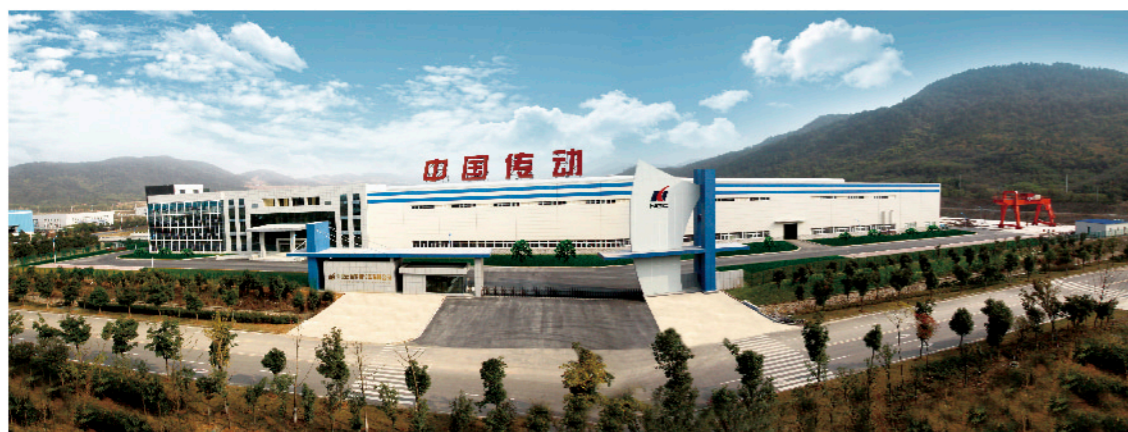


挖泥船动力传动系统

Power transmission system of dredger



南京高精船用设备有限公司是中国高速传动设备集团（简称中国传动）全资子公司，可以成套提供原动机以后的各种传动和推进设备，包括可调桨、定距桨、舵桨、侧推、各种船用主/辅齿轮箱以及各种轴舵系部件和甲板机械等。

船用公司位于风景秀丽、交通便利的南京江宁科学园，现已建成占地256亩的船用产品产业园。现有员工400余人，工程技术人员120人，高级工程师23人、高级技师31人。

船用公司作为江苏省高新技术企业，通过多年技术引进和创新，已拥有具有自主知识产权的船用产品系列，并配有世界一流的生产设备，已形成年产400套推进器和齿轮箱的设计和生产能力。可根据不同船型和要求，进行周到的个性化设计，从而实现产品效率高、能耗低的环保要求。所生产的船用产品已经大量出口海外市场，产品质量达到国际标准，赢得客户和合作伙伴的高度认可。

船用公司建有完善的质量体系，先后通过了ISO9001、ISO14001、ISO18001和国军标体系认证。船用产品严格按照国际标准和船级社的要求进行设计和生产，已通过CCS、BV、GL、ABS、LR、RINA、DNV和RMRS等船级社的认证和检验。

公司通过产品质量和技术服务来创造品牌，把建立国际一流的大型船用设备配套企业作为目标，致力于为客户提供各种船舶传动和推进系统的最佳解决方案。现在公司建立了全球的销售和售后服务网络，正不断拓展国内外的船用配套产品市场，并赢得全球客户的赞誉。

Nanjing High Accurate Marine Equipment Co., Ltd. (NGC Marine for short), a wholly subsidiary of China Transmission, is specialized to manufacture marine propulsion and transmission system package, including controllable pitch propeller, fixed pitch propeller, tunnel thruster, azimuth thruster, main/auxiliary marine gearbox, hydraulic coupling, shafting rudder system components and deck machineries, etc.

The company is located at Science Garden, Jiangning District, Nanjing city, a scenic place with convenient transportation. Till today, a marine equipment garden of 173, 400 m² has been formed. The company occupies over 400 employees, and among them 120 are engineers, 23 are senior engineers, and 31 are senior technicians.

As a hi-tech enterprise in Jiangsu Province, NGC Marine has mastered the core technology of marine propulsion system to form our own product line based on the technology import and innovation. Now, we are able to design and produce 400 sets of CPP and marine gearbox per year and we can make the special design based on the ship hull and customer requirement, so as to improve the efficiency and reduce the energy consumption. Our products, machined to International Standard, have been exported to several foreign countries and have been highly recognized by the clients and partners.

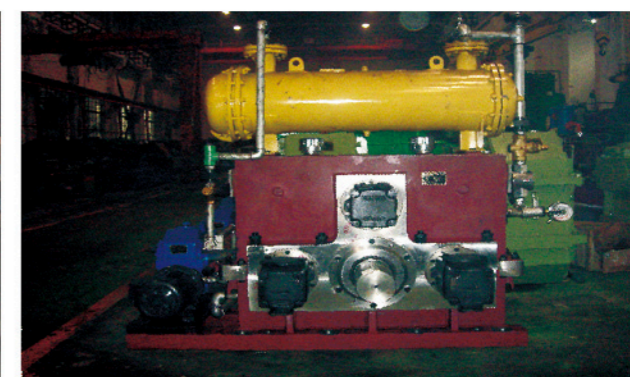
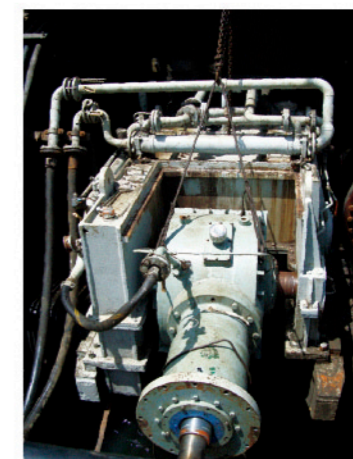
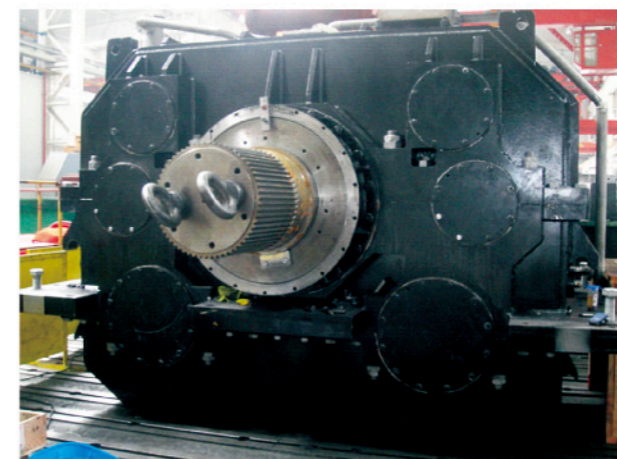
NGC Marine has established a complete quality system, and has been certificated by ISO9001, ISO1400, ISO18001 and Military Standard System.

All of our marine products are designed and manufactured strictly adhered to international standards and requirements of Classification Societies. The company has been approved by CCS, BV, GL, ABS, LR, RINA, DNV and RMRS, etc.

To create our brand through quality and technical service, NGC Marine is aiming to build an international top enterprise in supplying large marine equipment. For years, NGC Marine applies itself to provide the optimal propulsion and transmission solution to clients. Our company has set up its global sales and service net, and has gained the good comments from the clients all over the world.

NGC技术开发队伍通过消化吸收国内外先进的设计技术、结合自身的经验积累，开发了拥有自主知识产权的挖泥船传动系统设计方案。该系列设计方案满足挖泥船大型化、多样化的发展要求。按照船上各种设备不同的性能要求，结合各种设备之间的匹配，最终满足各设备的接口要求，以及成套以后的性能要求。现已开发出水下绞刀传动系统、舱内泥泵传动系统、水下泥泵传动系统、高压冲水泵传动系统、液压泵站传动系统、斗轮驱动系统、枢轴驱动系统，并成功应用于各类挖泥船当中。

Integrated with the global advanced designing technology into our own experience, NGC R & D team has developed out the transmission solutions of dredgers, which can meet the developing requirements of large size and diversification. We are able to satisfy the requirement of equipment interface and whole-set performance according to performance and matching between the equipments. Till today, we have developed out a series of transmission systems with NGC IP rights, such as submerged cutter gearbox, cabin dredge pump gearbox, submerged dredge pump gearbox, high pressure water pump gearbox, hydraulic pump gearbox, bucket wheel gearbox, pivot shaft gearbox, etc. and have been widely used in various types of dredgers.



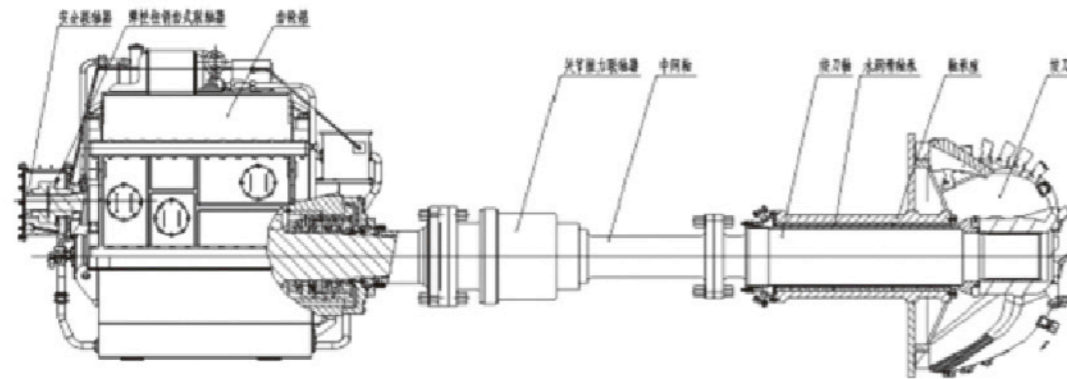
水下绞刀传动系统

Submerged cutter drive system

适用于大型绞吸式挖泥船水下绞刀驱动单元。适用的工况特点：土质泥沙的工作环境、对防沙和密封要求极高、低转速、超大扭矩、正反大力、深水下作业大水深(最大海水深度35m左右)。

Apply for the submerged cutter driving section of large cutter dredger.

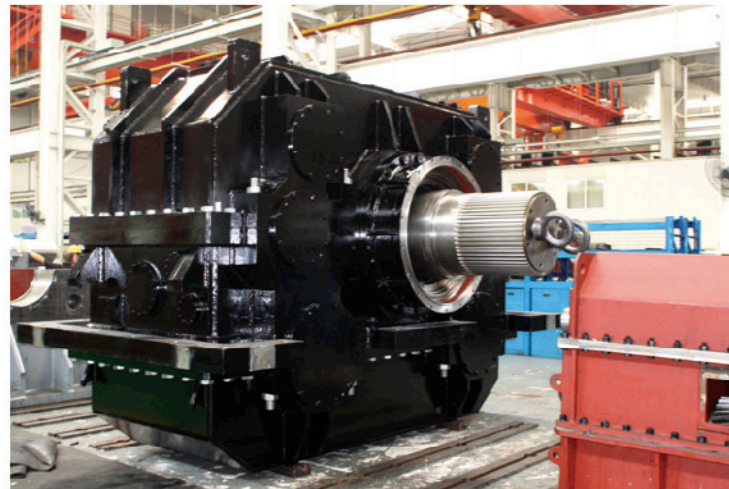
Features of work condition: soil sand; have high requirement of sand prevention and sealing; low RPM, super large torque, large ahead and astern pull, deep water operation (max. operating depth of water 35m)



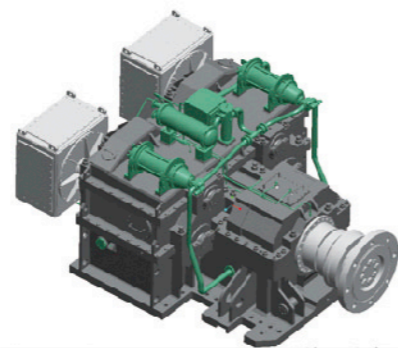
3500方绞吸挖泥船水下绞刀传动系统设计方案
Designing solution of submerged cutter driving system of 3500m³ cutter dredger

水下绞刀齿轮箱

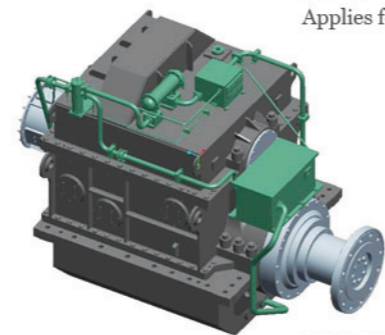
Submerged cutter gearbox



输入功率Input power: 2x2200kW
输入转速Input speed: 1000rpm
输出转速Output speed: 30rpm
用于6000方绞吸挖泥船
Applies for 6000m³ cutter dredger



输入功率Input power: 2x1400kW
输入转速Input speed: 1000rpm
输出转速Output speed: 30rpm
用于4500方绞吸挖泥船
Applies for 4500m³ cutter dredger



输入功率Input power: 2000kW
输入转速 Input speed: 1000rpm
输出转速Output speed: 30 rpm
用于3500方绞吸挖泥船
Applies for 3500m³ cutter dredger

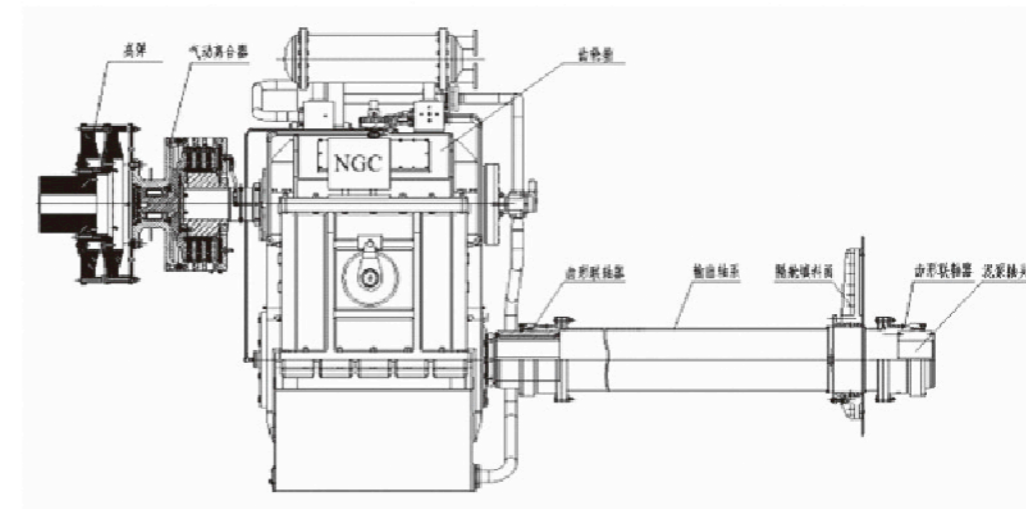
舱内泥泵传动系统

Dredge pump driving system in cabin

适用于大型绞吸式、耙吸式和斗轮式挖泥船舱内泥泵驱动单元。适用的工况特点：泥沙和水的密度变化大、不同转速切换、超大扭矩、大拉力、隔舱传递。

Apply for large submerged dredge pump driving section of cutter dredger, hopper dredger and bucket wheel dredger.

Features of working condition: big change to the sand and water density, different speed conversion, super large torque, big pull, compartment transmission.



8000方耙吸挖泥船舱内泵传动系统设计方案
Designing solution of cabin pump driving system of 8000 m³ hopper dredger

双速比齿轮箱

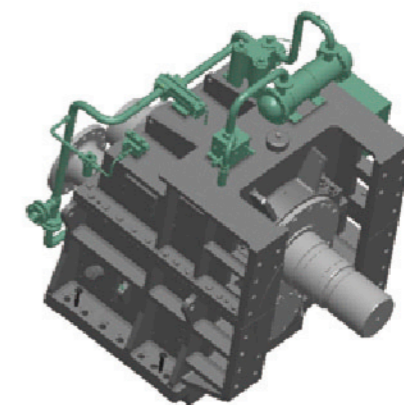
Double ratio gearbox



输入功率Input power: 3300kW
输入转速Input speed: 600rpm
输出转速Output speed: 340rpm (吹岸Pump off)
输出转速Output speed: 220rpm (装舱Stowing)
用于8000方耙吸挖泥船
Applies for 8000m³ hopper dredger

泵箱合一齿轮箱

Dredge pump & gearbox integrated-in-one

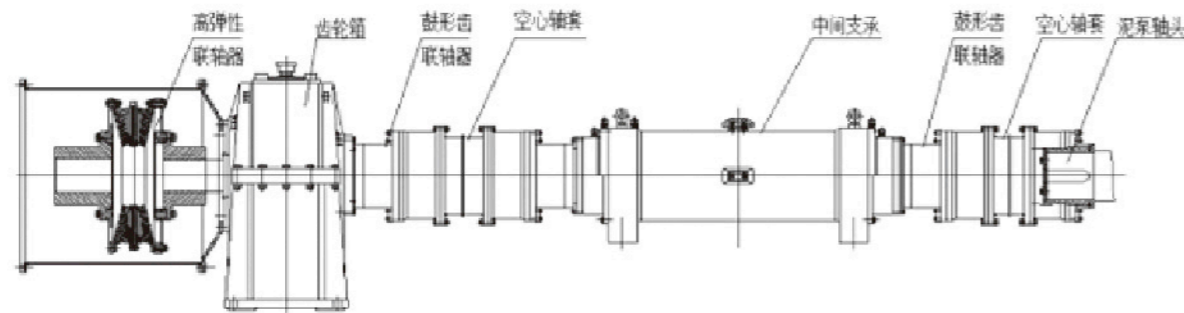


输入功率Input power: 3700kW
输入转速Input speed: 1000rpm
输出转速Output speed: 282rpm
用于4500方绞吸挖泥船
Applies for 4500m³ cutter dredger

水下泥泵传动系统 Submerged dredge pump driving system

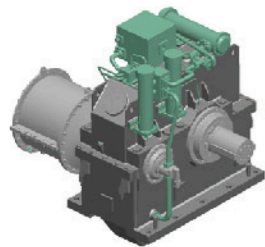
适用于大型绞吸式和斗轮式挖泥水下泥泵驱动单元。适用的工况特点：泥沙和水的密度变化大、深水下作业大水深(最大海水深度30m左右)、对防沙和密封要求极高、超大扭矩、大拉力。

Apply for the submerged dredge pump driving unit of large cutter dredger and bucket wheel dredger. Features of work condition: big variation of sand and water density, deep water operation (max. operating depth: around 30m), high requirements for sand prevention and seal, super large torque and large pull.



3500方绞吸挖泥船水下泵传动系统设计方案
Designing solution of submerged pump driving system of 3500m³ cutter dredger

水下泥泵齿轮箱(长轴系) Submerged dredge pump gearbox (long shaft line)



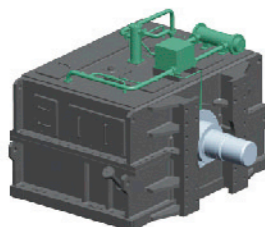
输入功率Input power: 2200kW
输入转速Input speed: 1000rpm
输出转速Output speed: 269rpm
用于3500方绞吸挖泥船
Applies for 3500m³ cutter dredger

水下泥泵齿轮箱 Submerged dredge pump gearbox



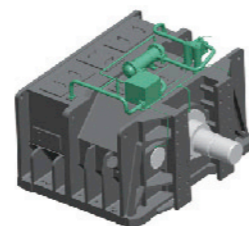
(单输入8输出)(Single input 8 outputs)
输入功率Input power: 900kW
输入转速Input speed: 310rpm
输出转速Output speed: 335rpm

水下泥泵泵箱合一齿轮箱 (水平剖分) Dredge pump & gearbox integrated-in-one (Horizontal section)



输入功率Input power: 2x1400kW
输入转速Input speed: 1000rpm
输出转速Output speed: 248rpm
用于4500方绞吸挖泥船
Applies for 4500m³ cutter dredger

水下泥泵泵箱合一齿轮箱 (垂直剖分) Dredge pump & gearbox integrated-in-one (Vertical section)



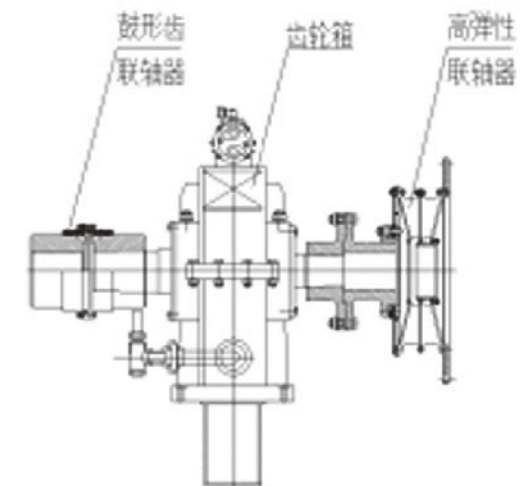
输入功率Input power: 2x1400kW
输入转速Input speed: 1000rpm
输出转速Output speed: 248rpm
用于4500方绞吸挖泥船
Applies for 4500m³ cutter dredger

高压冲水泵/ 液压泵站齿轮箱 High pressure water pump & Hydraulic station gearbox

适用于各类挖泥船冲水泵驱动单元。适用的工况特点：大扭矩、隔舱传递。
Apply for the water pump driving unit of all types of dredgers.
Features of working condition: large torque and compartment transmission.

高压冲水泵齿轮箱 High pressure water pump gearbox

输入功率Input power: 1200kW
输入转速Output speed: 1500rpm
输出转速Output speed: 458rpm
用于11000方耙吸挖泥船
Applies for 11000m³ hopper dredger



液压泵站齿轮箱 Hydraulic power pack gearbox



适用于打桩船和大型绞吸式挖泥船液压泵站系统驱动单元。适用的工况特点：同时驱动多个泵、输出高转速。
Apply for the hydraulic station driving unit of piling barges and large cutter dredgers.
Features of work condition: drive multi-pumps, high output speed.

液压泵站齿轮箱
(单输入6输出)
Hydraulic power pack gearbox
(single input 6 outputs)
输入功率Input power: 1470kW
输入转速Input speed: 600rpm
输出转速Output speed: 1800rpm

枢轴/斗轮齿轮箱 Pivot shaft & Bucket wheel gearbox

枢轴齿轮箱 Pivot shaft gearbox

适用于大型绞吸式和斗轮式挖泥水下泥泵驱动单元。适用的工况特点：泥沙和水的密度变化大、密封要求极高、超大扭矩、输出随桥架自由转动。

Apply for submerged dredge pump driving unit of large cutter dredger and bucket wheel dredger.
Features of work condition: big variation of sand and sand density, high requirement of seal, super large torque, the output side can rotate with bridge rack freely.

输入功率Input power: 1752kW
输入转速Input speed: 1600rpm
输出转速Output speed: 242rpm



斗轮齿轮箱 Bucket wheel gearbox



适用于大型斗轮式挖泥船水下斗轮驱动单元。适用的工况特点：深水下作业大水深(最大海水深度35m左右)、对防沙和密封要求极高、低转速、超大扭矩、大冲击、紧靠土质泥沙。

Apply for submerged bucket wheel driving section of large bucket wheel dredgers.
Features of work condition: deep water operation (max. operating depth: around 35m), high requirement of sand prevention and seal, low rpm, super large torque, big shock, abut against the soil sand.

输入功率Input power: 750kW
输入转速Input speed: 900rpm
输出转速Output speed: 13.7rpm

设计技术力量 Technical force

齿轮行业的技术专家、质量专家定期对设计人员进行培训。

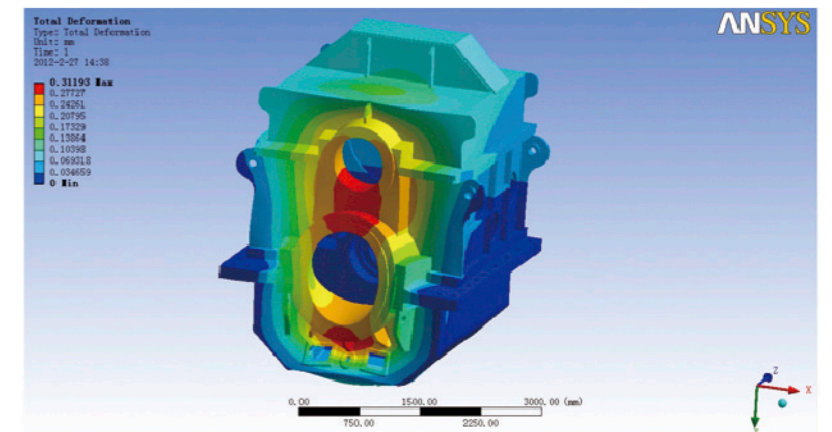
The engineers are trained by technical experts and quality experts of gear industry regularly.



产品设计软件 Designing software

Pro/E进行三维设计和仿真并用ANSYS进行有限元分析

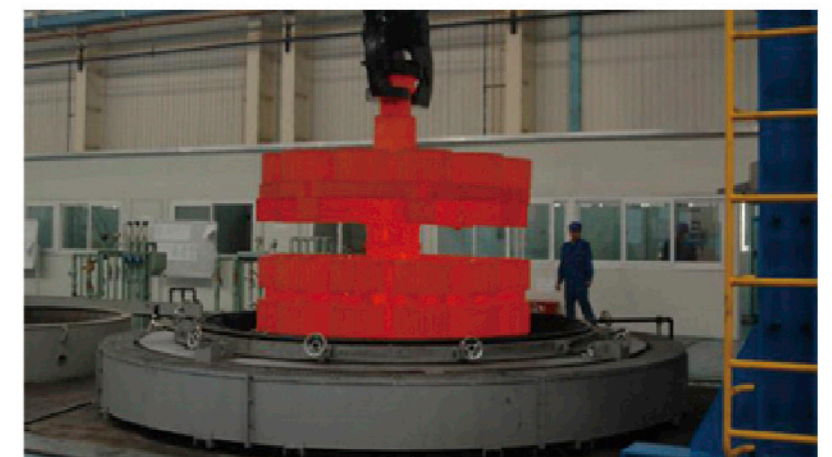
Apply PRO/E for 3-D designing and simulation, ANSYS for FEM analysis.



齿轮件热处理 Gear parts heat treatment

齿轮件材料采用优质合金钢，渗碳淬火处理，提高齿面硬度，保证载荷的传递。

Gears are made of high quality alloy steel. Carburization to improve the teeth flank hardness and ensure the load transmission.



齿轮件精加工

Finish machining to gear parts

齿面经硬化和磨齿，精度等级可达ISO1328 3级。磨齿机均为进口，最大加工直径达6m。

The tooth flank is hardened and ground to Class ISO 1328 3. All grinders are imported, and the maximum machining diameter is up to 6m.



箱体加工

Housing machining

进口大型数控落地式镗铣床，保证箱体的安装精度。

Imported large CNC floor type boring & milling machine ensures the mounting precision of the casing.



零件检验措施与设备

Components inspection instruments

齿轮件和箱体进行三坐标测量仪检验

Gears and housing are inspected by 3-coordinate measuring machine.



6000方绞吸式挖泥船
(水下绞刀功率: 2x2200kW)

6000m³ cutter dredger
(Submerged cutter power: 2x2200 kW)



8000方耙吸式挖泥船。(双机双桨，主机一拖三模式，主机功率: 4500kW，主推进功率: 3600kW，轴发功率: 2500kW，自由端带3300kW的双速泥泵系统，)

8000m³ hopper dredger
Twin screw, one main engine drives Three; main engine power: 4500kW, main propulsion power: 3600kW, shaft generator power: 2500kW, 3300kW double speed dredge pump system driven by the free end

