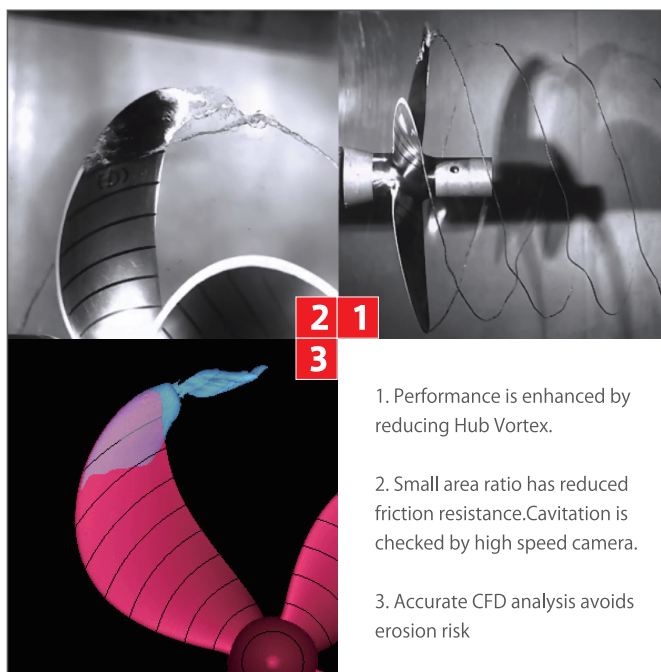


A4-400 in SMM

Nakashima Propeller exhibits a booth at SMM Hamburg exhibition at Hamburg MESSE during 4th September to 7th September!

Located at the Central Entrance of MESSE, booth No. A4-400, our booth has a full scale illustration of Fixed Pitch Propeller printed on back wall with life size Controllable Pitch type Thruster exhibited at display. Propeller will not rotate at site for safety regulations, though visitors can experience demonstration pitch controlling action at the booth.

"GPX Propeller", our latest designed propeller will be announced at SMM. This "GPX Propeller" has been developed to fulfill EEDI requirements while achieving high efficiency. For information of GPX propeller, please ask our staff at booth.



1. Performance is enhanced by reducing Hub Vortex.
2. Small area ratio has reduced friction resistance. Cavitation is checked by high speed camera.
3. Accurate CFD analysis avoids erosion risk

GPX Propeller

These 3 points were concentrated in development of GPX Propeller:

- 1) Enhanced efficiency with Non hub Vortex and Wake adopted
- 2) Reduced friction resistance by smaller area ratio
- 3) Improved cavitation performance by Tip Rake.

Optimization of these 3 factors has successfully enabled to improve both efficiency and cavitation performance. This development was achieved by remarkable progress of CFD. Nakashima Propeller has been working on fluid analysis by using CFD for a long time. With usage of mega Virtual Tank which size exceeds over 1000cores, we can now carry out large scale calculations. Cavitation simulation helped in estimating erosion risk that usually concerned to happen by reduced area ratio.

Our actual test results showed 3% improvement in comparison with our original propeller type.

Kind of vessel	Efficiency comparison with original propeller(%)		
	Propeller open efficiency	Self propulsion test	Actual (Sea trial)
Chemical tanker	+2%	+4%	+4.5%
Cement carrier	—	—	+7%

Delivery Record



Nakashima Propeller has started delivering propellers for 63,500DWT Bulk Carrier series at YangZhou Dayang Shipbuilding of Sinopacific Shipbuilding Group, China, broadly known as CROWN 63. This CROWN63 series boasts longtime seller with more than 40 vessel numbers.

Hull form was designed by Sinopacific's designhouse GreenSeas and development completed in association with HSVA. The overview of its design development is published in "HSVA Newswave 2011/1" .

< Overview of the ship >

Length overall	: 199.99 m
Bredth	: 32.26 m
Depth	: 18.50 m
Scatling Draft	: 13.30 m
Deadweight	: 63500 mt
Service Speed	: 14.50 knot

In "history" , we would like to look back on the past of Nakashima Propeller innovation.

In First round, we pick up our development of keyless propeller.

Keyless propeller is broadly adopted by current shipbuilding society.

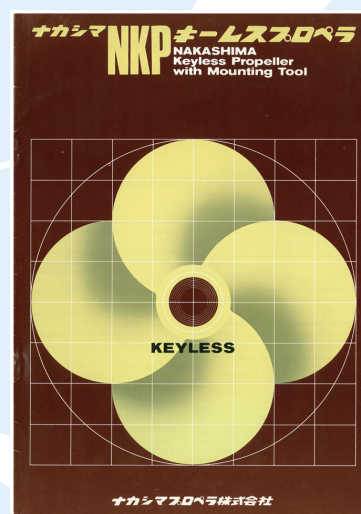
Risk of crack accidents on propeller keyway were increasingly concerned in old days. Especially the vessels with heavy weight propellers, large ME output with heavy torque variation during one rotation were concerned to be affected by shear stress.

To resolve such concern, Nakashima Propeller started developing "Keyless propeller" . The concept was not to use Key between propeller shaft and propeller boss, but alternatively to push in propeller by frictional force on propeller corn part.

In 1971, first keyless propeller was successfully installed to "YOSHUMARU" , built at Onomichi Dockyard, Japan. This keyless propellers are now adopted to most of large sized vessels worldwide.

The right picture is a catalog of the keyless propeller at that time.

History of 1971



Next Exhibition



The plan we exhibit in future is following exhibitions.

2012.10.23-26

SHIPTEC CHINA 2012 / Dalian World Expo Center

2013. 6. 4-7

NOR-SHIPING 2013 / Norges Veremesse

2013. 8. 6-8

NAVALSHORE 2013 / Sulamerica Convention Center

2013. 11.19-21

METS 2013 / Amsterdam RAI Convention Centre Europaplein

2013.12. 3-6

MARINTEC CHINA / Shanghai New International Expo Center

Look forward to welcome you at our coming exhibitions!!!