镇江同舟螺旋桨有限公司

ZHENJIANG TONGZHOU PROPELLER CO.,LTD.

船用水动力节能整体解决方案

Marine Hydrodynamic Optimization Energy Saving Solutions

From Hope to Achieving Reality

TONG ZHOU
TONGZHOU PROPELLER

Tongzhou was founded in 2005, located at No.7 Siping Road, Dingmao Economic Development Zone, Zhenjiang

Total Area
57,700㎡

Fixed Pitch Propeller
10000T

Number of employees
270+

Fixed Pitch Propeller
Maximum Diameter **11m**

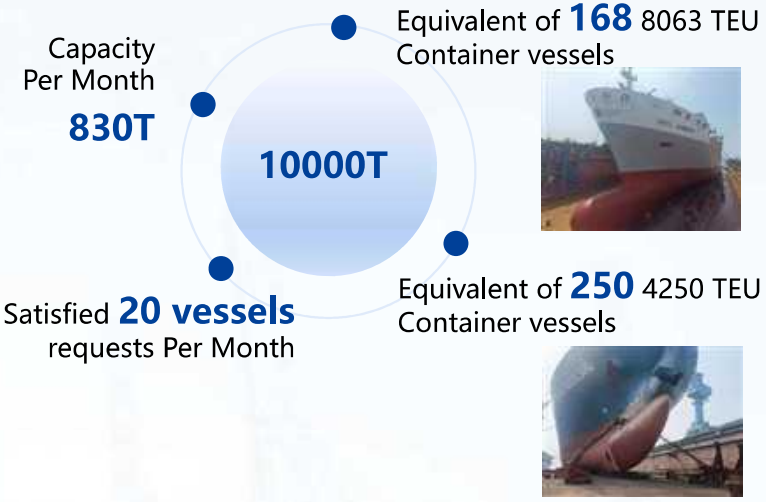
Maximum weight **100T**

- Market size ranks among the top in the world
- Aligned with corporate ethics emphasizing responsibility towards users and society, we hold ourselves accountable and aim to create maximum value for our customers.
- Tongzhou has provided marine propulsion systems and marine energy-saving devices for nearly 10,000 vessels worldwide
- Global leading professional supplier of marine hydrodynamic energy-saving solutions

Capacity and revenue

TONG ZHOU
TONGZHOU PROPELLER

2024	Capacity **6500T**		Revenue **800 Million**
2025	Estimated Capacity **10000T**		Target Revenue **1.2 Billion**



Qualification

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Patent Certificate

Class Approval

TONG ZHOU
TONGZHOU PROPELLER

CCS CHINA CLASSIFICATION SOCIETY 中国船级社

ABS

Lloyd's Register

BUREAU VERITAS

IRS

DNV·GL

ClassNK

RINA

KR KOREAN REGISTER

Tongzhou solutions under EEXI/CII goals

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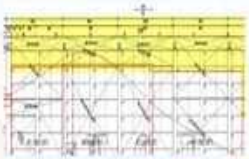
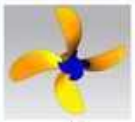
1.Ship Type Data Input



2. Energy-saving proposal

3. Selection of Energy-saving Devices



4. Model Tank Test/CFD Verification

5. Drawing Design for Class Approval

2-3 DAYS → 7 DAYS → 7 DAYS → 60 DAYS → 30-40 DAYS

Whole Procedure Period 180 DAYS

6. TVC / SAC / WVC

- **Torsional vibration** — Propulsion System Analysis
- **Shafting Alignment** — Propulsion System Analysis
- **Whirling Vibration** — Propulsion System Analysis

7. Manufacture

FOUNDRY

MACHINING

DRINDING

7 DAYS → 90 DAYS → 2-3 DAYS → 1 DAY → 1-2 DAYS

8. Blue Fitting

9. On-Site Installation Guidance

10. Jack-up Test

Change For the Changing market

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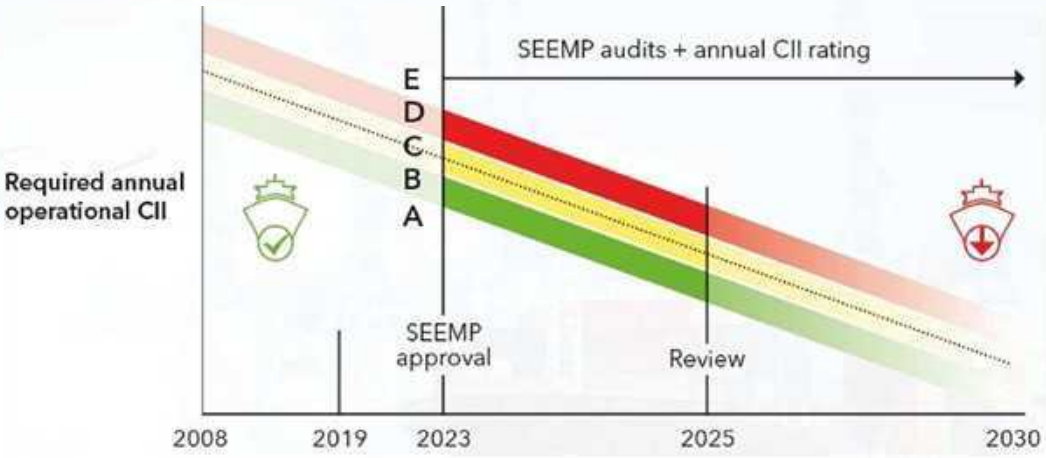
With the implementation of the IMO greenhouse gas Strategy:

Starting from January 2023, all ships will be required to calculate their Existing Ship Energy Efficiency Index (EEXI) to measure their energy efficiency. They will also need to begin collecting data to report their annual Operational Carbon Intensity Index (CII) and CII rating.

Following the enforcement of EEXI regulations, ships that fail to meet the requirements can achieve the necessary EEXI value by restricting their main engine power, utilizing energy-saving devices, or transitioning to alternative fuels. From both a cost and efficiency perspective, installing propulsion energy-saving devices (ESD) has proven to be one of the most appropriate solutions.

The replacement of efficient propellers and the installation of energy-saving devices directly impact the calculation of EEXI and CII (resulting in reduced fuel consumption and CO2 emissions), thereby enhancing ratings and assisting shipping companies in achieving compliance while maintaining competitiveness in their operations.



Change For the Green market

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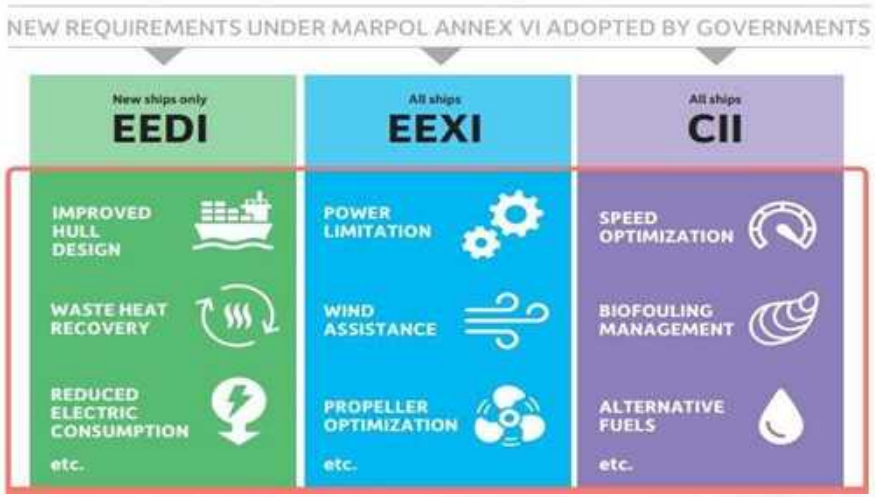
Through long-term cooperation with the China Ship Scientific Research Center (702 Institute), MMG, Stone Marine, and other world-renowned institutions, Tongzhou integrates global advantageous resources and introduces advanced hydraulic energy-saving technology. Tongzhou provides global customers with EEXI consulting technical services, energy-saving program evaluation, model test verification, main engine torsional vibration calculation, production, installation, sea trial verification, and other full-process marine hydraulic energy-saving upgrade services.

Tongzhou has provided systematic solutions for energy conservation and emission reduction of operating ships for MAERSK, MSC, CMA CGM, SEASPAN, DANAOS, and other well-known shipping companies worldwide. The company has saved about 480,000 tons of fuel for customers, saved about 276 million US dollars in fuel costs, and reduced carbon emissions by about 242,000 tons.



Fuel saving 480k Tons | Fuel cost saving 276million USD | carbon emission Reduction: 242k Tons

It provides strong program support for the green transformation of shipping and has become a leader in the field of marine propulsion system hydrodynamic energy-saving support.

Tongzhou solutions under EEXI/CII goals

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01 Improve Ship Propulsion Systems

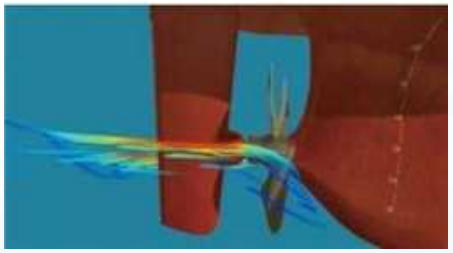
- We can improve the ship propulsion system according to the ship design requirements
- get the match of main engine - shafting - propeller
- Enhance the promotion of operating ships in the international shipping market

02 Replace With High-Efficiency Propellers

Reoptimize the propeller selection (including counter rotating propeller, guide propeller, fixed pitch propeller, controllable pitch propeller, etc.)

The propulsion efficiency can be increased by 3% - 8% by installing Tongzhou high-efficiency propeller

- Improve efficiency and reduce cavitation
- Suppression of tip flow
- Best match with the stern of the hull
- Comprehensive trade-offs of efficiency-vibration-cavitation



03 Add Ship Energy-Saving Devices

By cooperating with 702 scientific research institutes and other institutes, installing ship energy-saving devices can effectively help improve the comprehensive efficiency of ships by 3% - 8%

Pre-Shrouded Vanes

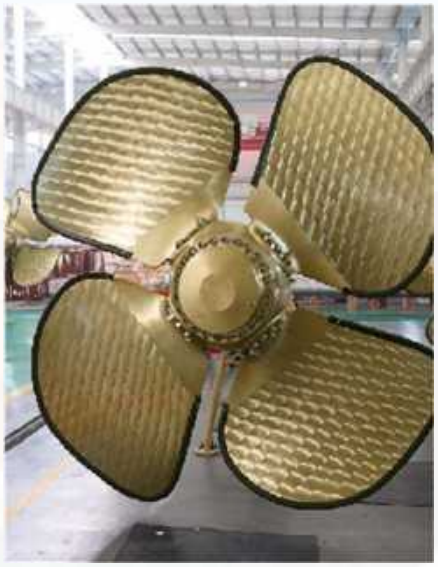
Reduce rotational loss in propeller slipstream
Improve propeller efficiency by equalizing inflow
Increasing the flow velocity towards the propeller
Suppress the flow separation near the stern

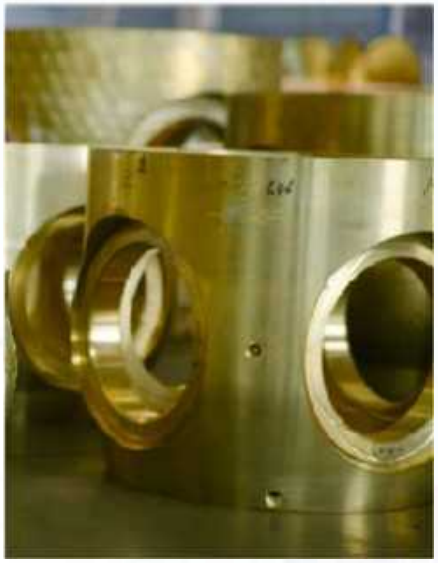
Propeller Boss Cap Fin

Effective alignment of propeller wake and dispersion of hub vortex
Effectively reduce propeller torque
Increase propeller thrust

Fixed Pitch Propeller (FPP)

Controllable Pitch Propeller (CPP)






Energy Saving Devices

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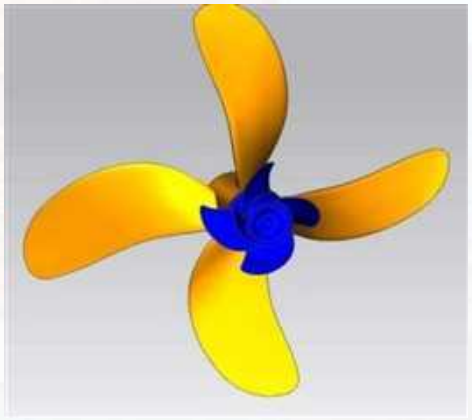
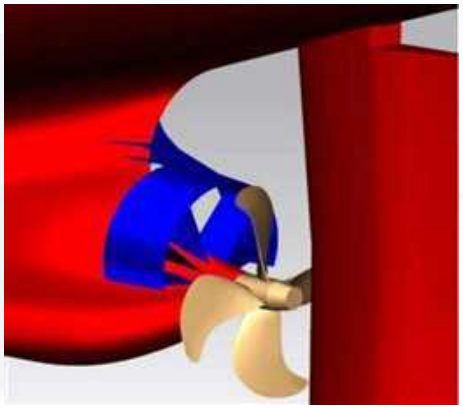
HVAF
(Hub Vortex Absorbed Fins)



PSV
(Pre-Shrouded Vanes)



EEXI/CII Retrofit Cases

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

13100 TEU Container Vessel

High Efficiency Propeller+HVAF

Item	Before	After
Number of blades	5	5
AE/A0	0.654	0.57
Dia.	9,300mm	9,400mm
W	83.975T	65.3T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 4.4%.

Annual fuel cost saving: $ 517,440 USD

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

156000 DWT Oil Tanker

High Efficiency Propeller + HVAF + PSV

Item	Before	After
Number of blades	4	4
AE/A0	0.522	0.40
Dia.	8.2mm	8.2mm
W	38T	32T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 9.5 %.

Annual fuel cost saving: $ 752,400USD

Annual fuel saving: 1254T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

147000 m3 LNG Carrier

High Efficiency Propeller + HVAF + PSV

Item	Before	After
Number of blades	4	4
AE/A0	0.592	0.46
Dia.	8.8mm	9.1mm
W	53.1T	47.74T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 10.0 %.

Annual fuel cost saving: $ 900,000USD

Annual fuel saving: 1500 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

180000 DWT Bulk Carrier

High Efficiency Propeller + HVAF + PSV

Item	Before	After
Number of blades	4	4
AE/A0	0.51	0.38
Dia.	8.2mm	8.2mm
W	41.33T	30.92T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 9.3 %.

Annual fuel cost saving: $ 429,660 USD

Annual fuel saving: 782.4T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

8500 TEU Container Vessel

High Efficiency Propeller+HVAF+PSV

Item	After
Number of blades	5
AE/A0	0.7
Dia.	9,100mm
W	62.9T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 9.3%.

Annual fuel cost saving: $ 1,090,650 USD

Annual fuel saving: 1983 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

8063 TEU Container Vessel

High Efficiency Propeller+HVAF+PSV

Item	Before	After
Number of blades	6	5
AE/A0	0.884	0.6
Dia.	8,800mm	8,800mm
W	85.20T	56.3T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 8.9%.

Annual fuel cost saving: $ 1,292,280 USD

Annual fuel saving: 2450 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

7500 TEU Container Vessel

High Efficiency Propeller+HVAF+PSV

Item	Before	After
Number of blades	6	5
AE/A0	0.9398	0.6
Dia.	8,900mm	9,000mm
W	102.46T	66.8T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about11.3%.

Annual fuel cost saving: $ 1,939,080 USD

年节省燃油Annual fuel saving: 3526 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

6900 TEU Container Vessel

(HVAF+PSV+Modified Propeller)

Item	After
Number of blades	5
AE/A0	0.55
Dia.	9,000mm
W	66.9T
According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 6.4%.	
Annual fuel cost saving: $ 844,800 USD	
Annual fuel saving: 1536 T	

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

6500 TEU Container Vessel

High Efficiency Propeller+HVAF+PSV

Item	Before	After
Number of blades	6	5
AE/A0	0.924	0.58
Dia.	8,400mm	8,500mm
W	88.4T	45.9T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 9.8%.

Annual fuel cost saving: $ 1,490,120 USD

Annual fuel saving: 2980 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

6300 TEU Container Vessel

High Efficiency Propeller+HVAF+PSV

Item	Before	After
Number of blades	6	5
AE/A0	0.951	0.60
Dia.	9,000mm	9,100mm
W	95.00T	54.44T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 9.3%.

Annual fuel cost saving: $ 1,104,840 USD

Annual fuel saving: 2008 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

5888 TEU Container Vessel

High Efficiency Propeller+HVAF+PSV

Item	Before	After
Number of blades	6	5
AE/A0	0.8645	0.56
Dia.	9,000mm	9,000mm
W	88.4T	59.6T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 9.4%.

Annual fuel cost saving: $ 1,240,800 USD

Annual fuel saving: 2256 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

5300 TEU Container Vessel

High Efficiency Propeller+HVAF+PSV

Item	Before	After
Number of blades	5	5
AE/A0	0.788	0.64
Dia.	8,200mm	8,200mm
W	67.2T	48.7T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 7.9%.

Annual fuel cost saving: $ 1,137,600 USD

Annual fuel saving: 1896 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

4578 TEU Container Vessel

High Efficiency Propeller+HVAF+PSV

Item	Before	After
Number of blades	6	5
AE/A0	0.792	0.56
Dia.	7,800mm	8,100mm
W	52.58T	37.80T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 8.10%.

Annual fuel cost saving: $ 823,908 USD

年节省燃油Annual fuel saving: 2100 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

4300 TEU Container Vessel

High Efficiency Propeller+HVAF+PSV

Item	Before	After
Number of blades	5	5
AE/A0	0.8454	0.6
Dia.	7,800mm	8,000mm
W	60.4T	41.1T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 9.5%.

Annual fuel cost saving: $ 1,209,000 USD

Annual fuel saving: 2015 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

4000 TEU Container Vessel

High Efficiency Propeller+HVAF

Item	Before	After
Number of blades	6	5
AE/A0	0.781	0.55
Dia.	8100mm	8600mm
W	61.8T	46.156T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 7.4 %.

Annual fuel cost saving: $ 752,706 USD

年节省燃油Annual fuel saving: 1,918 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

3400 TEU Container Vessel

High Efficiency Propeller+HVAF+PSV

Item	Before	After
Number of blades	5	5
AE/A0	0.782	0.56
Dia.	7700 mm	7750 mm
W	52.251 T	36.5 T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 7.8 %.

Annual fuel cost saving: $ 561,600 USD

年节省燃油Annual fuel saving: 936 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

3400 TEU Container Vessel

HVAF+PSV+Modified Propeller

Item	After
Number of blades	5
AE/A0	0.778
Dia.	7,700mm
W	52.096T
According to the water tank test report, the comprehensive energy-saving effect under design conditions is about4.6%.	
Annual fuel cost saving: $ 627,550 USD	
Annual fuel saving: 1141 T	

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

3100 TEU Container Vessel

High Efficiency Propeller+HVAF

Item	Before	After
Number of blades	5	5
AE/A0	0.782	0.55
Dia.	7,700mm	7,700mm
W	52.51T	33.9T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 8.9%.

Annual fuel cost saving: $ 873,600 USD

Annual fuel saving: 1456 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

2500 TEU Container Vessel

High Efficiency Propeller+HVAF

Item	Before	After
Number of blades	5	5
AE/A0	0.79	0.63
Dia.	6,800mm	6,800mm
W	31.28T	20.8T

According to the water tank test report, the comprehensive energy-saving effect under design conditions is about 8%.

Annual fuel cost saving: $ 748,800 USD

Annual fuel saving: 1248 T

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

COSCO & 4250TEU

中远德班COSCO DURBAN


中远科伦坡 COSCO COLOMBO



中远热那亚 COSCO GENOA



中远海法 COSCO HAIFA

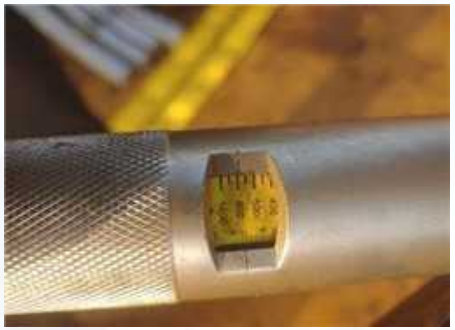

EEXI/CII Retrofit Cases

TONG ZHOU
TONGZHOU PROPELLER

COSCO & 4250TEU

中远福斯COSCO FOS





中远奥克兰 COSCO AUCKLAND


中远亚丁 COSCO

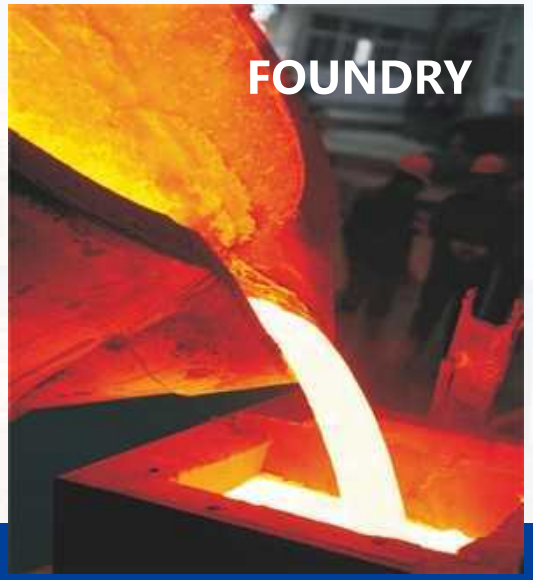
中远休斯顿COSCO HOUSTON

中远休斯顿 COSCO HOUSTON

中远吉达 COSCO JEDDAH

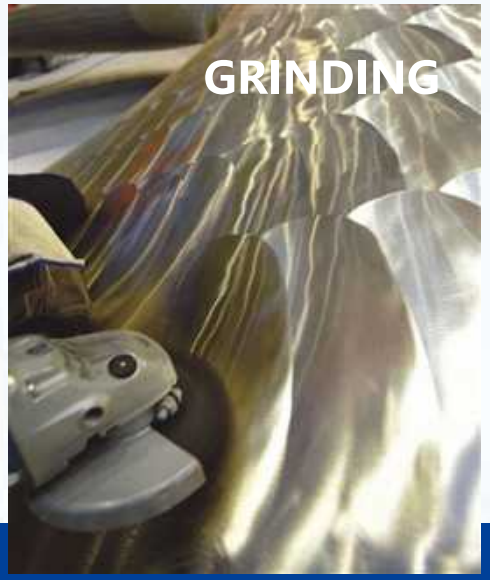
Manufacture Procedure

TONG ZHOU
TONGZHOU PROPELLER



Through unremitting efforts, Tongzhou has now become one of the strongest enterprises in foundry capacity within the propeller industry. With a 12,500 square meter casting work area, a 125T travelling crane, and a medium-frequency electric furnace (with a single melting capacity of 125T) Advanced casting equipment, perfected casting technology, and developed production management system ensure high-quality product standards from the very first stage.

The machining workshop is equipped with CNC machining equipment, including intelligent robotic systems, various types of vertical lathes, boring machines, horizontal lathes, and multifunctional machining centers to ensure high precision and quality.
Accurate control of the taper dimension allows for the propeller to be fitted with just a 0.1mm clearance.
Precise control of assembly dimensions makes product assembly much simpler.
Standardized dimensions make product and spare part replacement more convenient.



The grinding workshop is equipped with advanced intelligent equipment, including laser measurement, flexible blade grinding units, and blade milling robots, which revolutionize the machining process from traditional manual to automated mechanical processing.
Our team of skilled and experienced technicians focuses on every detail to ensure the final product fully meets design requirements.

- Laser measurement technology provides precise data and maintains a database that ensures continuous improvement from casting to the finished product.
- The application of flexible blade grinding units and robots makes the machining process more efficient and environmentally friendly.
- Accurate appearance dimensions and, more importantly, precise edge shapes provide our products with higher propulsion efficiency and lower noise levels.

Technical Service

Blue Fitting



Propeller trimming edge and Propeller small end enlarging hole



Tongzhou provides customers with comprehensive life cycle technical support services

- Propeller spare parts supply
- Propeller edge trimming
- Propeller dock inspection
- On-site propeller efficiency improvement trimming
- On-site propeller bore fitting and installation services
- Propeller small end hole enlargement
- Propeller damage repair
- On-site services to eliminate erosion and abnormal vibration

Customer Resources

TONG ZHOU
TONGZHOU PROPELLER

Customer Resources

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