



**CSSC**  
中国船舶

# 2021 企业社会责任报告



## 报告说明

### 称谓说明

为便于表达和阅读，在报告中“中国船舶集团有限公司”分别使用“中国船舶集团”、“集团公司”和“我们”等称谓。

### 报告目的

本报告为中国船舶集团有限公司正式发布的第三份社会责任报告。报告旨在就集团公司社会责任理念、实践绩效与利益相关方进行坦诚沟通，系统回应利益相关方期望和要求。中国船舶集团保证报告信息的真实性和准确性。

### 报告范围

本报告覆盖中国船舶集团及成员单位在经济、环境、社会等方面的工作成效。报告时间范围为 2021 年 1 月 1 日至 12 月 31 日，部分内容追溯以往年份。

### 编写标准

国务院国资委《关于中央企业履行社会责任的指导意见》《关于国有企业更好履行社会责任的指导意见》

国家标准化管理委员会《社会责任报告编写指南》（GB/T36001-2015）

中国社会科学院《中国企业社会责任报告指南基础框架（CASS-CSR4.0）》

全球可持续发展标准委员会《可持续发展报告指南》（GRI-standards）

国际标准化组织《ISO 26000 社会责任指南（2010）》

联合国 2030 年可持续发展目标（SDGs）

### 报告获取

报告语言为中文简体和英文，以印刷品和 PDF 电子文件两种形式发布。

您可以登录中国船舶集团网站 [www.cssc.net.cn](http://www.cssc.net.cn) 或关注中国船舶集团

微信公众号，下载本报告的电子文档。

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## 习近平总书记出席海军三型主战舰艇集中交接入列活动

2021 年 4 月 23 日，海军三型主战舰艇——长征 18 号艇、大连舰、海南舰在海南三亚某军港集中交接入列。中共中央总书记、国家主席、中央军委主席习近平出席交接入列活动并登上舰艇视察。



# 目录

## CONTENTS

04 关于我们

82 责任管理

86 展望 2022

87 关键履责绩效表

88 报告指标索引

90 意见反馈

06

## 年度责任专题

### 强化企业创新主体地位 打造国家战略科技力量

- 06 主动当好原创技术策源地
- 07 深入实施科技专项工程
- 09 提高产品技术竞争力
- 10 形成核心技术攻关全链条支持模式



44

### 加快高水平科技自立自强

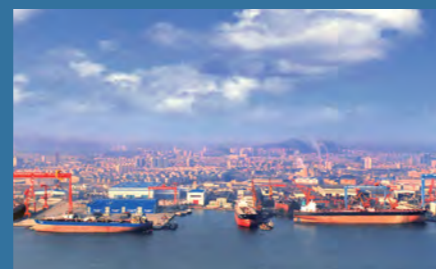
- 46 夯实科技创新基础能力
- 48 聚力攻克关键核心技术
- 51 深化科技成果转化应用



12

### 弘扬伟大建党精神

- 14 党的领导作用发挥更加制度化
- 14 落实“第一议题”制度
- 15 扎实开展党史学习教育
- 17 有力塑造中国船舶品牌
- 18 不断深化“三基”建设
- 19 深入推进全面从严治党



52

### 深化改革 强化管理

- 54 加快体制机制改革
- 55 深化资源整合融合
- 56 全面提升治理效能
- 57 提高质量管理水平



20

### 坚定不移履行强军首责

- 22 研制一流海军装备
- 24 保障重大军事任务
- 25 积极拓展军贸业务



58

### 积极践行绿色发展

- 60 发展绿色制造
- 62 研制绿色装备
- 64 壮大绿色产业



26

### 持之以恒壮大主业实业

- 28 船海产业创历史新高
- 37 科技应用产业稳健增长
- 42 船海服务业价值创造能力显著增强



68

### 实现共享共赢愿景

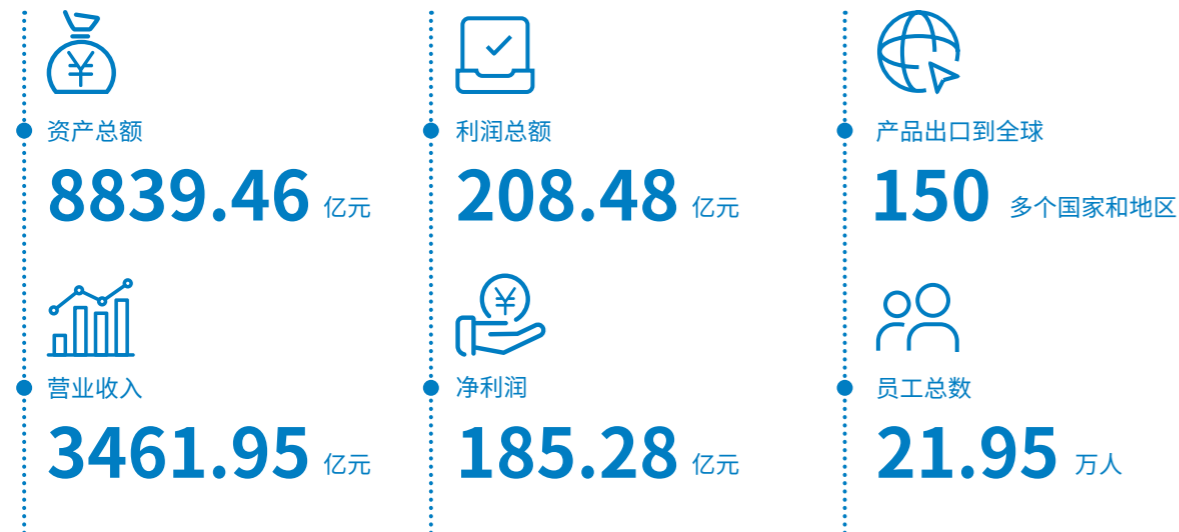
- 70 协同合作伙伴
- 71 关爱员工发展
- 77 热心社会公益

# 关于我们

## 公司概况

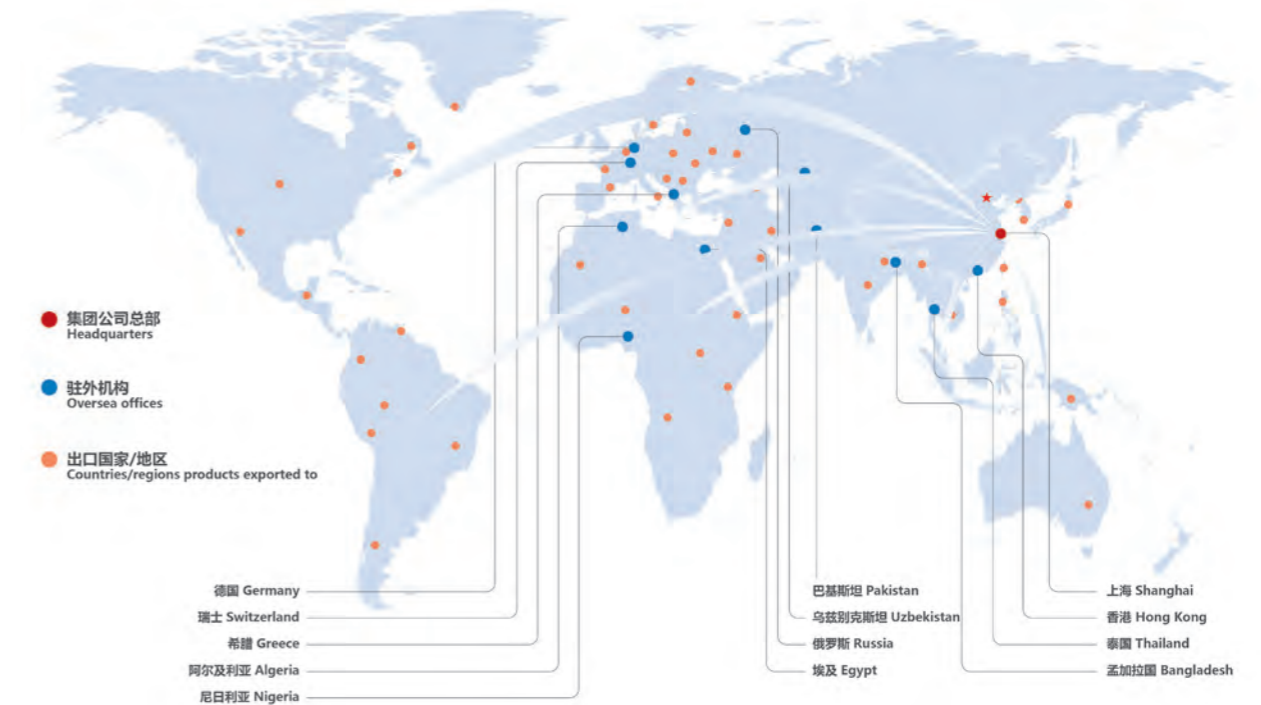
中国船舶集团有限公司挂牌成立于 2019 年 11 月 26 日，是由原中国船舶工业集团有限公司、原中国船舶重工集团有限公司联合重组成立的特大型中央企业，主要从事海洋防务装备产业、船舶海工装备产业、科技应用产业和船海服务业。中国船舶集团拥有我国最大的造修船基地和最完整的船舶及配套产品研发能力，能够设计建造符合全球船级社规范、满足国际通用技术标准和安全公约要求的船舶海工装备，是全球最大的造船企业，产品出口到全球 150 多个国家和地区。

2021 年，中国船舶集团经营业绩考核在央企中排名第 16 位；位列《财富》世界 500 强第 243 位；新接船舶订单量、造船完工量、手持船舶订单量三大造船指标全球市场份额均超过 20%，均居世界第一；实现利润总额同比增长 24.5%，净利润同比增长 27.7%，经济效益创历史最好水平。



## 组织架构

中国船舶集团党组是经党中央批准设立的领导机构，讨论和决定重大事项，发挥把方向、管大局、促落实的领导作用。中国船舶集团董事会是决策机构，对国务院国资委负责，依法行使职权，发挥定战略、作决策、防风险作用。中国船舶集团经理层是执行机构，按照规定执行董事会决议，开展生产经营工作。中国船舶集团纪检监察组是经中央纪委国家监委批准设立的纪检监察机构，依规依纪依法履行纪检、监察职能。中国船舶集团总部设立党组织工作机构 3 个和总部部门 15 个，集团公司旗下拥有 36 家科研院所、10 家上市公司，总计 103 家党组管理成员单位以及 53 家驻外机构。



### 海洋防务装备产业

作为我国海洋防务装备科研生产的主体力量，着力推动海军武器装备跨代跃升，为建设世界一流海军提供坚强支撑。

### 船舶海工装备产业

立足船舶、深耕海洋，积极向海洋领域拓展延伸，全面提升海洋装备研发、设计、制造、配套、服务全产业链发展能力。

### 科技应用产业

充分发挥科技应用与装备制造优势，着力推动海洋相关技术转移转化；高效运用现有资源，形成合理业务结构，实现业务更优发展。

### 船海服务业

围绕兴装强军和发展壮大实业，延伸拓展产业链价值链，积极推动商业模式创新，提升实业综合竞争力。

## 产业方向

### 企业使命

引领行业发展  
支撑国防建设  
服务国家战略

### 战略目标

构建产业结构合理、质量效益领先、军工核心突出、国际竞争力强的世界一流船舶集团

### 高质量发展战略纲要

坚持加强党的领导，全面从严治党  
坚持军工核心突出，履行强军首责  
坚持强化科技创新，实现创新引领  
坚持产业结构合理，壮大主业实业  
坚持质量效益领先，转变发展方式  
坚持增强国际竞争力，提升行业地位  
坚持加强管理体系建设，持续深化改革

### “三步走”高质量发展战略步骤

到 2025 年，与世界领先水平差距显著缩小  
到 2035 年，基本建成世界一流船舶集团  
到 2045 年，全面建成世界一流船舶集团

# 强化企业创新主体地位， 打造国家战略科技力量



2021年，中国船舶集团聚焦重大创新工程和科技创新体系在国家总体布局中的战略站位，不断提高科技供给质量、提升技术竞争力，持续为加快建设世界一流船舶集团提供动力，积极担当船舶工业国家战略科技力量，科技创新不断取得突破性、标志性重大成果。

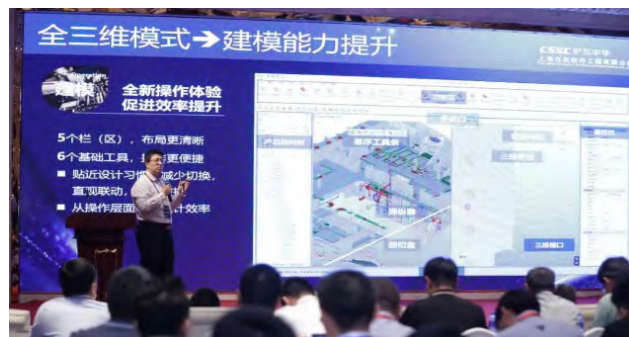
## 主动当好原创技术策源地

高技术船舶科研计划“十四五”规划中的极地装备、船用发动机、LNG 装备产业链、绿色智能船舶、船舶总装建造数字化等 6 项重大专项均由集团公司牵头论证实施。

2021年

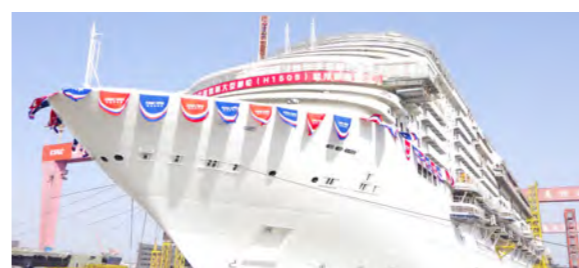
国防奖 **53** 项  
其中  
一等奖 **4** 项  
创新团队 **1** 项

主导获得国家科技进步奖 **4** 项  
获得国家标准创新贡献项目 **4** 项  
参与获得国家科技进步奖 **4** 项  
联合主导获得国家技术发明 **4** 项  
新增国家科研立项 **123** 项  
在研项目 **736** 项



## 深入实施科技专项工程

中国船舶集团从国家急需和长远需求出发，面向海洋安全、深海科学研究与资源开发等战略任务需要，深化论证实施一批重大科技专项工程，在相关领域发挥创新引领的重要作用。



大型邮轮专项形成三维生产设计平台、邮轮管理平台和邮轮数字样船，有力支撑了国产首制大型邮轮实船建造。



“深海多金属结核悬浮采矿新模式研究”获科技部重点研发计划支持，完成试验验证平台概念设计，硫化物采矿车水池试验取得成功，50 毫米颗粒度等级矿浆等核心设备完成研制试验。



制定长江流域 5 省 2 市新能源应用推广方案，完成三型 LNG 动力船舶型开发，长江首艘氢燃料示范船方案设计获业主认可，满足 C2 标准的船用气体机实现批量交付。



联合广东省政府共同推进的“绿色珠江”工程 50 艘 LNG 单燃料动力散货船开工建造，并实现首批船舶下水。



深海养殖工厂创新工程方案获多省地方政府认可，完成可移动式养殖工船目标船型总体设计方案。2021 年 3 月，广船国际与广西精工海洋科技有限公司及湛江湾实验室签署南海大洋性鱼类工船养殖项目框架合作协议。



建立了世界领先的低速机原理样机试验平台，成功研制 CX40DF 和 CX52 两型新一代船用发动机并实现实船应用，性能指标达到国际先进水平。

## 中国首制大型邮轮实现起浮

2021年12月17日，中国首制大型邮轮在上海外高桥造船有限公司顺利实现坞内起浮，标志着该工程从结构和舾装建造的“上半场”全面转段进入内装和系统完工调试的“深水区”。同时，全船残余应力释放、首次测定重量重心等一系列关键工艺要素和技术指标也进一步验证了中国首制大型邮轮在设计、工艺、生产准备、总装建造等阶段所取得的一系列重大科研成果。



## 国家重大工程平台“智海”号试验船正式交付

应急通信试验网络建设项目是响应“海洋强国”战略启动的国家“智慧海洋”第一个工程项目，中国船舶集团有限公司第七研究院建设的“智海”号交付标志着应急通信试验网络建设项目取得重要进展。作为我国海洋科学考察又一有力平台，“智海”号交付后将参加船载应急通信试验系统试验、大系统集成试验、应用示范等工作。



## 提高产品技术竞争力

中国船舶集团以关键共性技术、前沿技术、现代工程技术、颠覆性技术创新为突破口，加快产品创新迭代，不断引领市场需求。



全球首制纽卡斯尔型 21 万吨双燃料散货船



“奋斗者”号全海深载人潜水器



我国首艘 17.4 万立方米 LNG-FSRU



世界首艘超级电容动力渡船“新生态”号



全球首制 Fast4ward 型 FPSO



国内首台大缸径斯特林发动机基础样机

## 形成核心技术攻关全链条支持模式

中国船舶集团有效发挥船舶工业现代产业链链长作用,大力加强在科技创新方面的主体地位,聚集全球一流创新资源,携手产业链上下游,打通产学研用全链条,让更多合作者加入到基础研究、技术创新、成果转化、产业化等方面的科技创新活动中,在高水平开放格局中推进船舶工业高质量发展。



## 促进先进材料行业技术交流

2021年12月3日,中国船舶集团召开中国船舶科技论坛“先进材料在舰船及海工领域应用”分论坛暨集团科技委材料与工艺专业组2021年工作会,邀请国内外著名专家学者作专题报告。与会专家对材料专业组承担工作的完成情况给予了高度认可。材料与工艺专业组将搭建一个先进材料行业技术交流的平台,共同研讨先进材料在舰船与海洋工程领域的应用需求、自主创新发展方向,加快推动先进材料在舰船与海工领域的应用。

## 建立湖北省绿色电动船舶产业联盟

中国船舶集团有限公司第七一二研究所联合中国造船工程学会船舶轮机学术委员会主办第五届中国船电技术峰会,探索推动内河绿色船舶高质量发展。该所作为以船舶与海工装备综合电力推进系统为支柱产业的科研单位,引领国内新能源船舶动力系统技术发展,率先提出建立湖北省绿色电动船舶产业联盟,形成了“标准规范引领,自主产品支撑,标准船型为本,总包服务保障”的产业发展模式,倡导加快推进绿色电动船舶湖北综合应用示范区建设。

## 打造船用低速机合作交流平台

2021年7月,由中船动力(集团)有限公司设计建造、拥有自主知识产权的我国首台新型船用小缸径电控HHM6EX340EF-UB低速柴油机交付。该机型的成功研制,进一步完善了中船动力集团集研发、制造、服务于一体的科技创新体系,形成一整套系统化产品开发流程规范。以此为契,我国首个全面开放的“产、学、研、用”船用低速机合作交流平台进一步完善机制和功能,为未来我国自主品牌的大中型船用低速柴油机创新研发注入新的动力。





## 弘扬伟大建党精神

2021年是中国共产党百年华诞，中国船舶集团坚定“不忘初心听党话、牢记使命跟党走”的信念，坚持把党的建设作为根本性建设，深入学思践悟习近平新时代中国特色社会主义思想，以“钉钉子”精神持续深化全国国企党建会重点任务和重点工作，为建设世界一流船舶集团提供坚强政治保证。

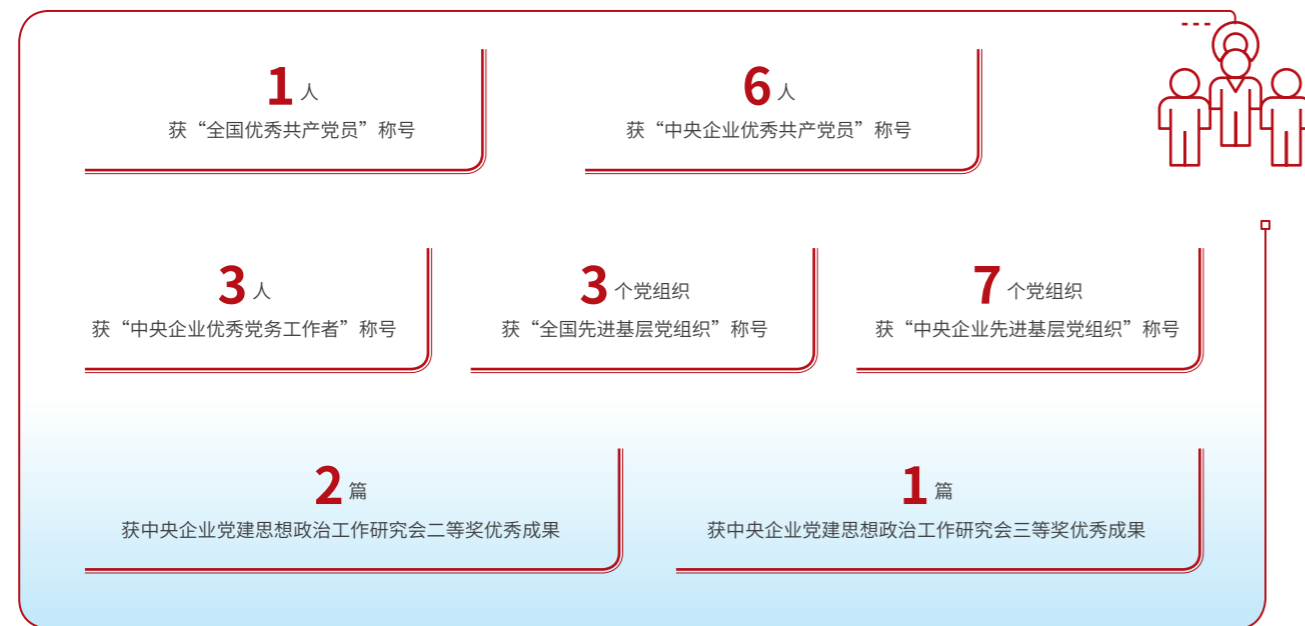
- 党的领导作用发挥更加制度化
- 落实“第一议题”制度
- 扎实开展党史学习教育
- 有力塑造中国船舶品牌
- 不断深化“三基”建设
- 深入推进全面从严治党



## 党的领导作用发挥更加制度化

中国船舶集团改革完善“三重一大”决策，修订《党组议事规则》等制度，准确把握党组发挥领导作用的本质内涵，完善党组讨论决定重大问题清单，坚持谋全局、议大事、抓重点。完善“双向进入、交叉任职”领导体制，在二级企业全面推行党委书记、董事长“一肩挑”。印发集团公司党建“十四五”规划，强化党建引领，不断增强高质量发展的红色动力。

- 出台党建相关制度、规定、规范 **23 项**
- 实现全级次 **899 户** 子企业党建要求进章程全覆盖



## 落实“第一议题”制度

我们反复、深入学习领会习近平总书记重要指示批示，推动贯彻习近平总书记重要指示批示精神往深里走、往实里抓，引导广大干部职工把思想和行动统一到以习近平同志为核心的党中央部署要求上来。通过坚持和完善“第一议题”制度，学习习近平总书记重要讲话和重要指示批示精神；举办“学习贯彻习近平总书记对组建集团公司重要指示两周年”座谈会、“习近平总书记全国国有企业党的建设工作会议重要讲话发表五周年”座谈会等重要活动。

- 集团公司党组学习习近平总书记重要讲话和重要指示批示精神 **97 项**，安排 **13 次** 党组理论中心组学习会和 **7 次** 专题读书班
- 全体员工传达学习习近平总书记重要讲话和重要指示批示 **1856 次**、共计 **3987 项**



## 扎实开展党史学习教育

我们突出集团特色、学用结合、惠及群众、担当作为，一体推进学党史、悟思想、办实事、开新局，从党史学习中筑牢信仰之基、汲取奋进力量。深入开展庆祝中国共产党成立 100 周年活动，6.8 万名党员和广大干部职工接受了一次全面深刻的政治教育、思想淬炼、精神洗礼。

- 广泛开展“我为群众办实事”实践活动，办成实事 **5912 项**



参观一大会址



赴香山革命纪念地开展党史学习教育



“百年建党史，百年造船路”  
庆祝建党百年线上展览



“党建引领，逐梦深蓝”  
庆祝建党百年演讲比赛



庆祝建党百年文艺表演



庆祝建党百年精品书画展



开展党史教育活动



长江舰党史学习教育

## 有力塑造中国船舶品牌

我们大力弘扬核潜艇精神、航母精神、载人深潜精神，不断完善船舶精神谱系。做强做大主题宣传，开展“永远跟党走”等群众性主题宣传活动，制作《功勋——黄旭华的深潜》《播火 1920》等优秀文化作品，其中《播火 1920》入选“庆祝建党 100 周年重点纪录片”；首艘国产航母、“奋斗者”号等重大宣传亮相新华社、人民日报、央视等中央主流媒体 200 余次。

- “中国船舶”品牌入选“2021 中国品牌 500 强”
- 江南造船展示馆入选“中央企业首批 100 个爱国主义教育基地”



中国船舶集团有限公司第七〇一研究所、中国船舶集团有限公司第七〇二研究所、中国船舶集团有限公司第七一九研究所联合举办核潜艇精神、航母精神和载人深潜精神交流会



《播火 1920》

## 不断深化“三基”建设

我们扎实开展全国国企党建会精神落实情况“回头看”，积极推进“党建创新拓展年”专项行动，推广“大项目党建”“一支部一品牌”等活动，开展“互查互学”和党建基础问题“清零行动”，深入解决基层党组织按期换届问题，集团公司及各成员单位配备专职党务干部，初步建成系统完备、科学规范的党建工作制度体系，基层党建质量不断提升。

- 41家成员单位党组织完成换届
- 基层党支部对行政机构和重点任务的覆盖率达到100%
- 制定印发51项规章制度



不断深化“三基”建设——大项目党建

2021年全国优秀共产党员、中国船舶科学研究中心副所长、“奋斗者”号总设计师叶聪



## ●○○ 构建邮轮项目党建体系

上海外高桥造船有限公司按照“党建铸心、使命传承、邮轮启航”构建六大党建融合体系，制定11类80余项党建制度、3个手册，在行业首创《党建年报》；新接订单、造船总量、手持订单三大造船指标连续十余年位居全球前五，劳动效率国内第一，是国内第一家年交船总量突破800万载重吨的船厂。



外高桥造船获评2021年中央企业先进基层党组织

## ●○○ 开展情景互动党课教育

中国舰船研究设计中心开展互动体验式党课教育，在报纸上推出讲党史专栏、在公众微信号发布自编自导自演的“党史微党课”系列微视频，做到知行合一。成员单位党组织广泛开展“海上劳动竞赛”“试航先锋岗”等创先争优活动，发挥党建优势，引领攻坚克难。

## 深入推进全面从严治党

认真落实中央纪委国家监委和国资委党委部署，深入贯彻全面从严治党战略方针，持续开展整改整治，强化军地廉洁共建，扎实开展问题线索“减存遏增”专项攻坚，结合以案促改纠“四风”树新风，充分发挥反腐败协调机制作用，稳妥有序推进内部巡视，确保全面从严治党永远在路上。

- 全集团完善制度1996项，其中总部38项



陕柴重工举办党史学习教育和反腐倡廉教育学习班

## 坚定不移履行强军首责

中国船舶集团牢记兴装强军的核心使命，坚持军品第一，坚决履行强军首责，军工发展实现重大突破，按期优质完成各项军工科研生产任务，助力我国海军实现战略转型发展，为我国建设世界一流海军、维护国家海洋权益提供强有力的装备支撑和服务保障。

- 研制一流海军装备
- 保障重大军事任务
- 积极拓展军贸业务

## 研制一流海军装备

作为我国海军武器装备建设的主体力量，中国船舶集团坚决贯彻习近平强军思想，全力以赴为建设世界一流海军提供一流装备保障。



长征 18 号艇



我国自主研制的万吨级驱逐舰大连舰



首艘两栖攻击舰海南舰



我国自主研制的万吨级驱逐舰拉萨舰



我国自主研制的首艘万吨级大型海事巡逻船“海巡 09”



## 保障重大军事任务

中国船舶集团秉持“全天候全方位”服务意识，提升精湛技术，严把修理和服务质量关，第一时间响应部队装备使用需求，助力人民海军圆满完成多项访问、护航、演习训练等保障任务。

### 远洋护航保障

2021年是“和平方舟”号医院船加入人民海军序列的第十个年头。我们保障“和平方舟”号等海上医疗救治任务。

海军第37批、第38批、第39批护航编队在亚丁湾、索马里海域执行护航保障任务，我们为其提供保障服务。



### 装备巡检及试航调试

参与东海、南海区域装备巡检。服务保障舰艇试航、动力试验、武备调试任务。

2021年4月、5月，中国海军分别组织辽宁舰航母编队、山东舰航母编队在远海进行训练，中国船舶集团为其提供运维保障。



中国船舶集团“山东舰”总体研制团队荣获2021年“央企楷模”荣誉称号



亚丁湾、索马里海域执行护航保障任务



服务保障舰艇试航、动力试验、武备调试任务

## 积极拓展军贸业务

中国船舶集团充分发挥在海洋防务装备研制方面的优势，积极开拓国际军贸市场，不断取得新突破，扩大了我国舰船产品的影响力。

### 为巴基斯坦建造1500吨海事巡逻舰

2021年11月4日，中船黄埔文冲船舶有限公司联合巴基斯坦卡拉奇船厂为巴基斯坦海事安全局建造的第2艘1500吨海事巡逻舰（MPV）在卡拉奇交付入役。该舰由中国船舶集团有限公司第七〇八研究所设计，全长90米，采用长桥楼舰型设计，配备先进的武备、执法、动力以及通导系统，总体性能优异。



### 巴基斯坦新型护卫舰

2021年11月8日，中国船舶集团为巴基斯坦海军设计建造的新型护卫舰交舰入役，为进一步巩固中巴全天候战略合作伙伴关系注入新的力量。该型护卫舰装备了集团公司自主研发的新型作战管理系统，配备了先进的传感器和武器系统，是我国迄今为止出口的吨位最大、技术最先进的水面战斗舰艇。





## 持之以恒壮大主业实业

中国船舶集团立足产业报国，推动技术、人才、资金等各类资源向主业实业集中，不断提升产业基础能力和产业链水平。

- 船海产业创历史新高
- 科技应用产业稳健增长
- 船海服务业价值创造能力显著增强

## 船海产业 创历史新高

2021年，中国船舶集团充分运用近年来在绿色环保、高效节能、双燃料动力等领域形成的技术积累，有效发挥研发、设计、建造、船舶配套等资源优势 and 产业链协同效能，经营接单实现翻倍增长；通过紧盯计划执行、加强统筹协调，发挥重组整合效应等针对性措施，完工交付船舶创20年来历史最高记录。造船完工量、新接订单量、手持订单量三大造船指标按载重吨计均位居世界第一。我们抢抓市场机遇，把控接单节奏，注重订单质量，强化风险防控，船海产品承接合同金额创2008年国际金融危机以来新纪录。

新接  
订单

新接船舶订单量：**2598.4** 万载重吨  
占全球市场份额：**21.5%**

2021年  
中国船舶集团  
三大造船指标  
位居世界第一

完工  
交付

造船完工量：**1708.1** 万载重吨  
占全球市场份额：**20.2%**

手持  
订单

手持船舶订单量：**4195.3** 万载重吨  
占全球市场份额：**20.5%**

### 23000TEU 双燃料动力集装箱船批量交付

2021年6月29日，沪东中华造船（集团）有限公司建造的第九艘全球最大、最先进23000TEU双燃料动力集装箱船交付，至此，该项目共9艘系列船全部按时完工交付。该船型全球首创双燃料动力应用在超大型集装箱船上，配置了全球首台W12X92DF船用双燃料低速机，可通过远程智能监控平台实现远程支持，具有绿色、低碳、智能、安全、高效等特质，创造了“中国船舶自主研发+设计+经营+建造+配套”模式的创新实践。



### 节能环保型30万吨超大型原油船（VLCC）交付

2021年2月26日，大连船舶重工集团有限公司建造的30万吨超大型原油船（VLCC）完工交付。该船最大载重量约31.9万吨，续航里程超过26000海里，主机油耗较上一代VLCC降低3%以上，氮氧化物排放量仅为2.8克/千瓦时，低于国际标准3.4克/千瓦时。





## ●○○ 全球最大“全能型”LNG加注船完工交付



2021年10月26日，沪东中华造船（集团）有限公司建造的18600立方米液化天然气（LNG）加注船完工交付。这是目前世界上能够提供全流程服务、技术指标最先进、舱容量最大、加注最快的LNG加注船，专门为地中海地区船舶提供LNG燃料加注，采用法国GTT公司的Mark III FLEX型薄膜围护系统。

## ●○○ 全球首艘LPG双燃料动力VLGC完工交付

2021年3月28日，江南造船（集团）有限责任公司建造的8.6万方双燃料超大型液化石油气运输船（VLGC）完工交付。该船是全球首次采用LPG作为主动力燃料，同时应用轴带发电机的VLGC新造船，在运营的经济性、可靠性、环境友好性等方面有巨大优势。



## ●○○ 海洋综合科考实习船“中山大学”号交付

2021年6月26日，江南造船（集团）有限责任公司建造的目前我国排水量最大、综合科考性能最强、创新设计亮点最多的6000吨级海洋综合科考实习船“中山大学”号交付。“中山大学”号排水量6880吨，续航力15000海里，是面向全球海域的“海上移动科研平台”，环保性能突出。



## ●○○ 践行“一带一路”倡议：为阿尔及利亚建造的客滚船开启首航

2021年11月1日，广船国际有限公司为“一带一路”沿线国家阿尔及利亚建造的1800客/600米车道豪华客滚船开启首航。该船是中阿合作的首个客滚船项目，豪华内装提升了航程舒适性，较高航速极大缩短航行时间，为旅客提供更加实惠和快捷的出行。



## ●○○ 世界最大最先进的民用医院船交付



2021年6月16日，天津新港船舶重工有限责任公司建造的全球最大、最先进的大型远洋医院船完工交付。该船采用全电力推进，全球适航，出航时定员500人，在港停靠期间额定载客可达到950人。该船稳性、抗沉性、快速性、操纵性、耐波性、续航性等性能极高，具备安全、舒适、环保、节能、智能等特点。

## ●○○ 全球最大火车运输船完工交付

2021年6月8日，中船黄埔文冲船舶有限公司建造的全球最大的火车专用滚装船完工交付。该船设置两层火车甲板，火车轨道总长达2500米，载重量超过2万吨，堪称“火车航母”。该船采用全上全下的火车装卸方式，2小时内可完成136节车厢的装卸。



## ●○○ 910RFEU 冷藏集装箱船交付



2021年8月26日，中船澄西船舶修造有限公司建造的首艘910RFEU支线冷藏集装箱船交付。该船货舱全舱装载多达910个冷藏箱，设计载重量28750吨，配置冷藏监测系统，便于系统维护和装卸。该船满足无限航区要求，环保指标达到国际先进水平。

## ●○○ 全球最大 FPSO 改装项目实现交付

2021年8月12日，大连船舶重工集团有限公司改装的 Guanabara MV31号浮式生产储卸船（FPSO）完工交船。该FPSO由一艘超大型油船（VLCC）改装而成，每天可处理18万桶原油和1200万立方米天然气，同时可以存储140万桶原油，是目前全球建成的最大FPSO之一。

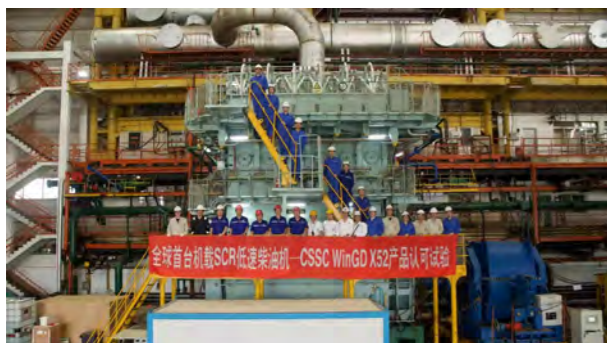


## ●○○ 全球首制双燃料超大型油船 C 型 LNG 低温储舱交付

2021年5月28日，大连船舶重工集团有限公司为全球首制双燃料超大型原油船建造的3500立方米C型LNG低温储舱成功交付。该储舱是满足EEDI第三阶段全球首艘LNG动力VLCC的关键配套产品，可有效抵抗甲板高盐、高湿恶劣环境对燃料舱的侵蚀，各项性能指标均达到国际领先水平。



●○○ 全球首台机载安装 SCR 的船用低速机 CX52 正式发布



2021年7月22日,中船动力(集团)有限公司自主研发、大连船用柴油机有限公司建造的全球首台机载SCR(选择性催化还原系统)船用低速机CSSC WinGD X52产品正式发布。CSSC WinGD X52可满足最新Tier III排放要求,集成式机载SCR系统具有操作灵活、空间紧凑、热损失小、利于船上安装等优点,其成功研制是公司在船舶动力领域取得的又一重大突破。

●○○ 全球首台第二代高压双燃料柴油机交付

2021年7月9日,由中船动力(集团)有限公司建造的全球首台6G70ME-C10.5-GI(MK2)第二代高压双燃料主机通过验收,是我国在该领域新的突破。该机优化设计运转模式,同时匹配大直径螺旋桨获得更高推进效率,经济性优势显著。



●○○ 自主研发 LNG 供气系统实现首单突破



2021年11月2日,青岛双瑞海洋环境工程股份有限公司取得GasLink®LNG供气系统(FGSS)订单。该系统将安装在芜湖造船厂有限公司建造的12000DWT/11700立方米沥青/成品油船上。此订单的签订,标志着由青岛双瑞自主研发的GasLink®FGSS设备实现首单突破。

专栏 云谈判、云签约、云调试、云交船

●○○ 上线船海业务云展厅

2021年6月21日,中国船舶集团创新探索云端展销,上线“船海业务云展厅”。中国船舶集团以“全景展示船海产品、用户体验智能快捷、助力市场营销工作”为导向,打造出集艺术性与先进性于一体的3D线上展厅,支持电脑、手机等多种终端使用。



●○○ 云签约超大型绿氨运输船(VLAC)合作备忘录

2021年12月10日,江南造船(集团)有限责任公司与JS&Co云签署2+2艘93000立方米超大型绿氨运输船(VLAC)合作备忘录。该VLAC将配置氨动力主机,为此可选择性地配置两个甲板氨燃料罐,方便需要进行其它货品运输贸易时的氨燃料供给,同样可以实现“零”碳排放。



## ●○○ 云签订液货舱容最大的二氧化碳运输船建造合同

2021年10月，大连船舶重工集团有限公司与挪威北极光公司云签订2艘7500立方米液化二氧化碳运输船建造合同。该船型为全球首制，是目前全球最大舱容量的液化二氧化碳运输船，满足最先进的能效设计指数要求，专业服务于海洋碳运输与封存。



## ●○○ 云交付全球最大沥青船

12月14日，中船澄西船舶修造有限公司通过线上视频连线的形式，实现全球最大沥青船2号37000吨沥青船胜利“云交付”。该船航速高、油耗低、载重量大，是目前全球最大沥青船，主辅机均配备SCR设备，满足IMO Tier III的排放要求，热油系统、液货系统、惰气系统等亦经系统优化。



## 科技应用产业稳健增长

2021年，中国船舶集团应用产业规模和重大项目影响力持续提升，在清洁能源装备、应急装备、电子信息装备、环保装备、基础设施建设与工程装备、新材料等领域的重点市场开拓成效显著，一大批应用产业重大项目进展顺利。

### ●●● 点亮绿色冬奥

中国船舶集团海装风电股份有限公司的张北多能互补、兴盛茂、三号乡等项目，拥有近200台机组，每年为北京输送14.6亿度清洁电。北京2022年冬奥会三大赛区26个场馆历史性实现100%绿色电能供应，可节约490万吨标准煤，减排1280万吨二氧化碳。



### ●●● 完成国内规模最大的海上风电项目

2021年7月，中国船舶集团海装风电股份有限公司完成华能如东H3项目的80台风电机组全场吊装。该项目安装了国内首台全国产化大型海上风电机组，总装机容量为400兆瓦，是国内规模最大、国产化程度最高的项目，标志着我国首次全面掌握海上风电机组关键部件的核心技术。



## ●○○ 乌拉特中旗 100 兆瓦光热发电项目完成国家能源局示范性验收

中国船舶集团新能源有限责任公司设计建造和运维的内蒙古乌拉特中旗 100 兆瓦槽式导热油 10 小时储能光热发电项目，是国家首批光热示范项目中单体规模最大、储热时长最长的槽式光热发电项目。该项目 2021 年 7 月 13 日储热岛全部投运以来，实现稳定高负荷发电，平均月发电量约 3600 万千瓦时。



## ●○○ 亚洲最大立方米秸秆生物天然气项目试运行

2021 年底，中国船舶集团有限公司第七〇三研究所投资建设的广瀚（尚志）秸秆生物天然气项目试运行，可将秸秆转化为节能环保的生物能源，生成的沼渣经过深加工后制成有机肥料。该项目达产后，秸秆年处理量为 10.2 万吨，年产生物天然气 2400 万立方米、有机肥 9.1 万吨，可有效改善土壤结构，解决区域秸秆等农业废弃物污染环境等问题。

## ●○○ 完成“深中通道”年度任务

“深中通道”项目是世界级的“桥、岛、隧、地下互通”集群工程，是国家“十三五”重大工程，也是粤港澳大湾区超级工程。2021 年 12 月 17 日，广船国际有限公司制造的第 7 个 E18 管节钢壳顺利完成上岸坐墩，超额完成深中通道 GK01 标项目年度任务目标。该管节钢壳纵移后仅用 8 天时间就完成了成型，再次刷新周期纪录。



## ●○○ LNG 罐箱自动化生产线开工建设

2021 年 12 月 21 日，中船澄西船舶修造有限公司签约 LNG 罐箱自动化生产线建设项目，利用现有修船厂房设施资源，加快推进 LNG 罐箱自动化生产线项目，实现核心产品研发、生产，首台交付销售。首批 50 台 LNG 罐箱已全部通过客户验收，产品获得 ASME 和 BV 检验认可。



## ●○○ 研发高纯特种电子气体

中船重工（邯郸）派瑞特种气体有限公司入选“十三五”中国气体行业分行业电子气体 10 强和“十三五”中国气体行业 50 强企业荣誉称号。高纯特种电子气体是整个电子工业体系的关键材料之一，主要应用于电子信息产业中芯片制程、化学气相沉积、刻蚀、掺杂和清洗等。“十三五”期间，派瑞特气公司攻克了多项关键工艺技术，生产的 29 种电子特气新材料产品广泛应用于电子信息领域，三氟化氮、六氟化钨国内市场覆盖率达到 95% 以上，填补了国内多项技术空白，有力保障国家战略性新兴产业安全。



## ●○○ 服务港口基建

武汉船机海西重机公司研制生产的系列化、多样化产品——龙门吊、门座式起重机、岸桥、自动化轨道吊等已遍及上海港、广州港、宁波港、天津港等几十个国内大型港口码头及船厂；同时产品远销“一带一路”沿线国家。2021年6月，中标广东省阳江港吉树作业区2台1000吨—74米龙门吊和1台40吨—30米四连杆门座式起重机项目，合同额超亿元。龙门吊单机起重量1000吨，起升高度轨上60米，具备现代化状态监测系统和控制管理系统。



## ●○○ 深水采油树实现国产化

水下采油树系统是海洋油气开发的核心设备。2021年9月5日，我国首台（套）深水采油树及控制模块在重庆前卫科技集团有限公司下线，并将在位于南海的中国海油乐东22-1气田进行示范应用，标志着我国在油气开发领域的核心设备——深水采油树实现国产化。前卫科技是我国首家具备1500米水深级采油树系统设备自主研发能力的企业，在深海石油开采关键核心技术和应用等方面取得重要突破。



## ●○○ 为“国和一号”提供核电贯穿件产品

“国和一号”CAP1400是我国具有自主知识产权的非能动大型先进压水堆核电机组。武汉重工铸锻有限公司为该项目承制的P01核电贯穿件，于2021年6月完成全过程生产并顺利发运。P01核电贯穿件尺寸大、各项性能要求高，是武汉重工承制的迄今最大核电产品。



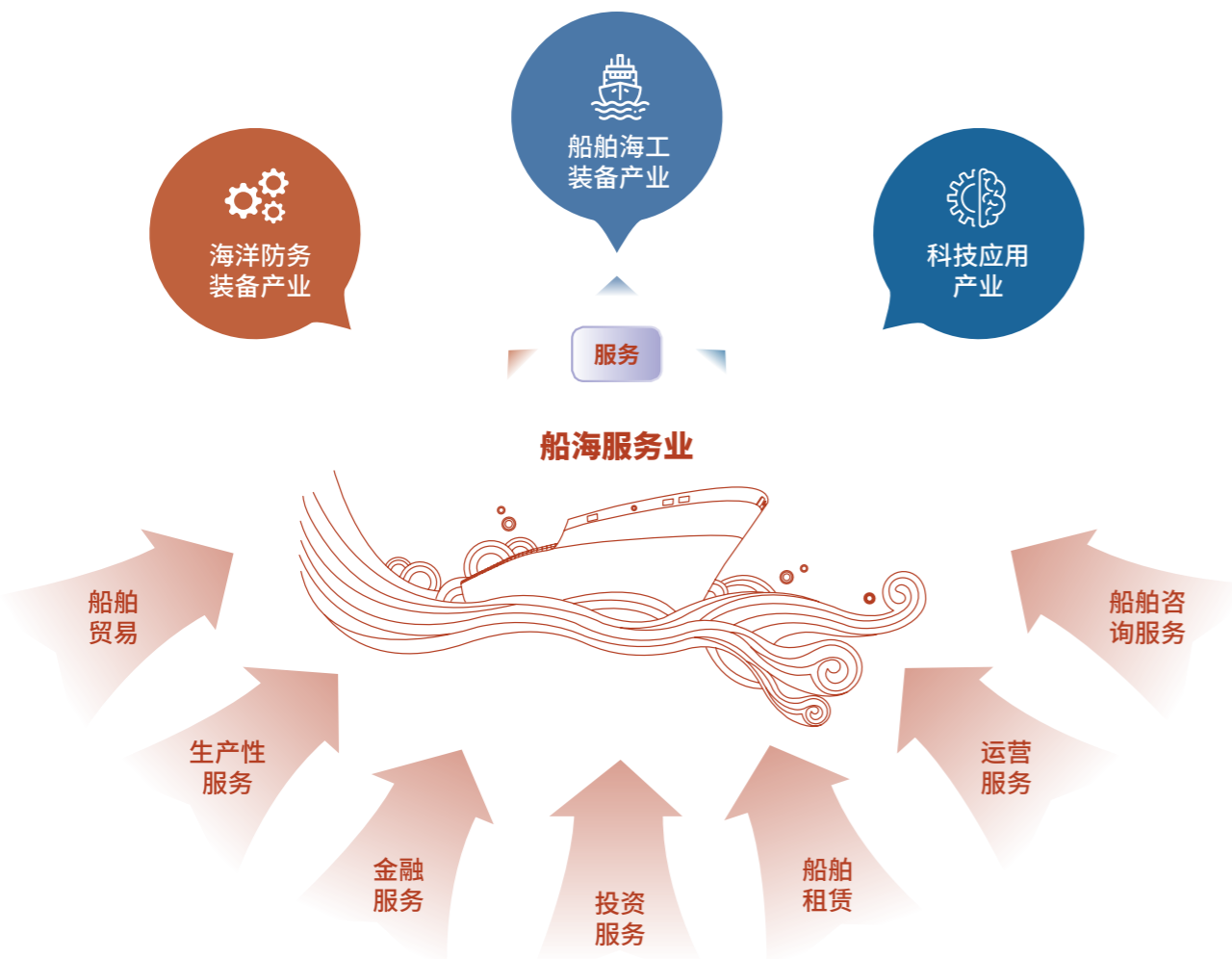
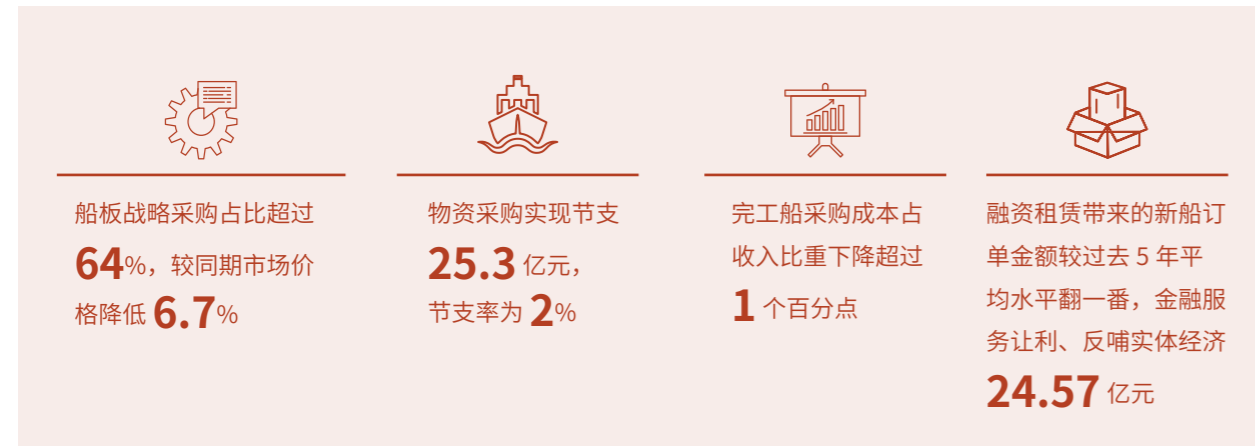
## ●○○ 建设世界一流高标准弱磁实验基地

宜昌测试技术研究所国防弱磁一级计量站是国家级标杆计量平台，主导我国磁学技术规范的制定，建设起涵盖“海陆空天”弱磁场计量的全参数校准设备。其产品、服务已全面应用于卫星、高铁、核电站、商用大飞机等国之重器，助力“天问一号”探测器、“祝融”号火星车共同完成火星“科考”。



## 船海服务业价值创造能力显著增强

中国船舶集团积极发展船海服务业，延伸拓展产业链价值链，支撑主业实业发展。2021年，在大宗物资价格大幅上升的情况下：



## ●○○ 拓展产业链金融服务

2021年，中国船舶集团财务公司服务客户 3800 余家，覆盖全国 30 个省级行政区，基本涵盖产业链主要生产制造企业。在监管机构的大力支持下，获批接入供应链票据平台，中国船舶集团供应链平台正式上线运行，让产业链上中小微企业高效、直接地向财务公司获取金融服务成为可能，为拓展产业链金融服务打下良好基础。

## ●○○ 构建合作共赢的供应商生态圈

中国船舶集团物资有限公司在“两个平台、两个支撑”的战略定位下，全面落实中国船舶集团物资集中采购工作部署，形成集中统一的采购管理新体制，打造公开阳光透明的数字化采购服务平台，并统一采购业务工作标准，实现稳链、强链、补链，推动产业链走向中高端。

## ●○○ 贸易实现新突破

中国船舶工业贸易有限公司坚持“市场化、国际化、专业化”发展方向，加快构建疫情常态化下的新发展模式，军贸业务稳步推进，舰船交付数量刷新纪录；船海业务再创佳绩，实现船海项目签约金额创 2008 年以来新高；应用业务全面起步。

## ●○○ 创新绿色金融，推动绿色发展

中国船舶（香港）航运租赁有限公司持续加大对清洁能源装备、绿色环保船型的投融资力度，与船东、货主、船管公司、融资机构、船厂、船舶经销商同心协力，通过“租赁+投资”模式培育新的经济增长点。2021年7月，成功发行5亿美元5年期蓝绿双标签债券，大幅压降综合融资成本至1.9%。公司连续三年获得标普A-和惠誉A的主体信用跟踪评级，并于2021年12月获得香港品质保证局（HKQAA）颁发的香港绿色和可持续金融大奖。





## 加快高水平科技自立自强

中国船舶集团努力肩负时代重任，以严谨科学的态度和自立自强的勇气，加大基础技术研究和关键核心技术攻关力度，不断提高科技成果转化力度。

- 夯实科技创新基础能力
- 聚力攻克关键核心技术
- 深化科技成果转化应用



## 夯实科技创新基础能力

中国船舶集团坚持把科技创新摆在高质量发展全局的核心地位，加大资源投入，发展和完善海洋装备理论、设计、试验与应用技术体系；全面提升我国在海洋研究领域的顶层战略规划能力、装备体系化研究能力、新概念装备研发与应用能力，形成代表国家水平的研究创新平台。

拥有 **36** 家科研院所，**63** 个国家级创新平台

### 标准与专利

中国船舶集团启动了“一个集团、一套标准”建设，成立集团标准化技术委员会和标准化研究中心，发布《集团公司标准化工作管理办法》，完成标准体系框架构建。

发布国际标准 **9** 项

国家标准 **30** 项

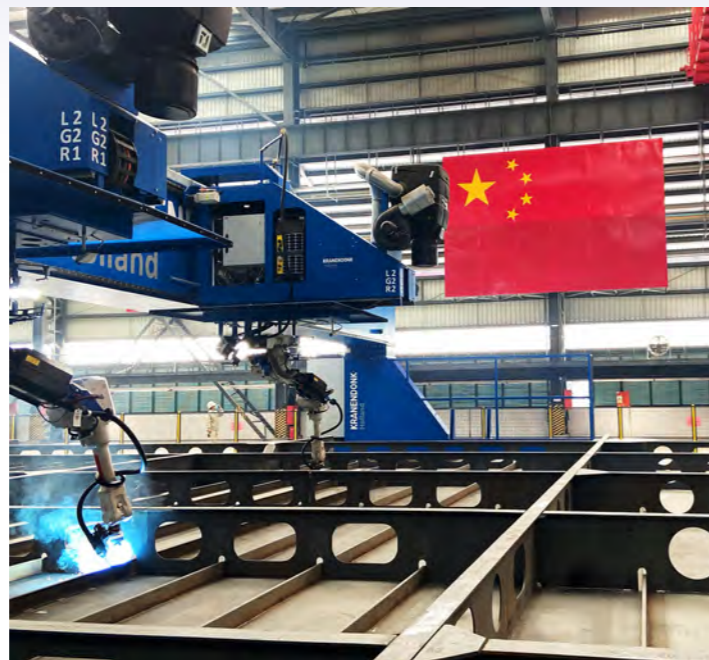
专利申请 **13427** 项

同比增长 **10.4%**

其中发明专利申请 **9675** 项

同比增长 **10.3%**

获得中国专利优秀奖 **8** 项



## 大力培育科技创新人才

中国船舶集团聚焦建设海洋强国、科技强国战略需求，坚持人才引进和产业培育发展相结合，贯通人才链、创新链和产业链，着力打造科技创新人才高地。

拥有工程院院士 **13** 人，享受国务院政府津贴 **87** 人

全国创新争先奖 **1** 人，国防科技创新团队 **5** 个

何梁何利科学与技术进步奖 **1** 人、创新奖 **1** 人

### 加快科技创新激励机制落地

审核 5 家单位 5 个项目收益分红方案，激励金额共计 2097 万元，激励核心技术和管理人员 65 人，人均激励金额达到 32.3 万元，进一步激发科技人员的创新活力。

### ●●● 成立智海创新研究院

2021 年 12 月 31 日，中国船舶集团成立智海创新研究院，加快将其打造成为海上智能领域世界一流的科研机构。智海创新研究院是中国船舶集团智能技术领域的总体技术中心、能力集成中心、共享研发中心以及协同创新平台、人才培养平台和创新实践平台，是集团公司智能科技发展总体单位和技术管理支撑单位。



## 聚力攻克关键核心技术

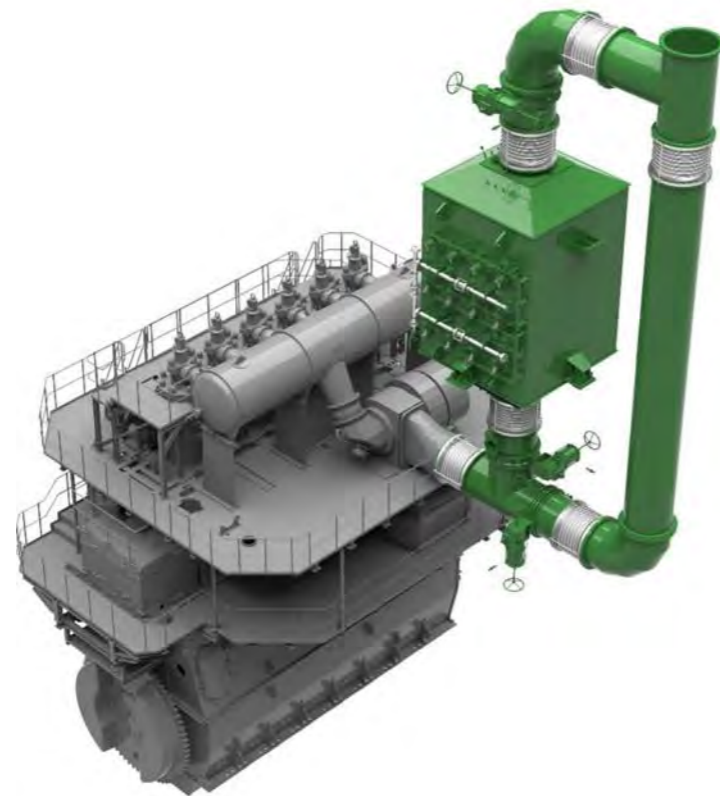
中国船舶集团加强原创性、引领性核心技术自主可控工程与关键核心技术攻关，明确“卡脖子”问题解决途径，形成自主可控科研项目清单，把创新主动权、发展主动权牢牢掌握在自己手中。

### 17.4 万立方米液化天然气（LNG）运输船获得船级社认可

2021年12月16日，由沪东中华造船（集团）有限公司与法国GTT公司联合研发的全球最新一代“长恒系列”17.4万立方米液化天然气（LNG）运输船获得美国船级社（ABS）、法国船级社（BV）、英国劳氏船级社（LR）、DNV等船级社颁发的船型设计通用认可、入级预先认可等证书，标志着这款集最新设计理念、最优技术装备、最强环保性能、最具前瞻性于一身的船型达到可以实船建造的状态，是中国在LNG船研发设计领域从跟跑、并跑到领跑进程中的重要里程碑。

### 船用LP-SCR 2.0系统首台套海试成功

2021年12月，搭载中国船舶集团动力股份有限公司船用LP-SCR 2.0系统的62000吨多用途船完工交付。船用LP-SCR 2.0系统是首次采用船用发动机排气集管集成式蒸发混合技术的船用脱硝产品，在系统能耗、系统集成度以及系统安全性等方面具有显著优势。该产品现已完成商业订单承接18台套，包括目前正在制的世界最大规格船用LP-SCR系统项目、世界首台CCS船级社方案B认证船用低速机LP-SCR项目等。



### 氨燃料动力 21 万吨散货船获船级社认证

2021年8月6日，上海外高桥造船有限公司最新研发的氨燃料动力21万吨散货船成功获得美国船级社（ABS）颁发的原则性认可证书（AIP）。该船型由上海外高桥造船有限公司自主研发设计，主机采用MAN的Ammonia机型，并配置相应的氨燃料存储和供应系统。氨燃料作为零碳能源，能满足更加严格的温室气体排放要求，使船舶满足减排要求，是未来脱碳航运业中最有希望的替代燃料之一。



### 世界首艘 B 型舱 99000 立方米超大型乙烷运输船研制成功

2021年12月28日，江南造船（集团）有限责任公司建造的全球最大舱容、世界首艘采用B型舱的99000立方米超大型乙烷运输船（VLEC）完工交付，对全球主要液化气终端具有普遍适用性。该船配置了可采用乙烷作燃料的双燃料主机和轴带发电机，在满足最严格的排放要求的同时保持最佳的经济性，已入级美国船级社和中国船级社。



## ●○○ 国内首个深远海工况的 6 兆瓦海上浮式风电机组完成研制

中国船舶集团海装风电股份有限公司自主研发的 6.2MW 抗台型 I 类风力发电机组，为目前国内最大浮式风电机组，具有高发电量、高可靠性、高安全性、高集成性和高可维性等特点。该风电机组将于 2022 年年初在广东省湛江市徐闻罗斗沙海域完成示范应用，这是国内首台按深远海条件进行设计、工程实施及测试验证的海上浮式风电装备示范样机。

## ●○○ 70 千瓦标准船用氢燃料电池板块获得船级社认可

中国船舶集团有限公司第七一二研究所自主研发的 70 千瓦氢燃料电池系统是国内首款符合船级社最新标准的船用氢燃料电池产品，具有船舶市场投放运营资格。目前，该所已着手开展氢燃料电池实船应用。

## ●○○ 世界先进水平自卸船顺利下水

2021 年 5 月 20 日，中船澄西船舶修造有限公司建造的第一艘双机双桨全电推 26000 吨自卸船顺利下水。该型船总长 225.5 米，型宽 23.76 米，型深 14 米，采用世界最先进推进器，更加节能环保，操纵性、机动性和可靠性优良。此外，该型船还配置有最大 5450 吨 / 小时卸货能力的自卸系统，以及全球首制最大装货能力 4000 吨 / 小时的单点装货设备，满足船舶装卸货需求。



## 深化科技成果转化应用

中国船舶集团加快船海装备的信息化、智能化水平，深化科技成果转化应用，有效促进发动机节能减排装置等高新技术产业化，努力成为全球船舶行业发展的推动者和引领者。

## 先进制造技术攻关与装备研发取得实效

中国船舶集团成功研制薄板激光焊接、MARKIII 波纹板自动化焊接、曲面分段肋板焊接等三型装备样机，突破 LNG 船密性检测技术，形成 LNG 密性检测装备的自主研发能力。中国船舶集团注重智能化、信息化建设，实现了船舶分段外表面智能涂装、艉轴管镗孔等装备示范应用。

## ●○○ 自主建造 MARK III 薄膜型燃料舱封舱

2021 年 10 月，江南造船（集团）有限责任公司自主建造的 15000TEU 集装箱船的燃料舱正式封舱，该燃料舱采用 MARK III 技术。MARK III 薄膜型围护系统装载货物具有蒸发率更低、更强的抗冲击能力的优势。江南造船（集团）有限责任公司已形成 MARK III 薄膜型围护系统燃料舱自主建造能力，能够拓展全新领域产品业务及中大型 LNG 领域。



## ●○○ 全球首条 45 英尺液化天然气（LNG）低温液罐智能流水线开工

2021 年 12 月，中国船舶集团有限公司第十一研究所自主研发、设计和承建的全球首条 45 英尺液化天然气（LNG）低温液罐智能流水线开工。该流水线采用十一所自主开发的智能管控系统进行全流程生产管理，可满足 40 英尺、20 英尺低温液罐生产技术要求，相较于现有生产方式，人工可减少 50%，效率可提高 6 倍之多，总体技术达到国际先进水平。



## 深化改革 强化管理

中国船舶集团加快推进全面深化改革，改革三年行动按期完成年度任务，重组整合与资产结构调整不断深化，三项制度改革迈出新步伐。管理体系和管理能力现代化水平迈上新台阶。

- 加快体制机制改革
- 深化资源整合融合
- 全面提升治理效能
- 提高质量管理水平

## 加快体制机制改革

中国船舶集团在健全现代企业制度、完善法人治理结构、推动混合所有制改革及中长期激励机制落地实施方面取得积极进展，有效激发和释放了企业发展活力。



### 大力推进中长期激励实施

2021年新增实施17个中长期激励方案，涉及激励对象1050人。其中，中国船舶（香港）航运租赁有限公司完成股票期权授予，形成骨干员工与公司利益共享、风险共担机制，成为集团公司重组成立以来首家实施股权激励的上市公司，主要经济指标创历史新高。

## 深化资源整合融合

2021年12月24日，中国船舶集团总部迁驻上海，全面开启更好服从服务国家重大战略、加快建设世界一流船舶集团的新征程。

中国船舶集团按照专业化、体系化、协调发展思路，根据成员单位功能、特点、区位，整合融合业务板块，快速完成贸易、物资、投资、财务、媒体、智库等领域专业化重组，实施区域化整合、实体化改革，推动技术、人才、资金等各类资源优化配置。



4月28日，中国船舶集团工程管理中心、未来发展研究中心、装备保障中心、规划发展研究中心揭牌仪式在京举行，突出军工核心，加强管理体系和管理能力建设，着力打造具有船舶特色的“战略+运营”管控新模式。

12月24日，国务院国资委牵头组织中国船舶集团等中央企业与地方国资企业设立的中国海洋工程装备技术发展有限公司落户上海揭牌仪式举行，汇聚优势资源，推动提升海工装备发展水平与能力，夯实海工装备产业发展基础，助力提升我国海工装备产业国际竞争力。

12月24日，中国船舶集团海舟系统技术有限公司落户上海揭牌仪式举行，充分发挥集团公司船舶行业领军企业和产业链“链长”作用，研发船舶工业全寿期并大力推广应用工业软件解决方案，努力提升我国工业软件发展水平。

推进完成大连、天津、上海、广州、重庆、西安、深圳等地区企事业单位的区域化整合实体化改革，解决地区公司市场化改革滞后、小散弱企业管控风险较大、部分单位聚焦主业实业不够和发展能力不足等问题。

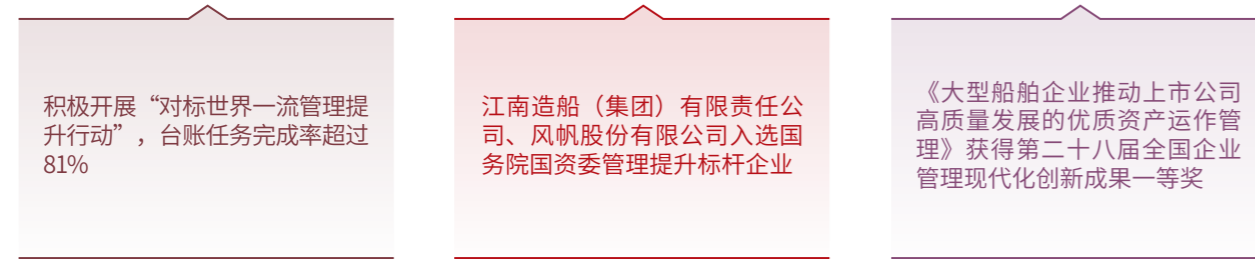
成员单位任期制契约化签约户数占比91%，签约人数占比94%，在4家单位试点推行职业经理人制度。全员劳动生产率同比增长12.2%。领导人员“业绩升薪酬升、业绩降薪酬降”不断深化。

通过引进战投、市场化债转股、发行可转债等方式，落实资本市场融资82.32亿元。

## 全面提升治理效能

中国船舶集团不断深化加强精细化管理，对标世界一流管理提升持续推进，降本增效成果明显，依法治企、合规管理不断深化，审计内控监督不断加强，质量安全环保及社会责任工作扎实开展。

### 对标世界一流管理提升持续推进

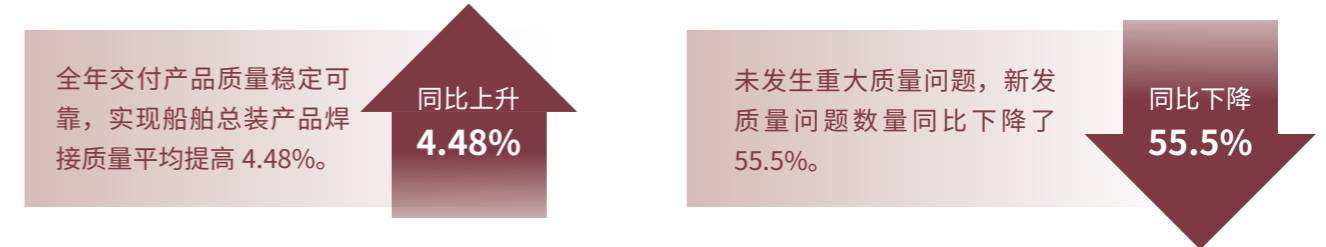


### 依法治企、合规管理不断深化

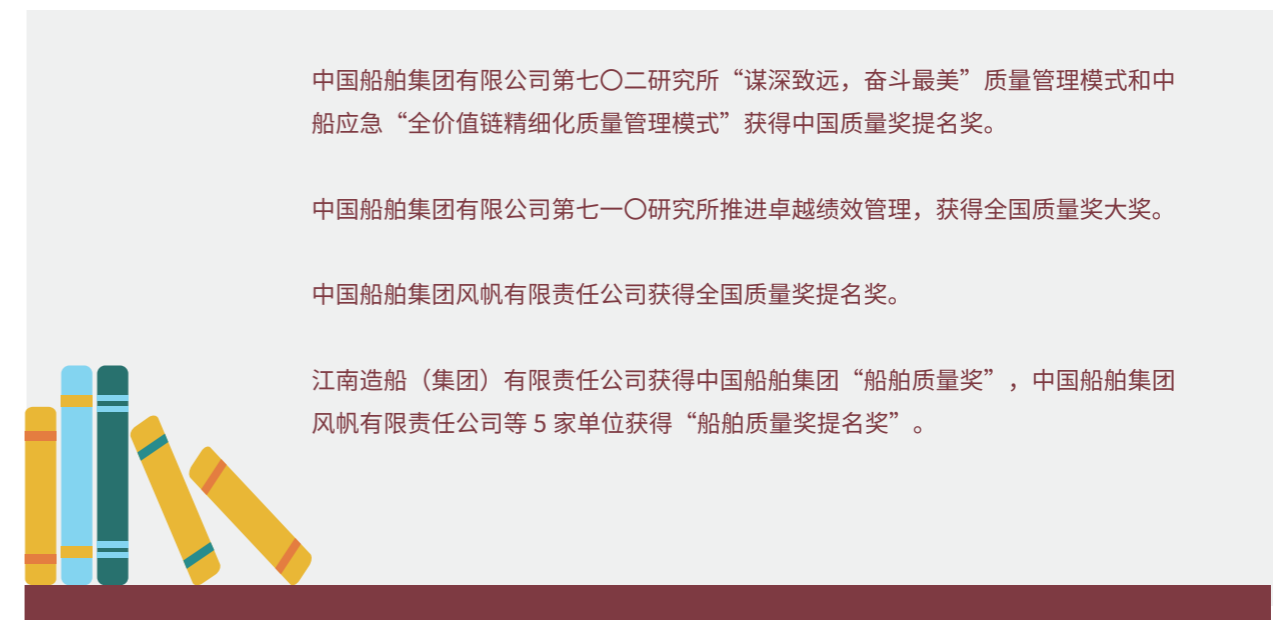


## 提高质量管理水平

中国船舶集团以“建设质量领先型企业”为目标，对标国际一流，坚持质量至上，注重质量效益，制定了“十四五”质量规划，提出了“十四五”期间的质量战略和发展目标，确定了“12315”的重点工作。



### 质量管理水平持续提升，得到相关方的高度认可



### 群众性质量活动取得丰硕成果

2021 年，中国船舶集团共有 8 个 QC 小组获评全国优秀质量管理小组，10 个班组获评全国质量信得过班组；组织参加中央企业质量管理小组发表赛，获得一等奖 2 项，二等奖 1 项，综合成绩在全部中央企业中排名第 3，军工央企第 1；组织 25 万余人参加了知识竞赛，综合成绩在全部中央企业中排名第 4，军工央企第 1。



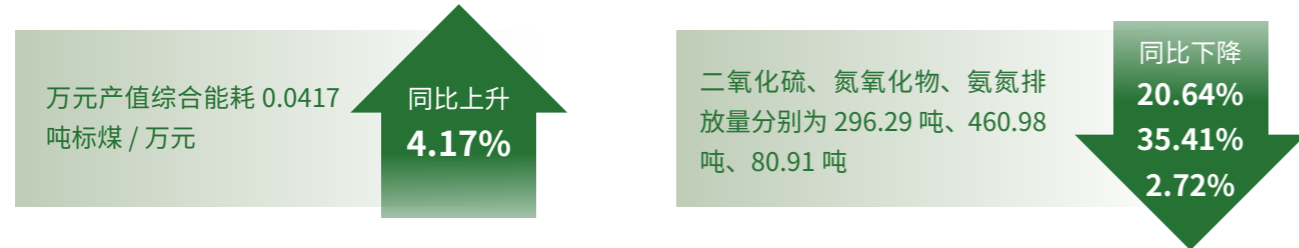
## 积极践行绿色发展

中国船舶集团深入贯彻落实国家关于推进习近平生态文明思想建设的决策部署，加强环保政策法规宣贯，组织开展环境保护专项行动计划，坚持发展绿色制造、研制绿色装备、布局绿色产业、提供绿色产品和服务，为绿水青山贡献力量。2021年节能环保形势总体平稳可控，未发生较大突发环境事件。

- 发展绿色制造
- 研制绿色装备
- 壮大绿色产业

## 发展绿色制造

中国船舶集团贯彻国家精准、科学、依法治污的要求，将打好污染防治攻坚战的各项任务落地、落细、落小、落实，持续降低能源消耗和污染物排放。2021年，中国船舶集团共投资12.8亿元，完成环境保护专项行动计划重点项目132项、一般项目893项，二氧化硫、氮氧化物、化学需氧量和氨氮等主要污染物的处理能力显著提升，排放量持续降低，有效提升环境质量。



### 大力推广 VOCs 治理工作

中国船舶集团有限公司第十一研究所承建的上海外高桥造船有限公司 VOCs 治理系统交付运行，该系统适用于两个涂装间共用一套废气治理装置，属国内首创。该系统运行后，排放口在线监测数据基本保持在 20 毫克 / 立方米以下，远低于各地方最新排放标准，达到国内先进水平。



VOCs 治理系统前合影

### 研发绿色喷涂系统工作

广船国际有限公司联合中国船舶集团长江科技发展有限公司共同研发了电子配比双组份大包装“绿色喷涂系统”相关装备，在船舶行业率先实现该技术的国产化和工业化，极大改善涂装作业的职业健康环境，将设备价格及其应用成本降低 30% 以上，实现减少排放危废和 VOCs 199 吨。



绿色喷涂系统合作签约仪式

## 开展工业固废治理

2021年6月，船舶行业首个分布式危废处置工厂在广船国际有限公司龙穴基地开始运行，该项目设计年处理规模5000吨，可实现废油漆桶等主要造船危废就地处置，减少危废处置和转运过程中的碳排放。

2021年8月，广船国际有限公司制定颁布了船舶行业首个《无废工厂评价指标体系及评价方法》，确立包括碳排放强度等24个评价指标，通过全年治理，实现工业垃圾产生总量下降942吨，工业固废产生强度下降25%，完成年度工业垃圾“达峰”的计划目标，为国家“无废城市”建设工作探索工厂管理模式。

中船第九设计研究院工程有限公司承担塑性阻隔系统设计工作的贵州天柱化工二期渣场综合治理项目，为中央环保督查的重点项目，是迄今国内规模最大的化工渣场综合整治项目。2021年12月25日，该项目正式完成，从根本上解决了渣场固体废物、污染土壤以及污染水体的问题。





## 研制绿色装备

中国船舶集团锚定“双碳”战略目标，加快研发绿色生态环保船型，形成以集成多种绿色节能措施的生态 VLCC、风帆助力 VLCC、全球首制 LNG 双燃料 VLCC、北极光 CO<sub>2</sub> 运输船等为代表的更具市场竞争力船舶产品，为远洋航运业“碳达峰、碳中和”提供解决方案。

### ●○○ 双燃料动力船舶建造交付

大连船舶重工集团有限公司建造的全球首艘 LNG 双燃料 VLCC 91 号船顺利完成水下阶段建造任务。该船 LNG 储气系统采用 C 型储罐设计，于左右舷各设一个 LNG 加注站，加注速率 1500 立方米 / 小时，便于船东加注作业。



大连船舶重工集团有限公司联合船东开发绿色甲醇、氨燃料 VLCC，获得船级社原则性认可。同时，自主研发单个净容积达 3500m<sup>3</sup> 的超大型船用 LNG C 型燃料储存舱，开发全球首艘双燃料 VLCC 的 LNG 加注方案。



江南造船(集团)有限责任公司成功交付世界首艘 LNG 双燃料 + 电池混合动力 + EMS 能源管控系统的汽车运输船，成为国际滚装船领域减排低碳标杆船型，入选“年度世界名船”榜单。该船总长 169.10 米，型宽 28.00 米，10 层甲板，可装载 3600 辆汽车。该轮装有一个 600 立方的 C 型罐，采用燃油和天然气双燃料动力，满足国际海事组织 TIER III Nox 排放限值，船上的天然气容量可满足全航程需求。



中船黄埔文冲船舶有限公司建造的第一艘 9500 方多用途气体运输船顺利交付。该船也是国内首艘配备自主研发主机的双燃料动力多用途气体运输船。该船液货系统分为两组，同时可处理两种货物，装载灵活、适应性强。该船船头两侧有 2 个 250 立方米的气体罐，兼做船上的 LNG 燃料罐；货罐舱还有 2 个 4500 立方米的气体罐。



## 壮大绿色产业

中国船舶集团坚持绿色发展理念，主动布局无污、无害、无毒、有益于人类健康的绿色产业，以实际行动助力国家能源绿色转型和“双碳”目标实现。

### ●○○ 风电产业

中国船舶集团具备较完整的风电装备研制生产服务保障体系，具有全产业链优势。2021年，获取风光资源超1700万千瓦，风电场核准超过100万千瓦，取得历史性突破；承接风机订单360万千瓦，交付700余台。

中国船舶集团海装风电股份有限公司成功打造国家级“绿色工厂”和“绿色供应链管理企业”，截至2021年底，在全球运行的风电机组每年发电量约480亿度，相当于节约标准煤1900多万吨，减排二氧化碳4700多万吨、二氧化硫140多万吨、氮氧化物70多万吨、每年植树造林200万亩。在江苏如东、启东、大丰和大连庄河、浙江象山、福建兴化湾等海上项目的风电机组共计362台，实现并网410台，并网容量达220.42万千瓦，相当于每年可节约标煤约215万吨、减排二氧化碳496万吨。



塞罕坝林场上的中国海装风机

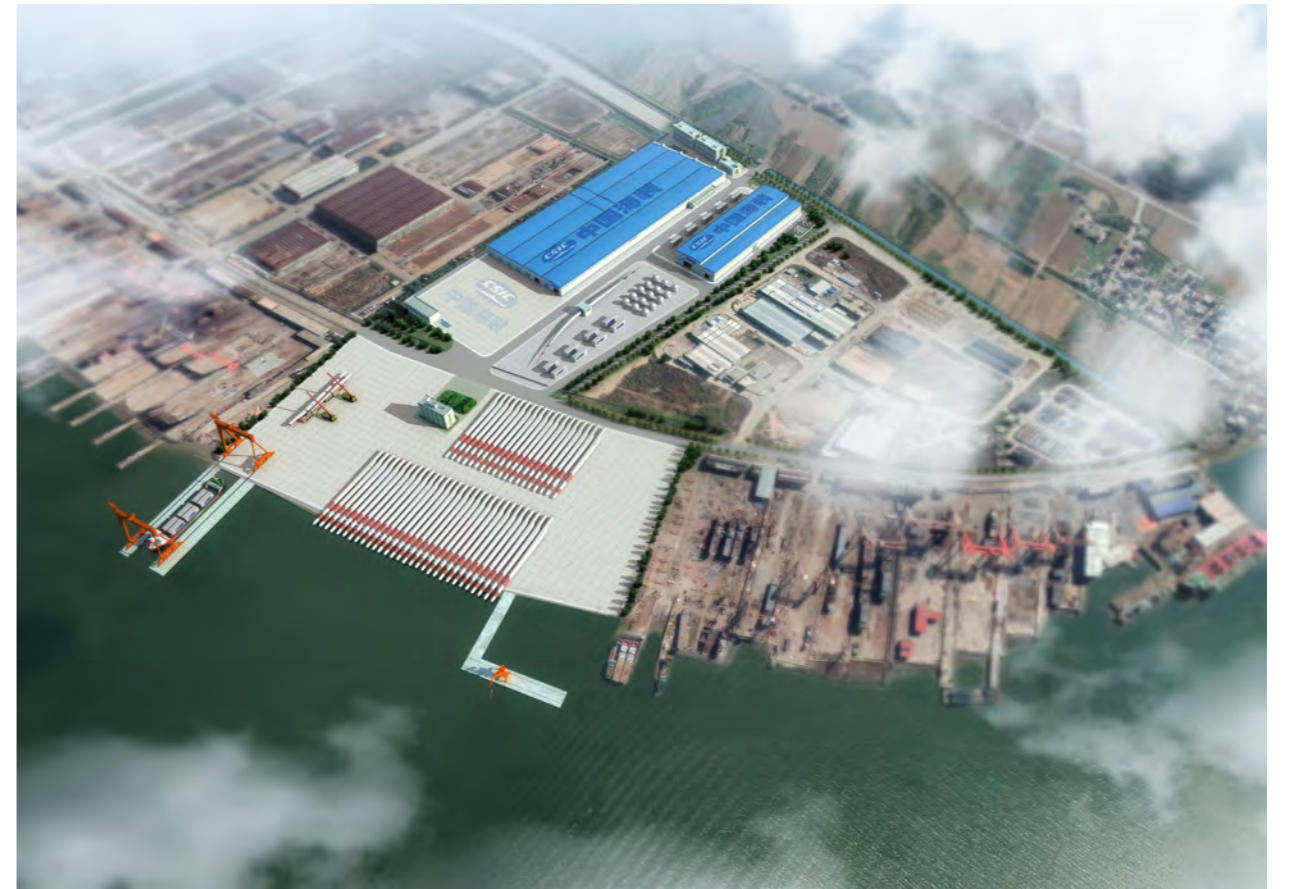


“中国三峡101”海上风电自升式勘探试验平台

武汉船用机械有限责任公司建造的“中国三峡101”海上风电自升式勘探试验平台顺利交付，可实现海上风电勘察及科研一体化作业，有力提升我国海洋工程勘察核心装备的竞争优势。



中船第九设计研究院工程有限公司顺利中标“中国海装象山大型海上风电装备产业园总装基地建设项目（EPC）工程总承包”项目。该项目是浙江省“十四五”海上风电规划的重要组成部分。



中国海装象山大型海上风电装备产业园总装基地建设

### ●○○ 光伏发电产业

广船国际有限公司与南方电网合作，投资5000万元，建成15兆瓦光伏发电项目，实现“自发自用、余量上网”，每年可实现碳减排1万吨。



光伏发电系统

## ●○○ 氢能产业

2021年，中国船舶集团 MW 级 PEM 电解水制氢设备入围年度国家能源领域首台（套）重大技术装备，制氢加氢一体化项目首次进入欧洲市场；集装箱式氢能装备首次进入美国市场；核电 TEG 氢氧复合单元签订首单合同，测氢装置首次进入核电后处理市场。

中国船舶集团有限公司第七一八研究所成立中船（邯郸）派瑞氢能科技有限公司，其业务涵盖水电解制氢、化石燃料制氢、氢能交通、海洋氢能等多个领域，其中水电解制氢装备在全国市场的占有率保持领先地位，并承担了4项“北京冬奥会”氢气供应关键性保障项目。



中国船舶集团有限公司第七一八研究所超大型水电解制氢设备项目。

## ●○○ 二氧化碳循环发电

重庆江增船舶重工有限公司自主研制的目前世界容量最大、参数最高、效率最优的首座 5MWe 超临界二氧化碳循环发电系统在西安成功完成满负荷试运行，在全球率先实现了工业级超临界二氧化碳透平研制及试验验证，循环发电试验机组核心设备国产化率 100%。



超临界二氧化碳透平发电机组投运监测现场



## 实现共享共赢愿景

中国船舶集团积极构建和谐发展、共享共赢的生态圈，始终高度关注利益相关方的诉求，筑牢利益共同体，推动高质量发展。

- 协同合作伙伴
- 关爱员工发展
- 热心社会公益



## 协同合作伙伴

为打造适应稳定安全、迅捷高效、成本优势突出的产业链和供应链，中国船舶集团创新合作机制，加强与地方政府、金融机构、各大院校的广泛、深入合作，实现补链、稳链、强链，推动产业链走向中高端，构建合作共赢的生态圈。

### ●○○ 签署战略合作协议

政企合作：与上海、海南、福建等地政府签署战略合作协议

银企合作：与建设银行、农业银行、浦发银行等金融机构签署银企合作协议

校企合作：与清华大学、上海交通大学、西北工业大学等高校签署战略合作协议

### ●○○ 举办首届供应商大会

为深化供应商合作，形成全产业链协同效应，2021年7月22日，中国船舶集团举办首届供应商大会，共吸引120多家中国船舶集团供应商、60多家成员单位近400名企业代表参加。大会达成共识：将以新一代信息技术构建现代化的产业链和供应链管理体系，开展绿色、智能物资和设备系统的研制，推进智慧供应链建设，在公平竞争与合作的基础上，建立发展共同体和命运共同体。



## 关爱员工发展

中国船舶集团关注员工权益，切实为员工办实事解难题；关爱员工健康，为员工创造安全和谐的工作环境；帮助员工成长，为员工搭建职业发展平台。

### 关爱员工发展

中国船舶集团深入贯彻习近平总书记在中央人才工作会议上的重要讲话精神，召开人才工作会，开展员工培训，建设爱国奉献、规模适度、结构合理、素质优良、充满活力、具有国际视野的一流人才队伍，为建设世界一流船舶集团提供强大的人才支撑。

员工总人数 **21.95** 万名，员工培训投入 **1.48** 亿元，员工参与培训 **75.38** 万人次，  
新增入选国家级人才计划 **17** 人、**4** 个集体，**2** 人获何梁何利科学与技术奖，**1** 人获中华技能大奖，  
**16** 人获“全国技术能手”称号

“围绕一条主线，坚持五项原则，推进两个结合，打造三支队伍，实施六大工程，实现四新目标” 聚焦专业化、市场化、年轻化发展方向

“3个一级指标、10个二级指标、35个三级指标”的量化关键指标体系



制定“14项重点任务、40项重点举措”重点任务清单

## 青年人才选拔

骨干企业和科研院所中 26 家实现“60后”“70后”“75后（含80后）”各占 1/3。

加强型号领导人员梯次配备，新任命“两总”55 人次，平均年龄 51 岁。

评聘首批 80 名特级技师，成为首个特级技师试点单位，入选国家首批产教融合型企业。

颁授首届“中国船舶青年五四奖章”，表彰共 24 名青年、24 个青年集体，树立团员青年榜样。

新提拔班子副职中，45 岁以下占比 **55%**

新提拔班子正职中，50 岁以下占比 **67%**

选拔青年拔尖人才 **299** 名



## 开展各类专题培训

举办领导干部专题研修班，创新采用“集中开班+分班面授+线上学习”培训方式。

举办首期科技领军人才培养，聚焦高级专家、型号两总，突出“综合素养+能力提升”，打造科技领军人才“技术+管理”双提升实战学习平台。

举办第二期、第三期中青班，形成“四学四复”中青班品牌。

举办高技能培训班，提升技能人才专业技能。

## 开展职业技能竞赛

中国船舶集团积极搭建岗位练兵、技术比武的职业技能竞赛体系。2021 年 9 月 27 日，集团公司联合中国就业培训技术指导中心，举办“2021 年全国行业职业技能竞赛暨中国船舶集团有限公司职业技能竞赛”，来自中国船舶集团 49 家成员单位共计 128 名选手参赛。



中国船舶集团高技能人才在国内顶级职业技能大赛中再创佳绩

## 入职第一课

2021 年 9 月 13 日，中国船舶集团召开 2021 年新员工入职培训会，为 4000 余名新员工上职业生涯第一课。



## 保障员工权益

中国船舶集团坚持以人为本，致力与员工建立平等和谐的劳动关系，保护员工合法权益，满足员工合理诉求，持续为员工营造平等、尊重、安全的工作环境。

集团公司做细做实保障员工权益工作，切实帮助员工解决实际问题困难，增强员工的获得感、幸福感、安全感。集团公司领导节假日开展慰问走访，看望慰问院士、老干部、烈士家属、劳模、业务骨干、驻外人员和困难职工，关心了解员工的生活状况；关爱女性员工，为孕期、哺乳期的女性员工提供便利。



春节前夕看望离退休员工



员工专项慰问



举办“三八节”花艺培训

## 守护健康安全

中国船舶集团对安全生产工作实行提级管理，落实《加强和改进安全生产工作的对策措施》，发布《中国船舶集团有限公司安全文化手册》，将安全生产理念厚植于日常的决策管理和生产作业中，以“严”和“实”的作风推动安全生产工作落地见效，全力以赴守护员工生命安全健康。2021年，安全生产形势总体稳定，未发生较大及以上事故。

- 全面持续开展习近平总书记关于安全生产重要论述宣讲学习活动
- 开展安全生产“两个一流”建设
- 开展企业安全生产标准化建设
- 开展“安全生产月”活动、安全生产专项整治三年行动
- 开展“辨风险、除隐患、反三违、保安全”专项整治百日行动



- 适应产业发展趋势和职业健康防护需求，进一步完善职业卫生防护标准，提升职业场所安全水平。
- 加强职业健康体检，落实工伤、医保、救助等政策。
- 强化对职业病风险的预防预控，严格报告制度，早发现、早报告、早处置。
- 认真开展职业健康宣传教育，健全劳动用工制度，增强劳动者主动防护意识。

### ●● 以人为本，保障员工安全健康

中国船舶集团风帆有限责任公司对标世界一流标准，将血铅内控标准定为 400μg/L（国家标准为 600μg/L），建立由异常率、异常人数、重点区间、平均值，四类血铅指标组成的考核体系，实施不同血铅区间人员差异化监管措施；推广分区管理，通过划分人员进出路线，避免交叉污染；推广铅显色液，编制铅作业员工卫生管理制度，填补了行业内铅作业人员个人卫生检查方式上的空白。

## ●○○ 高效统筹疫情防控和科研经营生产

2021年，国内新冠肺炎疫情局地多点散发，区域防疫成为常态。我们坚持“外防输入、内防扩散、严防输出”，推动落实疫情防控各项工作，按照要求开展核酸检测，组织疫苗接种，保护员工生命健康。我们建立疫情期间船海产业生产经营工作机制、“疫情期间船海产业生产经营日报、周报”制度。船舶海工业务承接合同金额创2008年国际金融危机以来新纪录，实现经济运行稳中向好、疫情防控和生产经营两手硬。



接种疫苗现场



组织员工有序进行核酸检测



开展防疫志愿清洁活动

## 热心社会公益

中国船舶集团认真履行央企社会责任，承担历史使命，助力乡村振兴，参与抢险救灾，热心公益慈善，共建温暖和谐的社区。

### 助力乡村振兴

中国船舶集团始终秉持“上下同心、尽锐出战、精准务实、开拓创新、攻坚克难、不负人民”的脱贫攻坚精神，持续扎实开展对云南省鹤庆县、勐腊县、丘北县的定点帮扶工作。

2021年，在三县累计投入各类帮扶资金1.52亿元（其中，无偿帮扶资金5697.68万元、通过产业扶贫基金投入2723.7万元、购买农产品6780万元），实施项目超过50个。



党组成员到丘北县调研定点帮扶工作

投入533.8万元，在鹤庆县建设生产加工、冷藏储存设施

投入913万元，在丘北县建设蔬菜产业、种植示范基地，发展平寨乡蚌常村旅游业

投入765万元，在勐腊县建设综合蔬菜交易市场、推广轻木种植，投入115万元在磨憨镇尚勇村建设500头规模冬瓜猪养殖场、扩建茶叶初制所

### 在产业方面，打造乡村产业发展示范项目

投入280.27万元，在丘北县树皮乡滕胧村和新店乡老熊箐建设道路、在舍得乡舍得村建设管饮工程、在官寨乡禹王村建设灌溉工程等

投入36万元，在鹤庆县六合乡松园村建设山地田间轨道

### 在基础设施方面，改善乡村生产生活条件

投入1049.41万元，在三县开办“中船春蕾班”、建设校园设施、开展“筑梦深蓝”国防教育夏令营

### 在教育方面，帮助脱贫地区学生改善学习条件



投入 501 万元，支持鹤庆县 2 个、勐腊县 3 个标准村卫生室和丘北县 1 个乡镇卫生院综合业务楼建设

投入 157.8 万元，捐建勐腊县装配式边境值守保障系统、集中隔离区垃圾焚烧设施

建立可容纳 5000 人以上的集中隔离点，助力边境疫情防控

### 在医疗方面，改善乡村一线医疗条件

投入 238 万元，累计培训基层党政干部 1687 人、乡村振兴带头人 516 人、专业技术人员 1319 人

### 在培训方面，支持三县开展人才培养

投入 373 万元，在鹤庆县 64 个村建设“爱心超市”，投入 281 万元支持六合乡民族文化团结广场和金墩乡银河文化空间建设

投入 65 万元，支持勐腊县民族中学民族文化陈列室及党建、军工文化长廊建设

投入 22 万元，在丘北县开展中国船舶 - 平寨乡花米稻田公园首届新米节，投入 12 万元支持开展文化下乡系列活动

### 在文化方面，助力乡村文化振兴

投入 100 万元，支持勐腊县城市垃圾处理场渗滤液处理站修复工程

投入 204 万元，在丘北县聘任 90 名乡村护河员、190 名乡村保洁员，加强河湖和乡村道路监督管理

### 在环境方面，保护乡村生态环境

投入 205.4 万元，支持丘北县建设“智慧党建”可视化调度智慧中心和随机调研系统、官寨乡革勒村基层党组织活动中心

投入 12 万元，建设勐腊县勐捧镇曼回庄村党建室

### 在党建方面，助力完善基层党组织活动设施

组织干部职工购买三县农产品 6780 万元

发动成员单位帮助三县销售农产品 5525 万元

### 在消费帮扶方面，积极带动当地发展

## ●● 助力西双版纳州勐腊县产业发展

中国船舶集团持续助力云南省西双版纳州勐腊县巩固拓展脱贫攻坚成果、加快推进乡村振兴。通过勐腊产业扶贫基金，分别向云锰橡胶和万泽农业投资 2500 万元、1000 万元（其中，归属集团公司份额分别为 1945.5 万元、778.2 万元），支持勐腊县橡胶深加工、冬瓜猪养殖产业发展。



党组成员到勐腊县调研定点帮扶工作



在西双版纳成立国家级企业技术中心

昆明船舶设备集团有限公司发挥智能制造领域的产业技术优势，结合勐腊县产业发展需要，自主研发建设了全国首条智能化普洱茶生产试验线，2021 年完成普洱茶 300kg/h 实验线方案的设计；在勐腊县设立云茶智能制造创新中心、云胶智能制造创新中心、智慧停车创新发展中心，开展智能化普洱茶生产线、智能化橡胶生产装备研发及应用和智慧停车业务拓展，推动当地普洱茶产业、天然橡胶生产加工集约化、规模化发展和城市交通智慧化发展。



## 推进疫情防控

自新冠肺炎疫情爆发以来，中国船舶集团始终保持清醒的战略定位和底线思维，紧扣市场脉搏、创新工作机制，在打赢疫情防控阻击战中彰显央企责任担当。



大船集团向大连市政府捐赠 15 万只医用外科口罩



第八研究院为扬州捐赠 30 万元现金、100 万只口罩、20 万元其他防疫物资



中船绿洲医疗垃圾处理系统装车发往禄口，支援南京抗疫

## ●○○ 以智能方舱医院助力边境疫情防控

为帮助西双版纳州勐腊县坚决打赢疫情外防输入的阻击战，昆明船舶设备集团有限公司响应当地政府需求，夜以继日快速建成防疫隔离工程项目；与系统工程研究院联合研发了中国船舶智能化移动多功能方舱医院，获中国船舶集团“应用产业重大项目奖”，“支撑疫情防控和复工复产工业互联网平台解决方案”被国家工信部列入智能制造系统解决方案供应商目录。

2021年，建成云南省瑞丽市应急移动医院2座、西双版纳州勐腊县疫情防控集中隔离点方舱医院3座及边境值守保障系统1座、勐海县医学集中隔离点1座，文山州富宁医学集中隔离点1座、麻栗坡县医学集中隔离点1座。



系统院可快速部署方舱



昆船集团建设方舱医院

## 热心公益慈善

中国船舶集团注重社会效益，积极组织各类公益慈善活动，开展支援河南防汛救灾工作，传递社会正能量。

## ●○○ 支援河南防汛救灾工作

2021年7月，河南暴雨洪灾发生后，中国船舶集团紧急通过河南省慈善总会捐赠1000万元，组织旗下在豫各单位快速启动防汛应急预案，充分发挥水上应急救援装备优势，支持河南省防汛救灾及灾后重建工作。2021年7月23日，中国船舶重工集团应急预警与救援装备股份有限公司的102名专业人员，携应急动力舟桥、全地形两栖救援车等装备30台套，奔赴河南新乡市、鹤壁市紧急转移村民千余名。



## ●○○ 开展各类慈善公益活动

集团公司成员单位积极履行社会责任，开展“一日捐”、帮扶孤寡老人及儿童、资助贫困大学生等慈善公益活动。



中国船舶集团有限公司第七〇一研究所青年职工胡文莉荣膺“中国青年志愿者优秀个人奖”



江增重工在重庆东方红学校开展爱心助学活动



青岛双瑞在中国海洋大学设立“青岛双瑞奖学金”



武汉重工参与社区“清洁家园”志愿服务活动



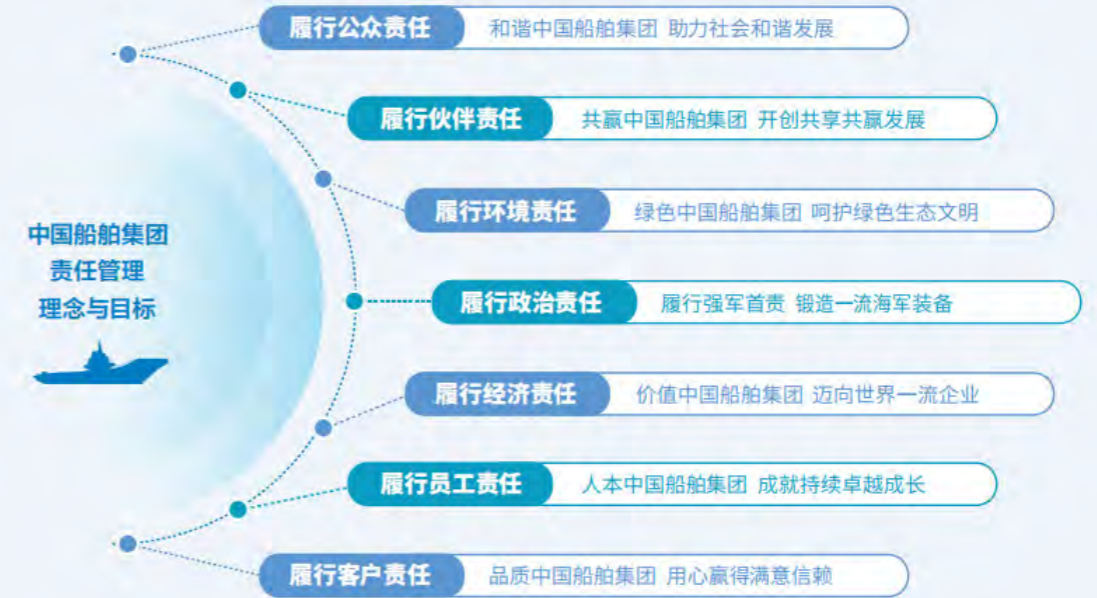
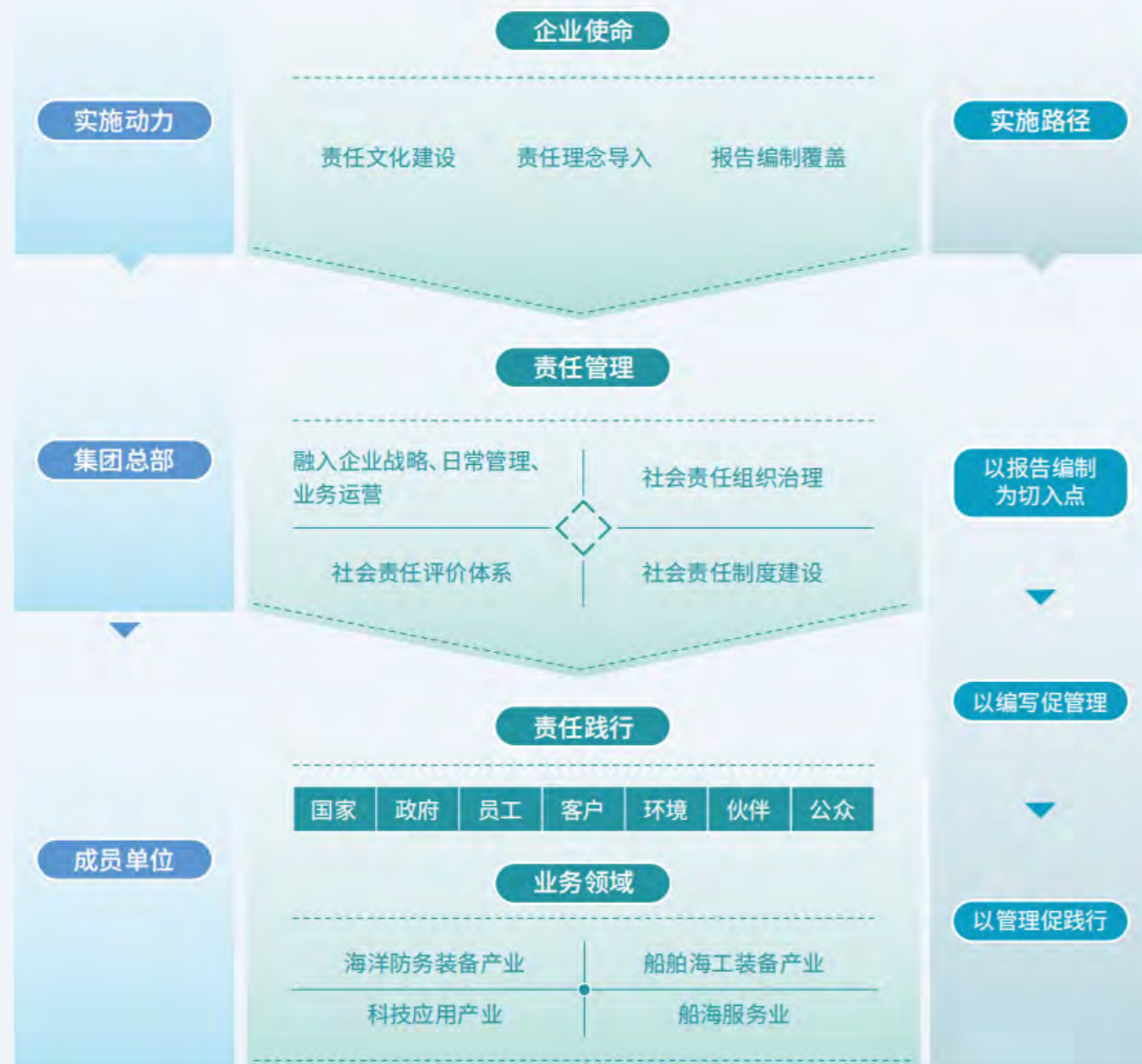
北海造船组织无偿献血活动

# 责任管理

## 责任理念

秉承“引领行业发展、支撑国防建设、服务国家战略”的企业使命，逐步走出一条以使命为引领的履责之路，并有意识地将社会责任融入企业战略与企业文化，推动责任践行、开展责任管理，实现承担历史使命、履行社会责任和推动企业可持续发展的有机统一。

中国船舶集团社会责任管理推进模型



## 责任治理

中国船舶集团成立社会责任领导小组，建立由总部相关部门归口管理、成员单位联动的社会责任组织体系，覆盖集团公司总部和各成员单位，有章法、有步骤、系统化推进社会责任工作融入战略、进入管理、纳入运营。

中国船舶集团社会责任组织体系



# 责任沟通

中国船舶集团将主动与各利益相关方进行沟通交流，建立常态化的社会责任信息披露机制。通过在中国船舶集团官网及官方微信平台披露社会责任信息，编制并发布年度社会责任报告等，传播社会责任理念与实践，提升社会责任影响力，增强运营透明度。

	国家	政府	员工	客户	合作伙伴	同行	环境	社区
<b>我们的共同目标</b>	<ul style="list-style-type: none"> <li>服务国防，优质高效</li> <li>科技创新，引领行业</li> <li>国有资产保值增值</li> <li>带动就业，和谐发展</li> </ul>	<ul style="list-style-type: none"> <li>遵纪守法</li> <li>依法纳税</li> </ul>	<ul style="list-style-type: none"> <li>基本权益保障</li> <li>职业素质提升</li> <li>广阔职业发展空间</li> <li>归属感和认同感</li> </ul>	<ul style="list-style-type: none"> <li>优质产品和服务</li> <li>认真履行合同</li> <li>合作共赢</li> </ul>	<ul style="list-style-type: none"> <li>恪守商业道德</li> <li>公开、公平采购</li> <li>合作共赢</li> <li>共同发展</li> </ul>	<ul style="list-style-type: none"> <li>公平竞争</li> <li>产业发展</li> </ul>	<ul style="list-style-type: none"> <li>绿色发展，节能减排</li> <li>节约资源</li> <li>清洁能源</li> <li>绿色办公</li> </ul>	<ul style="list-style-type: none"> <li>参与社区发展</li> <li>支持公益事业</li> <li>提供就业保障</li> </ul>
<b>我们的沟通渠道</b>	<ul style="list-style-type: none"> <li>定期工作汇报</li> <li>参加相关会议</li> <li>信息报送</li> <li>中国船舶集团网站、报刊、微信公众号等</li> </ul>	<ul style="list-style-type: none"> <li>工作汇报</li> <li>相关会议</li> <li>函件往来</li> </ul>	<ul style="list-style-type: none"> <li>厂务公开制度</li> <li>对话机制</li> <li>职工代表大会</li> <li>满意度调查</li> <li>探访慰问</li> </ul>	<ul style="list-style-type: none"> <li>中国船舶集团网站</li> <li>合同协议</li> <li>满意度调查</li> </ul>	<ul style="list-style-type: none"> <li>合同协议</li> <li>合作研发</li> <li>联合活动</li> <li>日常沟通</li> </ul>	<ul style="list-style-type: none"> <li>公平竞争</li> <li>产业发展</li> </ul>	<ul style="list-style-type: none"> <li>中国船舶集团网站</li> <li>资料报送</li> <li>定期工作汇报</li> <li>公开披露信息</li> </ul>	<ul style="list-style-type: none"> <li>合作共建</li> <li>公益活动</li> <li>社区参与</li> <li>志愿者活动</li> </ul>
<b>我们的不懈努力</b>	<ul style="list-style-type: none"> <li>创新型企业集团</li> <li>转变经济发展方式</li> <li>经济贡献</li> <li>带动地方经济</li> </ul>	<ul style="list-style-type: none"> <li>遵守法律法规</li> <li>积极与各级政府部门沟通</li> </ul>	<ul style="list-style-type: none"> <li>建立完善薪酬体系</li> <li>加大健康安全保障</li> <li>建设人才工程</li> </ul>	<ul style="list-style-type: none"> <li>提供优质、高效、安全产品</li> <li>定制化产品和服务</li> </ul>	<ul style="list-style-type: none"> <li>执行公平透明的商业原则和流程</li> <li>公开招标采购信息</li> <li>责任采购</li> </ul>	<ul style="list-style-type: none"> <li>引领行业发展</li> <li>提升产业链价值</li> <li>共享最新科技成果</li> </ul>	<ul style="list-style-type: none"> <li>“资源节约型”企业</li> <li>“环境友好型”企业</li> <li>绿色产品和服务</li> <li>发展绿色产业</li> </ul>	<ul style="list-style-type: none"> <li>定点帮扶</li> <li>爱心助学</li> <li>抢险救灾</li> <li>鼓励志愿者行动</li> </ul>

## 展望 2022

2022 年将迎来党的二十大。中国船舶集团将在以习近平同志为核心的党中央坚强领导下，胸怀“两个大局”、心系“国之大者”，以迁驻上海为起点，弘扬伟大建党精神，坚决履行强军首责，持续强化全球资源配置功能、科技创新策源功能、高端产业引领功能，聚焦主责主业，优化产业布局。我们将深化重组整合融合，决战决胜改革三年行动，充分发挥党建引领保障作用，完善中国特色现代企业制度，加快健全市场化经营机制，持续激发企业活力动力，履行好“引领行业发展、支撑国防建设、服务国家战略”的企业使命，加快建设世界一流船舶集团，以优异成绩迎接党的二十大胜利召开。

## 报告结尾

### 关键履责绩效表

指标	单位	2021 年
经济		
资产总额	亿元	8839.46
营业收入	亿元	3461.95
利润总额	亿元	208.48
净利润	亿元	185.28
纳税总额	亿元	79
科技		
研发资金投入	亿元	381
国家级创新平台	个	63
国家重点实验室	个	1
国家级工程技术研究中心	个	2
国家工程实验室	个	4
国家工程研究中心	个	4
国家企业技术中心	个	29
国家级研发中心	个	4
国防科技重点实验室	个	11
国防科技工业创新中心	个	6
国家级创新基地	个	2
申请专利	项	13427
其中发明专利	项	9675
发布国际 / 国家和行业标准	项	39
社会		
员工总数	万人	21.95
经济合同法律审核率	%	100
员工培训投入	亿元	1.48
员工培训人次	万人次	75.83
员工体检覆盖率	%	100
各类帮扶资金投入	亿元	1.52
环境		
万元产值综合能耗	吨标煤 / 万元	0.0417
二氧化硫排放量	吨	296.29
氮氧化物排放量	吨	460.98
氨氮化物排放量	吨	80.91

# 报告指标索引

标题	中国企业社会责任编写指南 (CASS-CSR4.0)	全球可持续发展标准委员会 《可持续发展报告标准》 (GRI Standards)
<b>报告说明</b>	P1.1, P1.2, P1.3, P1.4, P1.5	102-46, 102-50, 102-52, 102-53
<b>关于我们</b>	公司概况	P4.1, S1.6
	组织结构	P4.2
<b>责任专题：强化企业创新主体地位 打造国家战略科技力量</b>	M2.4, M2.7	102-2
<b>弘扬伟大建党精神</b>	党的领导作用发挥更加制度化	P3.1, P4.1
	落实“第一议题”制度	P3.1, P4.1
	扎实开展党史学习教育	P3.1, P4.1
	有力塑造中国船舶品牌	P3.1, P4.1, G1.1
	不断深化“三基”建设	P3.1, P4.1
	深入推进全面从严治党	P3.1, P4.1
<b>坚定不移履行强军首责</b>	研制一流海军装备	M2, P4.3
	保障重大军事任务	M2, P4.3
	积极拓展军贸业务	M2, P4.3
<b>持之以恒壮大主业实业</b>	船海产业创历史新高	M2, M3.4
	科技应用产业稳健增长	M2
	船海服务业价值创造能力显著增强	M3
<b>加快高水平科技自立自强</b>	夯实科技创新基础能力	M2.4, M2.6, M2.7
	聚力攻克关键核心技术	M2.4, M2.7
	深化科技成果转化应用	M2.1, M2.4, M2.7
<b>深化改革强化管理</b>	加快体制机制改革	S1.4
	深化资源整合融合	S1.4
	全面提升治理效能	M2.2, M2.3
	提高质量管理水平	M2., S2.11, S2.12, S3.2, S3.3

标题	中国企业社会责任编写指南 (CASS-CSR4.0)	全球可持续发展标准委员会 《可持续发展报告标准》 (GRI Standards)
<b>积极践行绿色发展</b>	发展绿色制造	E1.1, E1.8, E.1.10, E2.4, E2.11, E2.12, E2.15, E2.16
	研制绿色装备	E1.3, E1.7, E2.1, E2.3, E2.21
	壮大绿色产业	E1.3, E1.7, E2.1, E2.3
<b>实现共享共赢愿景</b>	协同合作伙伴	M2.2, M3.6, G3.2
	关爱员工发展	S1.5, S1.6, S2.1, S2.2, S2.3, S2.8, S2.10, S2.14, S2.18
	热心社会公益	S4.3, S4.5, S4.12, S4.13
<b>责任管理</b>	责任理念	G1.1, G1.4
	责任治理	G2.1, G2.2, G2.3, G2.4, G2.5
	责任沟通	G5.1, G5.3
<b>展望 2022</b>	A1	102-15
<b>关键履责绩效表</b>	A2	201-1
<b>报告指标索引</b>	A5	102-55
<b>意见反馈</b>	A6	/

# 意见反馈

尊敬的读者：您好！

感谢您阅读本报告。我们真诚地期待您对本报告进行评价，提出宝贵的意见，以便我们持续改进社会责任工作，提高履行社会责任工作能力与水平！

谢谢！

中国船舶集团有限公司

2022 年

选择性问题：（请在相应的位置选择打“√”）

1. 您对报告的总体印象是：

很好    较好    一般    较差    很差

2. 您认为报告中所披露的社会责任信息质量：

很高    较高    一般    较低    很低

3. 您认为报告结构：

很合理    较合理    一般    较差    很差

4. 您认为报告版式设计和表现形式：

很好    较好    一般    较差    很差

开放性问题：

您对《中国船舶集团有限公司 2021 年企业社会责任报告》的宝贵意见与建议，欢迎提出：

您可以与中国船舶集团有限公司 2021 年企业社会责任报告编写组联络。我们将认真对待您的意见与建议，并承诺妥善保护您的信息不被第三方获取。

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**建设世界一流船舶集团**

**中国船舶集团有限公司**  
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**CSSC**  
中国船舶

**2021**

**Corporate Social  
Responsibility Report**



## Report Description

### Report Description

For ease of expression and reading, "China State Shipbuilding Corporation Limited" is referred as CSSC or "we/us" for short hereinafter.

### Reporting Objectives

This report is the third CSR Report released by CSSC, aiming to provide our stakeholders with information on the CSR philosophy, practice and performance and respond to the important concerns of the stakeholders. CSSC guarantees the authenticity and accuracy of the report.

### Report Scope

This report covers the economic, environmental, and social performance of China State Shipbuilding Corporation Limited and its member units.

The time scope of the report is from January 1, 2021 to December 31, 2021. Part of the content data back to previous years.

### Standards

Guidelines to Central Government-owned Enterprises on Fulfilling Corporate Social Responsibilities issued by State-owned Assets Supervision and Administration Commission of the State Council (SASAC)

Guidelines to State-owned Enterprises on Better Fulfilling Corporate Social Responsibilities issued by State-owned Assets Supervision and Administration Commission of the State Council (SASAC)

Guidelines on Social Responsibility Reporting (GB/T36001-2015) issued by Standardization Administration Commission of China

Guidelines for Compiling Chinese Cooperate Social Responsibility Report (CASS-CSR4.0) issued by Chinese Academy of Social Sciences

Sustainability Reporting Guidelines (GRI-standards) issued by Global Reporting Initiative (GRI)

ISO 26000 Guidance on Social Responsibility (2010) issued by International Standardization Organization (ISO)

2030 UN Sustainable Development Goals (SDGs)

### Access to the Report

The report is published in simplified Chinese and English, in printed version and PDF electronic version. The report can be accessed or downloaded from CSSC's website [www.cssc.net.cn](http://www.cssc.net.cn) or official WeChat account.

If you need a hard copy of the report, or if you have any suggestions and comments, please contact us in the following ways:

Address: No. 889, Zhonghua Road, Laoximen Street, Huangpu District, Shanghai, 200011

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E-mail: [cssc@cssc.net.cn](mailto:cssc@cssc.net.cn)



## President Xi Jinping attends the commissioning ceremony for Navy's three main battleships

On April 23, 2021, three main battleships, the Changzheng-18, the Dalian, and the Hainan, were delivered to the Navy and placed in active service at a naval port in Sanya City, Hainan Province. Chinese President Xi Jinping, also General Secretary of the CPC Central Committee and Chairman of the Central Military Commission, attended the commissioning ceremony of the three naval vessels, and boarded the vessels for inspection.



# CONTENTS

04 About us

82 Responsibility Management

86 Outlook in 2022

87 Table of Performance for Key Tasks

88 Index

90 Feedback

06

## Annual Topic: Being an Active Innovator and Contributing to the Country's Strategic Strength in Science and Technology

- 06 Performing as a source of original technologies
- 07 Undertaking key science and technology projects
- 09 Boosting technological competitiveness of products
- 10 Forming a whole chain support mode for core technology research



44

## Accelerating High-level Technology Self-reliance

- 46 Consolidating the foundation for technological innovation
- 48 Achieving breakthroughs in core and key technologies
- 51 Deepening commercialization and application of research outcomes



12

## Promoting the Great Founding Spirit of the CPC

- 14 Institutionalizing the Party's leading role
- 14 Implementing the "first topic" system
- 15 Conducting Party history education thoroughly
- 17 Creating a strong CSSC brand image
- 18 Continuously consolidating primary-level Party building
- 19 Deepening strict Party governance in all round way



52

## Deepening reform and strengthening management

- 54 Speeding up the Reform of Systems and Mechanisms
- 55 Deepening Resource Integration
- 56 Improving overall governance efficiency
- 57 Improving quality management



20

## Prioritizing Support for a Strong Army

- 22 Developing first-class naval equipment
- 24 Guaranteeing major military missions
- 25 Expanding military trade proactively



58

## Practicing Green Development

- 60 Developing green manufacturing
- 62 Developing and manufacturing green equipment
- 64 Expanding green businesses



26

## Continuously Expanding Primary Businesses

- 28 Shipbuilding business hits a record high
- 37 Science and technology application industry witnesses steady growth
- 42 Marine service creates higher values



68

## Pursuing Shared Benefits and Win- win Cooperation

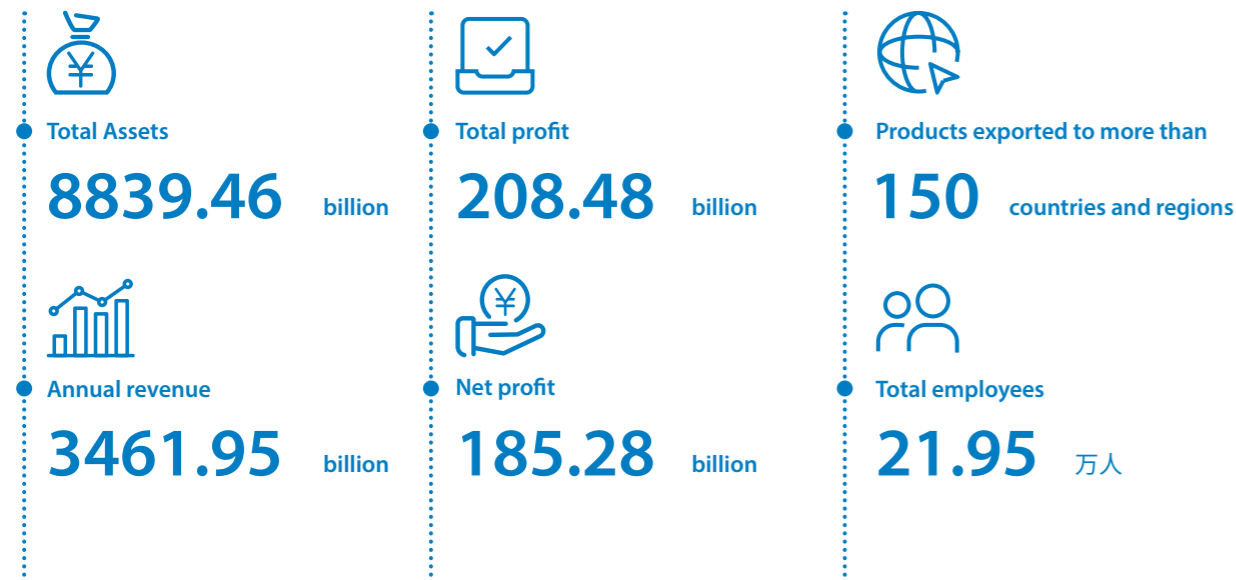
- 70 Building partnerships
- 71 Caring for employee growth
- 77 Engaging in social welfare

# About us

## Company Overview

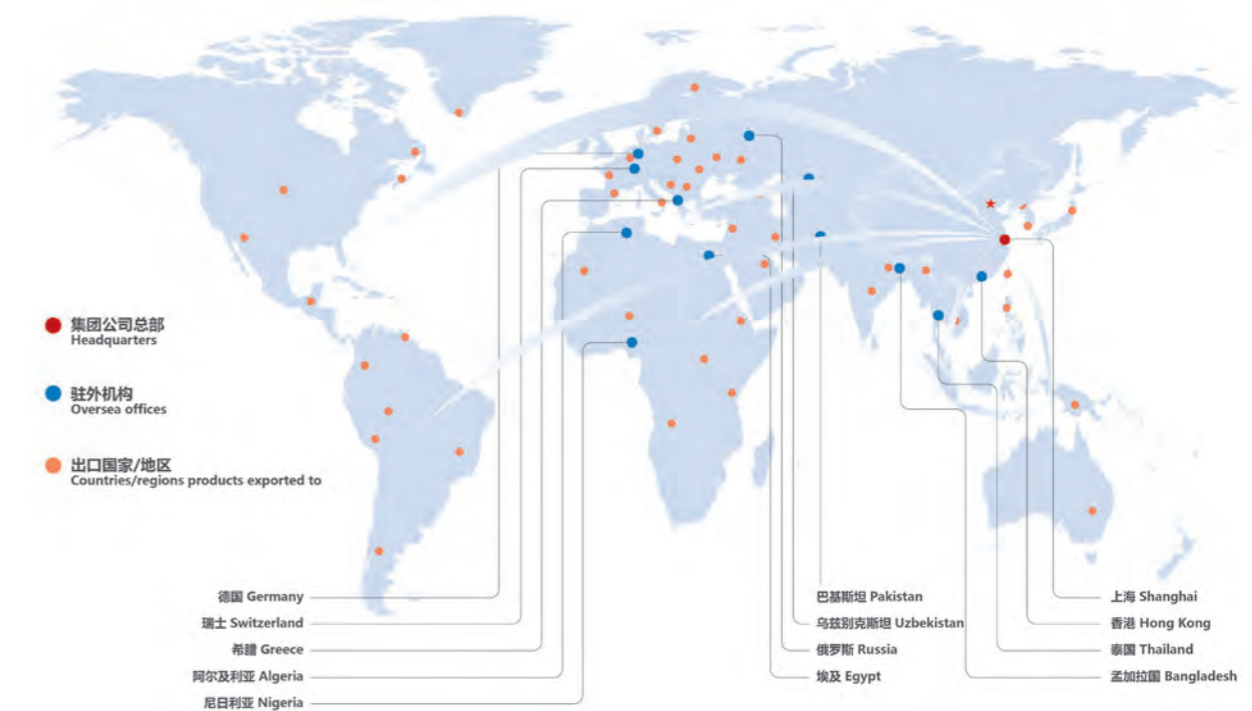
CSSC was established on November 26, 2019 by reforming the former China State Shipbuilding Corporation and the former China Shipbuilding Industry Group Co., Ltd. As a super large enterprise directly governed by the Central Government, the main businesses of CSSC cover industries of marine defence equipment industry, shipbuilding and offshore equipment industry, science and technology application industry, and marine service. CSSC has China's largest shipbuilding base and the most comprehensive R&D capability for ships and auxiliary products. The marine equipment we design and build complies with the specifications of global classification societies and the requirements of international general standard technology and safety conventions. Being the world's largest shipbuilder in the world, we export our products to over 150 countries and regions.

In 2021, CSSC ranked the 16th in the business performance appraisal for central state-owned enterprises and 243rd among Fortune Global 500. The global market share of the three major shipbuilding indicators, namely newbuilding order, completion and orderbook, all exceeded 20%, ranking the first in the world. Our total profit increased by 24.5% and net profit by 27.7% year on year, and the economic performance reached a record high.



## Organization

The Party Leadership Group of CSSC is established with the approval of CPC Central Committee to discuss and decide major issues, and play a leading role in steering the direction, managing the overall situation, and promoting implementation of policies. The Board of Directors is the decision-making body responsible for the State-owned Assets Supervision and Administration Commission of the State Council and exercises its powers in accordance with the law, and plays the role of formulating strategies, making decisions and preventing risks. The Managers Group is the executive body which implements the resolutions of the Board of Directors in accordance with regulations and conducts production and operation. The Discipline Inspection and Supervision Group is a disciplinary inspection and supervision institution approved by the Communist Party of China Central Commission for Discipline Inspection and the National Supervisory Commission, performing disciplinary inspection and supervision functions in accordance with regulations and laws. The headquarters has set up three working organizations of the Party and 15 headquarters departments. Besides, the Company has 36 scientific research institutes, 10 listed companies, a total of 113 member units under the management of the Party Leadership group, and 53 overseas organizations.



Industry direction

**Marine Defence Equipment Industry**

As the main force in the scientific research and production of the country's marine defence equipment, CSSC strives to promote the intergenerational leap of naval weapons and equipment to provide strong support for building a world-class navy.

**Shipbuilding and Offshore Equipment Industry**

Based on shipbuilding and deep exploration of the ocean, CSSC will actively expand into the marine field, and comprehensively improve the development capabilities of marine equipment research and development, design, manufacture, support, and service for the entire industry chain.

**Science and Technology Application Industry**

CSSC will give full play to the advantages of technology application and equipment manufacturing. Focusing on promoting marine technology transformation and efficient use of existing resources, CSSC will form a reasonable business structure to achieve better business development.

**Shipbuilding and Offshore Equipment Service Industry**

Focusing on strong military equipment and strong industries, CSSC will extend and expand the value chains of the industry, actively promote innovations in business models, and enhance the comprehensive competitiveness of the industry.

**Corporate Mission**

CSSC will lead the development of the industry support the construction of national defense and serve the country strategy.

**Strategic Objectives**

CSSC will build an internationally competitive world-class shipbuilding company with a reasonable industrial structure, leading quality and profits, and an outstanding military core.

**CSSC High-quality Development Strategy Outline**

Persisting in strengthening the leadership of the Party, administering the Party strictly in an all-round way.

Persisting in the prominent military industry core, fulfilling the primary responsibility of strengthening the military defence.

Persisting in strengthening scientific and technological innovations, realizing innovation leadership.

Persisting in constructing a reasonable industrial structure, strengthening the main industry.

Adhering to the lead in quality and efficiency, changing the development mode.

Persisting in enhancing international competitiveness, enhancing industry status.

Persisting in strengthening the management system, continuing to deepen reforms.

**"Three Steps" CSSC High-quality Development Strategy Outline**

By 2025, the gap with the world's leading level will be significantly reduced.

By 2035, CSSC will basically grow to be a world-class shipbuilding group.

By 2045, CSSC will be an internationally competitive world-class shipbuilding group.



In 2021, CSSC focuses on the strategic position of major innovation projects and sci-tech innovation system in the national overall layout, constantly improved the supply quality of science and technology output, enhanced technical competitiveness, and provided ongoing impetus to build itself into a world-class shipbuilder at a faster pace. We actively acted as a national strategic force of science and technology for the shipbuilding industry, and constantly made new breakthroughs and achieved new landmarks in innovation.

## Performing as a source of original technologies

CSSC has taken the lead in verifying the feasibility of and implementing high-tech shipbuilding research projects on major polar technologies and equipment, marine engine, industry chain for offshore LNG equipment, and digitalization of assembly manufacturing, etc., as well as six major projects during the 14th Five-Year Plan period.

2021年

**53 National Defence Science and Technology awards, including 4 first-class awards, and 1 Innovative Team**

Principle Winner of 4 National Science and Technology Progress Awards

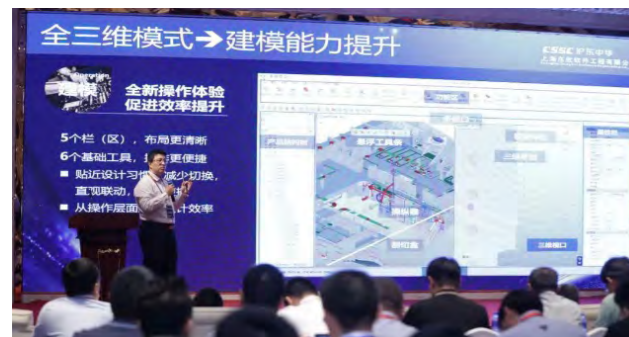
Winner of 4 National Standard Innovation Contribution Projects

Participant Winner of 4 National Science and Technology Progress Awards

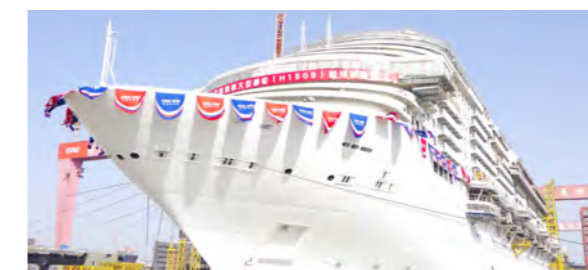
Joint Winner of 4 National Technology Inventions

123 new national science and technology projects approved

736 projects in progress



## Undertaking key science and technology projects



The large cruise ship project we undertook has incubated a number of outcomes, including a three-dimensional production and design platform, a cruise ship management platform, and digital cruise prototypes, effectively supporting the building of China's first homegrown large cruise ship.



Our "New Mining Method of Floating Deep-ocean Polymetallic Nodules" was supported by the National Key Research and Development Program of the Ministry of Science and Technology. We have completed the verification of conceptual design of the test bench, and conducted successful sink tests for the sulfide ore miner. Development testing have been carried out for core equipment including the 50 mm pulp.



We formulated the new energy application and promotion plan for two Municipalities, five provinces in the Yangtze River Basin area. We have developed three types of LNG powered vessels, and our hydrogen-fueled demonstration vessel scheme, the first one in the Yangtze River Basin, was recognized by the ship owner. Our marine gas engines up to C2 standard have been delivered in batches.

Based on the country's urgent and long-term needs, as well as the demand of strategic missions like marine security, deep sea research, and resource exploitation, CSSC has studied the feasibility of a batch of key science and technology projects, and played a significant role in leading innovation in related fields.



In partnership with Guangdong provincial government, we facilitated the "Green Pearl River" project and started building 50 LNG-fueled bulk carriers. The first batch has hit the water.



Our innovative deep-sea aquaculture proposal has won recognition from several provincial governments. We have finished the overall design of the mobile fish farming vessel. In March 2021, Guangzhou Shipyard International Co., Ltd. signed an agreement with Guangxi Jingong Marine Technology Co., Ltd. and Southern Marine Science and Engineering Guangdong Laboratory of Zhanjiang for the South China Sea Oceanic Fish Engineering Framework cooperation agreement for boat breeding projects.



A world-leading test platform for low-speed engine prototypes has been built. And we successfully developed two new-generation marine engines, CCX40DF and CX52, and realized real ship applications. The two engines both have reached international leading levels in all performance indicators.

### China floats first domestically built large cruise ship

On December 17, 2021, the first homegrown large cruise ship was floated and transferred to the docks at Shanghai Waigaoqiao Shipbuilding Co., Ltd., marking that the vessel was half way through completion, and the ship officially entered the second-half phase of interior decoration and system debugging. In the meantime, key processes such as release of remaining stress in the hull structure and first measurement of the centroid were completed, and the technical indicators were all within a reasonable range, proving that CSSC had achieved great success in the design, technology development, production preparation, and final assembly of the first large cruise ship in China.



### National key project platform "Zhihai" test vessel delivered

The test network project for emergency communication is the first "intelligent ocean" project launched in response to the national strategy of "building China into a strong maritime country". The delivery of "Zhihai" undertaken by CSSC No. 7 Research Institute is one milestone in the project. As another powerful platform for marine science research, "Zhihai" will participate in the verification of the onboard emergency communication test system, system integration testing, and application demonstrations, etc.



### Boosting technological competitiveness of products

CSSC strives to achieve breakthroughs in key generic technologies, cutting-edge technologies, modern engineering technologies, and disruptive innovations to fuel product innovation and iteration, and constantly leads the market demand.



World's first 210,000 DWT Newcastlemax dual-fuel bulk carrier



"Fen Dou Zhe", China's first full-depth deep-sea manned submersible



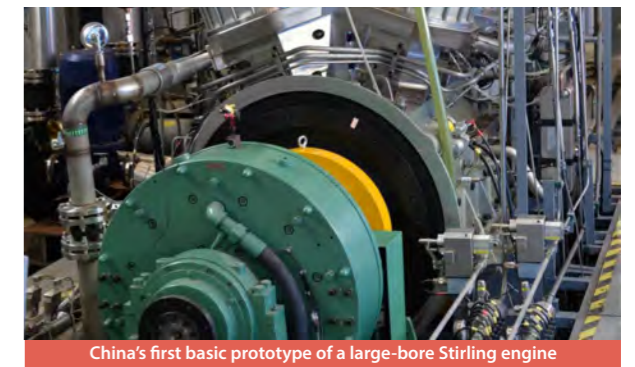
China's first 174,000 m3 LNG-FSRU



"Xin Ecology", the world's first ferry powered by a pure supercapacitor



World's first Fast4ward FPSO



China's first basic prototype of a large-bore Stirling engine

## Forming a whole chain support mode for core technology research

CSSC has been effectively leading the modern shipbuilding industry chain and playing an increasingly important role in scientific and technological innovation. Pooling world-class innovation resources, we work with upstream and downstream players across the industry chain to integrate industry, universities, research, and applications and form a full chain. By engaging more parties in science and technology innovation activities, including fundamental research, technological innovation, commercialization of research outcomes, and industrialization, we are able to promote high-quality development of shipbuilding industry against the backdrop of high-level opening up.



## Facilitating technical exchange in the advanced materials industry

On December 3, 2021, CSSC held "Applications of Advanced Materials in Shipbuilding and Offshore Engineering", a sub-forum of the China Shipbuilding Science and Technology Forum and the 2021 Working Meeting of the Materials and Technology Professional Panel, Science and Technology Commission of CSSC Group. Renowned experts from home and abroad were invited to give thematic-reports. The work performance of the Professional Panel was highly praised by experts. Through the Professional Panel, a technical exchange platform will be set up for the advanced materials industry to discuss the demand for applying advanced materials in shipbuilding and offshore engineering, as well as directions of self-dependent innovation, thereby accelerating relevant applications.

## Founding Hubei Electric Vessel Industry Alliance

CSSC No. 712 Research Institute and the Turbine Engine Academic Committee of the Chinese Society of Naval Architects and Marine Engineers jointly hosted the Fifth China Marine Electric & Electronic Engineering Summit, explored on promoting high-quality development of green vessels in inland waterways. CSSC No. 712 Research Institute specializes in electric propulsion systems for marine vessels and equipment. Being a leader in the field of power systems for new energy vessels in China, it founded the Hubei Electric Vessel Industry Alliance. The institute first proposed the establishment of Hubei Comprehensive Demonstration Zone for Green Electric Vessels, has developed an industrial development model based on "standards and specifications as the guide, self-developed products as the pillar, standard ship types as the foundation, and general contracting service as the guarantee".

## Building a cooperation and exchange platform for marine low-speed engines

HHM6EX340EF-UB, a proprietary small-bore electronic low-speed diesel engine for vessels, the first of its kind in China designed and manufactured by CSSC Marine Power Co., Ltd., was delivered in July 2021. The successful development of the engine has enhanced the company's scientific and technological innovation system that integrates R&D, manufacturing, and service, forming a set of systematic processes for product development. Take this as an opportunity, China has further improved the mechanisms and functions of its first "industry-university-research-application" cooperation and exchange platform for marine low-speed engines, giving new impetus to innovative R&D of low-speed diesel engines for small, medium-sized, and large vessels.





## Promoting the Great Founding Spirit of the CPC

The year 2021 marked the 100th anniversary of the founding of the Communist Party of China. In keeping with the original aspirations and founding mission and following the Party's directives, CSSC considers Party building to be a fundamental task. Through comprehensively studying, thinking, practicing, and applying Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era, we persistently deepen the implementation of key tasks required by the national Party building conference for SOEs, laying a solid political foundation for becoming a world-class shipbuilding corporation.

**Institutionalizing the Party's leading role**

**Implementing the "first topic" system**

**Conducting Party history education thoroughly**

**Creating a strong CSSC brand image**

**Continuously consolidating primary-level Party building**

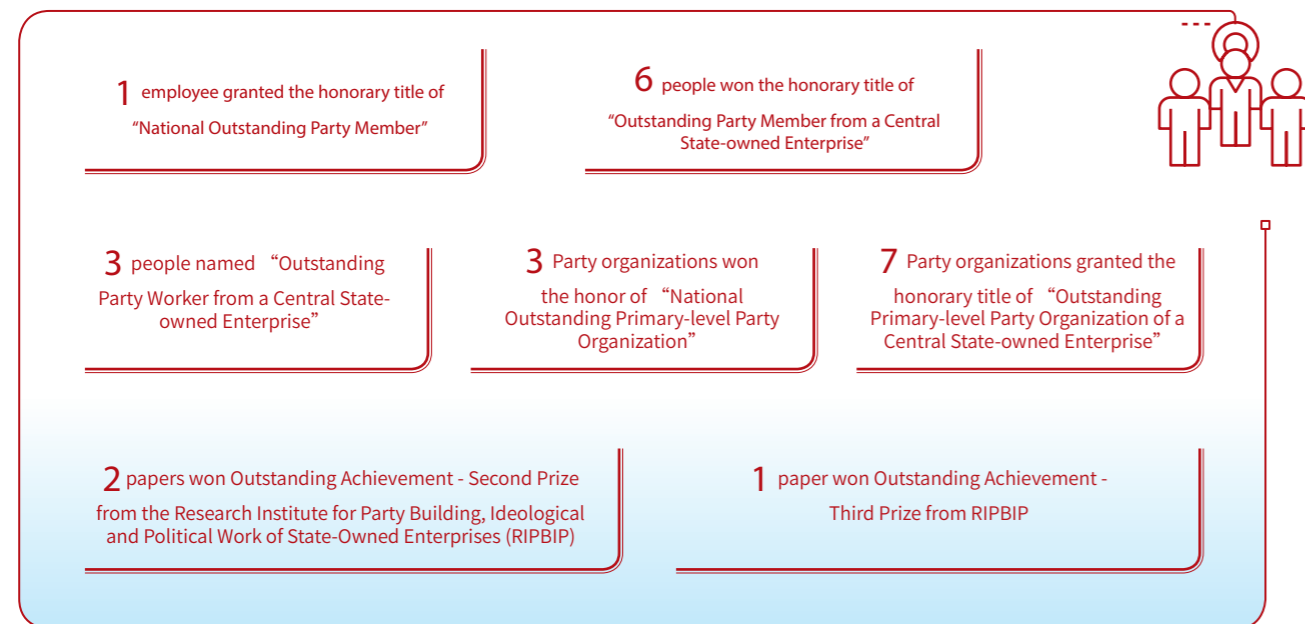
**Deepening strict Party governance in all round way**



## Institutionalizing the Party's leading role

CSSC has reformed and improved the decision-making mechanism related to key issues and revised internal regulations including the Rules of Procedure for the Party Leadership Group. We accurately grasp the nature and essence of letting the Party Leadership Group play the leading role, and keep improving the list of major issues that require deliberation by the Party Leadership Group, so as to make overall plans, discuss the major issues, and focus on priorities. We have improved the leadership system of "two-way entry and cross-service", and fully promoted the system wherein the Party Secretary and Chairman are the same person in our subsidiaries. We issued the CSSC Party Building Plan for the 14th Five-year Plan Period, reinforcing the leading role of Party building as a driving force behind high-quality development.

- Promulgated 23 regulations, rules, and specifications related to Party building
- 899 subsidiaries at all levels have included Party building requirements in their corporate constitutions and all links of business operation



## Implementing the "first topic" system

We study important instructions by General Secretary Xi Jinping in a repeated and in-depth manner to promote earnest and thorough implementation of the instructions, and ensure all officials and employees align their thoughts and actions with the arrangements and requirements of the CPC Central Committee with Comrade Xi Jinping at the core. Through adhering to and improving the "first topic" system, we study important speeches and instructions by General Secretary Xi Jinping. Themed forums have been held to commemorate the second anniversary of General Secretary Xi Jinping's critical instructions to CSSC Group, and the fifth anniversary of Xi's speech at the national Party building conference for SOEs,

- The CSSC Party Leadership Group has studied 97 important speeches and instructions by General Secretary Xi Jinping, arranged 13 Central Group's theoretical studies activities and 7 reading workshops

- All employees conveyed and studied 3,987 key speeches and instructions of General Secretary Xi Jinping for 1,856 times



## Conducting Party history education thoroughly

Highlighting business features of the CSSC Group, combining learning with practice, promoting public welfare, and shouldering responsibilities, we have been facilitating the Party history education, ideological consciousness, concrete actions, and innovative practices as a whole, so as to consolidate our faith in the Party and gather strength for forging ahead. In celebration of the 100th anniversary of the founding of the CPC, we organized in-depth activities, providing more than 68,000 Party members, and employees with a comprehensive and profound political and ideological education.

- Having taken 5,912 measures to help the public solve real difficulties



Visited the site of the First National Congress of the Communist Party of China



The study and education of Party History at Xiangshan revolutionary memorial site



Online exhibition themed "100 Years of Party History, 100 Years of Shipbuilding History" in celebration of the 100th anniversary of the founding of the CPC



"Following the Guidance of the Party, Pursuing Dreams in the Ocean" speech contest in celebration of the 100th anniversary of the founding of the CPC



Art performance to celebrate the Party's 100th birthday



Calligraphy and painting exhibition in celebration of the 100th anniversary of the founding of the CPC



A Party history education activity



Party history education at the site of Yangtze Vessel

## Creating a strong CSSC brand image

We vigorously carry forward the spirit of nuclear submarine, aircraft carrier and manned deep-ocean submersible, constantly sharpening the brand image of Chinese shipbuilding. We are investing increasing efforts in promoting the shipbuilding spirit, organized a publicity campaign for the general public named "Always Follow the Party's Guidance". Besides, we produced a number of high-quality cultural works such as The Merit - Huang Xuhua's Submarine and Sparking a Fire 1920. The latter was awarded as "a key documentary in celebration of the 100th anniversary of the CPC's founding". Our introduction of the first homegrown aircraft carrier, "Fen Dou Zhe (Striver)" and other major achievements have been covered by Xinhua News, People's Daily, CCTV and other mainstream media for over 200 times.

- "The brand "CSSC" was shortlisted into "2021 Top 500 Chinese Brands"
- The showroom of Jiangnan Shipyard was selected into the first batch of "100 Patriotism Education Cases at Central State-owned Enterprises"



CSSC No. 701 Research Institute, CSSC No. 702 Research Institute, and CSSC No. 719 Research Institute jointly host an exchange meeting on the spirit of nuclear submarine, aircraft carrier, and manned deep-ocean submersible



Sparking a Fire 1920

## Continuously consolidating primary-level Party building

We solidly reviewed our progress in implementing the spirit of the national Party building conference for SOEs, and actively promoted the "Innovative Party Building Year" campaign. We promoted activities including "Party building in every large project" and "building unique brand for each branch". By carrying out mutual inspections and learning from each other, fundamental issues in Party building have been eliminated. We have ensured timely term-changing in primary-level Party organizations, and assigned full-time Party officials to both the Group and all member companies. A systematic, complete, scientific, and well-regulated Party building system has been preliminarily developed, continuously improving the quality of Party building at the primary level.

- 41 member companies have completed the term-changing of Party organizations
- Administrative organizations and key tasks have covered 100% primary-level Party branches
- 51 rules and regulations have been formulated and issued



Continuously consolidating Party building in large projects

Ye Cong, National Outstanding Party Member of 2021, Deputy Director of China Ship Scientific Research Center, and Chief Designer of "Fen Dou Zhe"



## Creating a Party building system for cruise projects

Shanghai Waigaoqiao Shipbuilding Co., Ltd. has built six integrated Party building systems based on the principle of "strengthening faith through Party building, inheriting the mission, and promoting cruise projects". The company has formulated 11 categories of over 80 Party building systems, developed three manuals, and released the Annual Party Building Report, the first one in the industry. The company boasts China's highest labor efficiency and has maintained world's top five in all three major shipbuilding indicators, namely newbuilding order, completion and orderbook, for more than ten years in a row. It is the first shipyard in China to deliver vessels with a total deadweight tons exceeding 8 million in a single year.



Shanghai Waigaoqiao awarded as 2021 Outstanding Primary-level Party Organization of a Central State-owned Enterprise

## Interactive scenario-based Party education

China Ship Development and Design Center carries out interactive and experiential Party education. Writing articles for the Party history column in newspapers and posting micro-videos for the "mini Party history lecture" series on its WeChat official account, the center promotes Party education both theoretically and practically. Party organizations of CSSC member companies have extensively conducted a series of activities and competitions such as "Maritime labor Competition" and "Pioneer for Trial Voyage", to fully leverage the effect of Party building and guide employees to tackle difficulties.

## Deepening strict Party governance in all round way

We conscientiously implement the deployment of the CPC Central Commission for Discipline Inspection and the Party Committee of the SASAC, thoroughly implement the strategic policy of comprehensively and strictly governance over the party and continue to carry out rectification and renovation. We strengthen the military-civilian coordination for enhancing integrity, and take solid steps to reduce existing clues to problems while working hard to curb the increase of problems. Combining cases to promote reform, we address the practice of formalities for formalities' sake, bureaucratism, hedonism, and extravagance, and promote new healthy trends. Keeping in mind that ensuring the Party self-governance is exercised fully and strictly is a journey to which there's no end, we make full use of the coordination mechanism for rooting out corruption, and conduct internal inspections in an orderly manner.

- 1,996 systems have been revised across the CSSC Group, including 38 at the headquarters



CSSC Shaanxi Diesel Heavy Industry Co., Ltd. organized a workshop on Party history and anti-corruption education



## Prioritizing Support for a Strong Army

We keep in mind the commitment to our core mission of strengthening the army through powerful equipment and put military products first to empower the navy, making major breakthroughs in the military industry. We have performed well in meeting military research and production tasks on schedule and helped the PLA Navy to achieve strategic transformation, offering strong equipment and services for China to build a world-class navy and safeguard maritime rights and interests.

- Developing first-class naval equipment
- Guaranteeing major military missions
- Expanding military trade proactively

## Developing first-class naval equipment

As the major player in China's naval weapons and equipment, CSSC implements Xi Jinping's thoughts on building a strong army and tries our best to provide first-class equipment for a world-class navy.



Changzheng-18



China's self-developed 10,000-ton destroyer Dalian



The first amphibious assault ship Hainan



China's self-developed 10,000-ton destroyer Lhasa



The first 10,000-ton large-scale maritime patrol vessel Haixun 09 independently developed by China



## Guaranteeing major military missions

CSSC adheres to all-weather and all-round services concept, improves technology, and ensures the quality of repairs and services. We respond to the needs of the army for equipment the first time and have assisted the PLA Navy in numerous support missions including escorts, exercises, and training.

### Supporting escort missions

The year 2021 marks the tenth anniversary of the services provided by the hospital ship Peace Ark in the PLA Navy. We guarantee the medical relief missions of Peace Ark at sea.

We provide support to the 37th, 38th, and 39th naval escort taskforces in the Gulf of Aden and waters off Somalia.



Services and safeguards

### Equipment inspection and sea trials and tests

We engage in equipment inspections in the East China Sea and the South China Sea and support tasks of ship trial, power test, and armament debugging.

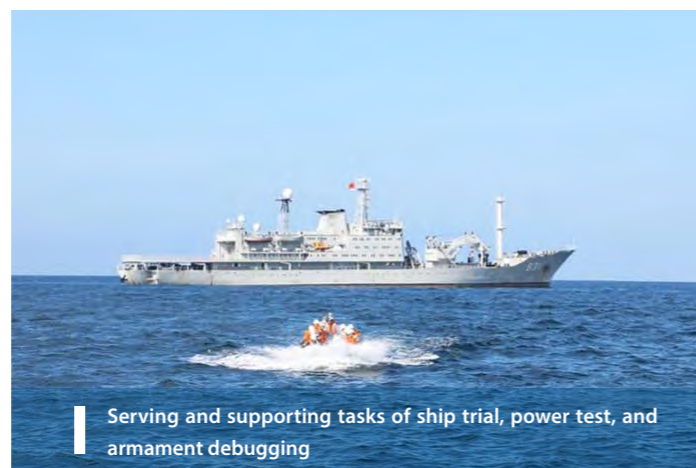
In April and May 2021, the PLA Navy organized the Chinese navy's Liaoning aircraft carrier formation and the Shandong aircraft carrier formation to conduct training in the distant sea, in which CSSC provided operation and maintenance support.



The R&D team of CSSC's Shandong aircraft carrier received the honorary title of "The Paragon of Central SOEs" in 2021



Escort missions in the Gulf of Aden and waters off Somalia



Serving and supporting tasks of ship trial, power test, and armament debugging

## Expanding military trade proactively

Giving full play to our advantages in the development of marine defence equipment, CSSC explores international military trade and makes new breakthroughs constantly, making China's vessels more influential.

### Building a 1,500-ton maritime patrol vessel for Pakistan

On November 4, 2021, the second 1,500-ton maritime patrol vessel built by CSSC Huangpu Wenchong Shipbuilding Co., Ltd. and Pakistan Karachi Shipyard for Pakistan Maritime Security Agency was delivered and commissioned in Karachi. The ship was designed by CSSC No. 708 Research Institute, with a total length of 90 meters. It adopts a long-bridge design and is equipped with advanced armament, law enforcement, power, and communication systems with excellent overall performance.



### Pakistan's new frigate

On November 8, 2021, a new type of frigate designed and built by CSSC for the Pakistan Navy was commissioned, injecting new vitality into the China-Pakistan all-weather strategic partnership. The frigate is equipped with a new combat management system independently developed by CSSC, advanced sensors, and weapon systems. It is the largest cutting-edge surface combatant exported by China so far.





## Continuously Expanding Primary Businesses

CSSC is committed to promoting the development of the industry, and pooling various resources such as technology, talents, and capital in the main business to continuously improve the basic capabilities of the industry and the level of the industry chain.

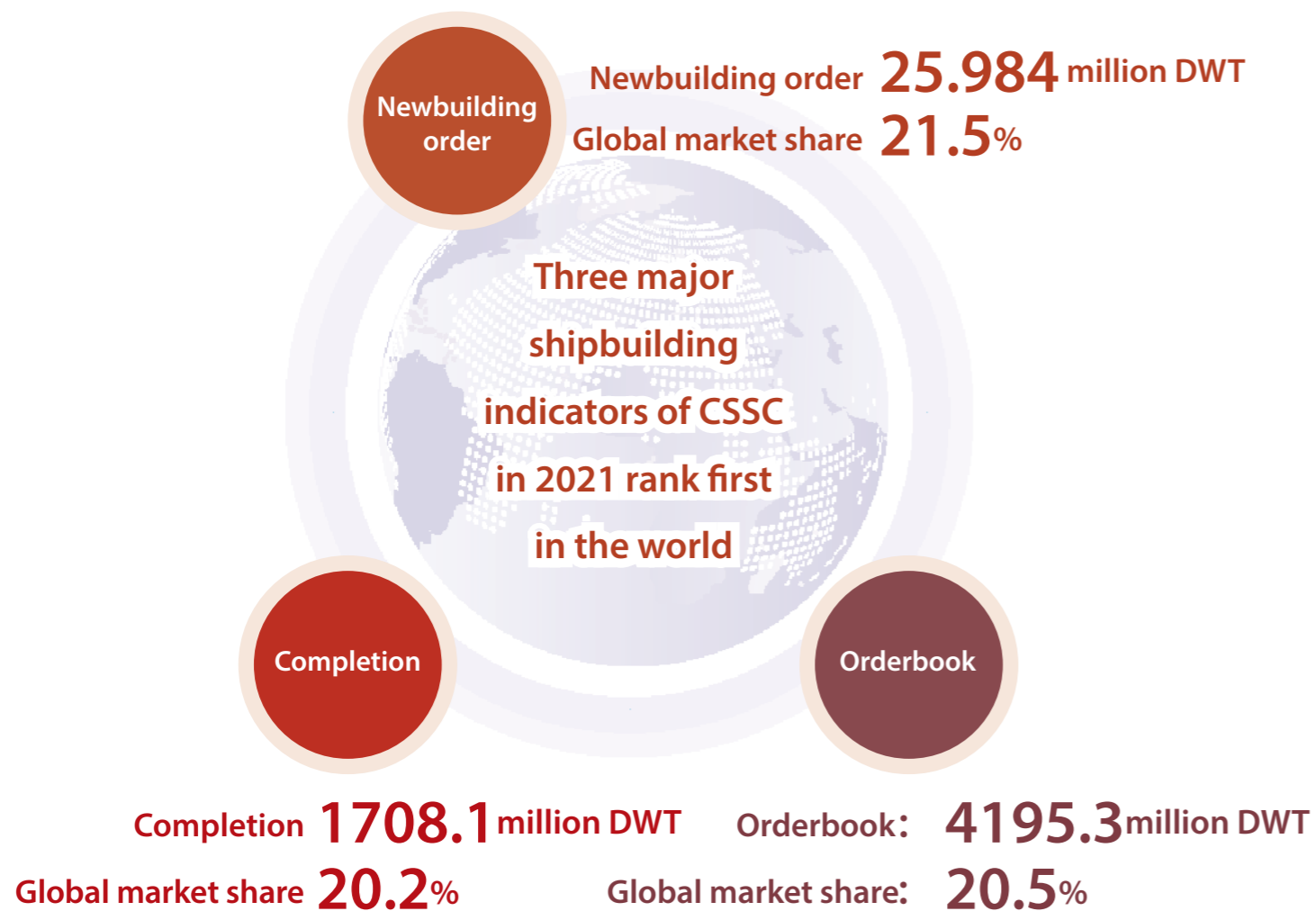
**Shipbuilding business hits a record high**

**Science and technology application industry witnesses steady growth**

**Marine service creates higher values**

## Shipbuilding business hits a record high

In 2021, we leveraged our technological expertise in environmental protection, energy efficiency and conservation, and dual-fuel powered vessels gained over the years, and gave play to the synergy of our industrial chain and our advantages in R&D, design, shipbuilding, and auxiliary equipment for ships, thus doubling the orders. Through targeted measures of strict implementation, overall coordination, and restructuring and integration, our completion vessels delivery has achieved a 20-year high. Our three major shipbuilding indicators of completion, newbuilding order, and orderbook rank the first in the world in terms of deadweight tonnage. We grasped the opportunity of market, controlled the number of orders, prioritized quality, and strengthened risk prevention and control. The contract value of marine and ship products reached a new record in 2021 since the 2008 financial crisis.



## The 23,000 TEU dual-fuel container ship delivered in batches

On June 29, 2021, the ninth world's largest and most advanced 23,000 TEU dual-fuel powered container ship built by Hudong-Zhonghua Shipbuilding (Group) Co., Ltd. was delivered. By then, a total of 9 ships in the shipbuilding project were completed and delivered as scheduled. The ultra-large container ship is equipped with the W12X92DF engine, which is the world's first low-speed dual-fuel engine for the ship type. The ship type supports the remote intelligent monitoring platform, which is green, low-carbon, intelligent, safe, and efficient, creating an innovative practice of the CSSC model in which "the ship is independently developed, designed, managed, built and supported".



## Energy-saving, eco-friendly 300,000 DWT ultra-large VLCC delivered

On February 26, 2021, the 300,000 DWT ultra-large VLCC built by Dalian Shipbuilding Industry Co., Ltd. was delivered. With a maximum load capacity of about 319,000 tons, this ship can travel 26,000 nautical miles. The main engine's oil consumption is lower than over 3% from that of the previous generation. The nitrogen oxide emission is only 2.8 g/kWh, lower than the international standard of 3.4 g/kWh.





●○○ World's largest versatile LNG bunker delivered



On October 26, 2021, the 18,600 CBM liquefied natural gas (LNG) bunker built by Hudong-Zhonghua Shipbuilding (Group) Co., Ltd. was delivered. The vessel is the world's most advanced LNG tanker which can provide whole process services, with the largest tank capacity and the highest bunkering rate. It specializes in providing LNG bunkering service to ships in the Mediterranean and applies Gaztransport & Technigaz (France) Mark III FLEX membrane containment system.

●○○ World's first dual-fuel powered VLGC delivered

On March 28, 2021, the 86,000 CBM dual-fuel VLGC (Very Large Liquefied Petroleum Gas Carriers) was delivered by Jiangnan Shipyard (Group) Co., Ltd. The ship is the world's first VLGC to use LPG as its main fuel, while fitted with a shaft generator to provide auxiliary power at sea. It scores highly in terms of economy, reliability, and environmental friendliness.



●○○ Marine research and training vessel "Sun Yat-sen University" delivered

China's largest-ever and most innovative 6,000 DWT-level oceanographic research and training vessel "Sun Yat-sen University" with the strongest comprehensive scientific examination performance, was delivered by Jiangnan Shipyard (Group) Co., Ltd. on June 26, 2021. The vessel boasts a displacement of 6,880 tons and a cruising range of 15,000 nautical miles. It is described as "a large mobile laboratory at sea," with impressive environmental performance.



●○○ Practicing the "Belt and Road" Initiative, the first luxury ro-ro passenger ship built for Algeria set sail

On November 1, 2021, the 1,800 passengers/600 meter lane luxury ro-ro passenger ship built by Guangzhou Shipyard International Co., Ltd. for Algeria, a country along the Belt and Road, set sail. It is the first ro-ro passenger ship project between China and Algeria. Its premier interior materials have improved the voyage comfort. Its voyage time is shorter thanks to the high speed, providing passengers with more affordable and convenient travel experience.



●○○ World's largest and most advanced civilian hospital ship delivered



On June 16, 2021, the world's largest and most advanced hospital ship was delivered by Tianjin Xingang Shipbuilding Heavy Industry Co., Ltd. The globally seaworthy ship runs fully on electricity. It is designed to accommodate up to 950 people onboard when docked in port, including a fixed crew of 500. The ship performs extremely well in stability, anti-sinking capacity, speed, maneuverability, seakeeping ability, and cruising range. It features high safety, comfort, eco-friendliness, energy efficiency, and intelligence.

●○○ World's largest train ferry delivered

The world's largest ro-ro train ferry built by CSSC Huangpu Wenchong Shipbuilding Co., Ltd. was delivered on June 8, 2021. The double-deck ferry has a total track length of 2,500 m and a deadweight of over 20,000 tons, becoming the world's largest "train carrier". This new type of ship can load and unload 136 carriages in less than two hours.



●○○ The first 910FEU reefer container ship delivered



On August 26, 2021, the first 910FEU reefer container ship built by CSSC Chengxi Shipyard Co., Ltd. was delivered. With a designed deadweight of 28,750 tons, the vessel has 910 reefers and a refrigeration monitoring system. Featuring flexible loading and ease of maintenance, it is eligible for unrestricted ocean voyages, and its environmental performance is world-class.

●○○ World's largest FPSO refitting project completed

The Guanabara MV31 FPSO (floating production storage and offloading) vessel refit by Dalian Shipbuilding Industry Co., Ltd. was delivered on August 12, 2021. Converted from a VLCC (very large crude carrier), the FPSO will have a processing capacity of 180,000 barrels of crude oil and 12 million m3 of natural gas per day and a storage capacity of 1.4 million barrels of crude oil. It is currently one of the world's largest FPSOs.



●○○ World's first C-type LNG cryogenic storage tank for dual-fuel VLCC delivered

On May 28, 2021, the world's first 3,500 CBM C-type LNG cryogenic storage tank developed by Dalian Shipbuilding Industry Co., Ltd. for dual-fuel VLCC was delivered. The cryogenic storage tank compliant which meets the Energy Efficiency Design Index (EEDI) Phase III is a key component intended for the world's first LNG-powered VLCC. With various performance indicators reaching the international leading levels, the tank can effectively resist erosion caused by high salt concentrations and high humidity on the deck.



●○○ World's first CX52 low-speed engine with integrated SCR released



On July 22, 2021, the world's first X52 low-speed engine with an integrated Selective Catalytic Reduction (SCR) system independently developed by CSSC Marine Power Co., Ltd. and manufactured by Dalian Marine Diesel Co., Ltd. was officially released. CSSC WinGD X52 meets the latest Tier III emission requirements. The integrated SCR onboard is easy to install and operate, compact in size, and low in heat loss. It is another breakthrough for CSSC in the marine power sector.

●○○ World's first second-generation high-pressure dual-fuel diesel engine delivered

On July 9, 2021, the 6G70ME-C10.5-GI (MK2) second-generation high-pressure dual-fuel main engine developed by CSSC Marine Power Co., Ltd., the first of its kind in the world, was accepted, marking another breakthrough of China in the field. With an optimized operating model and a large-diameter propeller, the engine achieves higher propulsion efficiency and shows an obvious economic advantage.



●○○ First order for the independently developed LNG FGSS system



On November 2, 2021, Qingdao SunRui Marine Environment Engineering Co., Ltd. got the first order for its GasLink®LNG fuel gas supply system (FGSS). The system will be integrated to a 12,000 DWT/11,700 CBM bitumen/product oil tanker built by Wuhu Shipyard Co., Ltd. This is the first order for the GasLink® FGSS independently developed by SunRui.



Online negotiation, agreement signing, testing, and ship delivery

●○○ Virtual Shipbuilding Business Showroom launched

A digital showroom was launched by CSSC on June 21, 2021, as an innovative move to explore online exhibition and marketing for its shipbuilding business. CSSC has created a 3D virtual showroom that leverages panoramic images and advanced technologies to bring smart and convenient experience to customers and boost marketing campaign. The showroom can be accessed via mobile phones, PCs, and other terminals, delivering a never-ending exhibition of CSSC products.



●○○ Cloud signing the MOU for very large integral green ammonia carriers (VLAC)

On December 10, 2021, Jiangnan Shipyard (Group) Co., Ltd. cloud signed a memorandum of cooperation with JS & Co for 2 + 2 units of 93,000 CBM very large integral green ammonia carrier (VLAC). The vessel is equipped with an ammonia-powered main engine and can, when required, install two ammonia fuel tanks on the deck to supply extra energy for transportation and trade. The green ship will achieve zero carbon emissions.



●○○ Cloud signing the contract for building carbon dioxide carrier with the largest liquid tank

In October 2021, Dalian Shipbuilding Industry Co., Ltd. signed a contract with Northern Lights, a Norwegian carbon capture and storage project, for the construction of two 7,500 CBM liquefied carbon dioxide carrier ships. The ships will be the largest tank capacity liquefied carbon dioxide carrier in the world. Meeting the most demanding standards and requirements for energy efficiency and design, the ships are specially designed for marine carbon transportation and storage.



●○○ Cloud delivery of the world's largest asphalt ship completed

On December 14, CSSC Chengxi Shipyard Co., Ltd. delivered the No. 2 37,000 DWT asphalt ship through cloud conferencing. The ship boasts features such as high speed, low fuel consumption and large carrying capacity, and is currently the largest asphalt ship in the world. Its main and auxiliary engines are equipped with SCR equipment, and are compliant with the IMO Tier III emission standards; in addition, the ship's thermal oil system, liquid cargo system, and inert gas system have all been optimized.



Science and technology application industry witnesses steady growth

In 2021, CSSC's scale of science and technology application industry and the influence of major projects continued to improve. We achieved remarkable market development progress in clean energy equipment, emergency equipment, electronic information equipment, environmental equipment, infrastructure and engineering equipment, and new materials. A large number of major projects for industrial application were doing well.

●●● Lighting the green Winter Olympics

The Zhangbei multi-energy complementary project, Xingshengmao project and Sanhaoxiang project of CSSC Haizhuang Wind Power Co., Ltd. possess nearly 200 generating units, transmitting 1.46 billion kWh of clean electricity to Beijing each year. All 26 venues in the three major competition zones of the 2022 Beijing Winter Olympics were fully powered by green electricity, saving 4.9 million tons of standard coal, and reducing carbon dioxide emissions by 12.8 million tons.



●●● China's largest offshore wind power project completed

In July 2021, all 80 wind turbine generators of the Huaneng Rudong H3 project were successfully hoisted by CSSC Haizhuang Wind Power Co., Ltd. The project is the first in China to adopt the fully domestically-developed large-scale offshore wind turbine generators, with a total installed capacity of 400 MW. It is the largest and most localized project in China, marking that our country has mastered the core technology for key components of offshore wind power units for the first time.



●○○ The 100 MW photothermal power generation project in Urat Middle Banner accepted by National Energy Administration

The 100 MW photothermal power generation project in Urat Middle Banner designed, built, operated, and maintained by CSIC New Energy Co., Ltd. in Inner Mongolia has the largest scale and the longest heat storage duration among China's first trough-type concentrated solar power (CSP) demonstration projects. It uses heat transfer oil and can store energy for 10 hours. Since its heat storage systems were fully commissioned on July 13, 2021, the project has realized stable full-load power generation, producing an average of 36 million kWh of electricity monthly.



●○○ Asia's largest straw to energy project put into trial run

At the end of 2021, the Guanghan (Shangzhi) Biogas Project invested and constructed by CSSC No. 703 Research Institute was put into trial operation. The project can convert straws into green biological energy. The biogas residues will be turned into organic fertilizers after deep processing. Once fully operational, the project will be able to process 102,000 tons of straws, and produce 24 million m3 of biogas and 91,000 tons of organic fertilizers annually. The project will effectively improve the soil structure and reduce environmental pollution caused by agricultural wastes, including local straws.

●○○ Accomplishing the annual goal of the "Shenzhen-Zhongshan Bridge" project

"Shenzhen-Zhongshan Bridge" is a world-class cluster project of "bridge, island, tunnel, and underground interconnection". It is a key project for China's 13th Five-year Plan, and a super project in the Guangdong-Hong Kong-Macau Greater Bay Area. On December 17, 2021, the seventh E18 steel shell tube produced by Guangzhou Shipyard International Co., Ltd., was successfully installed, overfulfilling the annual target of GK01 bid project. It took only eight days to install and fix the steel shell tube, reaching a new record.



●○○ Launch of an automatic production line for LNG tank containers

On December 21, 2021, CSSC Chengxi Shipyard Co., Ltd. signed a contract for building an automatic production line for LNG tank containers. The project will make full use of existing resources and equipment at the ship repairing plant to promote the project, accelerating the R&D, production, sales, and delivery of core products. The first 50 LNG tank containers have all passed the acceptance check and obtained ASME and BV certificates.



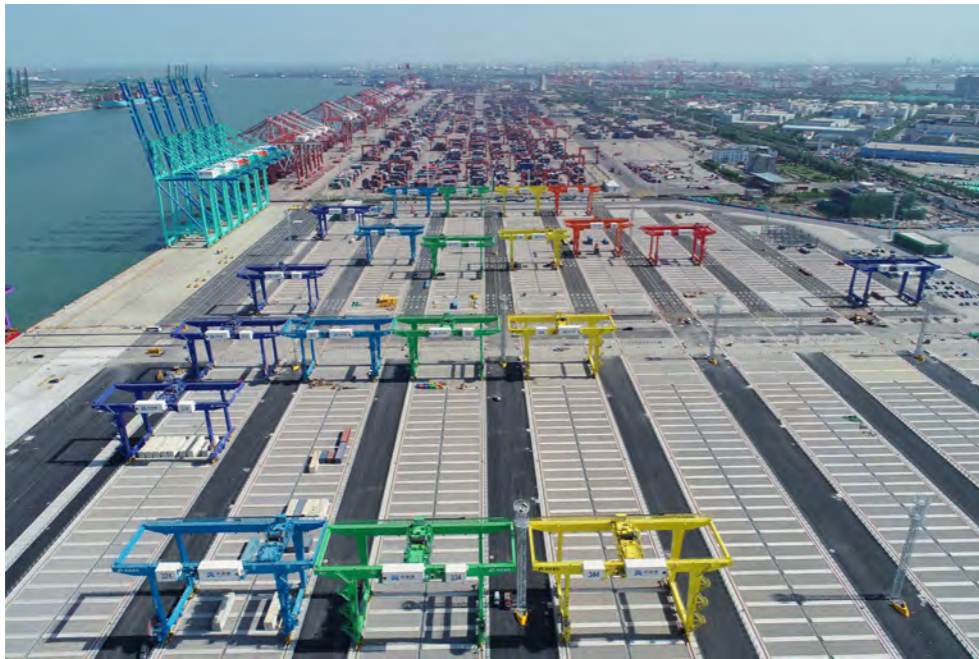
●○○ High-purity electronic specialty gas developed

CSIC Peric Special Gases Co., Ltd. was selected as one of the top 10 companies in the electronic gas sub-industry and top 50 companies in the gas industry during the 13th Five-year Plan period. High-purity electronic specialty gas is one of the key materials in the entire electronic engineering system. It is mainly used for chip manufacturing, chemical vapor deposition, etching, doping, and cleaning in the ICT industry. During the 13th Five-year Plan period, Peric Special Gases achieved breakthroughs in a number of key technologies and processes. Its 29 new electronic specialty gas products have been widely used in the ICT industry. Its domestic market coverage of nitrogen trifluoride and tungsten hexafluoride exceeds 95%. The company has filled multiple technical gaps, effectively guaranteeing the security of strategic emerging industries in China.



●○○ **Contributing to port infrastructure construction**

A wide variety of products developed and manufactured by Qingdao Haixi Heavy-duty Machinery Co., Ltd., affiliated with Wuhan Marine Machinery Plant Co., Ltd., including gantry cranes, portal cranes, quay cranes, and automated rail-mounted gantry cranes, have been installed in tens of large domestic ports, docks, and shipyards, including Shanghai Port, Guangzhou Port, Ningbo Port, and Tianjin Port. The products have also been widely exported to countries along the Belt and Road. In June 2021, the company won a bid for two 1,000-ton 74-meter gantry cranes and one 40-ton 30-meter four-bar portal crane project in Jishu operation zone, Yangjiang Port, Guangdong Province, with a contract value exceeding RMB 100 million. Equipped with a modern condition monitoring system and control management system, each gantry crane has a lifting capacity of 1,000 tons and a lifting height of 60 m.



●○○ **China's first self-developed subsea tree launched**

Subsea tree system is a core equipment for offshore oil and gas development. On September 5, 2021, China's first deep-sea tree system and the control module went off the assembly line at Chongqing Qianwei Technologies Group Co., Ltd. It will be applied in CNOOC Ledong 22-1 gas field in the South China Sea, marking the first localized core equipment in the field. Chongqing Qianwei Technologies is the first company in China to be able to independently develop a 1,500 m-deep Christmas subsea tree system. It has made major breakthroughs in key technologies and applications for deep-sea oil exploration.



●○○ **Providing electrical penetrations assemblies for "Guohe No. 1"**

"Guohe No. 1" CAP1400 is a large passive pressurized water reactor (PWR) with independent intellectual property rights. The P01 electrical penetration assemblies (EPA) manufactured by Wuhan Heavy Industry Casting & Forging Co., Ltd. for the project were completed and shipped in June 2021. The P01 EPA is the largest EPA manufactured by the company so far. The large size P01 EPA poses high performance requirements for manufacturers.



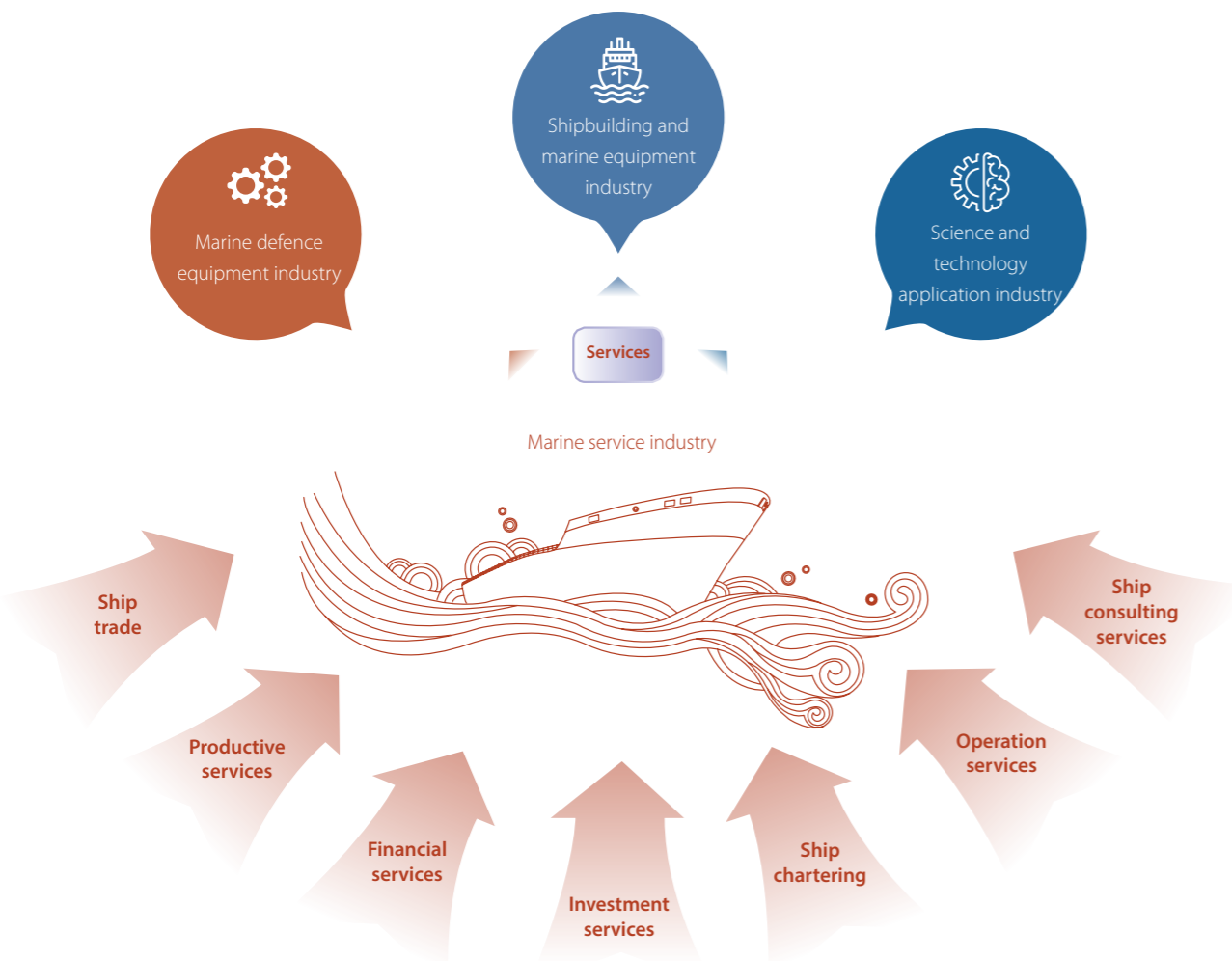
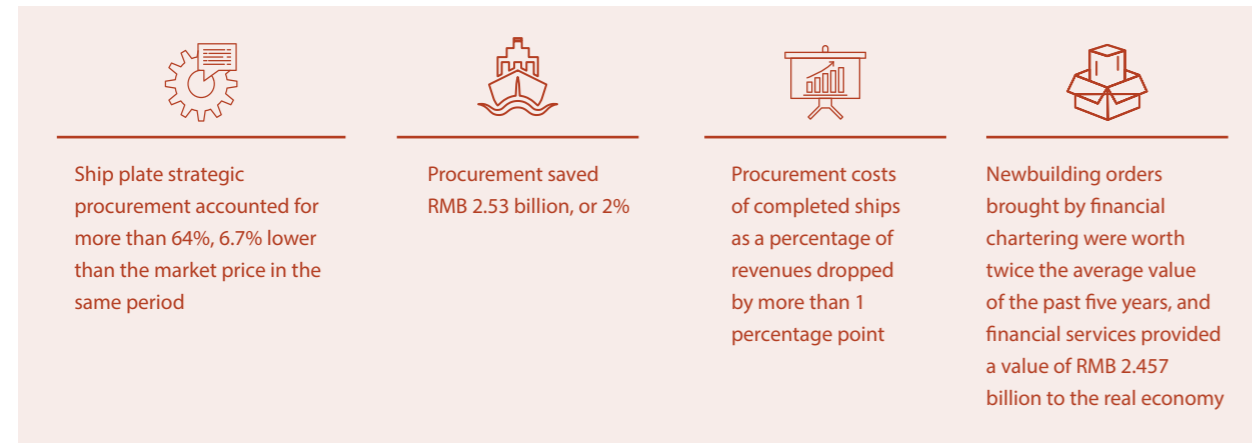
●○○ **Building a world-class low-intensity magnetic field experimental base**

Class-1 Low-intensity Magnetic Field Measurement Station for National Defense of Yichang Testing Technique Research Institute is a national-level model magnetic field measurement center. The station leads the formulation of technical specifications in China's magnetic field, and develops all-parameter calibration devices for measuring low-intensity magnetic fields on land, in the sea, in the air, and in space. Its products and services have been widely used in satellites, high-speed trains, nuclear power plants, large commercial airliners, and a number of national key projects, such as assisting the Tianwen-1 Mars probe and Zhurong rover in the Mars mission.



## Marine service creates higher values

CSSC actively develops the marine service industry to extend the value chain and the industrial chain and supports the development of the primary business. In 2021, against the backdrop of soaring commodity prices:



## Expanding financial services across the industry chain

In 2021, CSSC Finance Company served more than 3,800 customers across 30 provincial-level administrative regions, basically covering all major manufacturers along the industry chain. With strong support from regulators, the company was approved to access the supply chain billing platform, and the CSSC Supply Chain Platform was formally launched. The platform will bring micro, small and medium-sized businesses direct and efficient access to financial services from CSSC Finance Company, laying a solid foundation for expanding financial services across the industry chain.

## Developing an ecosystem of suppliers that enables win-win cooperation

Adhering to its strategic positioning as "two platforms, and two supports", CSSC Supply Co., Ltd. fully implements the CSSC's centralized procurement arrangements. A new centralized and unified procurement system has been created, as have an open, transparent, and digital procurement platform and unified procurement standards, so as to stabilize, strengthen and supplement the industrial chain, and promote it to the middle and high end.

## New breakthroughs in trade

CSSC Trading Co., Ltd., sticks to market-based, international, and professional development. Against the backdrop of normalized COVID-19 prevention and control, it speeds up creating a new development model, steadily advances in military trade, and has set a new record for the number of ships delivered. The value of newbuilding orders has reached a new record high since 2008. All-round progress has been made in technology applications.

## Innovative green finance, promoting green development

CSSC (Hong Kong) Shipping Co., Ltd. works in concert with ship owners, cargo owners, shipping management companies, financial institutions, shipyards, and ship brokers to continuously increase its investment in and financing of clean energy equipment and eco-friendly ship types. Through chartering and investment, the company aims to nurture new opportunities for business growth. In July 2021, the company successfully issued a total of USD 500 million five-year blue and green dual-label bonds, significantly decreasing the average cost of the company's interest-bearing liabilities to 1.9%. The company has been assigned A- rating by S&P Global Ratings and A by Fitch Ratings for three consecutive years. In December 2021, CSSC (Hong Kong) Shipping Co., Ltd. won the Hong Kong Green and Sustainable Finance Awards 2021 from Hong Kong Quality Assurance Agency (HKQAA).





## Accelerating High-level Technology Self-reliance

CSSC shoulders responsibility of our times, strengthens the research of basic and key technology with a rigorous and science-based attitude to ensure self-reliance and accelerates innovation commercialization.

**Consolidating the foundation for technological innovation**

**Achieving breakthroughs in core and key technologies**

**Deepening commercialization and application of research outcomes**



## Consolidating the foundation for technological innovation

CSSC puts innovation at the core of high-quality development, increases input, and improves the theory, design, test, and application technology system of marine equipment. We enhance China's top-level strategic planning, equipment system research, new concept equipment R&D and application to create an national class outstanding research and innovation platform in marine studies.

CSSC owns **36** research institutes and **63** national innovation platforms

## Making standards and patents

CSSC implements "universal standards for the whole Group". CSSC's standardized technology committee and standardization research center have been established, and the CSSC Standardization Management Measures has been issued to build a framework of standards.

**9** international standards

**30** national standards

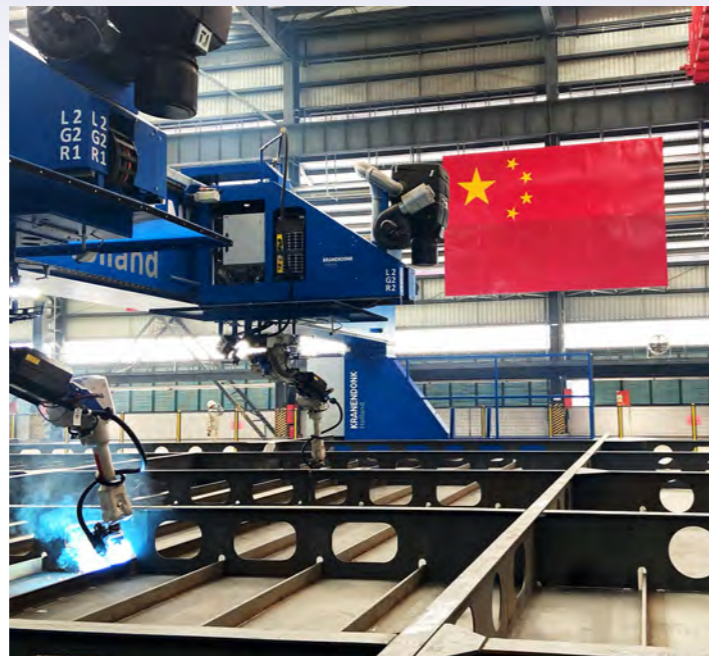
**13,427** patent applications

A year-on-year increase of **10.4%**

**9,675** invention patent applications

A year-on-year increase of **10.3%**

**8** Excellent Chinese Patent Awards



## Cultivate scientific and technological innovation talents

CSSC focuses on the strategic needs of "building China into a strong maritime country" and "building China into a strong maritime country scientific and technological country", adheres to the combination of talent introduction and industrial cultivation and development, connects the talent chain and the innovation chain industrial chain, and strives to create a highland of scientific and technological innovation talents.

**13** academicians of the Chinese Academy of Engineering, **87** people entitled to State Council subsidies

**1** National Innovation Award, **5** National Defence Science and Technology Innovation Teams

**1** Ho Leung Ho Lee Science and Technology Progress Award, and **1** Innovation Award.

## Accelerating the implementation of innovation incentives

In 2021, we reviewed five project revenue distribution schemes of five units and set up incentives worth RMB 20.97 million for 65 core technical experts and managers, an average of RMB 323,000 for each of them, further stimulating innovation vitality.

### ●○○ Smart Ocean Innovation Research Institute founded

On December 31, 2021, CSSC founded the Smart Ocean Innovation Research Institute, with the aim of building it to a world-class scientific research institute in the field of smart maritime applications. The research institute will be an overall technical center, capability integration center, shared R&D center, collaborative innovation platform, talent training platform, and innovative practice platform of CSSC in smart technologies. Furthermore, it guides the Group's development in smart technologies and supports technology management.



## Achieving breakthroughs in core and key technologies

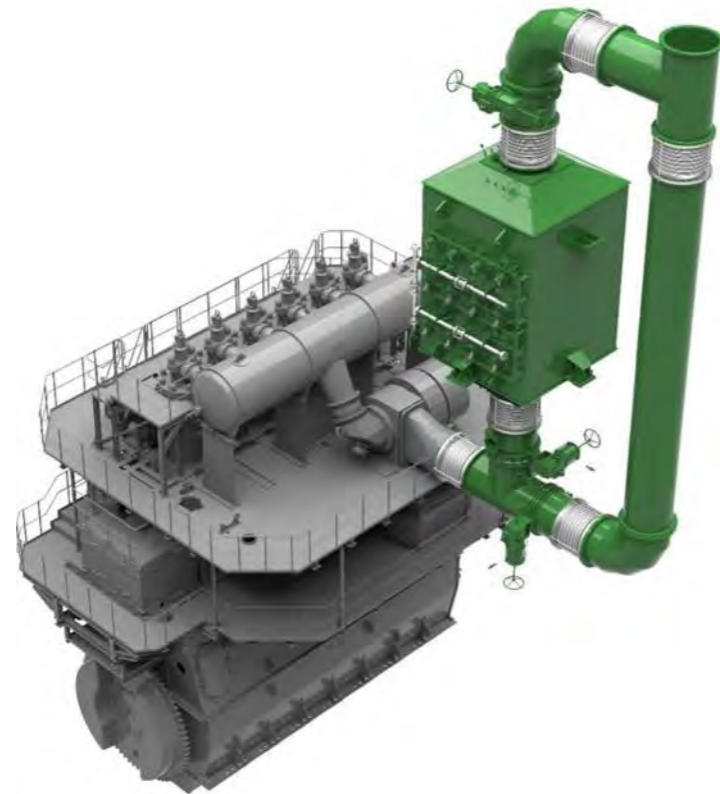
CSSC strengthens the research of original, leading core technology independent controllable project, and core and key technologies, resolves problems where key technology is held under others' control, and forms a list of independent and controllable research projects to firmly grasp the initiative of innovation and development in our own hands.

### 174,000 CBM LNG carrier recognized by classification societies

On December 16, 2021, the latest generation of "Chang Heng Series" 174,000 CBM liquefied natural gas (LNG) carrier jointly developed by Hudong-Zhonghua Shipbuilding (Group) Co., Ltd. and Gaztransport & Technigaz (France) was classed by American Bureau of Shipping (ABS), Bureau Veritas (BV), Lloyd's Register (LR), Det Norske Veritas (DNV), etc., acquiring relevant certificates including General Design Approval and Pre-Classification Accreditation. This marks that with its most advanced design, optimized technical equipment, highest environmental performance, and most forward-looking features, this ship type has been recognized and can now be built as a real ship. This is an important milestone as China moves from following to leading the development and design of LNG vessels.

### Sea trials completed for the first LP-SCR 2.0 system for ships

In December 2021, the 62,000 DWT multi-purpose vessel equipped with the LP-SCR 2.0 system developed by CSSC Power (Group) Co., Ltd. was delivered. The LP-SCR 2.0 system for ships is the first denitration device that adopts the integrated evaporating and mixing technology for the engine's exhaust headers. It shows significant strengths in system energy consumption, system integration, and system security. 18 commercial orders of the product have been received, including those for the world's largest LP-SCR project in construction, and the first LP-SCR for China Classification Society (CCS) B-Class low-speed engine.



### Ammonia-fueled 210,000 DWT bulk carrier getting AIP from the ABS

On August 6, 2021, the latest ammonia-fueled 210,000 DWT bulk carrier independently designed by Shanghai Waigaoqiao Shipbuilding Co., Ltd. received the Approval in Principle (AIP) from the American Bureau of Shipping (ABS). The ship type is equipped with the MAN ammonia engine, and an ammonia storage and supply system. As a zero-carbon energy source, ammonia satisfies greenhouse gas emission standards that are getting more stringent, thereby enabling the ship to meet the relevant emission reduction requirements. It is one of the most promising alternative fuels for the decarbonized shipping industry in the future.



### World's first b-type 99,000 CBM VLEC delivered

On December 28, 2021, the 99,000 CBM B-type tank very large ethane carrier (VLEC) was completed and delivered by Jiangnan Shipyard (Group) Co., Ltd. It has the largest tank volume and it is the world's first VLEC adopting a B-type tank. The ship type is universally applicable to major liquefied gas terminals around the globe. The vessel is equipped with a dual-fuel main engine which can run on ethane and a shaft generator, meeting the most stringent emission requirements while being as economical as possible. It has been classed by American Bureau of Shipping and China Classification Society.



### ●○○ China's first 6 MW floating wind turbine platform in far-reaching sea area

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The 6.2 MW typhoon-proof Type-1 wind turbine unit independently developed by CSSC Haizhuang Wind Power Co., Ltd. is the largest floating wind turbine system now in China. With high power generation, it is reliable, safe, highly integrated, and easy to maintain. The wind turbine is scheduled to be applied in a demonstration project in Luodousha sea area, Xuwen County, Zhanjiang City, Guangdong Province in early 2022. It will be China's first demonstration prototype of its kind designed, implemented, and tested in far-reaching sea conditions.

### ●○○ 70 KW standard hydrogen fuel cell module for marine vessels approved by CCS

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The 70 KW hydrogen fuel cell system independently developed by CSSC No. 712 Research Institute is the first one of its kind in China that meets the latest requirements of China Classification Society for marine batteries. It has been qualified for being launched in the ship market. Currently, the research institute is exploring the product's full-scale ship applications.

### ●○○ State-of-the-art self-unloader launched

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On May 20, 2021, the first twin-engine double-screw electricity-powered 26,000 DWT self-unloader built by CSSC Chengxi Shipyard Co., Ltd. hit the water. The ship type has a length of 225.5 m, a molded width of 23.76 m, and a molded depth of 14 m. With a state-of-the-art propeller, the ship is energy-efficient and environmental-friendly, and boasts maneuverability, flexibility, and reliability. It is equipped with a self-unloading system with a maximum capacity of 5,450 tons/hour, as well as the world's first and largest single-point loading system with a capacity of 4,000 tons/hour, meeting the vessel's loading and unloading needs.



### Deepening commercialization and application of research outcomes

CSSC makes progress on marine equipment informatization and intellectualization, applies innovation outcomes, and commercializes high-tech products such as engine energy-saving and emission-reduction devices to lead the global development of the industry.

### CSSC achieves practical results in the research of advanced manufacturing technology and equipment

We have developed three types of prototypes, including thin-plate laser welding, MARKIII automatic corrugated plate welding, and curved segmented rib welding. We have achieved breakthroughs in LNG ship tightness detection technology and developed independent research and development capabilities of LNG ship tightness detection equipment. In terms of intelligent and digitalized shipbuilding, we have demonstrated the application of intelligent coating on the outer surface of the ship segment and stern shaft boring.

### ●○○ Self-built MARKIII membrane-type fuel tank completed

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In October 2021, the 15,000TEU fuel tank built by Jiangnan Shipyard (Group) Co., Ltd. was completed. The fuel tank adopts MARKIII technology. The MARKIII membrane-type containment system evaporates less and resists more. Jiangnan Shipyard (Group) Co., Ltd. is able to self-develop MARKIII membrane-type containment system fuel tanks for products in new fields and medium and large LNG ships.



### ●○○ World's first 45-foot smart production line for LNG cryogenic liquid tanks put into operation

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In December 2021, the world's first 45-foot smart production line for liquefied natural gas (LNG) cryogenic tanks independently developed, designed, and built by CSSC No. 11 Research Institute, was launched. The production line utilizes a smart management and control system solely developed by the research institute to manage the entire production process. Both 40-foot and 20-foot cryogenic liquid tanks can be produced. Compared to existing production methods, the production line can save labor by 50% while boosting efficiency by six times, the overall technology has reached international advanced level.



## Deepening reform and strengthening management

CSSC deepened the comprehensive reform at a faster speed and completed the annual tasks according to the three-year action plan for SOE reform. We continued to promote reorganization and asset restructuring, as well as reforming the labor, personnel, and distribution systems. Further efforts were made to strengthen refined management, carried out in-depth actions to benchmark world-class management and implemented the quality and efficiency improvement action, comprehensively enhancing the effect of transformations.

### Speeding up the Reform of Systems and Mechanisms

#### Deepening Resource Integration

#### Improving overall governance efficiency

#### Improving quality management

## Speeding up the Reform of Systems and Mechanisms

CSSC has made significant progress in improving the modern corporate structure and the corporate governance structure, intensifying mixed ownership reform, and deepening the implementation of the medium and long-term incentive mechanisms. Such efforts have effectively boosted and released the vitality for corporate development.



### ●○○ Creating incentive stock options

CSSC (Hong Kong) Shipping Co., Ltd. completed the granting of incentive stock options and formed a mechanism of sharing interests and risks with backbone members of the company. It is the first listed company under CSSC to introduce incentive stock options since the reorganization of the Group, with its main economic indicators reaching a record high.

## Deepening Resource Integration

On December 24, 2021, the headquarters of CSSC was moved to Shanghai, fully launching a new journey of better serving the major national strategies and accelerating the construction of a world-class shipping group.



In accordance with the philosophy of development by professionalization, systematization and coordination, CSSC integrated business segments according to the functions, characteristics, and location of each member unit. In this way, CSSC promoted the optimal allocation of various resources, such as technology, talents, and capital, through regional integration and substantialized reform in the fields of trade, materials, investment, finance, media, and think tank.

On April 28, the unveiling ceremony of the Engineering Management Center, the Future Development Research Center, the Equipment Support Center, and the Planning and Development Research Center of CSSC was held in Beijing. Based on these facilities, CSSC aims to highlight the military industry as the core, further improve the management system and enhance the management capacity, and strive to create a new "strategy + operation" management and control model with its own characteristics.

On December 24, the unveiling ceremony of China Ocean Engineering Equipment Technology Development Co., Ltd., which was jointly established by CSSC and several other central SOEs and regional SOEs under the lead of SASAC, was held in Shanghai. The new company brings together superior resources, boosts the development of marine engineering equipment, consolidates the foundation for the development of the marine engineering equipment industry, and enhances the competitiveness of China's offshore equipment industry in the international market.

On December 24, the unveiling ceremony for celebrating the settlement of CSSC Haizhou System Technology Co., Ltd. was held in Shanghai. Giving full play to the Group Company's leading role in the shipbuilding industry and in the whole industrial chain, the company conducts whole-lifecycle R&D of the shipbuilding industry and vigorously promotes the application of industrial software solutions, striving to elevate the development of China's industrial software to a new level.

CSSC promoted the regional integration and substantialized reform of enterprises and public institutions in Dalian, Tianjin, Shanghai, Guangzhou, Chongqing, Xi'an, Shenzhen, and other regions. This helped solve problems of lagging behind market-oriented reform of regional companies, high governance and control risks faced by small, scattered and weak enterprises, and some units' lack of abilities to develop their main businesses and insufficient development capacity.

91% affiliates of CSSC signed agreements on tenure-based and contract-based management, covering 94% of the total number of personnel. The professional manager system was piloted in four CSSC affiliates. The overall labor productivity increased by 12.2% year on year, and the principle of leaders "salary increases/decreases along with the increase/crease of performance" has been further implemented.

Through strategic investments, market-based debt-to-equity swaps, and issuance of exchangeable bonds, CSSC raised RMB 8.232 billion in the capital market.

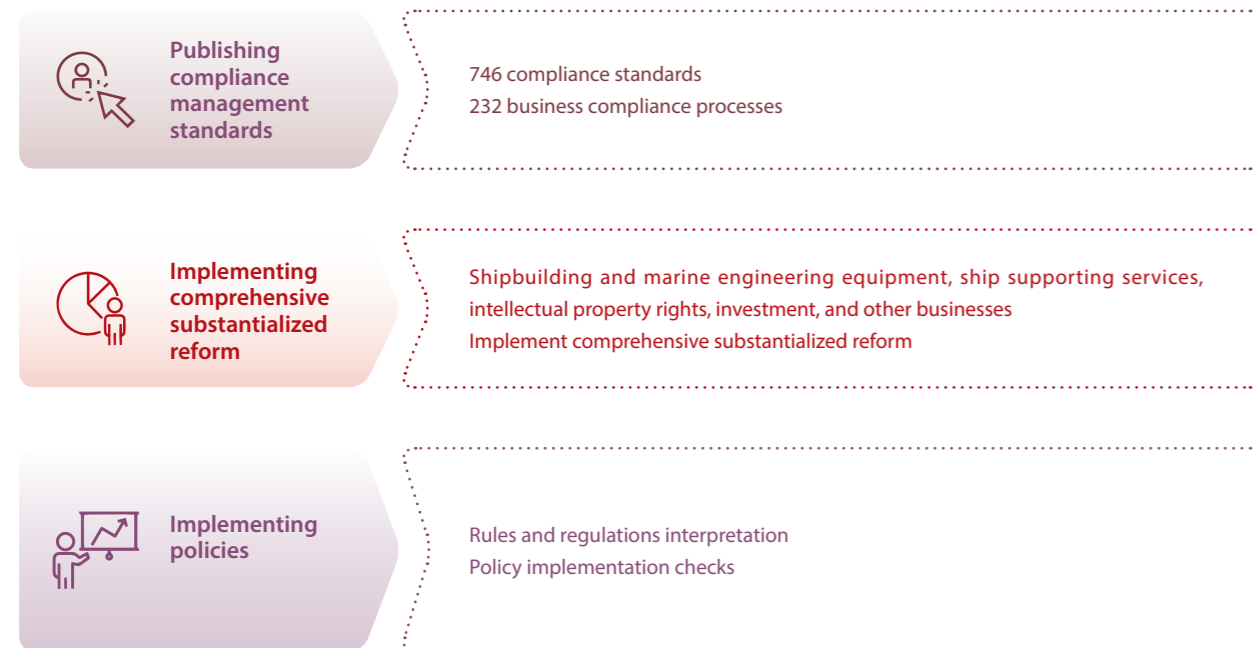
## Improving overall governance efficiency

CSSC deepens refined management and advances the process to benchmark world-class management, achieving lower costs and better efficiency. We also enhance compliance and internal audit and supervision. Solid progress is made in quality, work safety, environmental protection, and social responsibility.

### Advancing the process to build world-class management system

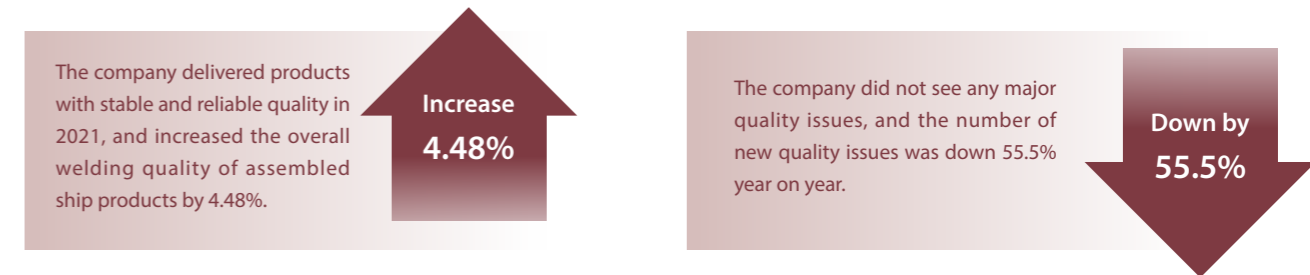


### Deepening compliance management



## Improving quality management

CSSC aims to "become a company with leading quality", benchmarks its performance against world-class counterparts, puts quality first and pays attention to quality and benefit. The company has formulated the quality plan during the 14th Five-Year Plan period, put forward its quality strategy and development goals in this period, and set the "12315" key tasks.



### The continuous improvement of quality management has been highly commended by stakeholders

CSSC No. 702 Research Institute's quality management model for "achieving lofty goals through struggle" and China Harzone Industry Co., Ltd.'s "refined quality management model for the entire value chain" were both nominated for the China Quality Award (CAQ).

CSSC No. 710 Research Institute won the CAQ for its performance in promoting performance excellence management.

CSSC Sail LLC was nominated for the CAQ.

Jiangnan Shipyard (Group) Co., Ltd. won the "Ship Quality Award" from CSSC, and five subsidiaries including CSSC Sail LLC received nomination awards for the "Ship Quality Award".

### Achieving fruitful results with quality improvement activities involving all staff

In 2021, a total of 8 quality control (QC) groups of CSSC won the National Excellent Quality Control Circles Award, and 10 teams won the National Quality Trustworthy Team Award. We participated in the Central SOE QC Group Results Publication Competition, and won two first prizes and one second prize. Our comprehensive performance ranked 3rd among all central SOEs and topped all central military enterprises participating in the competition. Under our organization, more than 250,000 people participated in the knowledge contest, and their comprehensive performance ranked 4th among all central SOEs and 1st among all central military enterprises.



## Practicing Green Development

CSSC thoroughly implements the national decisions and deployments on promoting the Xi Jinping's ideological construction of ecological civilization, strengthens the publicity and implementation of environmental protection policies and regulations, and organizes special action plans. We pursue green manufacturing, develop green equipment, lay out green industries, and provide green products and services, contributing to a beautiful environment. In 2021, we made steady progress in saving energy and protecting the environment with no major environmental emergencies.

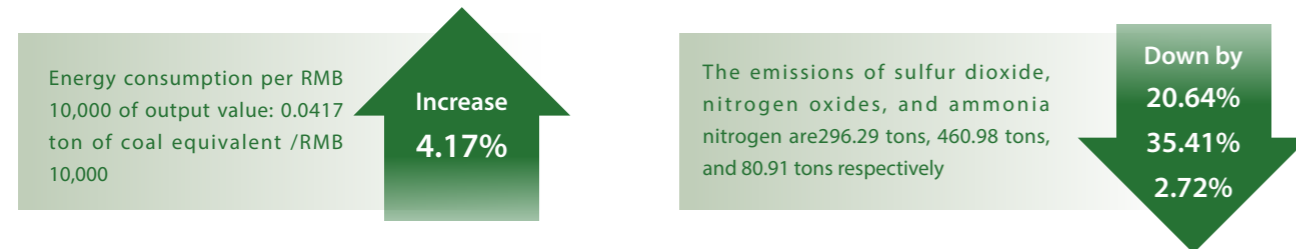
**Developing green manufacturing**

**Developing and manufacturing green equipment**

**Expanding green businesses**

## Developing green manufacturing

Following the national requirements for targeted and science-based pollution treatment according to law, we implement various tasks in the battle against pollution and continue to reduce energy consumption and pollutants. In 2021, CSSC invested a total of RMB 1.28 billion into 132 key projects and 893 general projects of the special environmental protection campaign. We have improved our capacities in dealing with major pollutants such as sulfur dioxide, nitrogen oxides, chemical oxygen demand, and ammonia nitrogen and reduced emissions, effectively improving environmental quality.



## Promoting VOC treatment with vigor

The VOCs treatment system of Shanghai Waigaoqiao Shipbuilding Co., Ltd., which was built by CSSC No. 11 Research Institute, has been delivered and put into operation. This system is the first one in China to be applied to two coating rooms that share the same waste gas treatment device. After the system is run, the discharge outlet is kept below 20 mg/m<sup>3</sup> according to the online monitoring readings, far lower than the latest pollution discharge standards imposed by local authorities, making the system among the top in China.



The VOCs management system

## A green spraying system developed

Guangzhou Shipyard International Co., Ltd. and CSSC Yangtze River Technology Co., Ltd. co-developed a double-component large-package green spray system, becoming the first to localize and industrialize the technology in the shipbuilding industry. The technology greatly improves the safety of spraying operations and protects the health of workers, while cutting the equipment's price and costs by over 30%, and reducing the emission of hazardous waste and VOCs by 199 tons.



Ceremony for signing the cooperation agreement on the green spraying system

## Industrial solid waste treatment

In June 2021, the first distributed hazardous waste disposal plant in the shipbuilding industry started operation at the Longxue Base of Guangzhou Shipyard International Co., Ltd. The project was designed to handle 5,000 tons of solid waste annually. Major hazardous waste generated from shipbuilding, such as waste paint barrels, can be treated on site, reducing carbon emissions during waste disposal and transportation.

In August 2021, Guangzhou Shipyard International Co., Ltd. formulated the Waste-Free Factory Evaluation Index System and Evaluation Methods, the first of its kind in the shipbuilding industry. Twenty-four evaluation indexes, including carbon emission intensity, are covered. Through strict regulation, the company reduced 942 tons of industrial waste in 2021, cutting the generation of industrial waste by 25%. It completed the goal of "peaking" the generated industrial wastes in 2021, setting an example for the building and management of waste-free cities.

CSSC No. 9 Research Institute Co., Ltd. designed the plastic barrier system for the comprehensive slag yard treatment project (Phase 2) of Guizhou Tianzhu Chemical Company, a key project under the environmental supervision of the central government. It is China's largest chemical slag yard treatment project to date. The project was completed on December 25, 2021. The problems of solid waste, soil pollution, and water pollution in the slag yard were fundamentally solved.





## Developing and manufacturing green equipment

Guided by the 30-60 goal, CSSC accelerates the R&D of eco-friendly ship types. We have developed ecological VLCC integrating a variety of green energy-saving measures, a sail-assisted VLCC, the world's first dual-fuel LNG VLCC, and the aurora CO2 carrier. These outstanding ship products provide solutions for "carbon peaking and neutrality" in the ocean shipping industry.

### ●○○ Dual-fuel powered vessels delivered

The world's first dual-fuel LNG VLCC 91 undertaken by Dalian Shipbuilding Industry Co., Ltd. finished the underwater construction part. Its LNG gas storage system adopts the C-type storage tank with LNG filling points on the port side and starboard side. The gas filling rate can reach 1500 m3 per hour, making the filling operation faster for the shipowner.



Dalian Shipbuilding Industry Co., Ltd. developed a green methanol- and ammonia-fueled VLCC together with the shipowner, and has obtained Approval in Principle (AiP) from classification societies. It also independently developed a Type-C LNG fuel storage tank with a dead volume of 3,500 m3, providing a novel LNG bunkering solution for the world's first dual-fuel VLCC.



Jiangnan Shipyard (Group) Co., Ltd. delivered the world's first LNG dual-fuel pure car, truck carrier (PCTC) with a fuel cell and an environmental management system (EMS). The type of ship has set a benchmark for ro-ro ships in terms of its low carbon emissions, and was named one of the "Significant Ships of 2021" by the Royal Institution of Naval Architects. The 169.1-meter-long and 28-meter-wide ship has 10 decks and can carry 3,600 vehicles at one time. Equipped with a 600-cubic meter C-shaped tank, the ship can be powered with both diesel and LNG and meets the International Maritime Organization's TIER III NOx emission standards. The natural gas capacity on board is sufficient for the entire voyage.



CSSC Huangpu Wenchong Shipbuilding Co., Ltd. successfully delivered its first 9,500 CBM multi-purpose gas carrier, which is also the first dual-fuel powered multi-purpose gas carrier equipped with a self-developed main engine in China. The ship has two liquid cargo systems that are designed for flexible loading of two types of cargoes. The carrier has two 250 CBM gas tanks on both sides of the bow, which also serve as LNG fuel tanks, and there are also two 4500 CBM gas tanks in the cargo tank.



## Expanding green businesses

Committed to the concept of green development, we develop green industries that are pollution-free, harmless, non-toxic, and beneficial to human health and contribute to China's green energy transition and the 30-60 goal with practical actions.

### Wind power generation

CSSC owns a relatively complete guarantee system for wind power equipment development and production, and has the advantages of a whole industry chain. In 2021, over 17 million kilowatts of wind and solar resources were secured, and approved wind farms had more than 1 million kilowatts of installed capacity, marking a significant breakthrough. We received 3.6 million kilowatts of wind turbine orders and delivered more than 700 units.

CSSC Haizhuang Wind Power Co., Ltd. successfully built a national "green factory" and became a "green supply chain management enterprise". As of the end of 2021, the wind turbines operated by the company around the world had reached an annual output capacity of about 48 billion kWh, equivalent to saving over 19 million tons of standard coal, reducing more than 47 million tons of CO<sub>2</sub>, 1.4 million tons of SO<sub>2</sub> and 0.7 million tons of NO<sub>x</sub>, and planting more than 2 million mu of trees annually. The company has 362 offshore wind turbines in Rudong City, Qidong City, and Dafeng City of Jiangsu Province, Zhuanghe of Dalian City in Liaoning Province, Xiangshan City of Zhejiang Province, and Xinghua Bay of Fujian Province, etc., and has connected 410 wind turbines to the grid. With a total grid-connected capacity of 2.2042 GW, the company saves about 2.15 million tons of standard coal and reduces 4.96 million tons of CO<sub>2</sub> every year.



Haizhuang wind turbines in the Saihanba forest farm



"China Three Gorges 101" offshore wind power jack-up exploration and test platform

The offshore wind power jack-up exploration and test platform "China Three Gorges 101" built by Wuhan Marine Machinery Plant Co., Ltd. was delivered. With the platform, integrated operations will be performed in offshore wind power survey and research. It will effectively enhance China's competitive edge in the field of core marine survey equipment.



China Shipbuilding NDRI Engineering Co.,Ltd won the bid for the engineering procurement construction (EPC) project for the base of the Large-scale Offshore Wind Power Intelligent Equipment Industrial Park at Xiangshan. It is a key offshore wind power planning project of Zhejiang Province during the 14th Five-year Plan period.



The base of the Large-scale Offshore Wind Power Intelligent Equipment Industrial Park at Xiangshan

### Photovoltaic power generation

Guangzhou Shipyard International Co., Ltd. and China Southern Power Grid invested RMB 50 million in a 15 MW PV power generation project, which runs on self-generated electricity and transmits the excess electricity to the grid. The project can reduce 10,000 tons of CO<sub>2</sub> emissions annually.



PV power generation system

In 2021, CSSC's MW-level proton exchange membrane (PEM) hydrogen production from water electrolysis was accredited as a significant technical equipment in China's energy sector. The hydrogen producing and refueling integrated project first entered the European market. The container-type hydrogen generator was first launched in the US market. And the hydrogen-oxygen unit in thermoelectric generator (TEG) for nuclear power plants received the first order. The hydrogen measuring device first made it to the market of post-treatment recovery for nuclear power generation.

CSSC No. 718 Research Institute founded PERIC Hydrogen Technologies Co., Ltd., which specializes in hydrogen production from water electrolysis, hydrogen production from fossil fuels, hydrogen-fueled transportation, and hydrogen energy in the sea, etc. The company holds a high market share in the national water electrolytic hydrogen generator market, and undertook four key hydrogen supply projects during the 2022 Beijing Winter Olympics.



Super-large water electrolytic hydrogen generator of CSSC No. 718 Research Institute

The world's first 5MWe power generation system based on supercritical CO2 (s-CO2) cycles developed independently by Chongqing Jiangjin Shipbuilding Industry Co., Ltd. completed full-load trial operations in Xi'an. The system has the world's largest capacity, highest performance parameters and most optimal efficiency among its kind. The company was the first in the world to develop and test the s-CO2 turbines for industrial purposes. The localization rate of the test circulating units' core components is 100%.



Supercritical CO2 turbines in operation and under monitoring





## Pursuing Shared Benefits and Win-win Cooperation

CSSC works hard to create an ecosystem that fosters harmonious development, shared benefits, and win-win cooperation. Keeping the needs of stakeholders in mind, we strive to build a solid community of shared interests and drive high-quality development.

**Building partnership**

**Caring for employee growth**

**Engaging in social welfare**



## Building partnerships

CSSC innovates in cooperation mechanisms and strengthens extensive and in-depth cooperation with local governments, financial institutions, as well as universities, to foster a stable, safe, agile, and lean industry chain and supply chain with a prominent edge in cost efficiency. Together with partners, CSSC stabilizes, strengthens, and supplements the two chains, brings the industry chain to the mid- and high-end level, and builds an ecosystem that facilitates win-win cooperation.

### ●○○ Signing strategic cooperation agreements

Government-enterprise cooperation: Signed strategic cooperation agreements with local governments in Shanghai, Hainan, and Fujian, etc.

Bank-enterprise cooperation: Signed cooperation agreements with financial institutions such as China Construction Bank, Agricultural Bank of China, and Shanghai Pudong Development Bank, etc.

University-enterprise cooperation: Signed strategic partnership agreements with universities such as Tsinghua University, Shanghai Jiao Tong University, and Northwestern Polytechnical University, etc.

### ●○○ The First CSSC Supplier Conference

To deepen supplier cooperation and create synergy effects across the industry chain, CSSC held the first supplier conference on July 22, 2021. More than 120 CSSC suppliers, over 60 affiliates, and nearly 400 corporate representatives attended the event. It was agreed at the conference that: CSSC will leverage the new generation of information technology in building a modern industry chain and supply chain management system; It will develop green and smart material and equipment management systems, and advance the building of an intelligent supply chain; A development community and shared community will be developed on the basis of fair competition and cooperation.



## Caring for employee growth

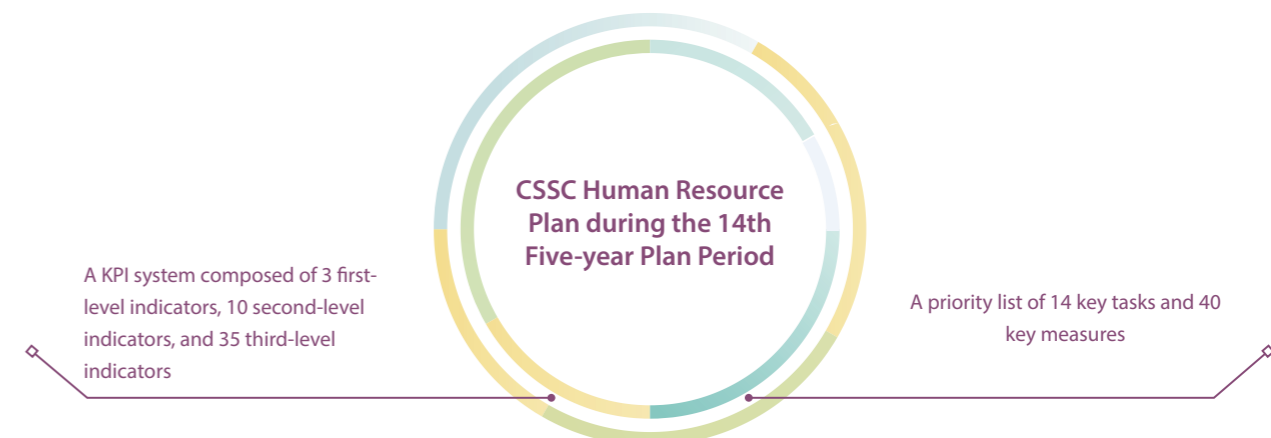
CSSC values the rights and interests of employees, helps them through difficulties, and cares for their health, creating a safe and harmonious workplace for them. We also endeavor to provide employees with an enabling platform for growth.

### Caring for employee growth

CSSC earnestly follows the spirit of the speech of General Secretary Xi Jinping at a central conference on talent-related work. As part of our commitment to talent fostering, we convene meetings on talent-related efforts, provide staff training, and build a talent team with a proper scale and structure. We hope to attract first-class talented professionals who love their country and value dedication, excel in overall capabilities, stay motivated, and have a global vision. The top-notch talent pool will contribute to the growth of CSSC into a world-class shipbuilding corporation.

Total workforce **219,500**, investment in training **RMB 148 million**, training staff **753,800 person-time**, **17** people and **4** collectives were newly selected into the National Talent Programs; **2** won the Ho Leung Ho Lee Foundation Science and Technology Award, **1** won of Chinese Skills Award, **16** won the title of National Technical Experts

"Focuses on one main line, adheres to five principles, promotes the two combinations, builds three teams, implements six major projects, and achieves four new goals"; meanwhile, the company attaches importance to the professional and market-oriented development of young employees.



## Selecting young talents

Twenty-six of CSSC's backbone affiliates and research institutes have realized a reasonable age distribution in their workforce, with 1/3 post-60s, 1/3 post-70s, and 1/3 post-75s (including post-80s).

We are constantly improving the echelon allocation of model leaders.

A total of 55 new Chief Directors and Chief Designers have been appointed, with an average age of 51.

The first batch of 80 top-class technical experts has been evaluated and hired. As the first pilot qualification agency for top-class technical experts, we were named one of the first model enterprises in China for industry-education integration.

For the first time, we awarded CSSC May Fourth Medals to 24 outstanding young employees and 24 youth groups, setting examples for other young employees.

In the newly promoted deputies of CSSC affiliates, 55% are under 45 years old.

In newly promoted principals of CSSC affiliates, 67% are under 50 years old.

Selected 299 top young talents



## Implementing various training schemes

Organizing training classes for leaders and officials with innovative training methods combining "centralized classes + face-to-face teaching in different classes + online learning".

Launching the first training program that focuses on "comprehensive competence and ability improvement" for leaders in science and technology, particularly senior experts, chief directors and chief designers; creating a practice and learning platform aimed at improving the "technical + management capabilities" of leaders in science and technology.

Organizing the second and third classes for young and middle-aged officials and developing the "Four-Learning and Four-Review" training brand.

Holding high-skill training classes to improve the professional skills of personnel.

## Vocational Skill Competition

CSSC actively promotes vocational skill competition by establishing a competition system. On September 27, 2021, CSSC joined hands with China Employment Training Technical Instruction Center to hold "2021 China Skills Competition and CSSC Skills Competition". The competition was attended by 128 contestants from 49 affiliates of CSSC.



Senior skilled personnel of CSSC achieve success once again in China's top vocational skills competition

## New Employee Orientation

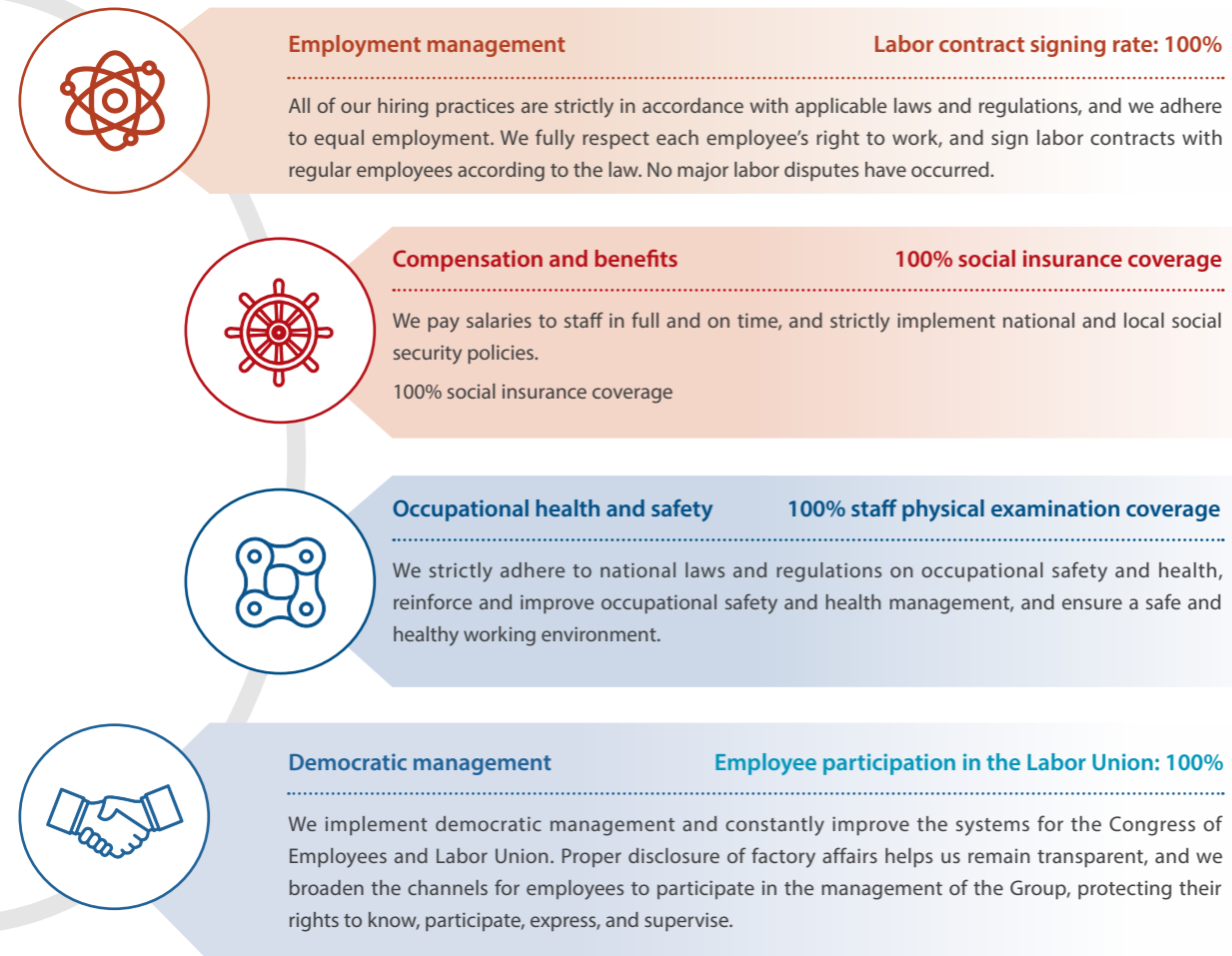
CSSC organized the 2021 New Hire Orientation and delivered a speech to more than 4,000 new employees on September 13, 2021.



## Protecting the rights and interests of employees

CSSC stays people-oriented and maintains equal and harmonious labor relations with employees. We protect the legitimate rights and interests of employees, respond to their reasonable demands, and constantly create a workplace that highlights equality, respect, and safety.

We take concrete and detailed measures to safeguard the rights and interests of employees, and help them cope with real difficulties, boosting their sense of acquisition, happiness, and security. Leaders of the Group Company pay visits to academicians, retirees, martyrs' families, model workers, business backbones, overseas employees and employees in need during holidays and festivals, showing concern for their living conditions. We support female employees and make our workplace more welcoming to them, especially for those during pregnancy and lactation.



Visit retired employees on the eve of the Spring Festival



Sending greetings to employees



Floral design workshop on International Women's Day

## Safeguarding health and safety

A higher priority has been given to work safety management. By implementing the Measures for Strengthening Work Safety Practices and issuing the Safety Culture Handbook of CSSC, we have incorporated the idea of work safety into our daily decision-making and production processes. Keeping strict and practical management, we land concrete measures and make every effort to safeguard the safety and health of our employees. Overall work safety was maintained in 2021, with no relatively major or above accidents reported.

- Organized propaganda and learning activities on General Secretary Xi Jinping's important remarks on work safety.
- Conducted first-class work safety campaigns
- Carried out the construction of enterprise safety production standardization
- Organized "Safety Month" and launched the three-year work safety rectification action
- Carried out a 100-Day Action Plan to identify and eliminate safety hazards, fight against workplace safety violations, and secure work safety.



- To adapt to the industry's development trend and latest requirements for occupational health and personal protection, we have further improved relevant management standards and enhanced the safety of the working environment.
- We have also strengthened the occupational health checkup system, and implemented policies on occupational injury, medical insurance, and financial assistance, etc.
- More efforts have been made in the prevention and pre-control of occupational disease risks. A reporting mechanism has been established to ensure early identification, early reporting, and early treatment.
- We diligently promote publicity and education regarding occupational health, improve relevant employment regulations, and raise workers' awareness of protecting themselves during operations.

### ●○○ Putting people first in ensuring the safety and health of employees

Benchmarking against world-class standards, CSSC Sail LLC has set the internal control standard for blood lead at 400 µg/L (the national standard is 600 µg/L), and established an assessment system consisting of four blood lead indicators: abnormality rate, number of people with blood lead abnormality, key ranges, and average value. In addition, the company has implemented differentiated supervision measures for employees in different blood lead ranges. The company has introduced zoning management to avoid cross-contamination by dividing the entry and exit routes of personnel; promoted chromogenic reagents for lead, and filled the blank by compiling the industry's first personal hygiene management and inspection regulations for personnel involved in lead exposure.

●○○ Coordinating COVID-19 containment with scientific research, operation and production in a more efficient way

Due to repeated COVID-19 outbreaks in China in 2021, regular epidemic control continued in regional areas. In line with the principles of "preventing external import, internal proliferation and strict export", we promoted the implementation of epidemic prevention and control work, took concrete anti-virus actions and organized nucleic acid tests and vaccinations as required, to safeguard the health of all employees. To ensure normalized production and operation of the shipbuilding business, we established a special mechanism and a daily and weekly performance report system. In 2021, our shipbuilding and offshore equipment contracts hit a record high in contract amount ever since the international financial crisis in 2008, marking that we scored high in both production and operation and COVID-19 control.



Vaccination site



Staff taking nucleic acid test orderly



Carrying out a volunteer cleaning activity for epidemic prevention

Engaging in social welfare

As a central state-owned enterprise, CSSC fulfills its social responsibilities and undertakes the historical mission. We contribute to rural vitalization and disaster relief, promote public welfare, and play a part in the building of a heart-warming and harmonious community.

Works for rural vitalization

When it comes to poverty alleviation, CSSC always unites as one, invests the best resources, delivers accurate and practical actions, blazes new trails, rises to challenges, and lives up to people's expectations. We are continuously devoted to targeted assistance efforts in Heqing County, Mengla County, and Qiubei County of Yunnan Province.

In 2021, we invested a total of RMB 152 million in the three counties, including non-reimbursable aid fund RMB 56.9768 million, RMB 27.237 million of industrial development funds, and RMB 67.8 million in purchasing agricultural products. More than 50 projects were carried out.



Members of the Party Leadership Group in Qiubei County for Paired Assistance Performance Evaluation

- Invested RMB 5.338 million to build production, processing, and cold storage facilities in Heqing County.
- Invested RMB 9.13 million in building demonstration vegetable growing bases in Qiubei County, and in developing tourism in Bangchang Hamlet, Pingzhai Village.
- Invested RMB 7.65 million in building vegetable markets in Mengla County, and in promoting the planting of cork oak trees; invested RMB 1.15 million in building a short-eared pig farm with 500 sows and in expanding the tea processing plant in Shangyong Village, Mohan Town.

In terms of industrial development, building model projects in rural areas

- Invested RMB 2.8027 million in building roads in Menglong Hamlet, Shupi Village, Qiubei County, in drinking water pipe systems in Shede Hamlet, Shede Village, and in irrigation projects in Yuwang Hamlet, Guanzhai Village.
- Invested RMB 360,000 in building farm field tracks in mountainous areas in Songyuan Hamlet, Liuhe Village, Heqing County.

In terms of infrastructure construction, improving living and production conditions in villages

- Invested RMB 10.4941 million in opening CSSC Spring Bud classes in the three counties, and in improving campus facilities, as well as in organizing "Ocean Dream Catcher" summer camps on defence education.

In terms of education, improving the teaching and learning conditions in impoverished areas



Invested RMB 5.01 million in building two and three standard village clinics in Heqing County and Mengla County, respectively, and in building a complex building for the township health center of Qiubei County.

Donated RMB 1.578 million to build a fabricated border surveillance system and a waste incinerator for the centralized isolation site in Mengla County.

Built a centralized isolation site that can accommodate more than 5,000 people, to support COVID-19 response along the border.

**In terms of healthcare, improving primary-level medical conditions in rural areas**

Invested RMB 2.38 million in training programs, benefiting a total of 1,687 primary-level Party officials, 516 rural vitalization pioneers, and 1,319 technicians.

**In terms of capacity building, organizing talent training in the three counties**

Invested RMB 3.73 million to build charity supermarkets in 64 hamlets of Heqing County; invested RMB 2.81 million in building the Ethnic Culture Solidarity Square in Liuhe Village and Galaxy Culture Space in Jindun Village.

Invested RMB 650,000 to support the High School for Ethnicity Groups in Mengla County in building ethnic culture showroom, as well as Party building and military culture corridors.

Invested RMB 220,000 in holding the First Rice Harvest Festival at CSSC-Pingzhai Huami Rice Field Park in Qiubei County; invested RMB 120,000 in sponsoring cultural promotion activities in rural areas.

**In terms of culture, supporting cultural vitalization in rural areas**

Invested RMB 1 million in supporting the restoration of the leachate treatment station of the municipal waste disposal plant in Mengla County.

Invested RMB 2.04 million in hiring 90 river guards and 190 village sanitation workers in Qiubei County, to strengthen supervision of rivers, lakes, and village roads.

**In terms of environment, protecting the ecological environment in the countryside**

Invested RMB 2.054 million to support Qiubei County in developing the "Intelligent Party Building" visualized dispatching center and random survey system, as well as the Primary-level Party Organization Activity Center in Gele Hamlet, Guanzhai Village.

Invested RMB 120,000 in building the Party Building Room for Manhuizhuang Hamlets, Mengpeng Township, Mengla County.

**In terms of Party building, improving facilities for activities of primary-level Party organizations**

Mobilized employees into buying RMB 67.8 million of agricultural products in the three counties; encouraged affiliates to help the three counties sell agricultural products, reaching a total sales value of RMB 55.25 million.

**In terms of poverty alleviation through consumption, actively driving local development**

●○○ Fueling industrial growth of Mengla County, Xishuangbanna Prefecture

CSSC continuously assists Mengla County, Xishuangbanna Dai Autonomous Prefecture, Yunnan Province in consolidating and deepening its achievements in poverty alleviation and speeds up rural vitalization. Through the Mengla Industrial Poverty Relief Fund, CSSC has invested RMB 25 million and RMB 10 million to Rising Natural Rubber Co., Ltd. of Yunnan Manganese Group Corporation and Wanze Ecological Agriculture Technology Co., Ltd., respectively (of which, RMB 19.455 million and RMB 7.782 million, respectively, belong to the Group Company). The investments will be used to support the development of rubber deep processing and Yunnan short-eared pig farming in Mengla County.



CSSC Party Leadership Group paying a field visit to Mengla County to promote paired poverty alleviation efforts



Establishing a national enterprise technical center in Xishuangbanna Prefecture

Kunming Shipbuilding Equipment Corporation (KSEC) combines its technical advantage in smart manufacturing with the needs of industries in Mengla County. In 2021, the company independently developed China's first smart Pu'er tea trial production line with a capacity of 300 kg/h. It also set up a smart tea manufacturing and innovation center, a smart rubber manufacturing and innovation center, and an intelligent parking development center. It is actively exploring the building of smart Pu'er tea production lines, the R&D and application of smart rubber products as well as intelligent parking services. The company strives to drive the intensified and scaled development of local Pu'er tea and natural rubber businesses, and the development of intelligent transportation.



**Promote epidemic prevention and control**

Since the outbreak of COVID-19, CSSC has maintained a rational strategic positioning and bottom-line mindset. By taking the pulse of the market and innovating in working mechanisms, we show our commitment to fulfilling responsibilities as a central state-owned enterprise in the tough battle against the virus.



Dalian Shipbuilding Industry Co., Ltd. donates 150,000 surgical masks to the Dalian Municipal People's Government



CSSC No. 8 Research Institute donates RMB 300,000 of cash, 1 million masks, and other epidemic prevention supplies worth RMB 200,000 to Yangzhou City



CSSC Nanjing Luzhou Environment Protection Co., Ltd. transports medical waste disposal systems to Lukou to support COVID-19 response in Nanjing City

Supporting COVID-19 control along the border with smart mobile cabin hospitals

To help Mengla County, Xishuangbanna Prefecture fight against COVID-19, Kunming Shipbuilding Equipment Corporation responded to the local government's call and worked around the clock to complete an emergency isolation project. Together with China Shipbuilding Industry System Engineering Research Institute, the company developed a smart mobile multi-function cabin hospital model, which won the "Major Project Award for Industrial Applications". The company's case "Outstanding Solution of the Industrial Internet for COVID-19 Response and Resumption of Production and Work" was included in the list of suppliers for intelligent manufacturing system solutions by the Ministry of Industry and Information Technology.

In 2021, the company built two emergency mobile hospitals for Ruili City, Yunnan Province, three mobile cabin hospitals and one border surveillance station for Mengla County, Xishuangbanna Prefecture, and one isolation center for Menghai County, Wenshan Prefecture, and Malipo County, respectively.



The cabin hospital built by Systems Engineering Research Institute



Kunming Shipbuilding Equipment Co., Ltd. builds a cabin hospital

Charity

CSSC highly values social benefits and actively organizes all kinds of public welfare activities, such as supporting flood control and disaster relief in Henan Province, to promote positive energy in society.

Supporting disaster relief and flood control in Henan

After the rain storm and flood hit Henan in July 2021, CSSC immediately donated RMB 10 million to the Henan Charity General Federation. The Group urged affiliates in Henan Province to implement flood control contingency plans at once, leveraging their expertise in emergency rescue equipment to support flood control, disaster relief, and post-disaster reconstruction in the affected areas. On July 23, 2021, China Harzone Industry Corp., Ltd. sent 102 professionals along with 30 sets of emergency rescue equipment, including flood relief emergency pontoons and amphibious all-terrain rescue vehicles, to rush to relocate more than 1,000 villagers in Xinxiang City and Hebi City, Henan Province.



Public welfare activities

CSSC affiliates actively fulfill social responsibilities by organizing Donation Day, programs to support elderly people living alone, children, and impoverished college students, and other public welfare activities.



Hu Wenli, a young employee of CSSC No. 701 Research Institute, is named "Outstanding Youth Volunteer of China"



Chongqing Jiangjin Shipbuilding Industry is carrying out an education supporting program in Dongfanghong School, Chongqing



Qingdao SunRui sets up "SunRui Scholarship" at Ocean University of China



Wuhan Heavy Industry Casting & Forging participates in the local community's volunteering cleanup activity



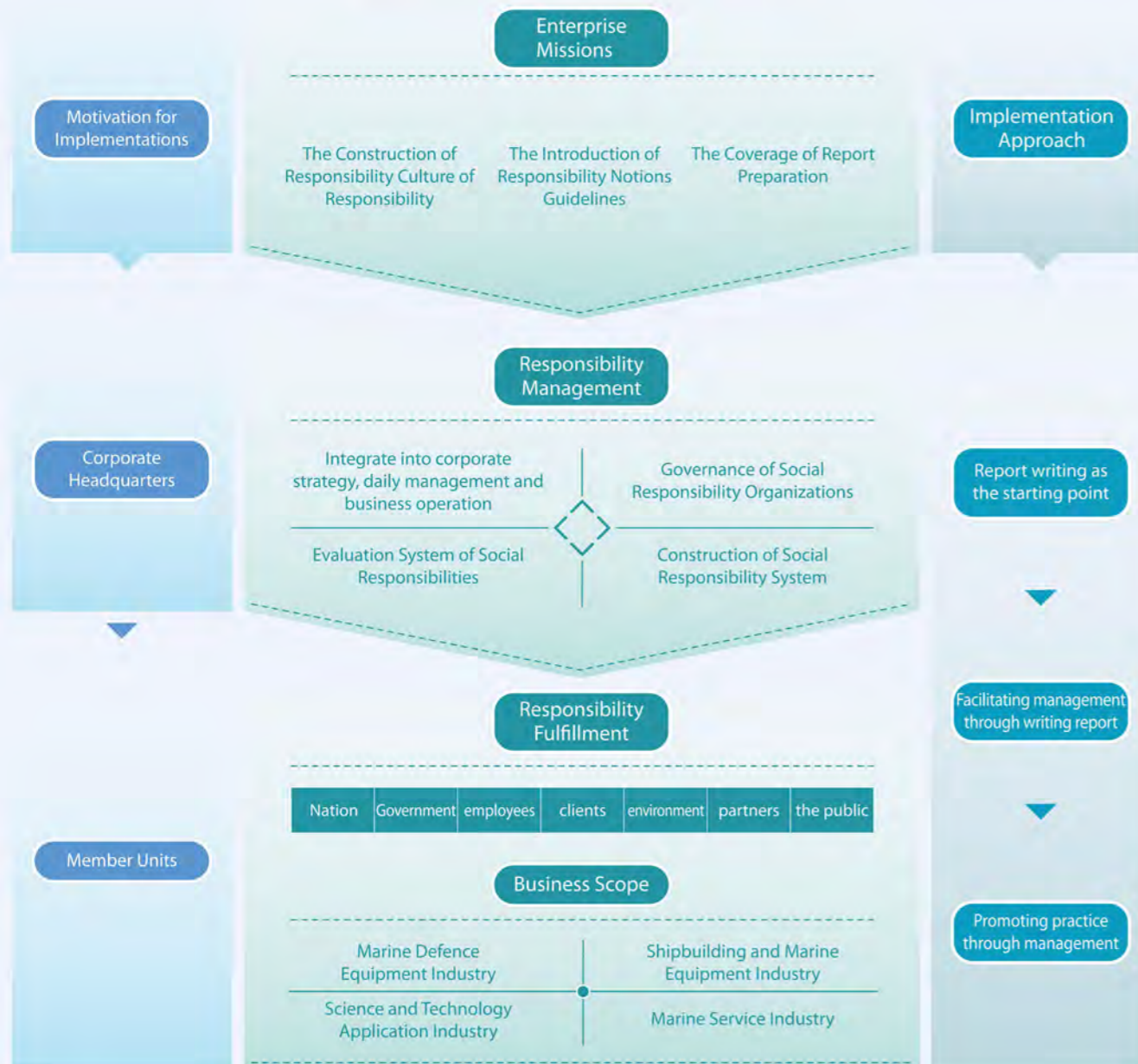
Beihai Shipyard organizes free blood donation activities

# Responsibility Management

## Responsibility Notions

Adhering to the enterprise mission of "leading the development of the industry, supporting the construction of national defense and serving the national strategy", we gradually walk out of a mission-led road to fulfill responsibility, and consciously integrate social responsibility into corporate strategy and corporate culture, promote the practice of responsibility, carry out responsibility management, and realize the organic unity of undertaking historical mission, fulfilling social responsibility and promoting the sustainable development of enterprises.

Social responsibility management promotion model of CSSC.



## Responsibility Management

CSSC set up a leading group for the social responsibilities, as well as relevant departments, managed by corporate headquarters, to administer the centralized management of responsibilities. CSSC also established a social responsibility organization system with the linkage of member units, covering the headquarters and all member units, which can systematically promote the integration of social responsibilities into strategy, management and operation in a systematic manner.

CSSC Social Responsibility Organization System



# Responsibility Communication

CSSC will readily communicate with various stakeholders and establish a regular mechanism on social responsibility information disclosure. Through ways of disclosing social responsibility information on CSSC's official website and WeChat platform, compiling and publishing annual social responsibility reports, etc., CSSC will disseminate concepts and practices about social responsibilities, enhance influence of social responsibilities and strengthen operational transparency.

	Country	Government	Employees	Customers	Partners	Counterparts	Environment	Society
<b>Our common goals</b>	<ul style="list-style-type: none"> <li>Serving national defence with quality and efficiency</li> <li>Leading the industry through technological innovation</li> <li>Preserving and appreciating state-owned assets</li> <li>Creating jobs and achieving harmonious development</li> </ul>	<ul style="list-style-type: none"> <li>Abiding by the law and discipline</li> <li>Paying taxes in accordance with the law</li> </ul>	<ul style="list-style-type: none"> <li>Basic rights and benefits protection</li> <li>Professional quality improvement</li> <li>Wide career development space</li> <li>Sense of belonging and identity</li> </ul>	<ul style="list-style-type: none"> <li>Quality products and services</li> <li>Conscientious performance of contracts</li> <li>Win-win cooperation</li> </ul>	<ul style="list-style-type: none"> <li>Adhere to business ethics</li> <li>Open and fair procurement</li> <li>Win-win cooperation</li> <li>Mutual development</li> </ul>	<ul style="list-style-type: none"> <li>Fair competition</li> <li>Industrial development</li> </ul>	<ul style="list-style-type: none"> <li>Green development, energy saving and emission reduction</li> <li>Resource saving</li> <li>Clean energy</li> <li>Green office</li> </ul>	<ul style="list-style-type: none"> <li>Participating in community development</li> <li>Supporting public welfare</li> <li>Providing job security</li> </ul>
<b>Our communication channels</b>	<ul style="list-style-type: none"> <li>Regular work reports</li> <li>Relevant meetings</li> <li>Information Submission</li> <li>CSSC website, newspapers and magazines, WeChat, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Work reports</li> <li>Relevant meetings</li> <li>Correspondence</li> </ul>	<ul style="list-style-type: none"> <li>Open system of factory affairs</li> <li>Dialogue mechanism</li> <li>Staff representative assembly</li> <li>Satisfaction survey</li> <li>Visits and condolence</li> </ul>	<ul style="list-style-type: none"> <li>CSSC official website</li> <li>Contract and agreement</li> <li>Satisfaction survey</li> </ul>	<ul style="list-style-type: none"> <li>Contract and agreement</li> <li>Cooperative R&amp;D</li> <li>Joint activities</li> <li>Daily communication</li> </ul>	<ul style="list-style-type: none"> <li>Industry conferences</li> <li>Associations</li> <li>Seminars</li> </ul>	<ul style="list-style-type: none"> <li>CSSC official website</li> <li>Information Submission</li> <li>Regular work reports</li> <li>Public information disclosure</li> </ul>	<ul style="list-style-type: none"> <li>Cooperation and joint construction</li> <li>Public welfare activities</li> <li>Community involvement</li> <li>Volunteer activities</li> </ul>
<b>Our persistent efforts</b>	<ul style="list-style-type: none"> <li>Innovative enterprise</li> <li>Economic development transformation</li> <li>Economic contribution</li> <li>Driving local economy</li> </ul>	<ul style="list-style-type: none"> <li>Abiding by laws and regulations</li> <li>Active communications with governmental departments at all levels</li> </ul>	<ul style="list-style-type: none"> <li>Establishing a perfect payroll system</li> <li>Increasing health and safety protection</li> <li>Building talent projects</li> </ul>	<ul style="list-style-type: none"> <li>Quality, efficient and safe products</li> <li>Customized products and services</li> </ul>	<ul style="list-style-type: none"> <li>Implementing fair and transparent business principles and processes</li> <li>Making bidding and procurement information public</li> <li>Responsible procurement</li> </ul>	<ul style="list-style-type: none"> <li>Leading the industry development</li> <li>Enhancing the value of the industry chain</li> <li>Sharing the latest technological achievements</li> </ul>	<ul style="list-style-type: none"> <li>"Resource-saving" enterprises</li> <li>"Environment-friendly" enterprises</li> <li>Green products and services</li> <li>Developing green industry</li> </ul>	<ul style="list-style-type: none"> <li>Poverty alleviation in designated regions</li> <li>Caring aids for students</li> <li>Aiding disaster relief</li> <li>Encouraging volunteer action</li> </ul>

## Outlook in 2022

The year 2022 marks the 20th CPC National Congress. Under the strong leadership of the CPC Central Committee with Comrade Xi Jinping at its core, CSSC will bear in mind the great rejuvenation of the Chinese nation, great changes unseen in a century, and national priorities. Taking the relocation to Shanghai as a new starting point, we will carry forward the great founding spirit of the CPC and undertake the primary responsibility for a strong navy. We will continue to allocate global resources, encourage innovation, give play to the leading role of high-end industries, focus on the development of the primary business, and optimize our business structure. We will deepen reorganization and integration and secure a decisive victory in the three-year action plan for SOE reform. Party building will guide our directions. We will improve the modern enterprise system with Chinese characteristics and the market-based operation mechanism, stimulate the vitality of enterprises, and fulfill our mission of "leading the industry, supporting national defence, and serving national strategies." We will move faster toward a world-class shipping corporation and set the stage for the 20th CPC National Congress with excellent performance.

## Conclusion

### Table of Performance for Key Tasks

Indicators	Unit	2021 年
<b>Economic</b>		
Sum of assets	RMB 100 million	8839.46
Revenue	RMB 100 million	3461.95
Sum of profits	RMB 100 million	208.48
Net profit	RMB 100 million	185.28
Sum of tax	RMB 100 million	79
<b>Technology</b>		
R&D capital investment	RMB 100 million	381
National Innovation Platform	unit	63
State Key Laboratory	unit	1
National Engineering Technology Research Center	unit	2
National Engineering Laboratory	unit	4
National Engineering Research Center	unit	4
National Enterprise Technology Center	unit	29
National R&D Center	unit	4
National Defence Science and Technology Key Laboratory	unit	11
National Defence Technology Industry Innovation Center	unit	6
National Innovation Base	unit	2
Patents	item	13427
Invention patents	item	9675
International/national and industrial standards	item	39
<b>Society</b>		
Total number of employees	10,000	21.95
Legal review rate of economic contracts	%	100
Employee training investment	RMB 100 Million	1.48
Staff training	10,000 person-times	75.83
Employee medical examination coverage	%	100
Various types of assistance funds invested	RMB 100 million	1.52
<b>Environment</b>		
Comprehensive energy consumption per 10,000 yuan output value	ton of standard coal/ 10,000 yuan	0.0417
Sulfur dioxide emissions	ton	296.29
NOx emissions	ton	460.98
Ammonia nitrogen emissions	ton	80.91



# Index

	Title	CASS-CSR4.0	GRI Standards
	Report Description	P1.1, P1.2, P1.3, P1.4, P1.5	102-46, 102-50, 102-52, 102-53
About Us	Company Overview	P4.1, S1.6	102-8, 201-1
	Organization	P4.2	102-3, 102-4, 102-6, 102-7, 103-2
Being an Active Innovator and Contributing to the Country's Strategic Strength in Science and Technology		M2.4, M2.7	102-2
Promoting the Great Founding Spirit of the CPC	Institutionalizing the Party's leading role	P3.1, P4.1	102-16, 102-26
	Implementing the "first topic" system	P3.1, P4.1	102-16, 102-26
	Conducting Party history education thoroughly	P3.1, P4.1	102-16, 102-26
	Creating a strong CSSC brand image	P3.1, P4.1, G1.1	102-14, 102-16
	Continuously consolidating primary-level Party building	P3.1, P4.1	102-16, 102-26
	Deepening strict Party governance in all round way	P3.1, P4.1	102-16, 102-26
Prioritizing Support for a Strong Army	Developing first-class naval equipment	M2, P4.3	102-2
	Guaranteeing major military missions	M2, P4.3	102-2
	Expanding military trade proactively	M2, P4.3	102-2
Pursuing Shared Benefits and Win-win Cooperation	Shipbuilding business hits a record high	M2, M3.4	102-2
	Science and technology application industry witnesses steady growth	M2	102-2
	Marine service creates higher values	M3	102-2
Continuously Expanding Primary Businesses	Consolidating the foundation for technological innovation	M2.4, M2.6, M2.7	102-2
	Achieving breakthroughs in core and key technologies	M2.4, M2.7	102-2
	Deepening commercialization and application of research outcomes	M2.1, M2.4, M2.7	102-2

	Title	CASS-CSR4.0	GRI Standards
Accelerating High-level Technology Self-reliance	Speeding up the Reform of Systems and Mechanisms	S1.4	102-10, 102-15
	Deepening Resource Integration	S1.4	102-10, 102-15
	Improving overall governance efficiency	M2.2, M2.3	102-10, 102-15
	Improving quality management	M2., S2.11, S2.12, S3.2, S3.3	102-11, 103-2
Deepening reform and strengthening management	Developing green manufacturing	E1.1, E1.8, E.1.10, E2.4, E2.11, E2.12, E2.15, E2.16	103-2, 302-3, 302-4, 305-4, 305-7
	Developing and manufacturing green equipment	E1.3, E1.7, E2.1, E2.3, E2.21	301-3, 302-5
	Expanding green businesses	E1.3, E1.7, E2.1, E2.3	302-5
Pursuing Shared Benefits and Win-win Cooperation	Building partnership	M2.2, M3.6, G3.2	102-16, 102-40, 102-41
	Caring for employee growth	S1.5, S1.6, S2.1, S2.2, S2.3, S2.8, S2.10, S2.14, S2.18	102-8, 401-1, 401-2, 405-1
	Engaging in social welfare	S4.3, S4.5, S4.12, S4.13	102-29, 413-1, 415-1
Responsibility Management	Responsibility Notions	G1.1, G1.4	102-16, 102-20
	Responsibility Management	G2.1, G2.2, G2.3, G2.4, G2.5	102-16, 102-20
	Responsibility Communication	G5.1, G5.3	102-40, 102-42, 102-43, 102-44, 102-47
	Outlook in 2022	A1	102-15
	Table of Performance for Key Tasks	A2	201-1
	Index	A5	102-55
	Feedback	A6	/

## Feedback

Dear readers, Hello!

Thank you for reading this report. We sincerely look forward to your evaluation of this report and your valuable comments, so that we can continue improving our social responsibility work and improve our ability and level to perform social responsibility work!

Thank you!

China State Shipbuilding Corporation Limited

2022

Optional question: (please select "√" in the corresponding position)

1. Your overall impression of the report is

very good  good  fair  poor  very bad

2. In your opinion, the quality of the social responsibility information disclosed in the report

very high  high  average  low  very low

3. What do you think of the report structure?

very reasonable  relatively reasonable  fair  poor  very poor

4. What do you think of the layout design of this report and its form?

very good  good  fair  poor  very bad

Open questions:

Your valuable comments and suggestions on the "CSSC 2021 Corporate Social Responsibility Report" are welcome.

You can contact the 2021 Corporate Social Responsibility Report Compilation Team of CSSC. We will take your comments and suggestions seriously and promise to properly protect your above-mentioned information from third parties.

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