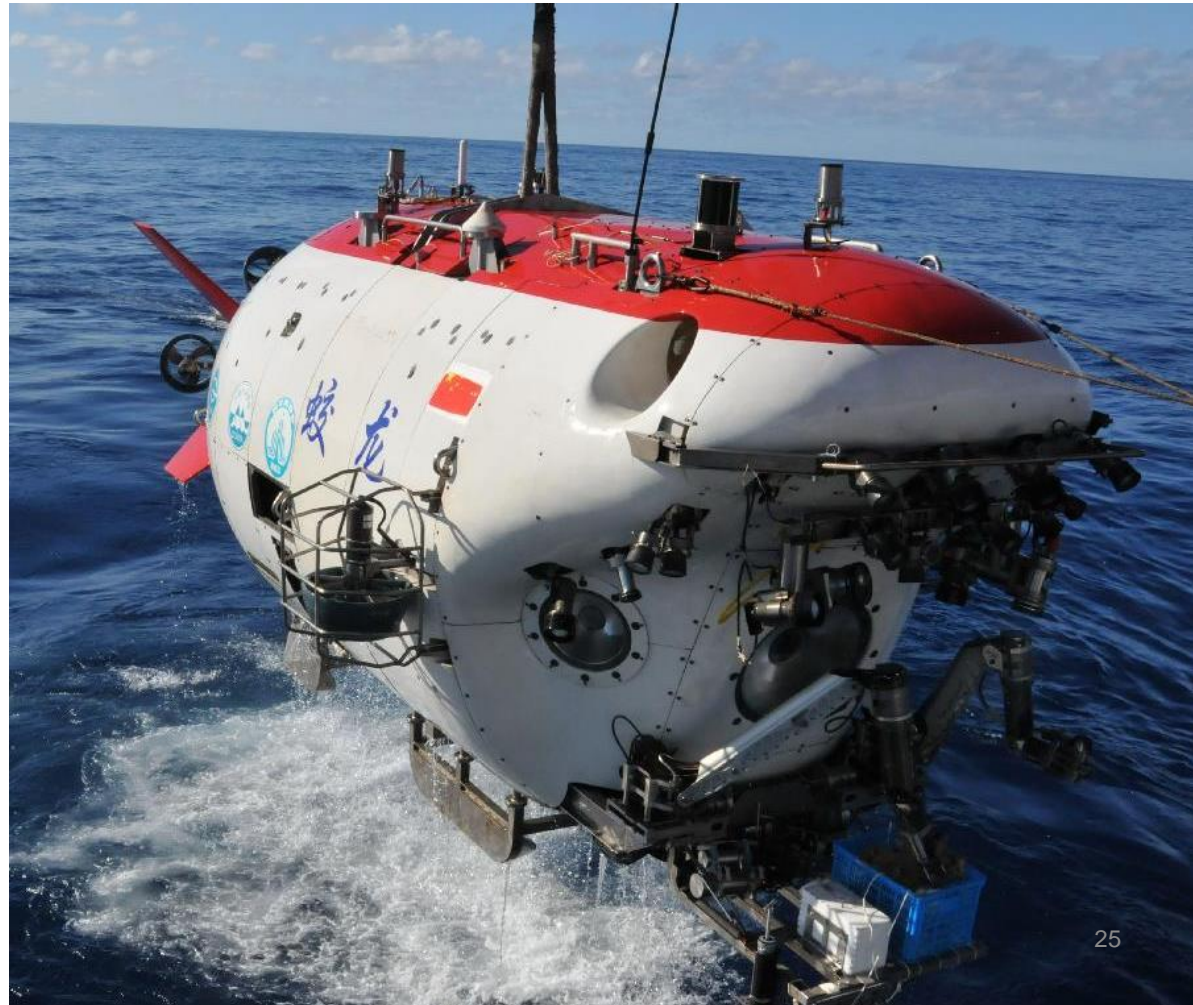
- ▲ Thunder / Lightning
- ▲ Articulated tug & barge
- ▲ Fitted 2006
- ▲ 400 mm shafts, twin screw
- ▲ 255 rpm, 12 knots



ACM L2 Marine – References



- ▲ *Jialong Hao submersible*
- ▲ *'Flood Dragon'*
- ▲ Dives to over 7,000m
- ▲ Titanium hull
- ▲ Crew of 3
- ▲ 8.2 m long
- ▲ 3 m wide
- ▲ 3.4 m high
- ▲ 22 tonnes



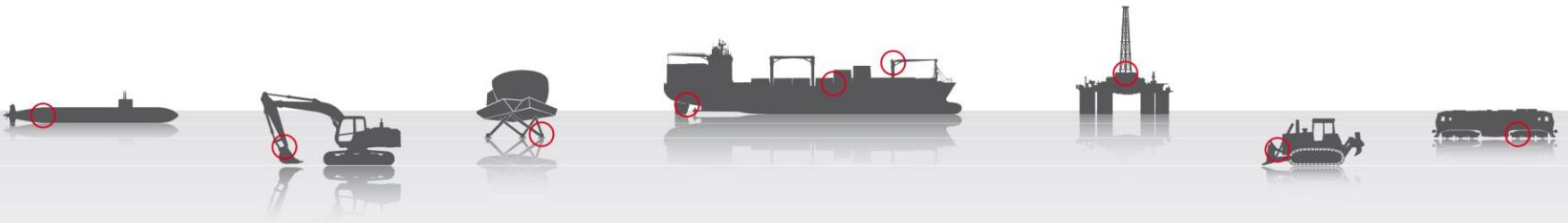
ACM L2 Marine – References



- ▲ Ocean Clipper
- ▲ Dynamic positioning drillship
- ▲ Fitted 2013
- ▲ 385 mm shafts
- ▲ ABS Class



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thank you

ACM Composites

Water Lubricated Propeller Shaft Bearings

