



中国2010年上海世博会全球合作伙伴
Global Partner of Expo 2010 Shanghai China

宝钢与能源

Baosteel and Energy



序言 Preface



在钢厂、油田、风电场、核电站，钢铁与能源相依相存的关系，处处可见。能源生产离不开钢铁产品，钢铁生产亦离不开能源动力。

三十多年来，宝钢肩负国家使命，始终致力于独有、领先的高端钢铁产品开发与应用，在国家石油战略储备、西气东输以及核电、水电等一系列重大能源建设工程项目中实现工程用钢国产化。

如今，人类对能源的依赖已不再局限于煤炭、石油、天然气，宝钢将踏着时代的节拍，不断求索创新，听从国家召唤，倾听用户心声，执着、自信地引领能源用钢走向未来。

Perfect examples of iron & steel with energy interdependent on each other can be seen in everywhere at Iron & Steel factories, oilfields, wind farms and nuclear power plants. Energy production can not live without iron & steel products, vice versa.

In the past thirty years, Baosteel has been carrying the nation's mission and been committed to developing and applying high quality, high-end steel product to localize the steel production for major energy site construction such as national oil strategy reserve, West-east gas pipeline, nuclear power plant and hydropower plant, etc.

Today, our energy resource is not only restricted to coal, oil and gas any more. Baosteel follows the step of the era, continues to innovate and listen to customers' voice with a service heart, and persistently and confidently lead Baosteel to the future of steel for energy.



目 录 Contents

02-03 公司简介 Company Profile

04-23 应用篇 Applications

24-37 生产管理篇 Production Management

38-43 研发篇 Research & Development

44-47 服务篇 Service

48 结束语 The End



海上石油平台用钢
Steel for
Offshore Oil Platform

石油专用管材
Oil Country Tubular
Goods (OCTG)

管线用钢
Steel for
Pipeline

大型石油储罐用钢
Steel for
Large Scale Oil Tank

大型低温球罐用钢
Steel for Large Scale
Low Temperature Spherical Tank

核电用钢
Steel for
Nuclear Power Plant

火电用钢
Steel for
Power Plant

水电用钢
Steel for
Hydropower Station

风电用钢
Steel for
Wind Power

宝钢产线聚焦
Baosteel Production Line Focus

宝钢质量管理体系
Baosteel's Quality Management System

研发模式
R&D Model

焊接材料开发与技术支撑
Development & Technical Support for Welding Materials

公司简介 Company Profile



宝钢是中国最具竞争力的钢铁联合企业，是2010年上海世博会的全球合作伙伴和钢材总供应商。2009年，宝钢营业总收入1,953亿元，利润总额149亿元，资产总额4,020亿元，净资产2,430亿元；宝钢从业人员总数为106,914人；2010年宝钢连续第七年进入《财富》杂志评选的世界500强企业，列第276位，并被评为2009年度“全球最受尊敬企业”，成为中国内地唯一获得此称号的企业。2009年宝钢产钢3,887万吨，位列全球钢铁企业第三位。

2005年，宝钢建立重大工程材料供应服务体系。旨在通过参与国家重大工程建设，打造最具竞争力的重大工程营销体系。为参与国家重大工程建设创建一个高效、全面和超值服务的窗口和平台，并根据地域及专业分工原则，为重大工程项目配备贸易服务平台，提供快速响应的绿色服务通道。自重大工程材料供应服务体系成立至今，宝钢通过这个窗口，向国家战略石油储备基地、苏通大桥、国家体育场（鸟巢）等一百多项国家重大建设工程提供优质钢材四百多万吨，有力地保证了国家重大工程的建设周期。

宝钢重大工程材料供应服务体系将秉承“诚信为本、用户至上”的宗旨，立足精品战略，为海内外重大工程项目提供“一流的产品、一流的服务”，在重大工程项目供料上再创佳绩！



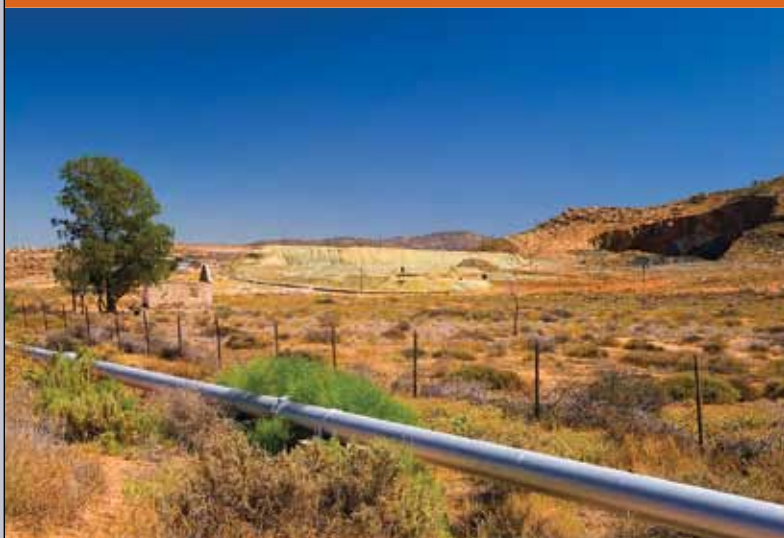


Baosteel Group Corporation (hereinafter as Baosteel) is the most competitive steel enterprise in China at present. Baosteel is the world-wide partner and master steel supplier of Shanghai World Expo in 2010. In 2009, Baosteel registered a sales revenue of RMB 195.3 billion yuan, a total profit of RMB 14.9 billion yuan, a total assets of RMB 402 billion yuan and a net assets of RMB 243 billion yuan; the total employees of Baosteel are 106,914 people; Baosteel has been enrolled in Global 500 for 7 years consecutively and ranked 276th this year and in 2009 Baosteel has been cited as “The World’s Most Respectful Corporation”, became the only mainland corporation awarded this title. The annual production of 2009 is 38.87 million tons, which ranks No. 3 in the world wide iron & steel corporations.

The major project material supply system has been established by Baosteel in 2005, aiming to build up the most competitive project marketing system by participating in the construction of national major projects. The system is featured with a highly effective, comprehensive and value-added service window and platform, a project-supporting trade service platform with work division principle of regions and professions and an instant reaction green service channel. Ever since the start of the supply system setting, Baosteel has been providing more than 4 million tons of high quality steel through the system to more than 100 major projects including National Strategic Oil Reserve Base, Sutong Bridge, National Stadium (The “Bird Nest”) etc. The system has enhanced the guarantee of major projects constructions success.

Baosteel’s major projects material supply system adopts the principle of “Integrity and Customer Oriented”. Standing on competitive products strategy, the system has been continuously providing “first-class products, first-class service” to domestic and overseas major projects and aims to achieve more in the future.

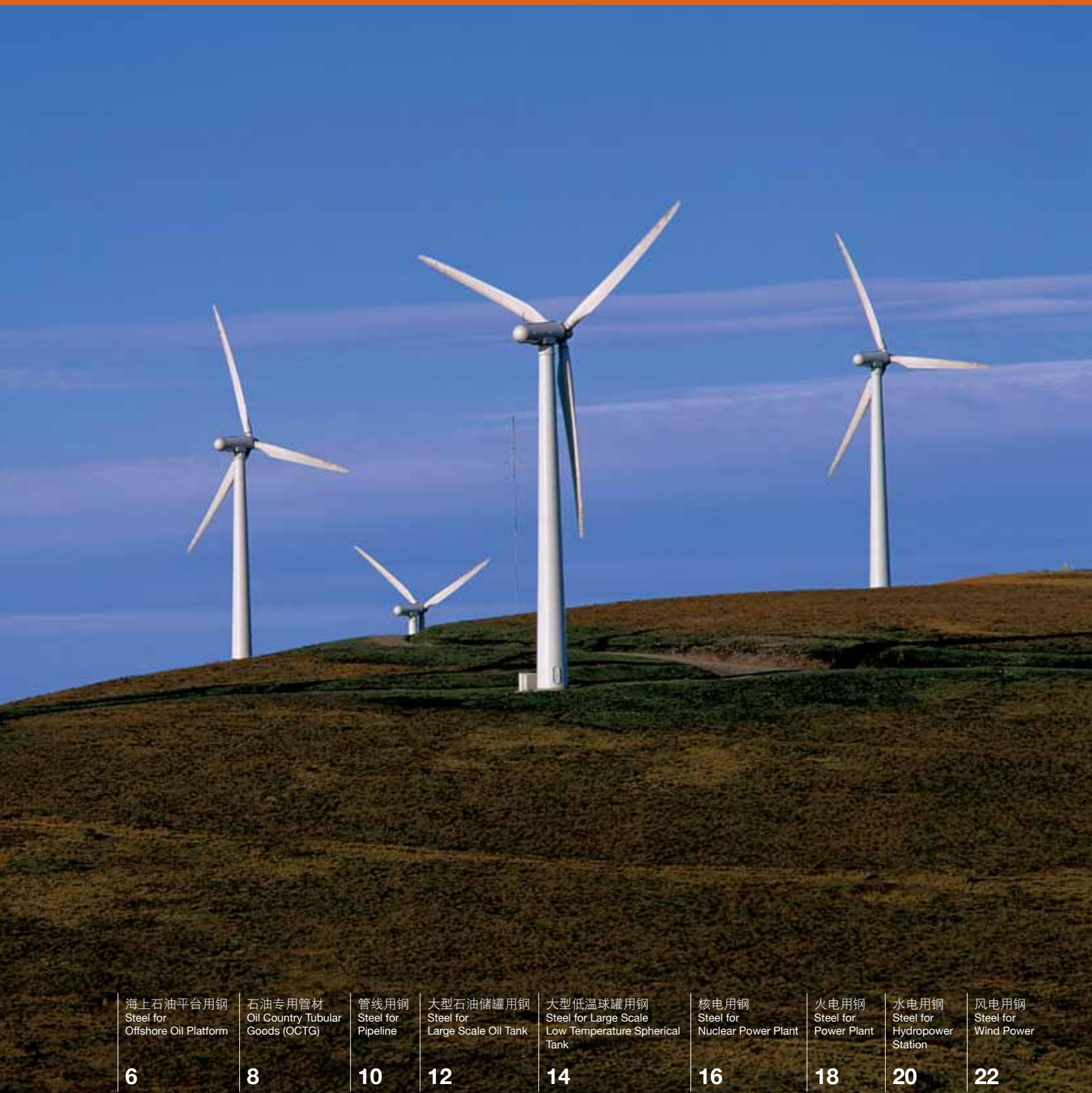
A 应用篇 Applications



宝钢始终致力于独有、领先的高端产品开发与应用, 在国家石油战略储备、千万吨炼油、西气东输、核电、水电等大型建设工程项目中实现用钢国产化。以下收录宝钢产品在部分能源工程中的应用实例。

Baosteel has devoted itself into developing and applying extraordinary and high-ended products for the market and has realized local production of steel for national strategy oil reserve, million tons refinery, west-to-east gas pipeline project, nuclear power plant, hydropower station etc. major projects. The applications samples are collected as below.





海上石油平台用钢 Steel for Offshore Oil Platform	石油专用管材 Oil Country Tubular Goods (OCTG)	管线用钢 Steel for Pipeline	大型石油储罐用钢 Steel for Large Scale Oil Tank	大型低温球罐用钢 Steel for Large Scale Low Temperature Spherical Tank	核电用钢 Steel for Nuclear Power Plant	火电用钢 Steel for Power Plant	水电用钢 Steel for Hydropower Station	风电用钢 Steel for Wind Power
6	8	10	12	14	16	18	20	22

A 应用篇 Applications



海上石油平台用钢 Steel for Offshore Oil Platform

产品概述

海上石油平台被喻为“人工海岛”。宝钢研发的海上石油平台用钢已用于海洋石油平台模板、导管架等支撑平台的核心部件，改变了此类产品依赖进口的局面。已供钢板厚度8-100mm，已供牌号：B，D，E，D32，D36，E32，E36。目前，宝钢正在进行海洋石油平台其它标准牌号的认证。

Introduction

Offshore oil platform is usually called as “artificial island”. Baosteel has developed steel for core supporting parts of platform such as key components of offshore oil platform template, guide tube etc. The situation of relying on imported products has been changed with Baosteel’s achievements in the area. Steel plates with thickness 8-100mm, grades B, D, E, D32, D36, E32, and E36 have been delivered. Currently, Baosteel is under certifying of other grades of steel for offshore oil platform.



工程应用

中海油南海海域文昌、西江等海上石油平台建设项目。

Projects Application

Offshore oil platform construction of CNOOC's Wenchang, Xijiang projects in Southern Ocean.



A 应用篇 Applications



石油专用管材 Oil Country Tubular Goods (OCTG)

产品概述

宝钢是目前国内品种规格最为齐全的石油管制造商，能够生产油管、套管、钻杆全系列油井管产品。既有API标准产品，又有非标产品和特殊螺纹接头。产品规格从 $\Phi 60.3\text{mm}$ — $\Phi 508\text{mm}$ ；材质从低合金钢、13Cr马氏体不锈钢直至最高端的镍基合金；油井管产品已逐步形成深井系列、抗挤系列、抗硫系列、经济性抗 CO_2 腐蚀系列、经济性抗 $\text{CO}_2 + \text{H}_2\text{S}$ 腐蚀系列、抗 CO_2 腐蚀系列、抗 $\text{CO}_2 + \text{H}_2\text{S}$ 腐蚀系列。宝钢油井管产能约70万吨/年。



Introduction

Baosteel is the only full range oil tube products producer in China. The product category covers tubing, casing, drilling pipes, including API standard products, non-standard products and special screw thread connectors. Product specification ranges from $\text{Ø}60.3\text{mm}$ — $\text{Ø}508\text{mm}$, material varies from low alloys, 13Cr Markov stainless steel to the most expensive nickel based alloy. Currently, the oil tube series products covers from deep platform, anti-collapse, sulfur-tolerance, economic CO_2 corrosion resistance, economic $\text{CO}_2 + \text{H}_2\text{S}$ corrosion resistance, CO_2 corrosion resistance to $\text{CO}_2 + \text{H}_2\text{S}$ corrosion resistance. Baosteel has an annual production of 700,000 tons of oil tube.



工程应用

- 2005年7月, 在外钓岛一册子岛跨海定向钻穿越工程中, 宝钢 $\Phi 139.7 \times 10.54$ mm IEU S135 BGDS55高抗扭钻杆创造了穿越长度2350米的世界纪录。
- 2008年1月, 宝钢研制的 $\Phi 127 \times 9.19$ mm IEU S-135 NC52非标钻杆在塔里木油田钻探成功7620米的轮东I井, 创中石油最深井新纪录。



Projects Application

- July 2005, in the cross-ocean oriented drilling project of Outer fishing island- Cezi island, Baosteel's $\Phi 139.7 \times 10.54$ mm IEU S135 BGDS55 High torsional drilling pod has created the new world's record of 2350-meter in length.
- January 2008, Baosteel's $\Phi 127 \times 9.19$ mm IEU S-135 NC52 non-standard drilling pipe used for oil field in Tarim No.1 Well at Lundong, created a world's new record of 7620-meter in depth.

油井管牌号、规格一览表 Grdes & Specifications of Oil Tube

品种 Type	外径 (mm) OD (mm)	螺纹形式 Screw Thread Type		钢级 Steel Grade	
油管 Oil tube	60.3-114.3	API系列 API series	EU NU	API系列 API series	J55-P110
		特殊扣系列 Special screw threading series	BGTI BGHY SUPERMAX SUPERMAX-TS	抗硫系列 Sulfur tolerance series	BG80S (SS)-BG110S (SS)
				经济性抗CO ₂ 腐蚀系列 Economic series of CO ₂ corrosion resistance	BG80-3Cr-BG110-3Cr
				抗CO ₂ 腐蚀系列 Series of CO ₂ Corrosion resistance	BG13Cr-80-BG13Cr-110
				经济性抗CO ₂ +H ₂ S腐蚀系列 Economic series of CO ₂ +H ₂ S corrosion resistance	BG80S-3Cr-BG110S-2Cr
				抗CO ₂ +H ₂ S腐蚀系列 Series of CO ₂ +H ₂ S corrosion resistance	BG2830-110 BG2250-125
套管 Casing	101.6-508	API系列 API series	LC STC BC	API系列 API Series	J55-Q125
		特殊扣系列 Special screw threading series	BGC BGXC	抗硫系列 Sulfur tolerance series	BG80S (SS) -BG110S (SS)
				经济性抗CO ₂ 腐蚀系列 Economic series of CO ₂ corrosion resistance	BG80-3Cr-BG110-3Cr
				抗CO ₂ 腐蚀系列 Series of CO ₂ corrosion resistance	BG13Cr-80-BG13Cr-110
				经济性抗CO ₂ +H ₂ S腐蚀系列 Economic series of CO ₂ +H ₂ S corrosion resistance	BG80S-3Cr-BG110S-2Cr
				深井系列 Deep platform series	BG125-BG150
钻杆 Drill pipe	60.3-168.28	API系列 API series	NC26-NC50 5I/2FH-65/8FH	API系列 API Series	E75-S135
		高抗扭与 超高抗扭系列 High anti-torsion and super high anti-torsion series	BGDS26- BGDS65 BGXT24- BGXT65	抗硫系列 Sulfur tolerance series	BGD75SS-BGD105SS
				超高强度系列 Super high strength series	BGDI50

A 应用篇 Applications



管线用钢 Steel for Pipeline

管线用钢 (热轧卷、厚板)

Steel for Pipeline (Hot-rolled Coil, Heavy Plate)

产品概述

伴随着长输管线向高压、大口径发展的趋势，宝钢经过十多年管线钢的开发和生产，已掌握了高钢级管线用钢生产的关键技术。并成功研发具有抗HIC性能的管线钢，同时根据未来天然气管道发展的需求，宝钢还开发了X90、X100和X120等超高强度管线钢板。目前可按API SPEC 5L/ISO3183、GB/T9711、DNV-OS-F101等技术规范供管线用钢板，钢板厚度范围 $\leq 40\text{mm}$ 。

Introduction

To meet the changing trend from long pipeline to high pressure, wide diameter pipe, Baosteel has mastered critical techniques of high grade pipeline steel production and guaranteed success with its rich experience in product development and production in the area. Baosteel has successfully developed steel for pipeline of anti-HIC property. In addition, to meet the future development requirements of natural gas pipeline, Baosteel has developed X90, X100 and X120 etc. super high strength steel plate for pipeline. Now Baosteel is able to provide steel specifications of API SPEC 5L/ ISO3183, GB/T9711, DNV-OS-F101, thickness $\leq 40\text{mm}$.

工程应用

- 宝钢开发的X80管线钢板已批量应用于目前国际上规模最大，壁厚和口径最大的中国西气东输二线天然气管道工程。
- 宝钢开发的壁厚为26.2mm的X70钢板首次替代进口产品，应用于中石化川气东送项目。
- 宝钢向“俄罗斯远东输油管线”工程所供K60管线钢，完全满足工程技术要求。

Project Applications

- Baosteel's X80 steel plate for oil tube is used in the West-to-east gas pipeline project Line II, the world largest project of this kind, featuring the thickest wall thickness and the widest diameter worldwide.
- Baosteel's X70, 26.2mm-wall thick, has replaced imported products for the first time in the project of Sinopec's South west-to-east gas transportation.
- Baosteel has provided qualified K60 pipeline steel for the project of Russia Far-east oil tubing.



管线管 Pipeline Tube

产品概述

宝钢管线管广泛用于国内外陆上、海底石油及天然气输送。目前, 可按API SPEC 5L, ISO3183, GB/T9711.1, GB/T9711.2, GB/T9711.3, CSA Z245.1, DNV-OS-F101及任何可协商的技术规范供货。

Introduction

Baosteel's pipeline tube has been widely used in oil and gas pipeline projects both on land and in oceans of China and overseas. Currently products with following specifications are available: API SPEC 5L, ISO3183, GB/T9711.1, GB/T9711.2, GB/T9711.3, CSA Z245.1, DNV-OS-F101 and any specification under negotiation.



工程应用

Projects Application

宝钢向西气东输二线工程供应UOE直缝焊管:

UOE Longitudinal Welding Pipe for West to East Gas Pipeline Project II:

X80	1219mm×22mm, 1219mm×18.4mm
X70	1016mm×26.2mm, 1016mm×21mm

HFW高频直缝焊管主要工程业绩:

Project Performance of HFW Longitudinal Welding Pipe:

X60	508×7.1	94Km	巴基斯坦输气管线 Pakistan Gas pipeline
X65	508×9.5	67.6Km	美国得克萨斯州希尔县天然气输送管线 Gas pipeline in Hill County, Texas, USA
L415MB	406.4×7.1	111.4Km	腰英台天然气田地面建设工程 Surface construction project of Yao Ying Tai natural gas field
L415	355.6×6.4	130Km	济南邯郸/鲁皖二期成品油管道工程 Jinan Handan/Lu Wan oil product project pipeline phase II
L415MB	406.4×7.1	131Km	江苏成品油管道(江南线) Jiangsu oil product pipeline (South Yangzi river route)
L450MB	457×7.1	115.87Km	克-乌成品油复线工程 Oil product pipeline project in Karamay to Urumqi



管线管牌号、规格一览表

Grads & Specifications of Pipeline

制造方法 Production Method	钢级 Steel Grade	外径 (mm) OD (mm)	壁厚 (mm) Thickness (mm)	长度 (m) Length (m)
无缝钢管 Seamless Pipe	B-X56	33.4-323.9	3.18-25.4	Max: 12
高频焊管 High Frequency Welding Pipe	B-X80	219.1-559	4-19.1	Max: 18.3
埋弧直缝焊管 Longitudinal Submerged Arc Welding Pipe	X42-X100	508-1422	6-38.1	Max: 18.3



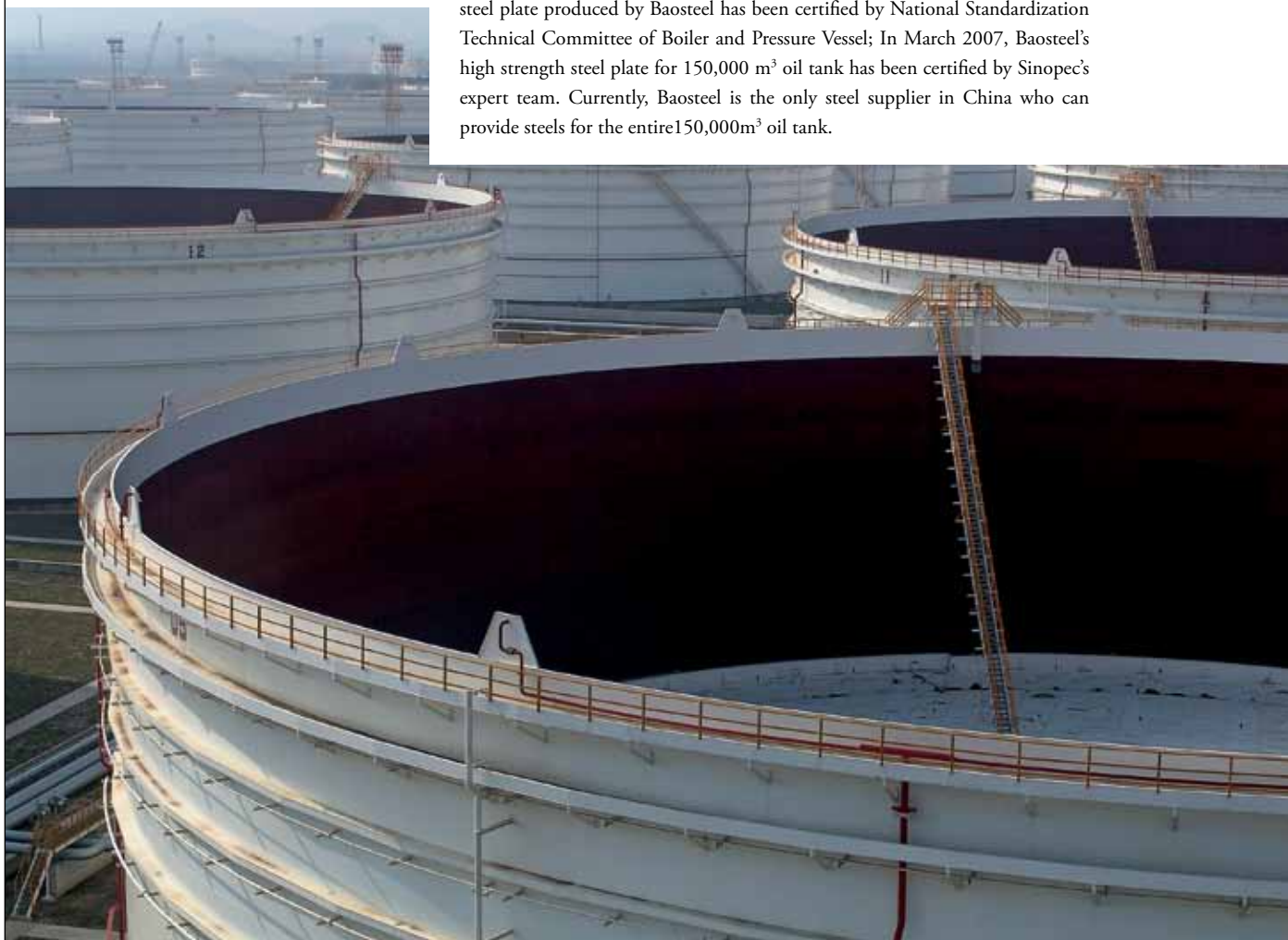
大型石油储罐用钢 Steel for Large Scale Oil Tank

产品概述

2005年11月, 宝钢厚板厂试制的B610E (08MnNiVR、12MnNiVR) 高强度钢板通过全国锅炉压力容器标准化技术委员会的技术评审; 2007年3月, 宝钢15万立方米储罐用高强度钢板通过中石化组织的专家评审; 目前, 宝钢是国内唯一实现15万立方米石油储罐整罐供料的企业。

Introduction

In November 2005, B610E (08MnNiVR, 12MnNiVR) high strength steel plate produced by Baosteel has been certified by National Standardization Technical Committee of Boiler and Pressure Vessel; In March 2007, Baosteel's high strength steel plate for 150,000 m³ oil tank has been certified by Sinopec's expert team. Currently, Baosteel is the only steel supplier in China who can provide steels for the entire 150,000m³ oil tank.





工程应用

- 从2007年6月起, 宝钢已向中石化白沙湾、钦州、大连港和茂名等基地供应20台12.5和15万立方米石油储罐用高强度钢板。
- 2006年-2010年9月底, 宝钢累计为镇海国家石油储备基地、黄岛国家石油储备基地等石油储备建设项目供应高强度调质钢板已超过18万吨, 供应配套普板和热轧钢板已超过15万吨。

Projects Application

- June 2007, Baosteel has provided high strength steel plate for 20 oil tanks of 125,000m³ volume and 150,000m³ volume for Sinopec's Baisha Bay, Qinzhou, Guangxi, Dalian Oil Port, Maomin oil reserve bases.
- From 2006 to the end of September 2010, Baosteel has accumulatively provided more than 180,000 tons of high strength quenched and tempered steel plate to Zhenhai National Oil Reserve Base and Huangdao National Oil Reserve Base etc. together with 150,000 tons supporting steel plate.

石油储罐高强度调质钢板牌号、规格一览表

Grade & Specifications of Quenched & Tempered High Strength Steel for Oil Tank

牌号 Grade	厚度 (mm) Thickness (mm)	产线 Production Line	标准 Standard
B610E (08MnNiVR, 12MnNiVR)	12-45	厚板 Heavy Plate	Q/BQB660-2010



大型低温球罐用钢 Steel for Large Scale Low Temperature Spherical Tank

产品概述

2006年6月, 宝钢厚板厂试制的低焊接裂纹敏感性B610CF系列高强度调质钢板通过全国锅炉压力容器标准化技术委员会的技术评审; 牌号B610CF (07MnMoVR)、B610CF-L1 (07MnNiMoVDR, 07MnNiVDR)、B610CF-L2 (07MnNiMoVDR, 07MnNiMoDR) 对应的最低服役温度分别为-20℃、-40℃、-50℃。这些钢板可用于建造多种介质用不同体积的球罐。

Introduction

June 2006, the quenched and tempered high strength B610CF series of low welding crack sensitivity steel produced by Baosteel's Heavy Plate Plant has been certified by the National Standardization Technical Committee of Boiler and Pressure Vessel. Grades of B610CF(07MnMoVR), B610CF-L1(07MnNi-MoVDR), B610CF-L2(07MnNiMoVDR) with respective service temperature at -20°C, -40°C, -50°C. These plates can be used for spherical tanks of multi-media and in various volumes.





工程应用

2007年, 国内首次采用宝钢B610CF-L2钢板建造2000立方米丙烯和乙烯球罐, 实现了大型低温球罐用高强度钢板的国产化。目前, 宝钢的钢板已大量应用于中海油惠州炼油、天津百万吨乙烯等重点工程项目。

Projects Application

In 2007, Baosteel's B610CF-L2 plate has been used for the first time in the construction of 2000m³ Propylene and Ethylene spherical tank, which was regarded as the milestone of the localization of the high strength steel for low temperature sphere tank. Currently, Baosteel's plate has been used in CNOOC's projects such as Huizhou refinery, Tianjing million tons of ethylene etc..

低温球罐钢牌号、规格一览表

Grade & Specification of Steel for Low Temperature Spherical Tank

牌号 Grade	最低服役温度 Lowest Service Temperature	厚度 (mm) Thickness (mm)	交货状态 Delivery Condition	标准 Standard
B610CF (07MnMoVR)	-20°C	10-50	调质 Quenched and Tempered	Q/BQB660-2010
B610CF-L1 (07MnNiMoVDR, 07MnNiVDR)	-40°C			
B610CF-L2 (07MnNiMoVDR, 07MnNiMoDR)	-50°C			



A 应用篇 Applications



核电用钢 Steel for Nuclear Power Plant

产品概述

宝钢核电用钢涵盖碳钢、不锈钢、特钢三大系列产品，是目前国内可供核电用钢品种系列最多的企业。相关制造单元按核电用钢要求建立了质量管理体系，成为多家核电设备制造与建设单位的合格材料供应商。宝钢民用核安全设备制造许可证申请已通过国家核安全局组织的专家评审。

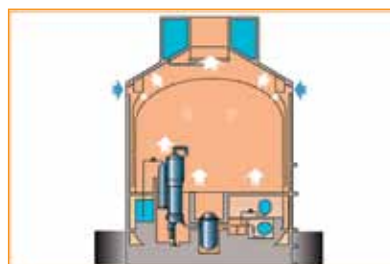
Introduction

Baosteel has three main product series for nuclear power plant steel: carbon steel, stainless steel and special steel. It's the only supplier in China that can provide most products items for nuclear power plant. Baosteel also has established quality management system according to the specific requirements and it's the certified supplier for nuclear power equipments and plant constructions in China. Baosteel's civilian nuclear safety equipment manufacturing license has been certified by National Nuclear Safety Administration Council.





美国西屋设计的第三代AP-1000核电站外观
Picture of the third generation of AP-1000 nuclear power plant designed by Westinghouse Electric Company, USA.



西屋设计的核电站安全壳内部示意图
Schematic diagram of inner safety containment for nuclear power plant designed by Westinghouse Electric Company, USA.

工程应用

从国内首座核电站开工建设起，宝钢就参与控制棒驱动机构、堆内构件和燃料组件用不锈钢、镍基合金及碳钢材料的研制和配套供货任务。30多年来先后为秦山一期、PC一期、二期、秦山二期扩建、岭澳二期扩建提供堆内构件、驱动机构用不锈钢材料、镍基合金和燃料组件用不锈钢导向管、通量管、包壳管及镍基合金搁板与搁架材料。

- 2006年，宝钢开发成功ASME SA738 Grade B高强度调质钢板。2007年通过美国西屋电气公司ASME核质保体系审核，2008年实现批量供货用于浙江三门、山东海阳AP1000核电站安全壳的制造。
- 2009年后，生产和供应核岛容器用SA533B、16MND5、18MND5等厚钢板。
- 宝钢参与实施国内首次60万千瓦核电站建设用不锈钢国产化项目，供应304及304L不锈钢板。

Projects Application

Since the construction of China's first nuclear power plant Baosteel has been participating in the development and production of stainless steel, nickel based alloyed and carbon steel for supporting equipments of control rod driven mechanism, inner reactor component and fuel assembly. In the past 30 years, Baosteel has provided steel for reactor component, driven mechanism and stainless guide tube, flux tube and nickel based alloyed materials for shelf in projects of Qinshan Phase I, PC Phase I, Phase II, Qinshan Phase II expansion, Lingao Phase II expansion.

- 2006, Baosteel developed ASME SA738 Grade B quenched and tempered high strength steel plate. 2007, Baosteel has been certified by Westinghouse Electric Company Nuclear ASME Quality Assurance System. 2008, Baosteel has realized mass supply for safety containment of Zhejiang Sanmen, Shandong Haiyang AP1000 nuclear power plants.
- After 2009, Baosteel has produced and provided the heavy plates, such as SA533B, 16MND5, 18MND5 etc. for pressure vessels in nuclear station.
- Baosteel participated in the project of stainless steel localization for the first 600,000kw nuclear power plant in. 304 and 304L stainless steel plate has been provided.

典型核电用钢牌号、规格一览表

Grade/Specification for Typical Products

标准 Standards	牌号 Grade	产品形态 Products Condition
按ASME要求 Under ASME Requirements	碳钢低合金钢 Low alloyed carbon steel	SA738B, SA533B, SA387Gr.22Cl.2, SA516Gr70等
	不锈钢 Stainless steel	304, 304L, 316, 316L, 321, 316LN
	镍基合金 Nickel based alloyed steel	Inconel 718, Inconel X750
按RCCM要求 Under RCCM Requirements	碳钢低合金钢 Low alloyed carbon steel	16MND5, 18MND5等
	不锈钢 Stainless steel	Z2CN19-10NS, Z2CND18-12NS, Z6CND17-12, Z2CN18-10, Z12C13, Z6 CNU 17-04
	镍基合金 Nickel based alloyed steel	NC15FeTNbA, NC15Fe
按中国核电标准 Under National Nuclear Safety Standards	碳钢低合金钢 Low alloyed carbon steel	20HR, 16MnHR, 12Cr2Mo1R等
	不锈钢 Stainless steel	0Cr13, 1Cr13, 0Cr18Ni10Ti, 1Cr18Ni-9Ti, 0Cr19Ni9, 00Cr18Ni9, 00Cr19Ni9N, 0Cr17Ni12Mo2, 00Cr17Ni14Mo2, 00Cr17Ni12Mo2, 0Cr17Ni4Cu4Nb, 0Cr17Ni12Mo2Ti, 0Cr17Ni7Al
	镍基合金 Nickel based alloyed steel	GH4169, GH2132, GH4145, GH3600, 00Cr25Ni35AlTi

A 应用篇 Applications



火电用钢 Steel for Power Plant

产品概述

宝钢生产的火电用锅炉管和钢板广泛用于国内外电站锅炉的制造,包括亚临界、超临界、超超临界锅炉。目前,可按GB、ASTM、ASME、DIN、EN、JIS等系列标准及任何可协商的技术规范供货。宝钢锅炉管年产量20万吨,可生产多种规格钢板,如13MnNiMoR汽包钢板。

Introduction

The boiler tubes and steel plate produced by Baosteel has been widely used for power plant in China and overseas, including boiler of subcritical, supercritical, ultra supercritical. Currently, products can be provided by GB, ASTM, ASME, DIN, EN, JIS etc. standards and any specification under negotiation. Baosteel's has annual production of 200,000 tons of boiler tube and various kinds of steel plate for power plant, such as the 13MnNiMoR for drum.



典型锅炉应用
Typical Applications

机组 (万kW) Unit (10,000 kW)		≤12.5	35	60	>60
机组利用系数 (%) Unit utilization factor (%)		30-34	34-40	40-44	44-50
管材处热循环 (温度℃ / 压力MPa) Pipe thermal cycling (°C/MPa)		538/12.7 一般状态 General condition	538/16.7 亚热态 Sub-heat condition	566/24.2 超临界 Supercritical	>600/26.2 超超临界 Ultra supercritical
集箱、蒸汽管道用材 Steel for container and steam pipe		P22	P22	P91, P23, P22	PI22, P91I, P92, P9I
末级过热器、再热器用材 Steel for final stage superheater, reheater		T22, 20G	T22, 20G	TI22, T9I, E9II, TP304H, 347H	SAVEI2, TP347HFG, Super304H, TP310HNBn, XA704 , NF709
水冷壁用材 Materials for water wall tube	下部 Lower part	20G	20G, TII	20G, TII	TII, TI2, T22
	上部 Upper part	20G	20G, TII	TII, TI2, T22	T23, T24



典型锅炉管牌号、规格一览表
Grades & Specifications of Typical Boiler Tube

制造方法 Production Method	钢 种 Steel Type	外径 (mm) OD (mm)	壁厚 (mm) Wall Thickness (mm)	长度 (m) Length (m)
冷拔/轧无缝 Cold drawn/rolled seamless	碳 钢 Carbon steel 合金钢 Alloyed steel 不锈钢 Stainless steel	10-89	2-16	Max: 21
热轧无缝 Hot-rolled seamless	碳 钢 Carbon steel 合金钢 Alloyed steel	33.4-325	3.18-25	Max: 16

A 应用篇 Applications



水电用钢 Steel for Hydropower Station

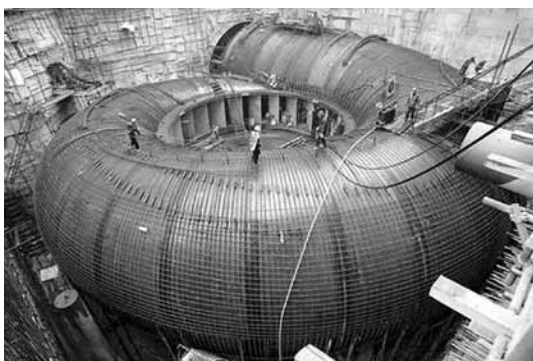
产品概述

宝钢开发和生产的低焊接裂纹敏感性高强度调质钢板用于制作大型水电站金属结构件（如压力钢管、蜗壳、岔管等）。现已广泛应用于长江、金沙江等流域的大型水电站工程。

Introduction

Baosteel has developed and produced low welding crack sensitivity quenched and tempered high strength steel plate for the metal components (such as penstock, spiral case, bifurcation etc.) for large scale hydropower construction, which is widely used in the hydropower plant project in the valley of Yangtze River and Jinsha River.





工程应用

自2005年以来, 宝钢累计向三峡右岸地下电站、向家坝水电站等国内数十个大中型水电工程供应B610CF等高强度钢板十万多吨。

Projects Application

Since 2005, Baosteel has provided more than 100,000 tons of B610CF etc. high strength steel plate for more than 10 large scale hydropower plant constructions projects, such as Three Gorges Right Side Underground Hydropower plant, Xiangjiaba Hydropower plant etc.

典型水电用钢牌号、规格一览表

Grade & Specification of Typical Steel for Hydropower Plant

牌号 Grade	最低服役温度 Lowest Service Temperature	厚度 (mm) Thickness (mm)	产线 Production Line
B610CFHL2 (B610CF)	-20°C	10-100	5m和4.2m产线 5m and 4.2m production line
B610CFHL4 (B610CF-LI)	-40°C		
Q345R (16MnR)	0°C	12-120	5m和4.2m产线 5m and 4.2m production line
Q345C			

A 应用篇 Applications



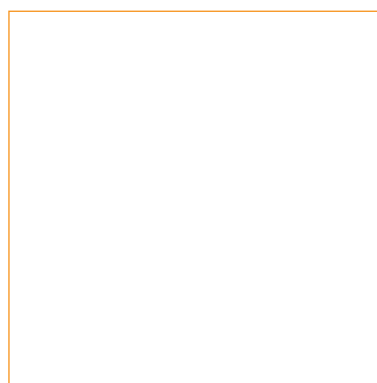
风电用钢 Steel for Wind Power

产品概述

风电作为清洁能源，发展前景良好。宝钢为风力发电设备制造提供制作风塔塔筒、风塔法兰、风力电机用钢。制作的风塔已用于国内外风力发电厂。

Introduction

Wind power is a clean energy with prosperous future. Baosteel provides steel for wind tower tube, wind flange and motors for wind power plants. The steel plate of Baosteel has been used to build wind tower both in China and abroad.



工程应用

- 株洲电力项目批量使用宝钢B50A350产品, 用于制造1.5兆瓦风力发电机组。
- 维斯塔斯公司批量使用B50A400极厚涂层、自粘结涂层产品, 用于制造1.5兆瓦风力发电机组。

Projects Application

- Zhuzhou power project mess used Baosteel's products of B50A350, for the 1.5 MW wind generator.
- Vestas company mess used B50A400 products of extreme thick coating, self-adhesive coating for the 1.5 MW wind generator.

典型风电用钢牌号、规格一览表
Grade & Specification of Typical Steel for Wind Power

品种 Type	牌号 Grade	用途 Applications
厚板 Heavy plate	S355K2, S355J2	风塔塔筒 Wind tower tube
厚板 Heavy plate	S355NL-Z25	风塔法兰 Wind flange
无取向硅钢 Non-oriented silicon steel	B50A350, B50A400, B50A470, B50AH470, B50A600	风电电机 Wind motor

B 生产管理篇 Production Management

宝钢产线聚焦
Baosteel Production Line Focus

26

宝钢质量管理体系
Baosteel's Quality Management System

36

宝钢产线涵盖板材、管材、线材、棒材、型材等产品系列。随着宝钢厚板、三热轧、五冷轧、钢管等项目相继投产,生产的产品能更好地满足能源工程建设及装备制造的需求。





Baosteel owns production lines for plate, tube, wire, rod and profiled steel products. With the new production lines of heavy plate, hot-rolled plate, cold-rolled plate and steel tube, Baosteel will better serve energy, equipment and construction projects.

B1 宝钢产线聚焦

Baosteel Production Line Focus

>> 厚板单元

总产能: 约340万吨/年

成品最大规格:

厚度: 400mm;

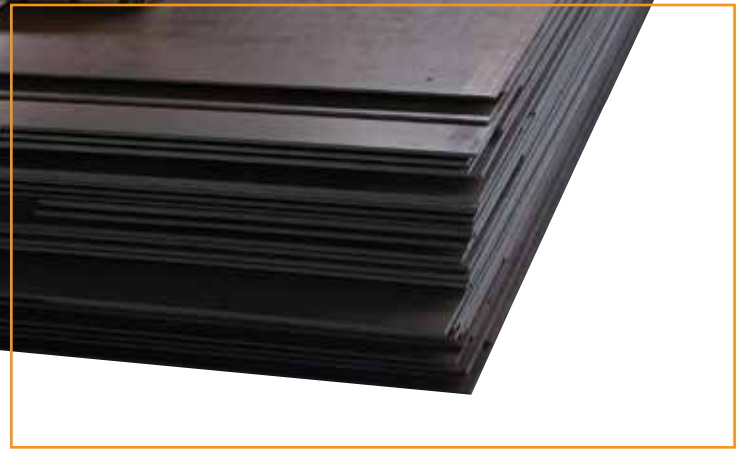
宽度: 4800mm;

长度: 25m

产线: 5米和4.2米厚板产线

生产单元: 厚板厂





>> Heavy Plate Unit

Total Capability: about 3.4 million tons/year

Maximum Size of Finished Product:

Thickness: 400mm;
Width: 4800mm;
Length: 25m

Production Line: 5 meter and 4.2 meter width heavy plate production line

Production Unit: Heavy Plate Plant

B1 宝钢产线聚焦

Baosteel Production Line Focus

>> 热轧单元

总产能: 约1900万吨/年

成品最大规格:

厚度: 25.4mm;

宽度: 1900mm;

长度: 12m (钢板)

产线: 2050mm、1550mm、1880mm、1780mm、1422mm

生产单元:

热轧厂

不锈钢事业部、

上海梅山钢铁股份有限公司





>> Hot-rolling Unit

Total Capability: about 19 million tons/year

Maximum Size of Finished Product:

Thickness: 25.4mm;

Width: 1900mm;

Length: 12m (plate)

Product Line: 2050mm, 1550mm, 1880mm, 1780mm, 1422mm

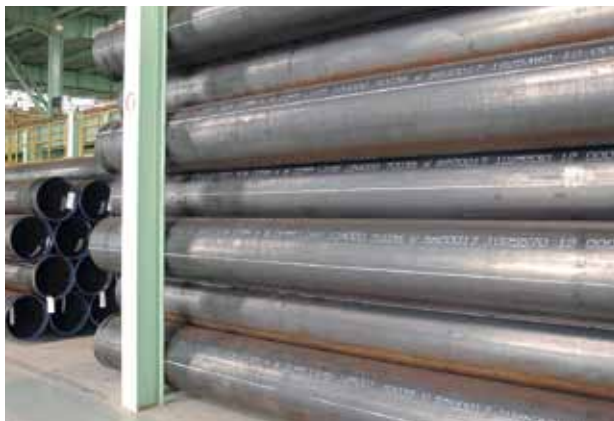
Production Unit:

Hot Rolling Plant,

Stainless Steel Business Unit,

Shanghai Meishan Iron & Steel Co., Ltd.

B1 宝钢产线聚焦 Baosteel Production Line Focus





>> 钢管单元

总产能: 约200万吨/年

成品最大规格:

外径: 1422mm;
厚度: 40mm;
长度: 21m

产线:

热轧无缝管 2*180mm、
高频直缝焊管 610mm、
埋弧直缝焊管 1422mm、
冷拔无缝、冷轧无缝管
325

生产单元:

钢管条钢事业部、
烟台鲁宝钢管有限责任公司、
特殊钢事业部



>> Steel Pipe & Tube Unit

Total Capability: 2 million tons/year

Maximum Size of Finished Product:

OD: 1422mm;
Thickness: 40mm;
Length: 21m

Production Line:

Hot-rolled seamless tube 2*180mm;
HFW pipe 610mm;
LSAW pipe 1422mm;
Cold-drawing seamless pipe, cold-rolling seamless pipe;
325

Production Unit:

Tube and Pipe, Bar Business Unit,
Yantai Lubao Steel Tubes Co., Ltd.,
Special Steel Business Unit



B1 宝钢产线聚焦 Baosteel Production Line Focus





>> 不锈钢单元

热轧不锈钢

产能: 150万吨/年

成品规格:

厚度: 2-10mm

宽度: 750-1600mm

生产单元: 不锈钢事业部

冷轧不锈钢

产能: 60万吨/年

成品规格:

厚度: 0.20-5.0mm

宽度: 40-320mm

生产单元:

不锈钢事业部冷轧厂

宁波宝新不锈钢有限公司



>> Stainless Steel Unit

Hot-rolled Stainless Steel

Capability: 1.5 million tons/year

Specification of Finished Product:

Thickness: 2-10mm

Width: 750-1600mm

Production Unit: Stainless Steel Business Unit

Cold-rolled Stainless Steel

Capability: 0.6 million tons/year

Specification of Finished Products:

Thickness: 0.20-5.0mm

Width: 40-320mm

Production Unit:

Cold Rolling Plant in Stainless Steel Business Unit

Ningbo Baoxin Stainless Steel Co., Ltd

B1 宝钢产线聚焦

Baosteel Production Line Focus

>> 特钢单元

年产能:

棒线材: 40万吨

银亮钢: 5万吨

锻材: 7万吨

管材: 5000吨

钢板: 28万吨 (钢板和钢卷)

品种规格:

棒材: $\phi 15-160\text{mm}$ (热轧)、 $\phi 90-1800\text{mm}$ (锻造)

锻件: 厚度 $\geq 60\text{mm}$ 、宽度 $300-1400\text{mm}$ 、长度 $1-5\text{m}$

钢管: 外径 $\phi 10-108\text{mm}$ 、壁厚 $0.5-12\text{mm}$ 、长度 $\leq 10\text{m}$

钢丝: $\phi 2-7\text{mm}$

钢带: 厚度 $0.05-3.5\text{mm}$ 、宽度 $\leq 230\text{mm}$

钢卷: $2.5-7\text{mm} \times 600-1300\text{mm}$ (热卷)

$2.5-6\text{mm} \times 600-1300\text{mm}$ (热轧酸洗白卷)

钢板: $4-80\text{mm} \times 600-2500\text{mm} \times 2000-8000\text{mm}$

生产单元: 特殊钢事业部





>> Special Steel Unit

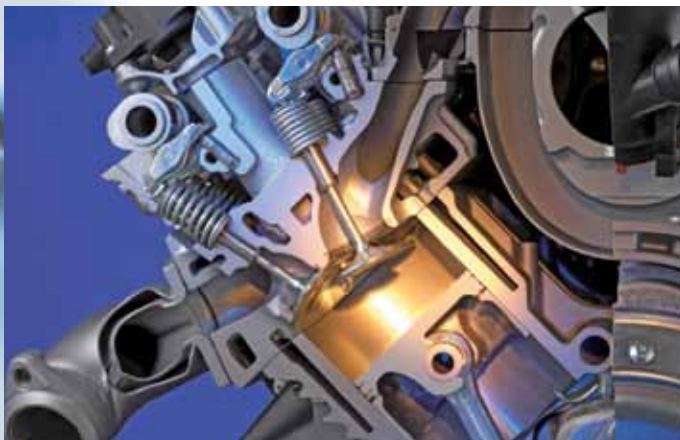
Annual Capability:

Rod & wire: 400,000 tons
 Silver steel: 50,000 tons
 Forging: 70,000 tons
 Tube: 5000 tons
 Plate: 280,000 tons (plate & coil)

Product Specification:

Rod: $\varnothing 15$ –160mm (hot-rolled), $\varnothing 90$ –1800mm (forging)
 Forging: Thickness ≥ 60 mm, Width 300–1400mm, Length 1–5m
 Tube: Outside Diameter $\varnothing 10$ –108mm, Wall thickness 0.5–12mm, Length ≤ 10 m
 Wire: $\varnothing 2$ –7mm
 Strip: Thickness 0.05–3.5mm, Width ≤ 230 mm
 Coil: 2.5–7mm \times 600–1300mm (Hot-rolled coil)
 2.5–6mm \times 600–1300mm (Pickled hot-rolled white coil)
 Plate: 4–80mm \times 600–2500mm \times 2000–8000mm

Production Unit: Special Steel Business Unit



B2 宝钢质量管理体系 Baosteel's Quality Management System



宝钢建立了集中、一贯管理体制，全面采用现代化质量管理手段和方法，并不断进行“消化、吸收、充实、创新”，在实践中探索出一套具有宝钢特色的行之有效的现代化管理模式。

随着宝钢各项管理制度的不断完善和发展，实现了从“满足标准”到“满足用户使用要求”，从“合同评审”到“质量先期策划”，从“检验把关”到“过程预防控制”，从“分别应对”到“大规模定制”的转变。

Baosteel has established centralized consistent management system, by adopting modern quality management method and techniques, keep “digesting, adopting, enriching, innovating”. Baosteel has developed a set of practical modern management models with Baosteel's characteristics.

With the perfection and development of various internal management systems, Baosteel has realized the conversion from “Matching standards” to “Customer expectation oriented”, from “Contract evaluation” to “Quality pre-planning”, from “Inspection check” to “Process control and prevention”, from “Respective handling” to “Large scale customizing”.





- 按照ISO9001标准建立质量管理体系
- 按照ISO/TS16949标准建立了与汽车行业要求一致的质量管理体系
- 按照ISO14001标准建立了环境管理体系
- 按照OHSAS18001标准建立了职业健康安全管理体系
- 按照ISO10012标准建立了测量管理体系
- 按照ISO/IEC17025标准建立了检测和校准实验室管理体系
- 按照AS9100B、GJB9001A-2001标准建立航空、航天、军工质量管理体系
- 按照HAF003建立核电质量管理体系



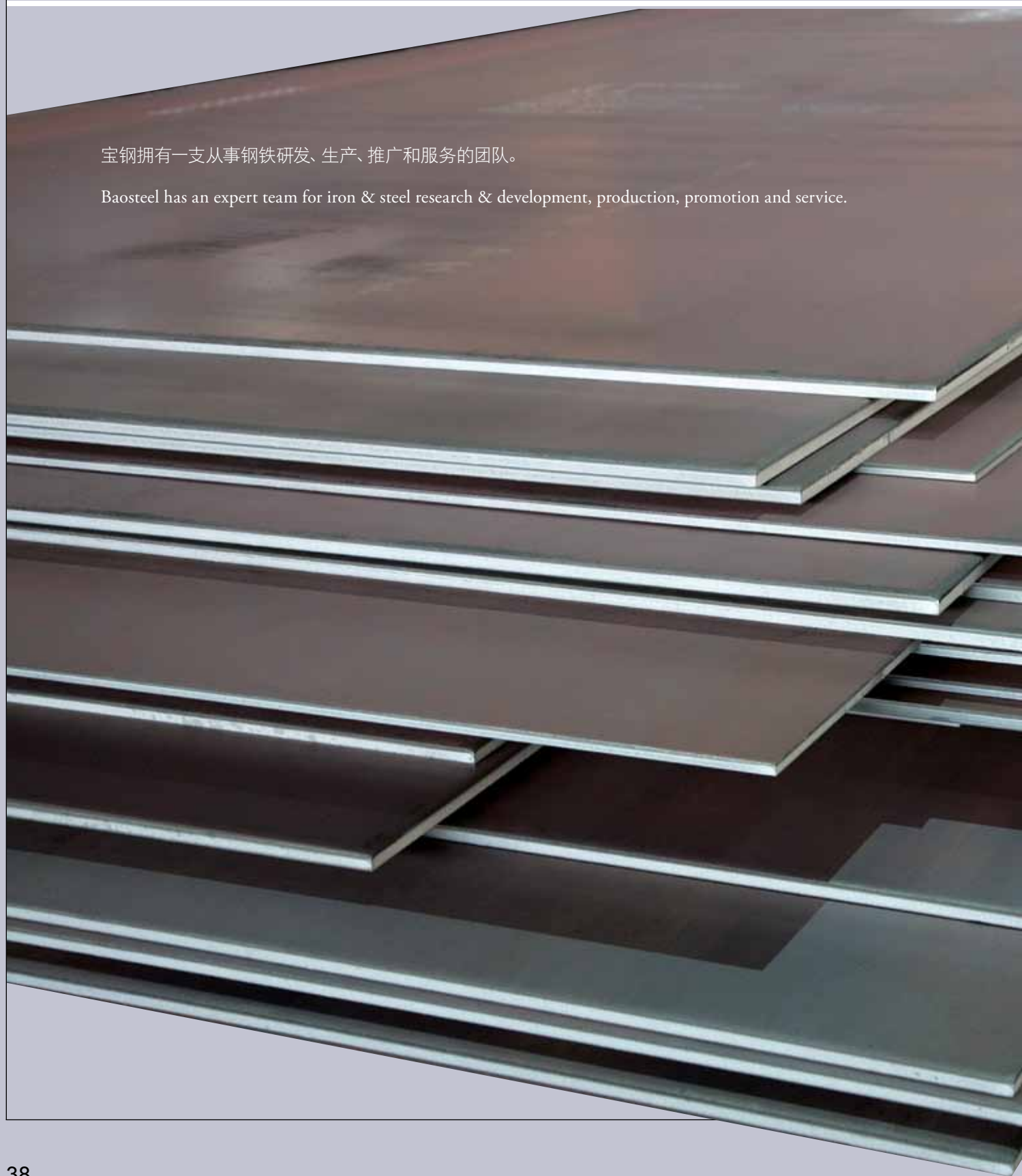
- Established quality management system according to ISO9001 standard
- Consistency quality management system with automobile industry according to ISO/TS16949
- Environmental management system according to ISO14001 standard
- Occupational health and safety management system according to OHSA18001
- Measurement management system according to ISO10012
- Inspection and calibration lab management system according to ISO/IEC17025
- Aviation, aerospace, military quality management system according to AS9100B, GJB9001A-2001
- Nuclear power plant quality management system according to HAF003

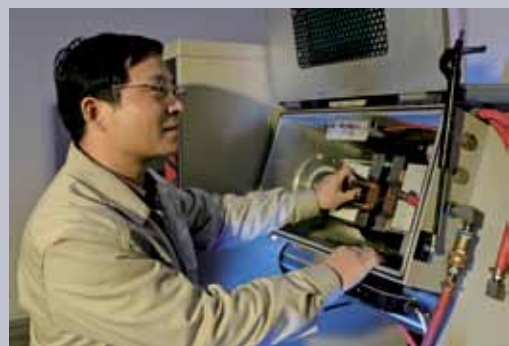
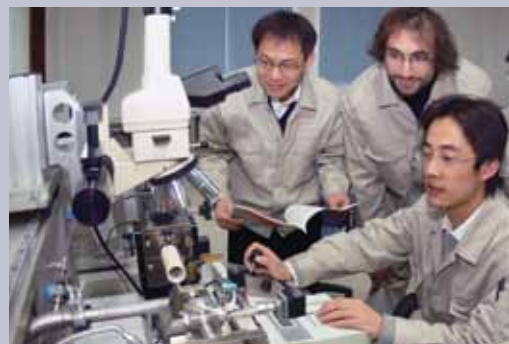
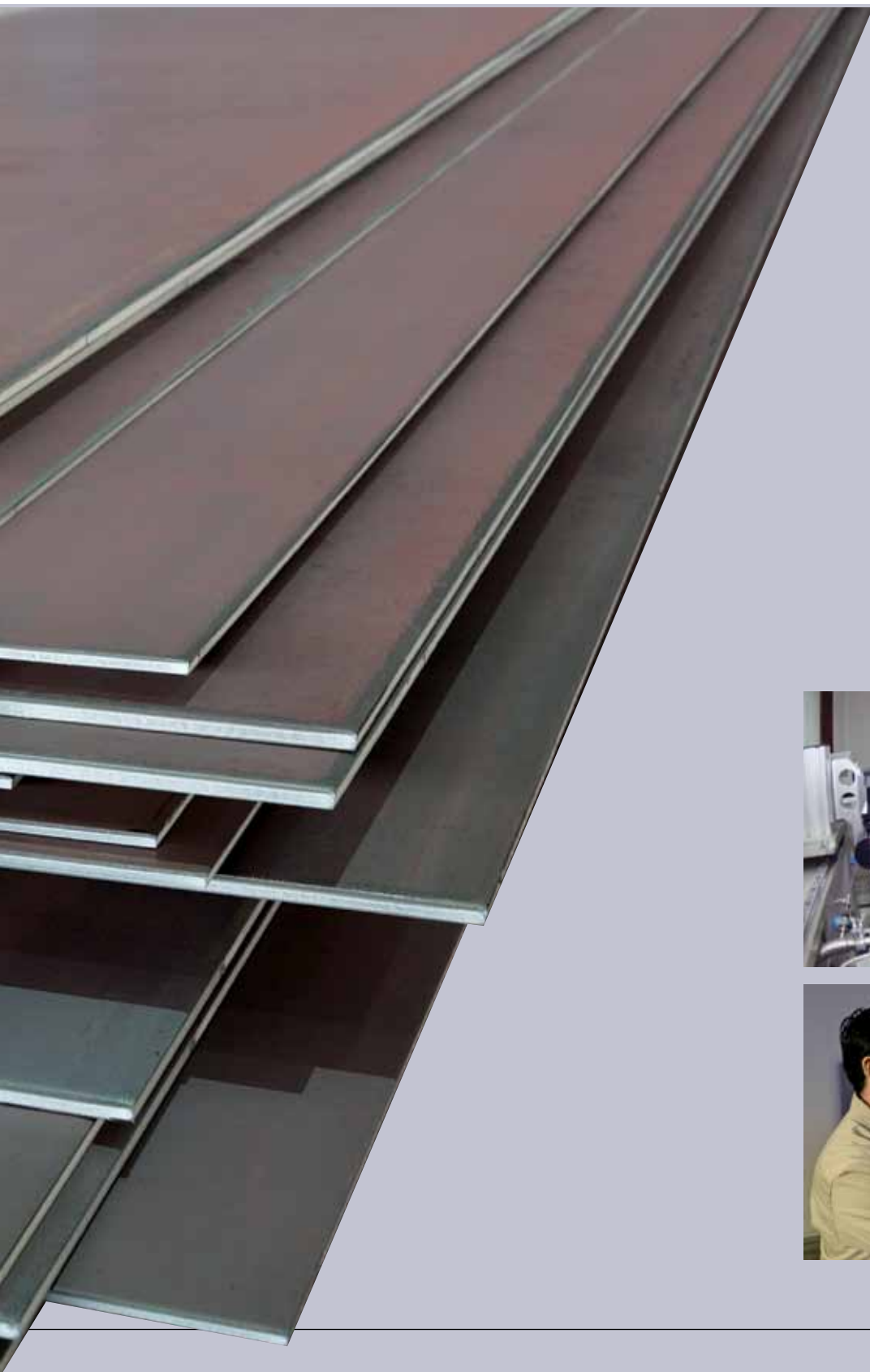


研发篇 Research & Development

宝钢拥有一支从事钢铁研发、生产、推广和服务的团队。

Baosteel has an expert team for iron & steel research & development, production, promotion and service.





C1 研发模式 R&D Model

研发模式 R&D Model

工程规划 Project Planning	工程设计 Project Design	工程建设 Project Construction	工程竣工 Project Completion
<ul style="list-style-type: none"> 工程规划跟踪 Project planning tracking 国内外同类工程用钢信息的研究 Abroad and domestic construction steel information study 工程用钢应用环境的辨识 Application environment analysis of construction steel 工程用钢可制造性的辨识 Manufacturability analysis of construction steel 工程用钢机理研究 Mechanism study of construction steel 工程用钢新产品的开发 New products development 	<ul style="list-style-type: none"> 与业主、设计单位的技术交流 Technical communication with customer and design unit 工程用钢技术条件的确认 Technical condition confirmation 工程用钢个性化需求的确认 Customization requirements confirmation 工程用钢新产品的工业试制 New product trial production 工程用钢新产品应用技术的研究 Application technology study of new product 工程用钢新产品的推荐 New product recommendation 	<ul style="list-style-type: none"> 工程用钢新产品的试用 New product trial 工程用钢新产品加工工艺的优化、评定 Optimization and evaluation of processing technology 工程的技术服务与支撑 Technical service and support 	<ul style="list-style-type: none"> 工程用钢技术总结 Techniques summary of construction steel 工程用钢的进一步优化 Further optimization





C2 焊接材料开发与技术支撑

Development & Technical Support for Welding Materials



概述

宝钢自主开发和生产与钢材配套的气体保护焊丝、埋弧焊丝、焊芯等用盘条，与国内焊材企业合作开发钢板配套的焊条、焊丝、焊剂等焊接材料。指导焊接工艺评价，推荐配套焊接材料，提供焊接技术服务。

Introduction

Baosteel has developed and produced supporting steel material for gas-protected welding wire, SAW wire, welding core. By cooperating with domestic welding materials companies, Baosteel has developed supporting steel for welding rod, welding wire and welding flux etc. welding materials. Baosteel can also provide service of evaluation of welding process, and recommend supporting welding materials and welding techniques.





应用

- 自主开发的与水电用钢B610CF配套的气体保护焊丝钢BH600-II, 用于三峡等水电工程。
- 自主开发了与石油储罐用高强度钢B610E配套的焊接材料, 如埋弧焊丝钢BH610-III和气体保护焊丝钢BH610-II; 与国内焊材厂联合开发了气电立焊药芯焊丝BH610-EG。
- 与国内焊材企业联合开发了与低温球罐用B610CF-L2钢板配套的焊条。
- 自主开发的与核电安全壳用钢SA738B配套的焊接材料, 包括气体保护焊丝钢BH600GR-II和埋弧焊丝钢BH600GR-III; 与国内焊材厂联合开发了配套专用高韧性焊条。

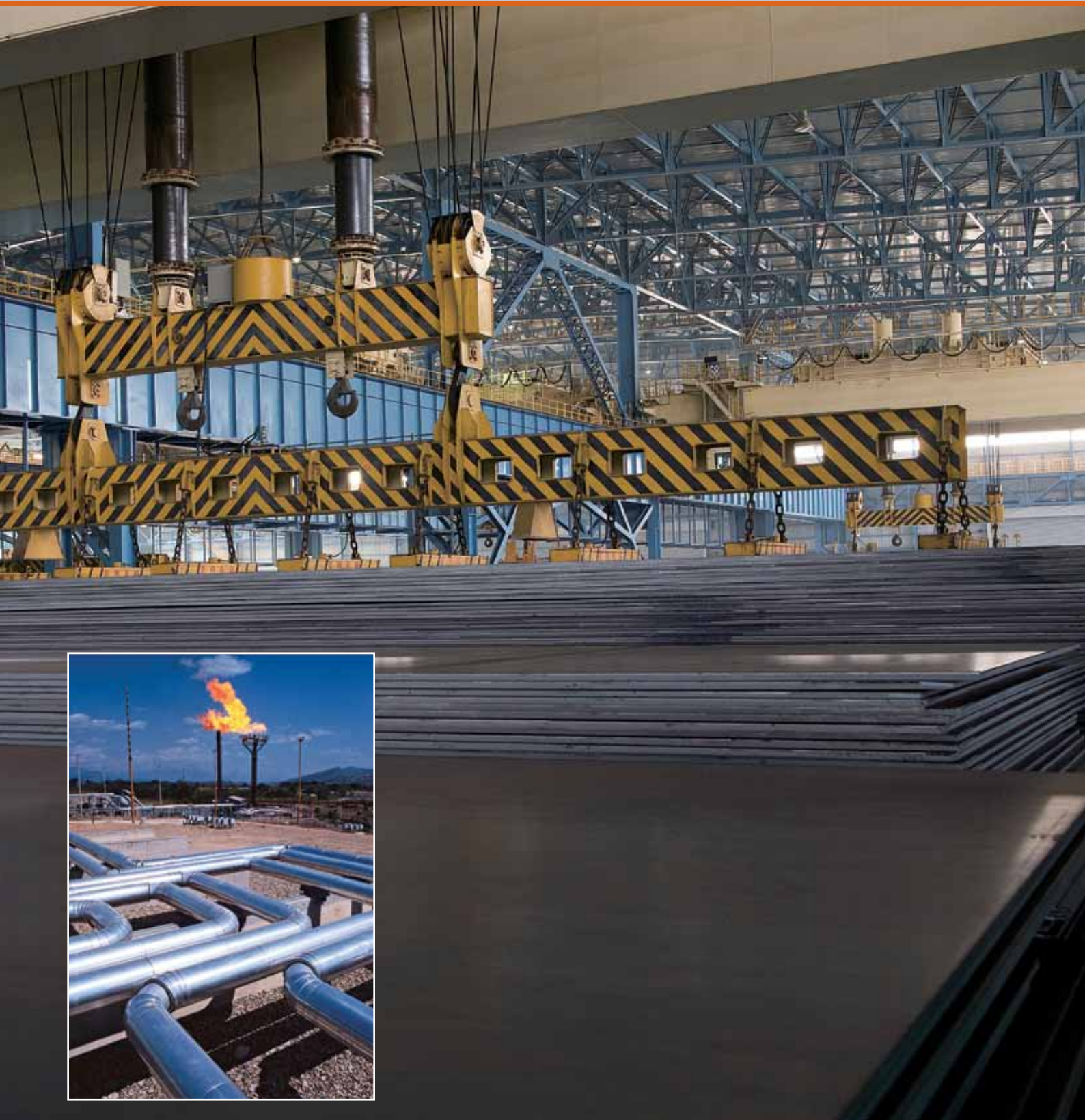
Applications

- Baosteel has independently developed gas protected welding wire BH600-II supporting B610CF for hydropower plant, which has been used for Sanxia hydropower project.
- Independently developed supporting welding materials for B610E high strength steel for oil tank, such as SAW wire BH610-III and gas protected welding wire BH610-II. Co-developed gas-electric vertical welding core and wire BH610-EG with domestic welding companies.
- Co-developed with domestic welding companies supporting welding wire for B610CF-L2 for low temperature spherical tank
- Independently developed supporting welding materials for SA738B steel for nuclear safety container, includes gas protected welding wire BH600GR-II and SAW welding wire BH600GR-III. Supporting high toughness welding rod has been developed with domestic welding companies.

D 服务篇 Service

石油储罐用钢工程分布
Projects Distribution of Steel for Oil Tank





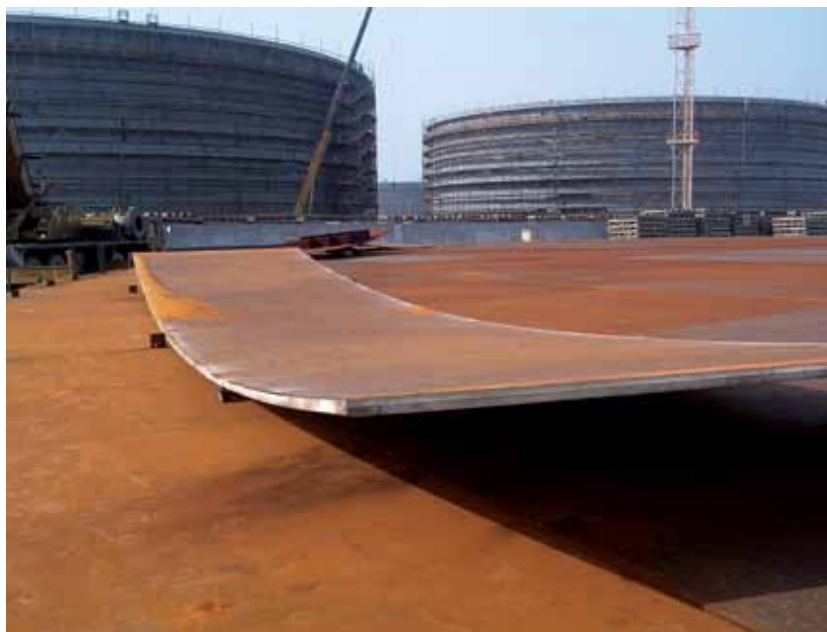
宝钢大型石油储罐用高强度钢板开发与应用回顾

1、组织产销研团队，加速大型石油储罐用高强度钢板研发

- (1) 2004年9月，国家启动建设一期战略石油储备四大基地。为满足工程进度需求，国家发改委主持，中石化集团牵头的大型石油储备用高强度钢板的国产化和工程应用工作全面展开。宝钢以国家需求为己任，组织跨部门、跨单元的产销研团队，加速大型石油储罐用高强度钢板研发和试制进程。宝钢原浦钢公司产线、宝钢分公司产线试制的产品分别于2005年7月和2005年11月通过全国锅炉压力容器标准化技术委员会的技术评审。
- (2) 在大型石油储罐用高强度钢板国产化过程中，宝钢科研人员以科学、严谨的试验，积累了大量数据，提出焊接工艺要求和工艺评定指导意见，深化了对高强度钢板应用大线能量焊接认识。宝钢试制和批量生产的钢板，进行了不同施工单位、不同匹配焊接材料、不同气候条件下的全面评价，积累的数据和资料为罐体的安全运行提供了依据。2006年3月，第一批1500多吨钢板供应镇海国家石油储备基地。宝钢以交货期最短，一次复验全部合格、焊接探伤一次合格率99.1%、储罐验收和使用最好，钢板首次工程应用受到业主的高度评价。

2、后来居上，实现替代进口

- (1) 宝钢严格的质量管理体系，实力雄厚的研发和生产能力，生产出实物性能优良和稳定的大型石油储罐用高强度钢板，成为国内公认的能与国外同类产品相媲美的钢板。按工程进度要求的供货能力和全面技术服务能力，加速了工程推广应用进展。黄岛国家石油储备基地除了早期12台10万立方米石油储罐用进口高强度钢板外，其余20台全部采用宝钢高强度钢板，实现了替代进口。
- (2) 经过实践和摸索，宝钢逐步形成了“以产销研为平台，以重大工程为目标，以技术营销为载体”的工作思路，宝钢产销研团队共同参与技术交流，到有设计者的城市与设计者交流和探讨，到要建储备油库的地方与业主沟通和释疑，到施工现场与施工者面谈和切磋。通过与设计、业主、施工单位的反复交流、沟通，取得了业内的认可。
- (3) 对于首次采用国产钢板的设计单位和设计者，宝钢技术人员与设计者共同制定技术条件、钢板复验方法、焊接工艺评价要求和配套焊接材料采购条件，形成伙伴关系。提升设计能力和速度，使更多设计者认识宝钢高强度钢板的质量优势和技术服务能力，主动首选国产钢板。



3、 持续创新、实现15万立方米石油储罐高强度钢板国产化

- (1) 2006年年底，国家商业储备库要建设一批15万立方米石油储罐。宝钢瞄15万立方米储罐所需的高强度钢板，与国内设计、施工和业主单位合作，用3个多月时间，完成了钢板试制和评价试验。2007年3月6日通过中石化组织的专家评审。
- (2) 2007年3月，中石化物资装备部在徐州进行上海白沙湾8台15万立方米石油储罐用高强度钢板招标。宝钢与日本JFE、住友同台竞争。在比技术、比价格的竞争中，宝钢中标4台，得到一半份额。宝钢生产的4台15万立方米石油储罐用4800吨高强度钢板，性能优异，所有焊接评定项目一次全部合格，与日本同类钢板相当。同时宝钢实现了15万立方米石油储罐用钢的整体供货。随后，又分别在广西钦州和大连油港各供应4台15万立方米石油储罐。

4、 创立宝钢大型石油储罐高强度品牌地位

技术先行，市场竞争显实力，创立宝钢大型石油储罐高强度品牌。以稳定的产品质量、全方位的服务取信于用户。从2006年1月供应第一台石油储罐用高强度钢板开始，到2010年底，宝钢已实现石油储罐用高强度钢板供货达240台，其中10万立方米石油储罐220台、12.5万立方米石油储罐8台、15万立方米石油储罐12台，成为国内大型石油储罐用高强度钢板供应的重要钢铁企业。

Review of the Development & Application of High Strength Steel Plate for Large Scale Oil Tank

1. Organized integrated team of production-sales-R&D to accelerate R&D process of high strength steel plate for large scale oil tank.

- (1) September 2004, China launched the construction of four strategic oil reserve bases Phase I project. To ensure smooth project progress, SINOPEC organized National Development and Reform Commission to fully support the localization of high strength steel for large scale oil tank. Baosteel, carries the nation's expectation, organized a cross departments and cross units team of production-sales-R&D, which has accelerated the process the project progress. The production lines of Baosteel Pudong Steel Company and Baosteel Branch Company had been certified by the National Standardization Technical Committee of Boiler and Pressure Vessel respectively in July 2005 and November 2005.
- (2) In the localization process of high strength steel for large scale oil tank, Baosteel's research experts has studied and accumulated mess statistics from scientific and rigorous experiments and has provided suggestions to welding process requirements and evaluation, which helped to deepen the knowledge in high strength steel plate. Baosteel conducts comprehensive evaluation for both trial and mess produced steel plate with various construction units, different supporting welding materials and different weather conditions accumulated precious data and materials for the safety operation of tank. March 2006, the first batch of 1500-ton steel plate delivered to Zhenhai National Oil Reserve Base. Baosteel has won well reputation among project owners by its instant delivery, one-stop complex inspection pass, "A" qualified welding flaw detection rate of 99.1%, Best inspection and usage of tank.

2. Replace imported items with superiorities

- (1) Baosteel's strict quality management system, strong R&D and production capability, excellent and stable product properties of high strength steel plate for large scale oil tank outstands from other competitive products. To ensure smooth project progress, Baosteel's supply capability and total technical solution service has accelerated project promotion and implementation. Huang Island National Oil Reserve Base has mostly use Baosteel's high strength steel plate, except the first 12 units of 100,000m³ oil tank.
- (2) By continuous practice and experiments, Baosteel has formed the strategy of "working on the integrated platform of production-sales-R&D, focusing on significant projects and carrying on technology marketing". Baosteel's production-sale-R&D team

participates in techniques exchange session, discussion with designers, communication and explanation for the property owners at oil reserve site and interview and demonstration with constructor at construction site. By communicating with designer, owner and construction unit, Baosteel has won recognition with in the industry.

- (3) For those designers and design units who adopt domestic steel plate for the first time, Baosteel develops partner-relationship with designers by providing technical experts to work out technical terms and complex inspections methods, welding process evaluation and procurement requirements of supporting welding materials. Baosteel's upgrading designing capability and speed and becomes the first choice in China for its excellent quality and comprehensive technical support service of high strength steel plate.

3. Continuous innovation and realized the localization of 150,000m³ of high strength steel plate for oil reserve tank

- (1) By the end of 2006, National Business Reserve Bank requires to construct 150,000m³ oil tank. Baosteel has cooperated with domestic designer, construction and owner unit, within 3 months completed trial and evaluation test for high strength steel need for 150,000m³ oil tank. On March 6, 2007, the product was certified by SINOPEC's professional certification.
- (2) March 2007, SINOPEC has held Shanghai Baisha Bay project bidding for the 8 units of 150,000m³ oil tank in Xuzhou for high strength steel. Baosteel has competed with Japan's JFE, Sumitomo in the bidding. In the competition of techniques and price, Baosteel won 4 units, half of the quotation. The 4 units 150,000m³ oil tank produced by Baosteel used 4800 tons of high strength steel plate with excellent performance, welding projects once-and-for-all qualified evaluation, which approved to have competitive performances of Japanese products. Baosteel has realized the whole supply of steel for 150,000m³ oil tank.

4. Establishing Baosteel's brand position in the market of high strength steel for large scale oil tank

With superiority in technology and marketing competition, Baosteel has established its high strength brand in large scale oil tank and won customer recognition by stable quality and total service solution. January 2006, since the supply of high strength steel for first oil tank till the end of 2008, Baosteel has supplied high strength steel plate for 240 oil tanks, among which 220 oil tanks of 100,000m³, 8 units for 125,000m³, 12 units for 150,000m³, and became most important iron & steel cooperate in supplying high strength steel for large scale oil tank.

结束语 The End

这本画册仅仅是宝钢参与国家能源建设项目的缩影。在这里，我们感受着光荣，更多地感受着能源行业对宝钢的信任和期望。

This brochure is only a miniature of Baosteel's participation in national's energy construction project. Here, we enjoy the pride, the trust and the expectation of Baosteel in the energy industry future.



宝山钢铁股份有限公司
<http://www.baosteel.com>

BAOSHAN IRON & STEEL CO., LTD.
<http://www.baosteel.com>

营销管理部
Marketing Management Department

地址：上海宝山区同济路3509号
邮编：200940
电话：021-26645287
传真：021-26645289

宝钢服务热线
Baosteel Service Hot-line

400-820-8590

宝钢在线
<http://www.baosteel.net.cn>

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