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公司业绩遍布国内70余家钢铁企业，以及巴西、印度、马来西亚、越南、孟加拉、菲律宾、津巴布韦、安哥拉、秘鲁、沙特等多个国家。

公司是北京市高新技术企业，获得国家科学技术奖和全国优秀设计奖等30余项、冶金行业和北京市优秀设计及科技成果奖等近300项，拥有数百项专利技术，多个项目创中国企业新纪录。

BSIET is an international engineering company, established through reorganization of Beijing Shougang Design Institute, which is invested by Shougang Group who takes relative majority of the share.

BSIET has the Engineering Design Integrated Qualification Class A issued by the State, it is the first unit of Beijing municipal enterprises that awarded this Qualification and is able to undertake engineering design for all industries and all grades. Meanwhile, it can provide technical services such as planning consultation, equipment integration and general contracting. BSIET owns unique technology and rich practical experience in overall design of iron and steel plants, individual design for iron making, steel making, steel rolling, sintering, pelletizing, coking, industrial furnace and integration of metallurgical equipment.

BSIET has served more than 70 iron and steel enterprises in China, and has its achievements in more than 20 countries such as India, Malaysia, Brazil, Viet Nam, Bangladesh, the Philippines, Zimbabwe, Angola, Peru and Saudi Arabia, etc.

BSIET is Hi-tech Enterprise of Beijing City, and has been awarded with 30-odd national science & technology prizes and national excellent design prizes, nearly 300 metallurgical industry and Beijing city excellent design and achievement prizes, and hundreds of national patents. More projects have created the new records of the Chinese enterprises.



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钢卷双排式托盘运输系统 DOUBLE ROW PALLET CONVEYING SYSTEM OF COIL



北京首钢国际工程技术有限公司
BEIJING SHOUGANG INTERNATIONAL ENGINEERING TECHNOLOGY CO.,LTD.



◎ 双排式托盘运输系统是目前钢卷运输领域的最新方式，也是最先进合理的技术。该运输系统具有突出的优越性，尤其适合于大型钢铁企业多用户点之间的交叉运输。

◎ 该运输系统基本取消了汽车运输，能够大大降低天车的工作负荷，有效保护钢卷表面，保证车间整洁美观、改善企业形象。

◎ 通过课题开发及首钢京唐2250mm热轧托盘运输系统的成功应用，首钢国际工程公司形成了具有自主知识产权的托盘运输技术。通过首钢迁钢1580mm热轧托盘运输系统、首钢京唐1580mm热轧托盘运输系统的设计、设备成套和工程总承包，首钢国际工程公司掌握了全部关键技术，自主研发了全部的自动化控制程序，技术日臻完善。

◎ 首钢国际工程公司能够以工程总承包、设计与设备成套、联合设计合作制造、工程设计等多种方式提供技术服务，已完成宝钢湛江2250mm、1780mm热轧项目、韩国浦项1580mm项目托盘运输系统机电液自动化总成套方案设计。

◎ Double row pallet conveying system is the latest method in the field of coil conveying at present, and also the most advanced and effective technology. This conveying system has extraordinary advantages, which is particularly suitable for crossing transport among many customers for large scale iron and steel industry.

◎ Automobile transportation is basically cancelled in this conveying system, thus greatly reduce the operation load of crane, effectively protect the surface of coil, ensure the clean and aesthetic appearance of workshop and improve the image of enterprise.

◎ BSIET has developed the pallet conveying system with independent intellectual property rights, through case studies and the successful application of the pallet conveying system in Shougang Jingtang 2250mm hot rolling production line. And with the engineering, integration of equipment and general contracting of pallet conveying systems for two 1580mm hot rolling lines in Shougang Jingtang and Shougang Qiangang, BSIET has mastered all key technologies and independently developed all automation control programs. The technology is becoming better and approaching perfection day by day.

◎ BSIET is capable to provide various forms of technical services, such as general contract, equipment integration, co-design and -manufacturing and engineering design etc. BSIET has accomplished the proposal design of general integration of automation system of mechanical, electrical and hydraulic for pallet conveying system for Baosteel Zhanjiang 2250mm and 1780mm hot rolling project and POSCO 1580mm hot rolling project.

双排式托盘运输方式的优势 Advantages of double row pallet conveying

托盘运输方式与传统运输方式的比较 Comparison of pallet conveying and traditional conveying methods



步进梁式运输方式
Walking beam conveying method

链式运输方式
Chain conveying method

托盘运输方式（单层单排结构）
Pallet conveying method (single floor and single row structure)

	步进梁式运输方式 Walking beam conveying method	链式运输方式 Chain conveying method	托盘运输方式 Pallet conveying method
可靠性 Reliability	较可靠 Relatively reliable	较可靠 Relatively reliable	可靠 Reliable
转向及交叉 Steering and crossing	复杂 Complex	复杂(需步进梁) Complex(walking beam is needed)	简单 Simple
满足生产节奏(最短60秒一卷) Meet production rhythm (Min. one coil per 60 seconds)	困难(>100s) Difficulty(>100s)	困难(>100s) Difficulty(>100s)	可以满足(<60s) Satisfied (<60s)
物料识别与跟踪 Identification and tracking of material	一般 Normal	复杂 Complex	简单 Simple
设备底面(辊道处) Bottom of equipment (at roller table)	深(约-6000mm) Depth (about -6000mm)	深(约-6000mm) Depth (about -6000mm)	浅(双排式约-700mm, 双层式约-3500mm) Shallow (double row type, about -700mm; double layer type, about -3500mm)
分步实施的操作性 Operability of step-by-step implementation	不好 No good	不好 No good	好 good
对车间地面影响 Influence to the ground in workshop	地面有坑，过人不便 Pit available on ground, difficult for pedestrians passing	地面有宽坑，过人很不便 Wide pit available on ground, difficult for pedestrians passing	地面只有两条宽100mm的缝，方便过人 Only two seams with width 100mm on ground, easy for pedestrians passing
液压站规模 Scale of hydraulic station	特大 Very big	大 Big	很小(仅提升需要) Very small (only for lifting)
对钢卷表面影响 Influence to coil surface	差 Bad	一般 Normal	好 Good
过马路的可操作性 Operability for crossing the street	复杂 Complex	复杂 Complex	相对简单 Relatively simple
设备制造、安装、调试、及维护保养 Manufacture, installation, commissioning and maintenance of equipment	复杂 Complex	复杂 Complex	简单 Simple
设备重量(以某工程一期为例) Weight of equipment (take a project as an example)	重 Heavy	中 Moderate	轻 Light
投资估算 Investment estimate	高 High	较高 Relatively high	低 Low

托盘运输是货物按一定要求，组装在一个标准托盘上，成为一个运输单位，有利于机械化装卸、搬运和堆存的一种运输方式。在有色金属领域，由于材料较软，很早即开始使用。

Pallet conveying is that goods are assembled on a standard pallet as per requirement, forming a conveying unit, which is a transportation way helpful to mechanized loading/unloading, transport and stockpiling. As the material is soft, this method has been used for a long time in non ferrous metal field.

双排式托盘与双层式托盘的比较 Comparison of double row pallet and double layer pallet

双层式托盘 Double layer pallet



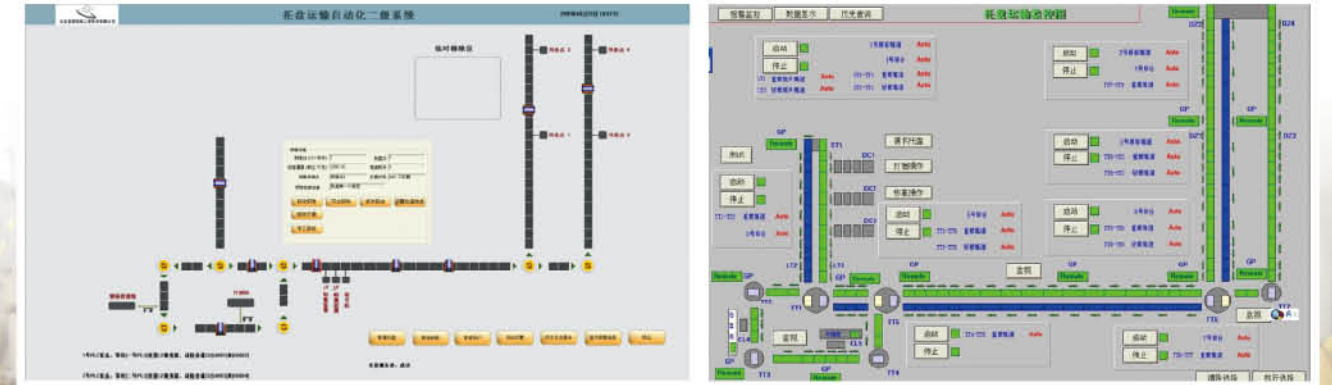
双排式托盘 Double row pallet



	双层式 Double layer	双排式 Double row
平稳性 Stability	重心高, 不稳 Higher center of gravity, unstable	重心低, 稳 Lower center of gravity, stable
安装、维护、保养 Installation and maintenance	下层辊道难 Difficult at lower roller table	均容易 Easy
设备基础(某2250mm热轧厂) Equipment foundation (a 2250mm hot roll mill)	深(约3500mm), 窄(约4400mm), 断面积15.4m ² 单位面积上的载荷大 Depth (about 3500mm), narrow (about 4400mm), sectional area 15.4m ² Load per unit area is higher	浅(约700mm), 宽(约5500mm), 断面积3.85m ² 载荷小 Shallow (about 700mm), width (about 5500mm), sectional area 3.85m ² Small load
占地面积(某2250mm热轧厂) Occupied area (a 2250mm hot rolling mill)	约8140m ² About 8140m ²	约10175m ² About 10175m ²
设备重量 Weight of equipment	重 Heavy	轻 Light weight
卷取区受卷位置设备 Equipment at position of coil receiving in coiler area	结构较复杂 Structure is complex	结构较简单 Structure is simple
投资(含设备、土建、电气自动化等) Investment (including equipment, civil works, electrical and automation etc)	高 High	低 Low

双排式托盘运输自动化控制系统 Automation control system of double row pallet conveying system

- ◎ 自动化控制程序由首钢国际工程公司独立开发完成, 为公司的专有和核心技术。
 - ◎ 自动化控制系统采取L1和L2两级控制方式, 并开发L2同L3的接口通讯程序, 实现托盘运输系统同工厂三级系统有效通讯。
 - ◎ 维护、手动、自动三种控制模式, 通过对设备的有效控制, 使设备按照一定的条件有序动作, 通过托盘完成对热轧钢卷的高效有序运输。
 - ◎ 对钢卷及托盘进行全程跟踪。
- ◎ The automation control programs are developed by BSIET, which are the proprietary and core technology of BSIET.
- ◎ L1 and L2 control methods are applied in automation control system, and interface communication programs of L2 and L3 are developed to achieve effective communication of pallet conveying system with the three-level system of the plant.
- ◎ There are three control modes, i.e., maintenance, manual and automatic. By effective control of equipment, make the equipment act in order as per certain condition and, through the pallet, achieve high-efficient and ordered conveying of hot rolled coil.
- ◎ Tracking coil and pallet in the whole process.



专利技术 PATENTED TECHNOLOGY

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|---|------------------|
| ◎ 钢卷运输系统（双排式运输方式） | ZL200710120095.0 |
| ◎ 一种带卷对夹装置（修正塔形） | ZL200910083474.6 |
| ◎ 一种带卷运输托盘（新结构免维护托盘） | ZL200820123641.6 |
| ◎ 一种用于双排式托盘运输的长行程重载提升机 | ZL201020180094.2 |
| ◎ Coil conveying system (double row pallet conveying method) | ZL200710120095.0 |
| ◎ One kind of coil clamping device (correction of telescoping) | ZL200910083474.6 |
| ◎ One kind of coil conveying pallet (new structure and maintenance free pallet) | ZL200820123641.6 |
| ◎ One kind of long travel heavy load elevator for double row pallet conveying | ZL201020180094.2 |



塔形对夹装置（发明专利）
Telescopes clamping device (patent of invention)



国家知识产权局授予公司发明专利证书
Invention patent certificate issued by the State Intellectual Property Office

应用业绩 PERFORMANCE REFERENCE

- ◎ 首钢京唐2250mm热轧厂托盘运输系统联合设计
- ◎ 首钢迁钢1580mm热轧厂托盘运输系统机电液自动化总成套
- ◎ 首钢京唐1580mm热轧厂托盘运输系统机电液自动化总成套
- ◎ Co-design of pallet conveying system of Shougang Jingtang 2250mm hot rolling plant
- ◎ General integration of automation system for mechanical, electrical and hydraulic for pallet conveying system for Shougang Qiangang 1580mm hot rolling plant
- ◎ General integration of automation system for mechanical, electrical and hydraulic for pallet conveying system for Shougang Jingtang 1580mm hot rolling plant



首钢京唐2250mm热轧托盘运输系统
Pallet conveying system for Shougang Jingtang 2250mm hot rolling



首钢京唐1580mm热轧托盘运输系统
Pallet conveying system for Shougang Jingtang 1580mm hot rolling



首钢迁钢1580mm热轧托盘运输系统 Pallet conveying system for Shougang Qiangang 1580mm hot rolling