

XIV. Research & Development

R&D Investment

	Unit	2013	2014	2015	2016
R&D investment	Million RMB	3,644	3,884	3,424	3,661
R&D investment rate	percentage	1.92	2.11	2.09	1.97

R&D Organization and R&D Personnel

R&D Center of Baoshan Iron & Steel Co., Ltd (including such centers of its subsidiaries): 1,008 persons

Among them: Researching staff: 709 persons Technical staff: 244 persons

Administrative staff: 55 persons

New Intellectual Property Rights Obtained in China in 2016

Authorized Invention Patent	Authorized Utility Mode	Software Copyrights
418 pieces	168 pieces	42 pieces

Scientific and Technological Achievements

Year	Number of achievements	Main Achievements
2013	130	Manufacturing Technology Development and Industrialization of Low-Temperature High-Magnetic Induction Grain-Oriented Silicon Steel (First Prize, National Awards For Progress in Science and Technology)
		Manufacturing Technology and Industrialization of Advanced High-Strength Thin Strip Steel (Special Prize, China Metallurgical Science and Technology Progress Award)
		Key Technology and Industrial Application of High-Efficiency RH Vacuum Refining (First prize, China Metallurgical Science and Technology Progress Award)
2014	131	Research and Application of Steel Pipe for 600 °C Ultra-Supercritical Thermal Power Unit (First prize, China Metallurgical Science and Technology Award)
		Research and Application of Steel Pipe for 600 °C Ultra-Supercritical Thermal Power Unit (First prize, National Awards For Progress in Science and Technology)
		R&D of Core Technology and Complete Set of Equipment for Cold-Rolled Hot-dip Galvanizing and Aluminizing Unit (First prize, China Metallurgical Science and Technology Progress Award)
		Core Technology Research, Equipment Development, Application and Promotion of Steel Strip Surface Quality Online Detection (Second prize, China Metallurgical Science and Technology Progress Award)
		R&D and Application of Heavy Plate Cold Leveler Mechanism Model, Process and Equipment Technology (Second prize, China Metallurgical Science and Technology Progress Award)
2015	111	Development and Industrialization of High-Grade Non-Oriented Silicon Steel Manufacturing Technology (First prize, Shanghai Science and Technology Progress Award)
		Application of Pickling & Tandem Cold Mill Process Technology for High Grade Non-oriented Silicon Steel (First prize, China Metallurgical Science and Technology Progress Award)
		Iron & Nickel Base Alloy Oil Casing Product and Manufacturing Technology Development (First prize, China Metallurgical Science and Technology Progress Award)
		Development and Application of Customers-driven Metallurgical Enterprise Total Process Collaborative Manufacturing System (First prize, China Metallurgical Science and Technology Progress Award)
		Hot Rolling Roughing Mill Sheet Shape Control and Quality Improvement Techniques (Second prize, China Metallurgical Science and Technology Progress Award)
		Iron & Nickel Base Alloy Oil Casing Key Process and Product Development (Second prize, Shanghai Science and Technology Progress Award)
2016	143	Research and Development of South China Sea Liwan Project X65 And X70 Sea Pipe (Second prize, Shanghai Science and Technology Progress Award)
		Research, Development and Industrial Application of High Quality Iron Oxide Red Green Manufacturing Technology (Second prize, Shanghai Science and Technology Progress Award)
		Engineering Technology Integration and Product Development of Thin Strip Continuous Casting and Rolling Process, Equipment and Control (Special prize, China Metallurgical Science and Technology Progress Award)
		R&D and Application of Key Technologies of Drill Pipe for Ultra-deep Complicated Well (First prize, China Metallurgical Science and Technology Progress Award)
		R&D and Application of EMS for slab caster mould (Second prize, China Metallurgical Science and Technology Progress Award)
		Independent Integration Development and Application Technology of Special Production Line Continuous Caster (Third prize, China Metallurgical Science and Technology Progress Award)
		Comprehensive Maintenance Technology of Breast Roll of Heavy Plate Mill (Third prize, China Metallurgical Science and Technology Progress Award)
		Baosteel DCR Products and Key Techs Research (First prize, Shanghai Science and Technology Progress Award)
2016	143	Development and Engineering Application of SA738 Gr.B High Strength Steel Plates in Quenched and Tempered Condition for AP-1000 Containment of Nuclear Power Plant (Second prize, Shanghai Science and Technology Progress Award)
		R&D and Application of Welding Technology and Reporting of Cold-rolled High-strength Thin Steel Sheet (Worker team) (Second prize, Shanghai Science and Technology Progress Award)
		R&D of Steel Coils for CT80-CT100 Coiled Tubing (Third prize, Shanghai Science and Technology Progress Award)