

能源电力

Energy & Power



上海电气
SHANGHAI ELECTRIC

上海电气电站设备有限公司发电机厂
Shanghai Electric Power Generation Equipment Co.,Ltd. Generator Plant

总体介绍 General Introduction

能源电力板块作为工厂的支柱产业，也是工厂转型发展的压舱石。

该板块聚焦于250MW及以上等级传统能源业务，近30年的发展和沉淀，已成为该领域最有影响力的设备及解决方案提供者之一。

The energy and power sector is the backbone industry of factories, and also the cornerstone of factory transformation and development.

This sector focuses on traditional energy businesses with the capacity of 250MW and above. With nearly 30 years of development and accumulation, it has become one of the most influential equipment and solution providers in this field.

- 2022年上海市重点产品质量振兴攻关成果奖二等奖
《华龙一号首台1300MW级水氢冷核发电机》

Second Prize of Shanghai Key Product Quality Revitalization Tackling Achievement Award in 2022 "The first 1300MW-class water-hydrogen-cooled nuclear power generator of Hualong-1"

- 2021年电力行业设备管理与技术创新成果奖一等奖
《首台660MW级双水内冷发电机的研究与应用》

First Prize of Electric Power Industry Equipment Management and Technological Innovation Achievement Award in 2021 "Research and Application of the First 660MW Grade Dual Water Intercooled Generator"

- 2021年电力建设科学技术进步奖三等奖《双驱大型500MW等级燃机发电机研制及工程应用》

Third Prize of Electric Power Construction Science and Technology Progress Award in 2021 "Development and Engineering Application of Dual-Drive 500MW Grade Gas Turbine Generator"

- 2017年中国机械工业科学技术奖二等奖《满足内陆运输及国际化需求的百万千瓦级发电机》

Second Prize of China Mechanical Industry Science and Technology Award in 2017 "Million-kilowatt-class Generator Meeting Inland Transportation and Internationalization Need"

- 2013年国家能源科技进步奖二等奖《百万千瓦级核电四极水氢氢发电机》

Second Prize of National Energy Science and Technology Progress Award in 2013 "Million-kilowatt-class nuclear power quadrupole water-hydrogen generator"

- 2013年国家重点新产品《改进型660MW级水氢氢汽轮发电机》

National Key New Product in 2013: "Improved 660MW Water-hydrogen Hydrogen Turbine Generator"

- 2008年国家重点新产品《THDF125/67型1000MW级水氢氢汽轮发电机》

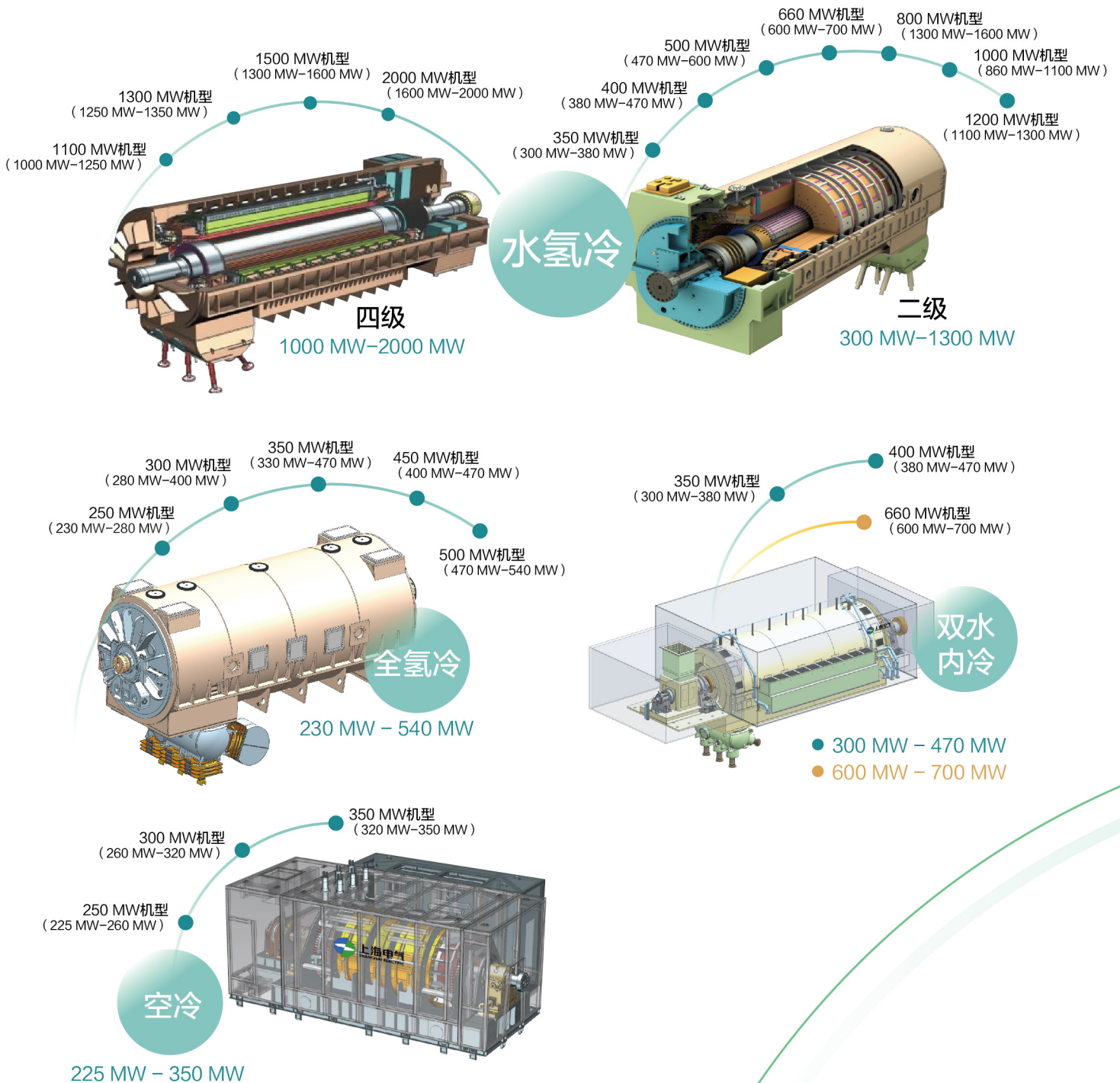
National Key New Product in 2008 "THDF125/67 Type 1000MW Water-hydrogen Hydrogen Turbine Generator"



产品系列 Product Series

共有水氢冷、全氢冷、双水内冷、空冷四种冷却方式，20+个产品模块。适用于大容量等级核电，大容量高参高效火电，F级或H级大容量等级联合循环气电等。

There are four cooling methods available in this product series, including water-hydrogen cooling, all-hydrogen cooling, double water cooling, and air cooling, with more than 20 product modules. They are suitable for high-capacity nuclear power, high-efficiency coal power with high parameters and capacity, and F-class or H-class large-capacity combined cycle power plants.

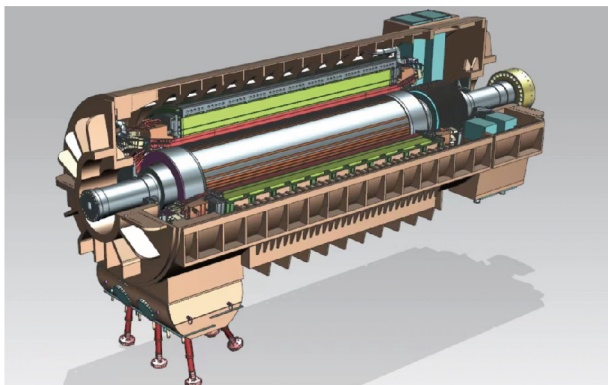


典型产品

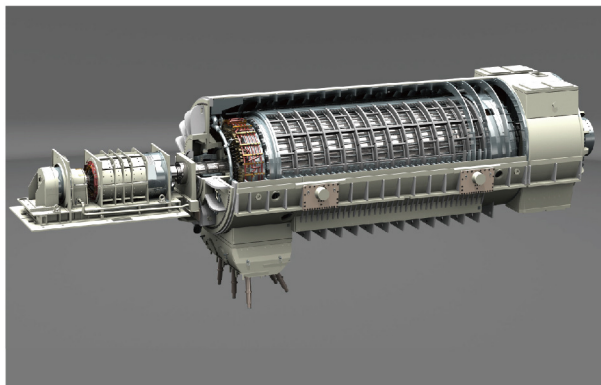
Typical Product

百万等级核电机组

Million-level Nuclear Power Unit



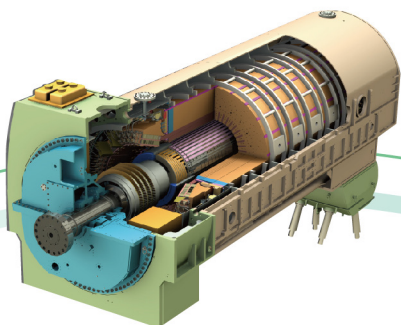
1100MW核电发电机
1100MW nuclear power generator



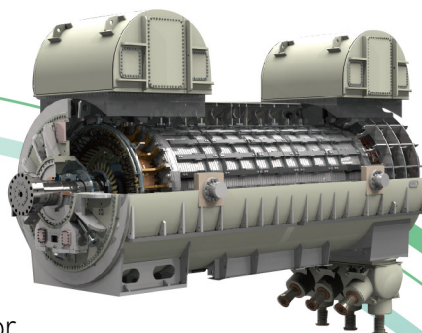
1300MW核电发电机
1300MW nuclear power generator

高效超超临界煤电机组

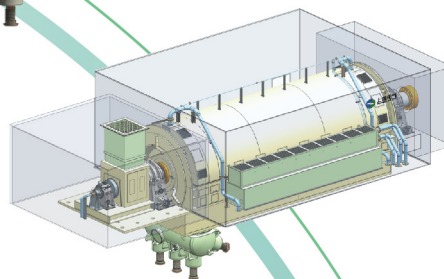
High-efficiency ultra-supercritical coal-fired power unit



1000MW水氢氢发电机
1000MW hydrogen-cooled generator



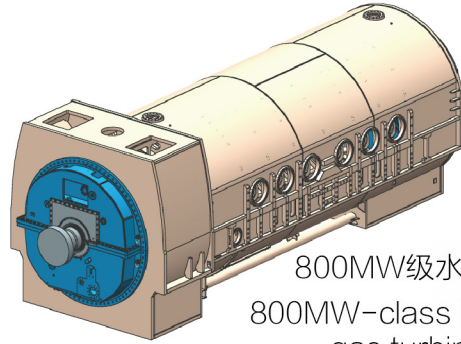
660MW水氢氢发电机
660MW hydrogen-cooled generator



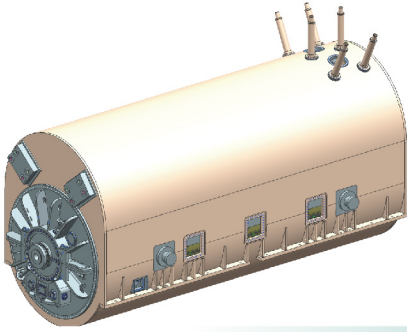
660MW双水内冷发电机
660MW double-water generator

大容量等级联合循环机组

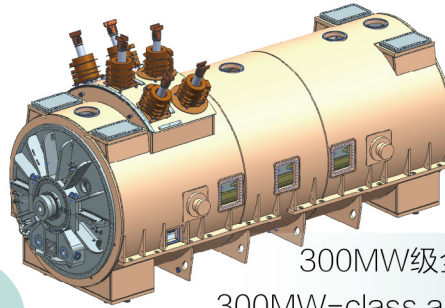
large capacity combined cycle power unit



800MW级水氢冷燃机发电机
800MW-class hydrogen-cooled
gas turbine generator



500MW级全氢冷燃机发电机
500MW-class all-hydrogen-cooled
gas turbine generator



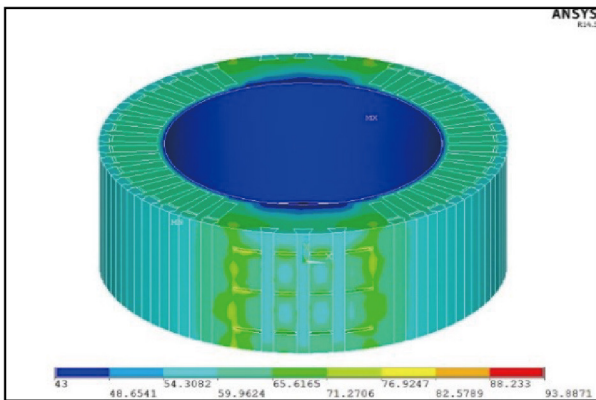
300MW级全氢冷燃机发电
300MW-class all-hydrogen-cooled
gas turbine generator

技术特点 Technical Features

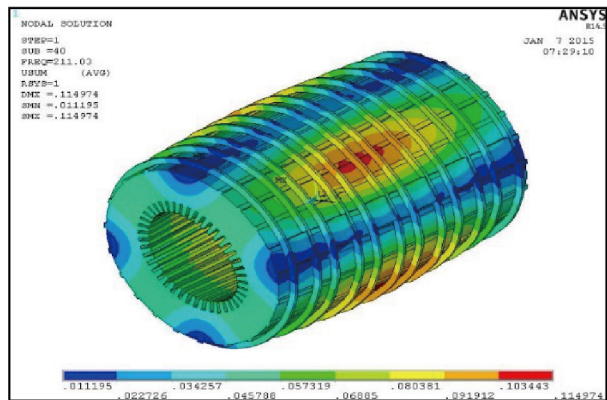


性能高效 High Performance and Efficiency

- 先进的设计研发平台，形成十二大核心技术，支撑全系列产品开发；
 - 基于更先进的第三代发电机设计、制造、检测技术；
 - 发电机效率值远超国标和IEC标准。
- An advanced design, research and development platform to develop all series of products supported by twelve core technologies.
 - Based on the latest third-generation generator design, manufacturing and testing technology
 - The generator efficiency values significantly exceed both national and IEC standards.



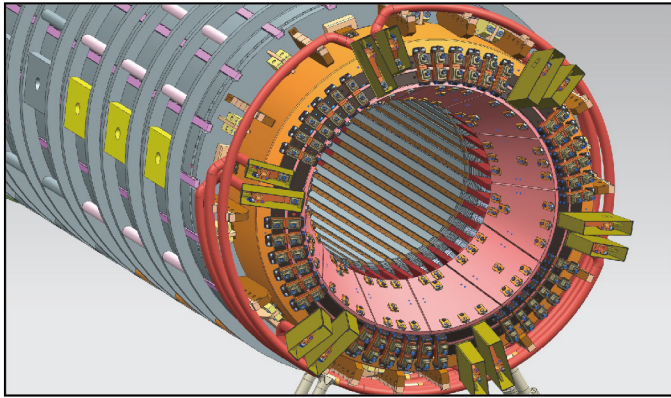
负序能力分析
Negative sequence capability analysis



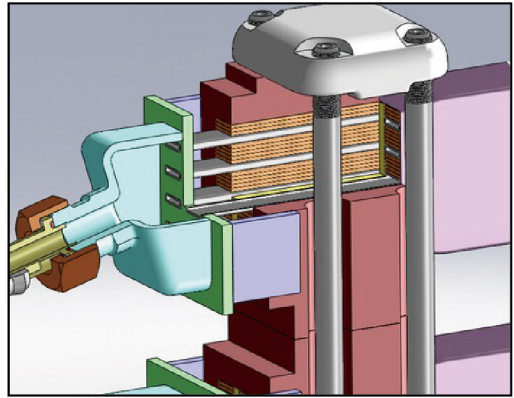
铁心模态分析
Iron core modal analysis

👍 结构可靠 Reliable structure

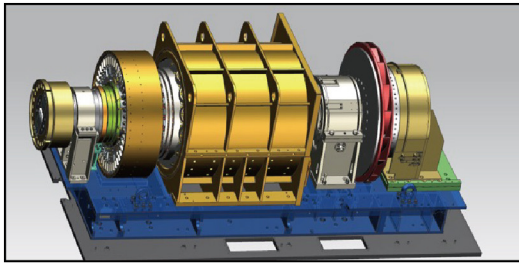
- 独有的定子端部整体灌胶技术；
 - 定子线圈鼻端机械式连接结构；
 - 独有的三机无刷励磁技术；
 - 转子防匝间短路专利技术；
 - 全补偿、抗蠕变的防松型定子铁心结构。
- Unique stator end integral potting technology;
 - Mechanical connection structure at the end of the stator coil
 - Unique three-machine brushless excitation technology;
 - Patented technology for rotor inter-turn short circuit prevention;
 - Fully compensated, anti-creep, anti-loosening stator core structure.



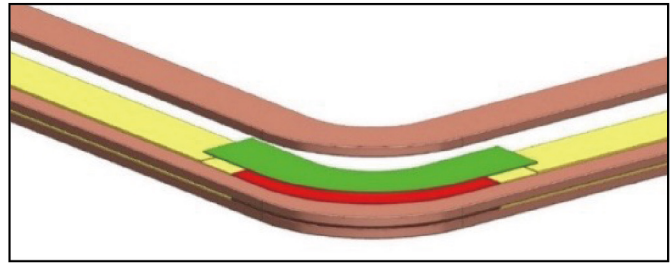
定子端部整体灌胶结构
Stator end integral potting structure



定子线圈鼻端机械式连接结构
Mechanical connection structure at the end of the stator coil



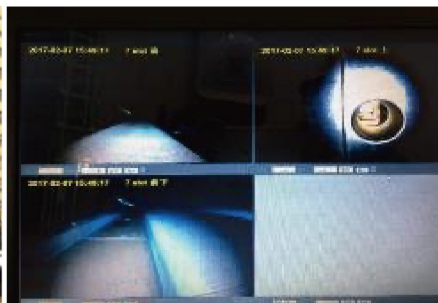
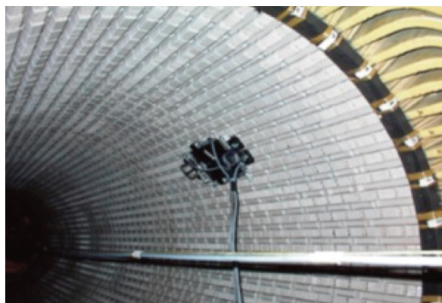
三机无刷励磁技术
three-machine brushless excitation technology



转子防匝间短路专利技术
Patented technology for rotor inter-turn short circuit prevention

👍 运维方便 Easy maintenance and operation

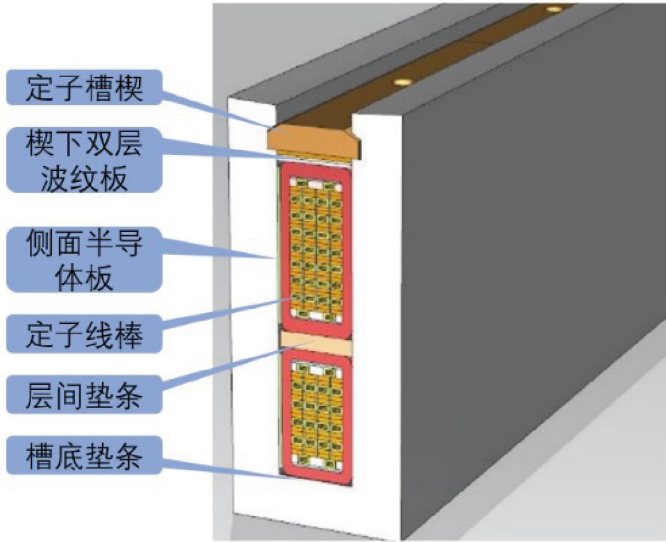
- 机组可靠性高、免抽转子大修；
 - 第三代智能检测技术提高维修效率。
- The generator has high reliability and can undergo major maintenance without rotor extraction;
 - Third-generation intelligent detection technology improves maintenance efficiency.



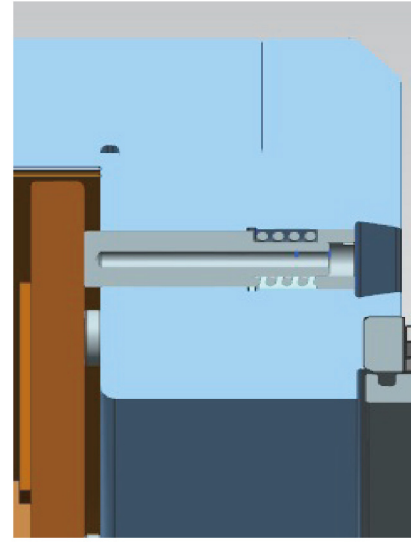
定子膛内智能检测
Intelligent detection inside the stator

👍 灵活性高 High flexibility

- 刚柔结合的发电机结构，运用新型滑移材料；
- 适应20%深度调峰、频繁启停的灵活性运行工况。
- Utilizing a combination of rigid and flexible design and new slip materials.;
- Adapt to flexible operating conditions such as 20% deep load-following and frequent start-stop operations.



定子槽内弹性防松结构
Elastic anti-loosening structure
inside stator slot



转子端部弹簧防松结构
Spring anti-loosening structure
at rotor end

👍 质量保证 Quality Assurance

- 基于工业4.0的智能制造技术；
- FAQCR发电机现场安装质量控制记录。
- Intelligent Manufacturing Technology based on Industry 4.0;
- Field Assembly Quality Control Record.



机器人铁心压装
Robot Stator Core Pressing



FAQCR