

## XII. Research & Development

### R&D Investment

	Unit	2008	2009	2010	2011
R&D investment	Million RMB	2,312	2,593	4,198	5,174
R&D expenditure /revenue	%	1.15	1.75	2.08	2.34

### R&D Organization and R&D Personnel

The Technology Center of Baoshan Iron & Steel Co., Ltd. (including such centers in its subsidiaries): 1056 persons

Among them: Research staff: 739 persons

Technical staff: 213 persons

Administrative staff: 104 persons.

### New Intellectual Property Rights Obtained in China in 2011

Invention patents	Utility model patents	Software copyrights
263	706	43

## Scientific and Technological Achievements

Year	Total	Major achievements
2008	166	Comprehensive technologies for steel makers' utilization and emission reduction of by-product gas
		Development of 3Cr series of oil casing with CO <sub>2</sub> , H <sub>2</sub> S corrosion resistant features Research and application of wide strip tandem cold rolling technique and its model control technology
2009	105	Development and application of tin plate for two-piece pop-top can (First prize, Metallurgical Science and Technology Award of China)
		Independent integration and innovation of process technology of annealing and coating line for non-oriented electrical steel (First prize, Metallurgical Science and Technology Award of China) Baosteel BPC: techniques and applications (First prize, Metallurgical Science and Technology Award of China)
2010	251	West-east natural gas transmission project technologies and their application (First prize, National Award for Science and Technology Progress)
		Independent integration and innovation of process technologies for baosteel's 1880mm hot rolling mill (First prize, China Metallurgical Science and Technology Award)
		R&D on flatness control technology of cold tandem mill (Third prize, China Metallurgical Science and Technology Award)
		Development of high-efficiency non-oriented electric steel B50AR500 and B50AR350 (Third prize, China Metallurgical Science and Technology Award)
2011	189	Development and application of tin plate for two-piece pop-top can (Second prize, National Award for Science and Technology Progress)
		R&D on process and complete set of equipment for high speed tandem cold rolling of ultra-thin steel strip (Special prize, China Metallurgical Science and Technology Award)
		Research on independent integration of UOE welded pipe technology (First prize, China Metallurgical Science and Technology Award)
		Research, equipment development and application promotion of key technology for on-line spray marking of metallurgical products (Second prize, China Metallurgical Science and Technology Award)
		Blast furnace multi-statistics integrated testing and comprehensive system for energy saving and optimization (Second prize, China Metallurgical Science and Technology Award)
		Research and application of the model for 5-meter heavy plates (Third prize, China Metallurgical Science and Technology Award)