



**HUNG SHEN**  
**PROPELLER**

Since 1975

宏昇螺旋槳





International Quality System  
Certification ISO 9001:2015



#### Classification Societies



# HUNG SHEN PROPELLER

Hung Shen, headquartered in Taiwan, was founded in 1975. Our mission is to develop products and services in the marine propulsion industry that continually exceed the expectations of our valued clients. And while we have been fortunate to develop the very best in design and manufacturing technology over the years, we strive to maintain our leading position by continued research and development. It is our commitment to deliver the finest propellers available to our customers. And it is their satisfaction and success that has motivated our company for over 40 years.

Cheng-I Cheng  
President



An honor to be invited by President Tsai Ying-wen to participate in the "Indigenous Defense Submarine" Meeting and "US-Taiwan Defense Industry Conference" in the USA.



Former President Ma Ying-Jeou, Premier Mao Zhiguo, Presidential Office Secretary-General Tseng Yung-Chuan and Minister of Economy Teng Chen-Chung visited Hung Shen on August 23, 2015. President Ma Affirmed Hung Shen's research and innovative involvement in many "Indigenous Defense Ship" projects.



- Contribution in Shipbuilding
- Contribution in National Defense
- National Enterprise Award

- Superior Attainments
- The 70th Golden Merchant Award



In 2003, Hung Shen expanded into Kunshan, China with two larger plants in order to satisfy the growing demand for our product. Company-wide, a total of 160 experienced staff are dedicated to providing the very best in products and services to our customers. Hung Shen has a total of three plants, headquartered in Taiwan Pingdong. The company's Quality System guarantees certification to ISO 9001:2015 and international standards certifications ABS, BV, CCS, CR, DNV, GL, KR, LR, NK, RINA and RS. With decades of manufacturing experience and engineering, Hung Shen can design and build the very best propeller to meet the customer's needs. In addition to propellers, Hung Shen engineers and manufactures shafting systems for various types of vessels, resulting in the most effective propulsion solution available.

Distribution in USA began in partnership with Rolls-Royce, where thousands of successful applications were delivered to a very broad segment of the commercial work boat market. And in 2010, HS Marine Propulsion was formed in Ocean Springs, Mississippi to carry out the sales and marketing of our products in North and South America. And in 2020, the completion of our newest manufacturing plant will enable even greater capacity well into the future.

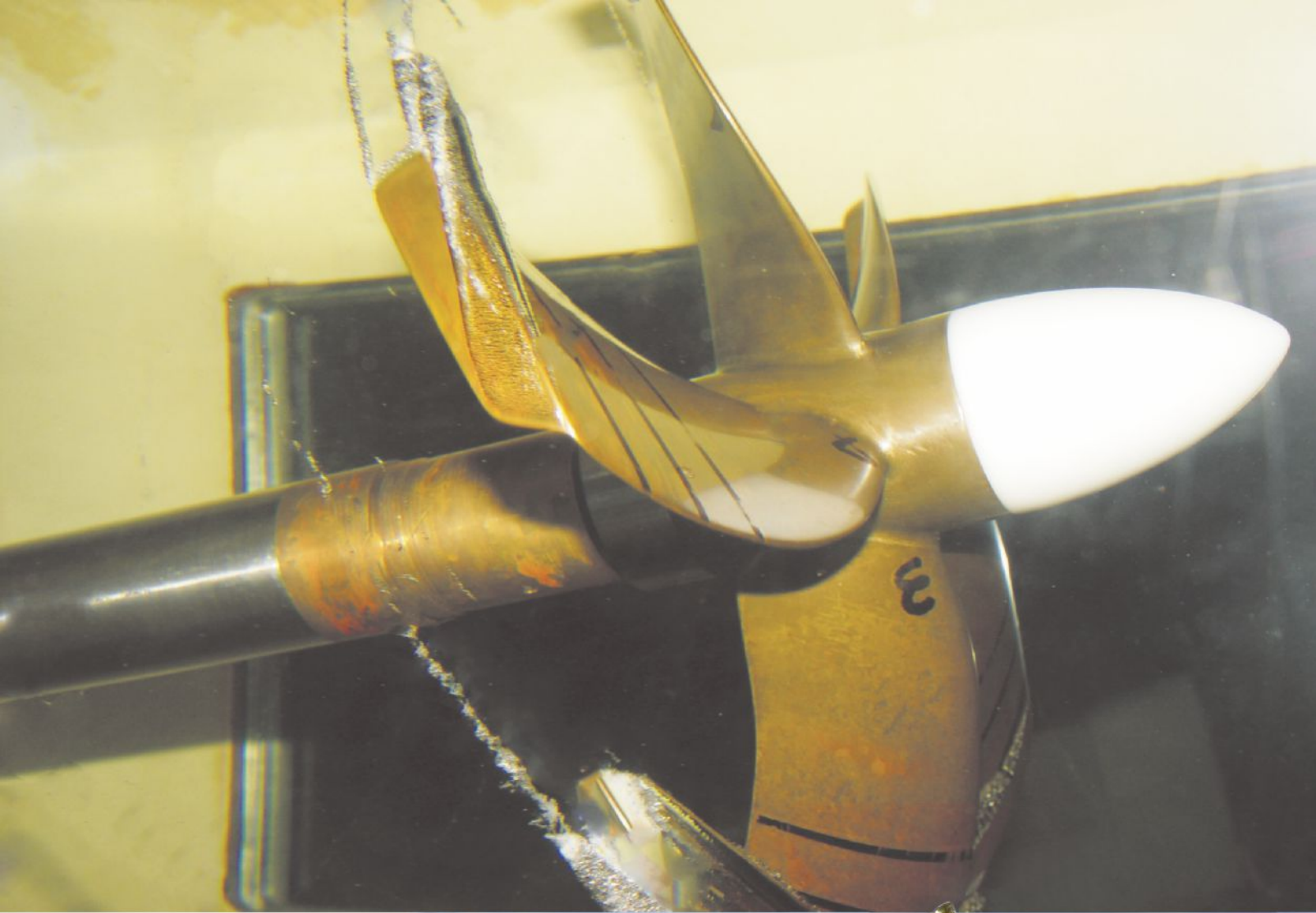


-Vice President Hsiao summoned Mr. Cheng to the Presidential Palace in 2011 for his contribution to the glory of the nation.

-Department of Defense Vice Minister Mr. Lee ( Former Navy Commander, Today is the Chief of General Staff) visited Hung Shen Propeller on November 21, 2016 to praise how Hung Shen has been standing in Taiwan government's new policy of Indigenous Defense ships.

-Department of Defense Vice Minister Mr. Chen ( Former Navy Commander ) visited Hung Shen Propeller on December 15, 2015. Hung Shen participation in design and manufacture of propulsion systems for 11 Warships and 30 Missile Boats for Taiwan Navy.





## Research & Development

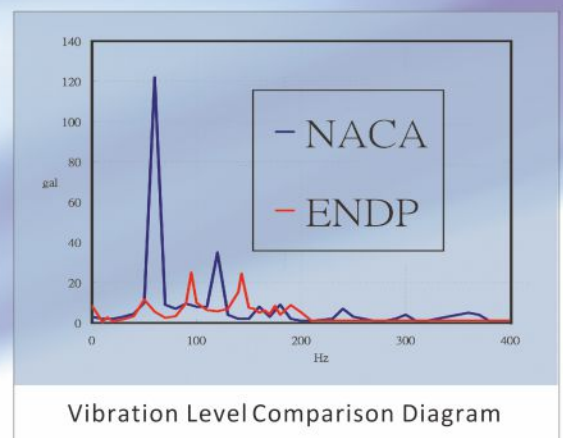
The Hung Shen New Foil Section Propeller is the product of 10 years R and D. We began the development of the ENDP propeller in cooperation with USDDC and NTOU in 2010. With patent pending, we are into the 10<sup>th</sup> generation of this technology. Each propeller is custom designed. More effective at reducing noise, vibration, and cavitation than the NACA or KCA section, it is very effective at reducing the pressure peak near the leading edge and delaying the inception of face cavitation on high-speed vessels with steeply inclined shafts. The end plate is similar to a winglet on an airplane reducing the cross flow.



5X-TYPE

### New 10th Generation X-type Propeller :

1. Increases the effective diameter by about 5%. Converts tip vortex pressure into thrust.
2. Reduces exciting forces and vibration levels can be reduced up to 50%.
3. Increases outer radius thrust and increases suction face pressure help to reduce sheeting cavitation.
4. Lower DAR with higher overall efficiency.





## CFD - Computer Fluid Dynamic

Hung Shen uses the latest CFD analysis tools and high order panel method software to develop propeller designs and analyze ship hulls and appendage configurations. We use Fine/Marine multiphysics CFD software which incorporates the latest algorithms for cavitation, turbulence modeling and free surface capturing. We have run full-scale vessel simulations to determine resistance and propulsion parameters, extract the 3D wake field for propeller design and determine proper neutral angles for struts and control surfaces. for high-speed vessels and thruster tunnel inlet we can customize a propeller solution for your vessel or provide consulting services to analyze problems such as noise, vibration, power, thrust or severe cavitation.



### Hung Shen R&D Team



Mr. Wu  
HS Vice President  
National Cheng Kung University  
32 Years experience in  
Propeller and Shaft Design  
Shaft Vibration



Professor Kehr  
NTU  
Ph.D Berlin Institute of  
Tech., German  
Prop. Design  
Prop. Cavitation Tunnel Test



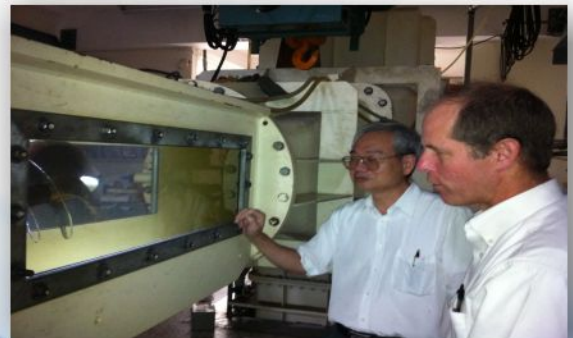
Mr. Chang  
Design Manager  
NTU  
Prop. Design  
Fluid Dynamic ME.  
LCT Laboratory  
Under Water Vehicle  
Design & Experiment



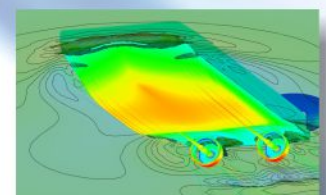
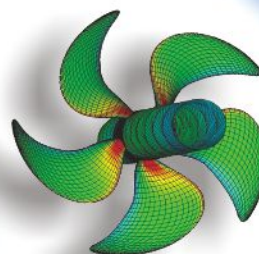
Mr. John Eckart  
HSMP Principal Engineer  
University of Michigan  
Prop. Design  
Prop. Cavitation, Vibration,  
Computational Fluid Dynamic



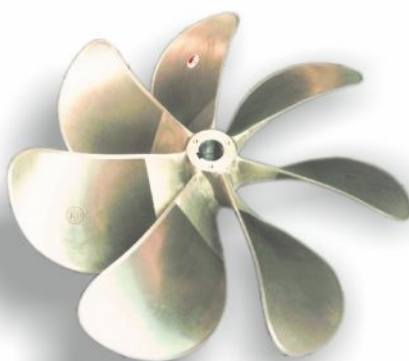
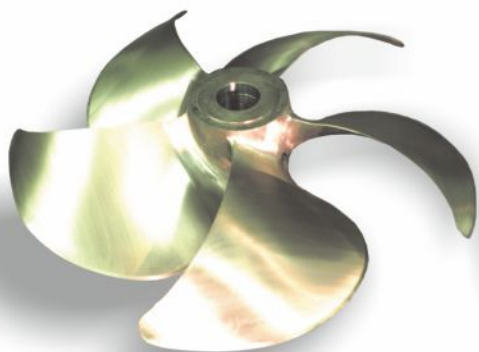
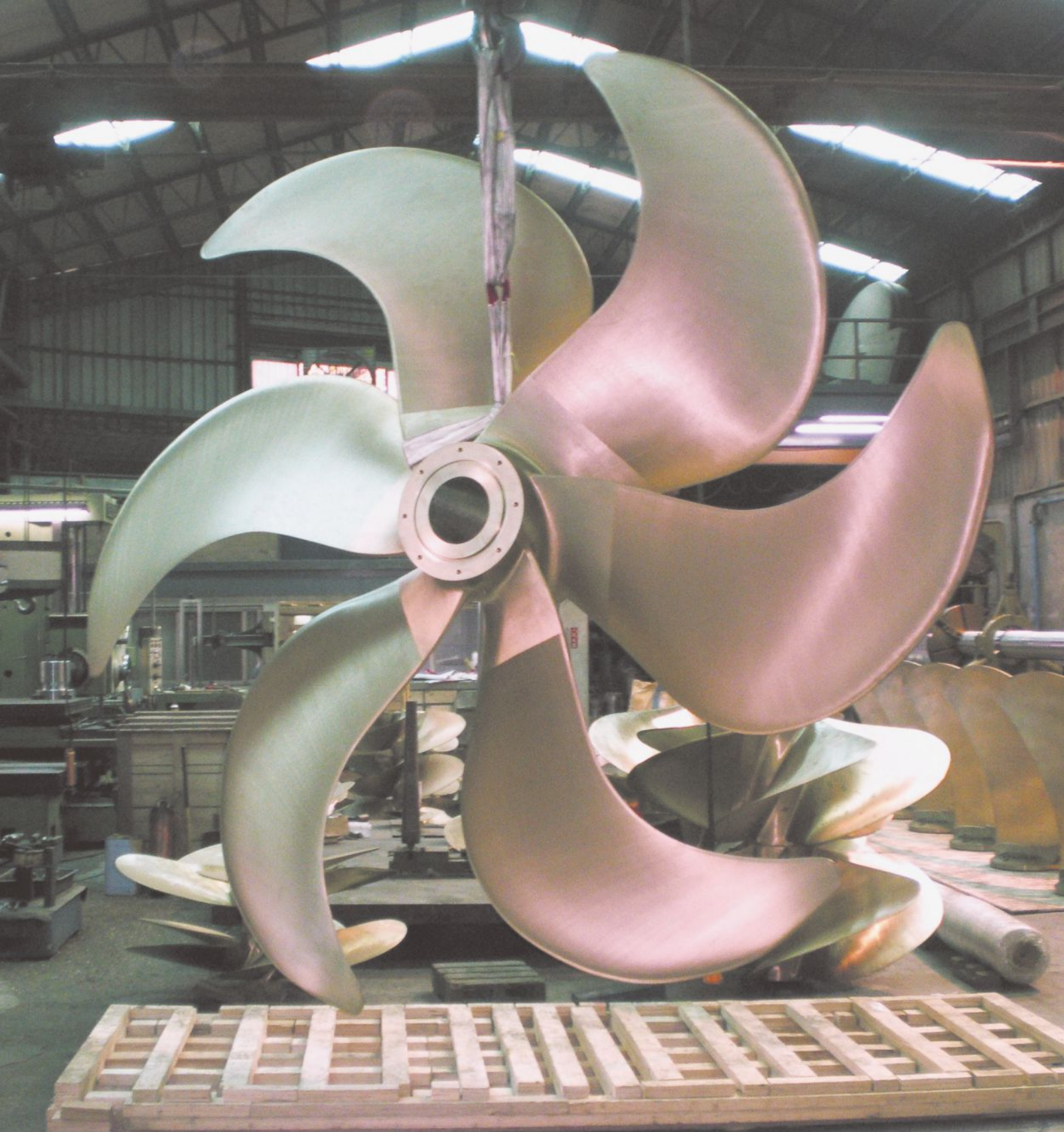
Professor Hsin  
NTU  
Ph.D M.I.T. USA  
Prop. Dynamic Theory  
Prop. Cavitation Tunnel Test  
Fluid Dynamic



-FLUCOME visited Hung Shen Propeller in 2011









# Fixed Pitch Propeller

Hung Shen's world-class design and manufacturing capability of Fixed Pitch Propellers (FPP) is recognized in every corner of the world. And our size range of up to 6 meters in diameter provides outstanding fuel economy, low vibration, low noise and cavitation for just about any vessel in both commercial and military applications. Work boats, ferries, military patrol craft, yachts and other vessel types have relied on the performance and durability of Hung Shen propellers for decades.





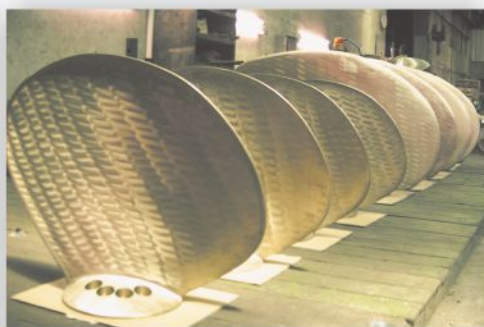


## Controllable Pitch Propeller

Hung Shen designs and manufactures controllable pitch propellers (CPP) up to 6 meters in diameter. For many years, we have maintained and guaranteed the efficiency, reliability, minimum noise and vibration levels in order to attain ISO Class S tolerance. These propellers are the ideal choice for commercial vessel with large gear ratios, offering a significant advantage in maneuverability under varying conditions and loads such as trawlers and tugs. The Prairie Air System CPP Blade were specifically made to reduce the hydrodynamic noise.

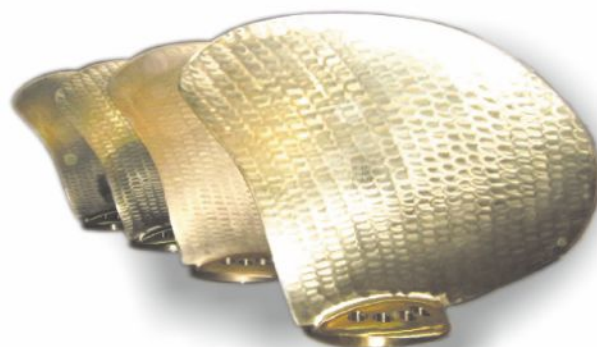


Stainless Steel CF-3





# HIGH PRECISION

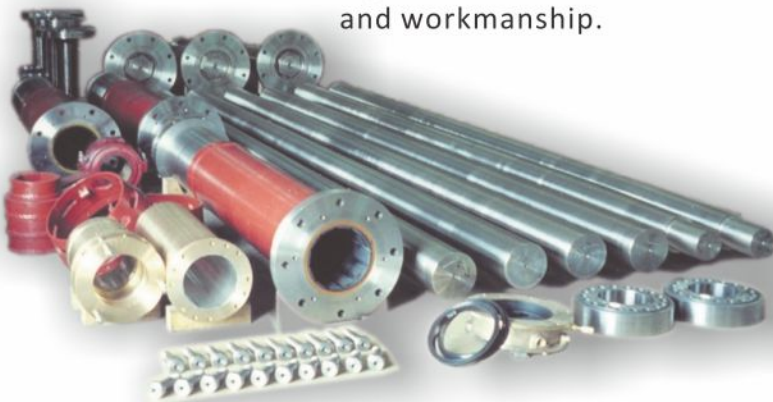






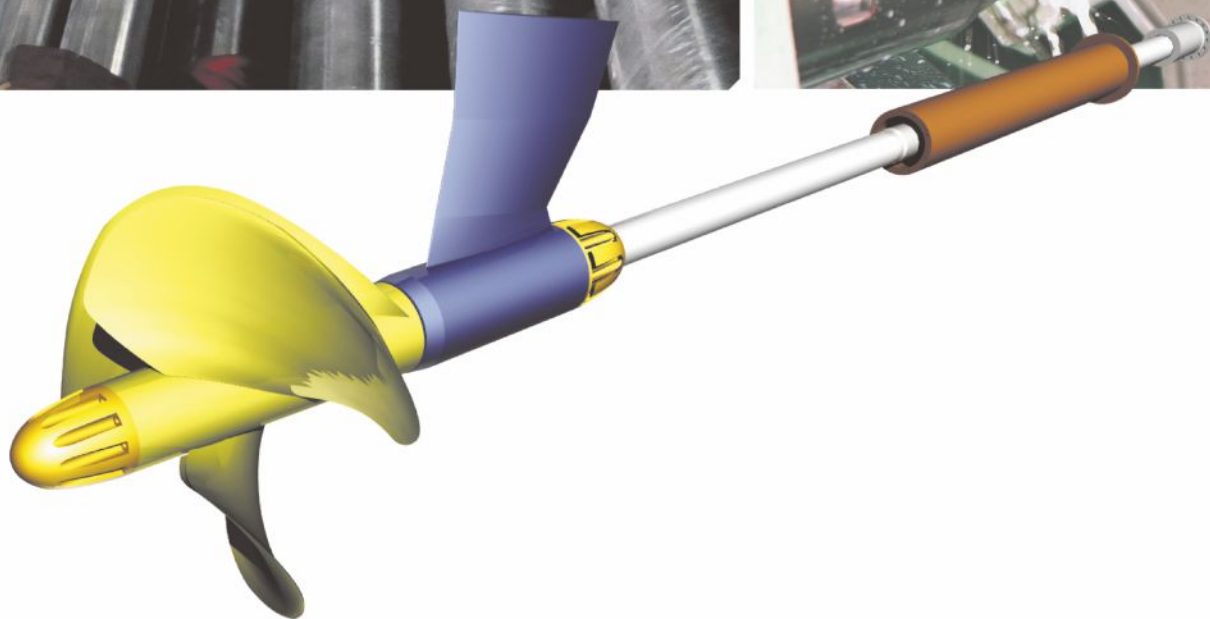
## Shafting System

Hung Shen designs and manufactures a complete set of under-water components for many types of vessels. From the propellers, shafts, bearings, stern tubes, brackets, rudders and seals, we can develop a comprehensive package for your vessel, providing the very best in performance and value. From the inception to launch, we work with you to develop the optimum propulsion solution to meet the your needs. And as the sole distributor of Aquashaft material in China and Taiwan, we assured the very best in materials and workmanship.



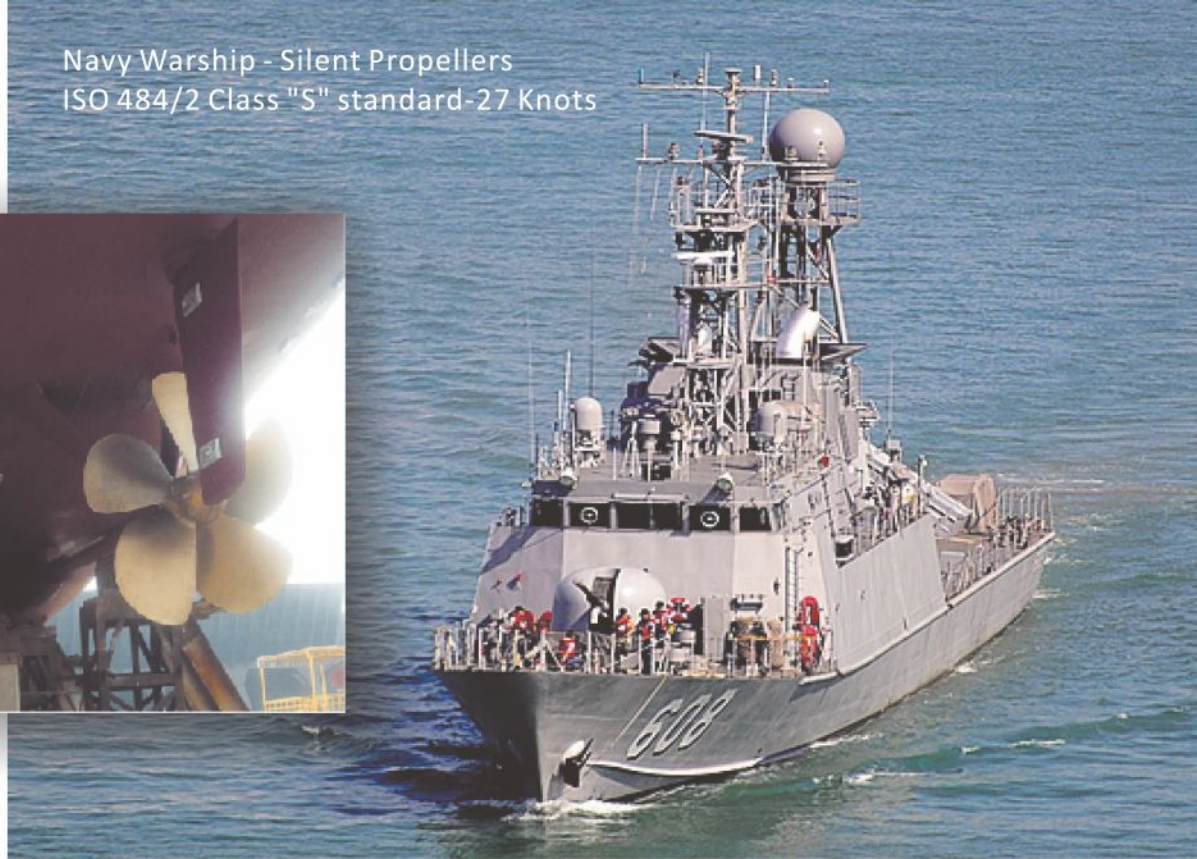
**AquaShaft®**  
STAINLESS STEEL FOR BOAT SHAFTING







Navy Warship - Silent Propellers  
ISO 484/2 Class "S" standard-27 Knots



## National Defense

Hung Shen has years of experience supplying propellers to military and Naval vessels such as Patrol Vessels, Guided Missile Ships, Vedette, and the Revenue Cutter Class which require exacting tolerances to reduce vibration and noise while maximizing efficiency and durability.

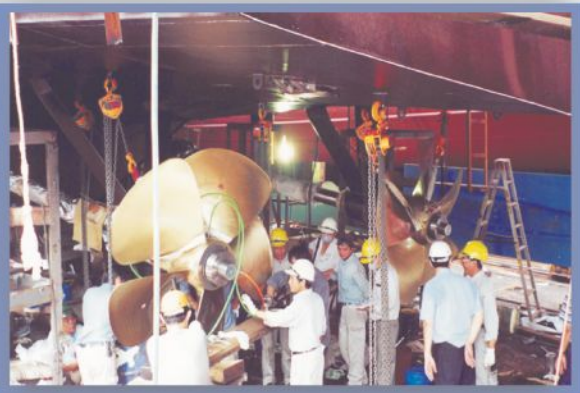
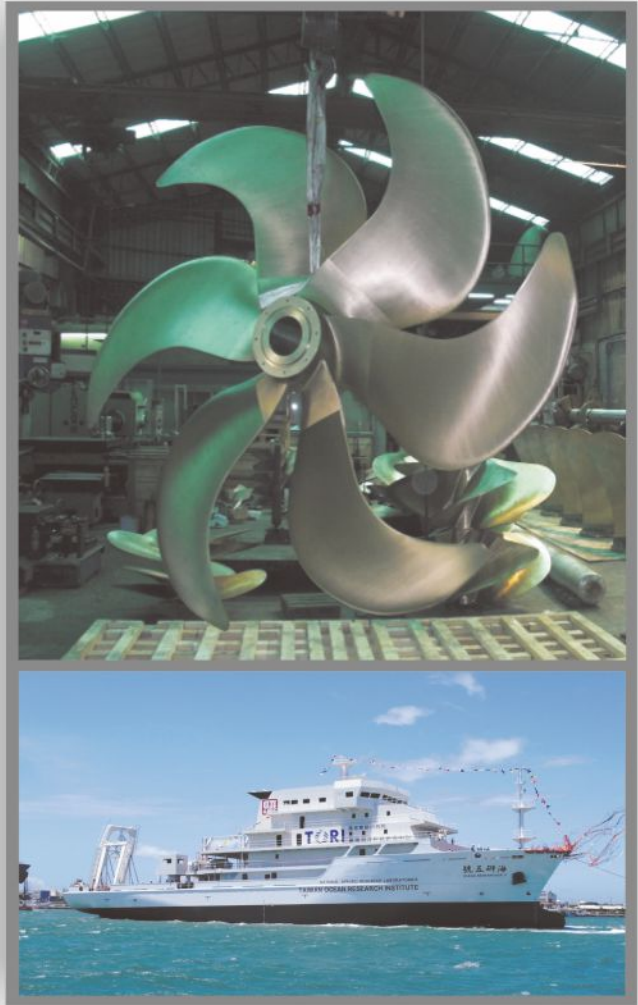


30 Navy Missile Boats FACG - New Foil Section Propeller  
Low Vibration and Noise - 35 Knots



## Research Vessel

Hung Shen supplied super silent propellers for 2700 ton Ocean Research 5. Launched in June 2011, she is operated by National Science Council and Taiwan Ocean Research Institute. A fully electrical propulsion system keeps her silent completely satisfies the research vessel standards ICES-209. Noise testing was done by USA NEC (Noise Control Engineering Inc).



Taiwan Navy Twin Screw 700 ton offshore patrol vessels use the New Foil Section propeller to prevent cavitation, minimize vibration and noise. Max. Speed 31 Knots.



400 ton Vietnam Navy vessels reach 37 knots with low vibration and low noise using our New Foil Section propeller.





## NEW ENDP Propeller

Our latest advanced technology, the ENDP propeller greatly reduced the vibration levels and noise up to 40 - 60 % for most applications. The optimized silent propeller is most frequently used on luxury yachts and high speed vessels. Many successful applications have been reported and the maximum speed achieved is 39 knots on high speed vessels. This technology is being developed further for other applications and will be a reliable option for speed, thrust and comfort for custom, high-speed vessels.



## Custom Propellers

Custom propellers are designed for specific vessel and engine combinations, allowing the vessels to achieve their optimum performance. Both the lifting line theory and the lifting surface theory are used to design propellers with higher performance requirements.

For vessels with maximum speeds over 25 knots, the custom propeller design provides significant benefits in many areas such as efficiency, vibration/noise, and cavitation erosion. Custom propellers are designed first by using the propeller lifting line theory to optimize performance in accordance with customer's requirements; including the vessel speed, horsepower, effective horsepower curve, propeller diameter, number of blades, etc.

This lifting line theory is also used to develop the optimum expanded area ratio and chord length distribution to meet the cavitation requirements. Finally, a lifting surface theory is used to obtain camber and pitch distribution. Skew and blade thickness are also optimized in the design for maximum performance.



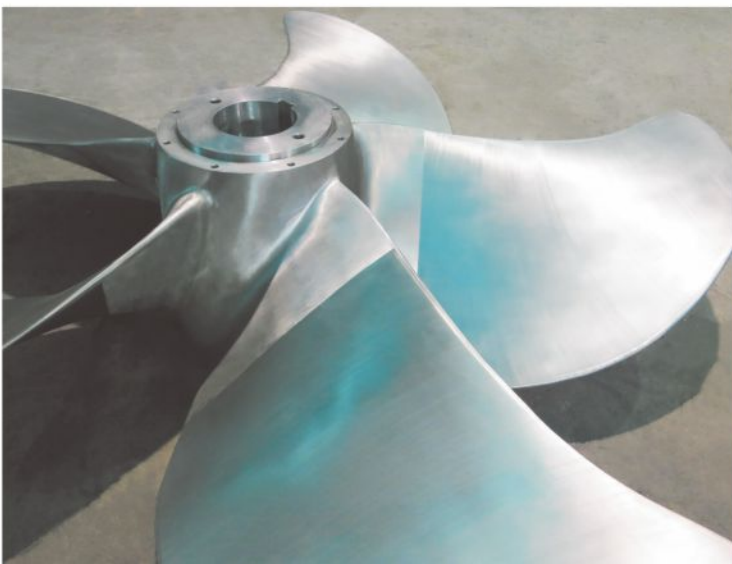




## Fish Vessels and Workboats

Careful selection of propeller geometries allows for maximum efficiency in Deep Sea Fishing Vessels when either half loaded or fully loaded. Hung Shen offers a robust collection of propellers in our standard lineup. However, standard series propellers may not be ideal for some vessels. With today's high output engines, shallow draft considerations among many other challenges, Hung Shen is ready to engineer and build the right solution for your vessel.

This design process is carried out using a specialized computer program which can simulate the vessel's performance using different reduction gear ratios and propellers. We can provide guidance to help select the right combination of power and RPM along with the propeller required to provide optimal performance.







**HUNG SHEN  
PROPELLER**

**HUNG SHEN PROPELLER CO., LTD. ( HEADQUARTER )**

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Prop. Types &  
Order Sheet