

# 株洲西门子牵引设备有限公司

Siemens Traction Equipment Ltd., Zhuzhou

**SIEMENS**





# GM/CM 寄语

## The Word from GM/CM



总经理 GM



商务经理 CM

过去几十年中国的经济发展和城市化建设取得了重大的成就，国家通过不断加大对基础设施建设的投入来保证其与快速增长的经济同步发展，确保未来经济的可持续发展和持续不断地提高人民的生活质量。而发展现代化轨道交通建设则是解决交通问题的主要措施之一，这也为机车车辆工业提供了巨大的商机。

依托西门子的交流传动技术，中国南车株洲电力机车有限公司和中国南车株洲电力机车研究所有限公司在中国轨道交通业的雄厚实力和市场地位，株洲西门子牵引设备有限公司致力于为中国铁路交通和城市轨道交通提供世界一流的牵引控制系统，从而不断满足用户对重载高速的铁道运输和快速便利的城市轨道交通的要求。

我们期待与您一道为中国的铁道交通和城市轨道建设作出更大的贡献。

In the past decades, China's economic development and urbanization has made significant achievements, the state continued to increase the investment on the construction of infrastructure to ensure its rapid growth with economic development, to ensure that the future sustainable economic development and continuous improvement on the quality of people's life. And the development of modern railway and mass transit is one of the main measures to solve traffic problems, which also provides enormous business opportunities to rolling stock industry in China.

Relying on Siemens AC drive technology, strength and market position of ZELC and ZELRI in China's rolling stock industry, Siemens Traction Equipment Ltd., Zhuzhou, is committed to provide world first class inverter control system to the China's railway and mass transit, so as to continuously meet the users' requirements on heavy load, high-speed railway transportation and fast, convenient mass transit.

We are here to be together with you, to make more contributions to China's railway and mass transit.

李晓勇 Li Xiaoyong  
总经理 GM

董恩 Frank Dorn  
商务经理 CM



## 公司介绍

### STEZ Introduction

株洲西门子牵引设备有限公司 (STEZ) 成立于1998年11月28日, 是由西门子(中国)有限公司 (SLC)、株洲南车时代电气股份有限公司 (TEC) 和南车株洲电力机车有限公司 (ZELC) 组建的中外合资公司, 三方所占股份比例分别为50%、30%和20%。公司位于湖南省株洲市国家高新技术开发区田心工业园。

STEZ 的经营范围: 设计、开发、制造交流传动电力机车及机车车辆的交流传动关键部件, 销售公司自产产品, 提供相关售后服务。

1999年到2003年, STEZ 依托西门子的技术和许可为铁道部批量生产了20台DJ1交流传动电力机车。DJ1 机车在大秦铁路的运用显示出的优异的性能和可靠性令我们的客户十分满意。

2004年起, STEZ 积极参与与西门子和国内合作伙伴的联合体的城市轨道交通车辆投标, 并为上海、广州、深圳等城市城市轨道交通订购的城市轨道交通车辆提供牵引逆变器, 为我国大中城市解决公共交通问题提供重要的支持。

STEZ在三股东支持下一直为其组织机构和业务能力重整旗鼓而艰苦奋斗。2009年初建立了新的变流器生产车间和办公楼, 完善了组织体系和管理体系, 并依托西门子技术、开始致力于为电力机车和城轨车辆生产牵引变流器。同时, STEZ 在消化吸收西门子技术的基础上正在不断地提高变流器零部件国产化率。

STEZ的业务活动大大促进了中国铁路和城市轨道交通现代化发展, 为中国现代轨道车辆工业的繁荣和快速发展做出了应有的贡献。



STEZ was founded on Nov. 28th, 1998 and consists of Siemens Ltd., China (SLC) and Zhuzhou CSR Times Electric Co., Ltd. (TEC) and CSR Zhuzhou Electric Locomotive Co., Ltd. (ZELC). The shares of three partners are respectively 50%, 30% and 20%. STEZ is located in Tianxin Industry Park of Zhuzhou National High/New Technology Zone, Hunan Province.

STEZ's business scope: R/D and manufacture and sale and after-sales-service for AC electric locomotive and key AC drive components of rolling stock.

From 1999 to 2003 STEZ had produced 20 DJ1 AC electric locomotives for Ministry of Railway(MOR) by means of Siemens'

technology and license. The outstanding performance and reliability showed by 20 AC locos operating on Da-Qin line are fully satisfying our customer — MOR.

Since 2004, STEZ has been participating in bidding for metro vehicle project together with Siemens and domestic partners, and has been delivering traction converters for mass transit vehicles for Shanghai Metro, Guangzhou Metro, Shenzhen Metro, etc. STEZ is a leader for solution of mass transit of the Chinese cities.

STEZ has been working hard to rally its organization and business capability supported by three shareholders. At the beginning of 2009 STEZ has set up its new

converter workshop/office building, improved its organization and management system and dedicated on production of localized traction converters for locomotive and mass transit vehicle licensed by Siemens AG. At the same time STEZ also is increasing continuously the localization ratio of the converter based on digesting and absorption of Siemens' technology.

STEZ's business activities have greatly promoted the development of modernization of Chinese railways and urban mass transit, and also have made contribution for blooming and rapidly growing up of Chinese modern rolling stock industry.





# 生产能力介绍

## Production Capability

### 月生产能力

- 60 台机车牵引变流器组装和试验
- 25 台城轨车辆牵引变流器组装和试验

### 生产车间（安装 ESD 地板）

- 20 个牵引变流器组装台位
- 2 个线缆制作区
- 3 个变流器试验台位
- 1800 平方米立体仓库和包装交货区

### 组装台位设备

- 防静电保护设施
- 完整的组装工具
- 大部件安装专用工装
- 小型天车

### 线缆制作设备

- 电线自动切断和剥线设备
- 线缆量度设备
- 剪线机
- 线缆接头压接机
- 热缩套管线号热打印机
- 标签绘制机
- 线缆自动测试仪

### 试验设备

- 高压直流电源
- 冷却塔和试验负载
- 热成像仪
- 绝缘耐压测试仪
- 万用示波表
- 试验测量设备，如示波器、信号输出表、数字万用表等
- 泄漏探测器
- 冷却液充灌设备

### 试验台功能

牵引变流器例行试验，按照 IEC 61287 和变流器特定的试验大纲



### Production capacity per month

- 60 traction converter for locomotive
- 25 traction converter for mass transit vehicle

### Production workshop with ESD floor

- 20 assembly stations for traction converter
- 2 cable/harness making areas
- 3 test stations
- Warehouse and packing area of 1800 square meter

### Equipment for assembly station

- ESD protection facility
- Toolkits - Hoffman
- Jigs and fixtures for assembly of big components
- Crane

### Equipment for cable/harness

- Automatic cut & strip equipment
- Cable measuring equipment
- Cutting machine
- Crimping machine
- Thermal printer for heat shrink tube marker
- Plotter for label
- Cable/harness automatic tester

### Equipment for testing

- High voltage DC power supply
- Cooling tower and loads
- Thermal camera
- High voltage and insulation tester
- Probe for multimeter and oscillograph
- Testing measurement device, e.g. oscilloscope, signal output meter, multimeter, etc.
- Leak detector
- Filling system

### Functions of test station

Routine tests for traction converter according to IEC 61287 and test program of specific converters.



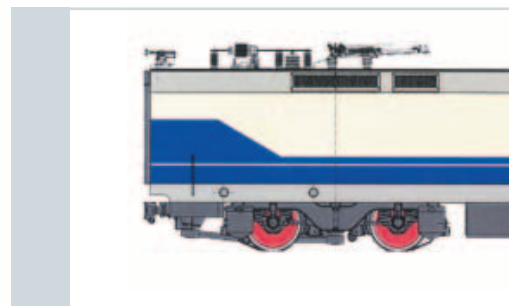


## 产品介绍 — DJ1 型交流传动电力机车 DJ1 AC Electric Locomotive

DJ1型交流电力机车是由两节完全相同的4轴电力机车通过机械和电气连接器连接组成的8轴重载货运电力机车。DJ1机车采用交流传动技术：水冷GTO四象限网侧整流器和电机侧逆变器，四象限IGBT辅助逆变器，交流异步牵引电动机，SIBAS32计算机控制、通信和诊断系统。转向架采用低牵引拉杆、二系悬挂采用高挠度弹簧，具有良好的牵引和动力学性能。车体为焊接式整体结构。

(注：2004年起DJ1机车已不再生产)

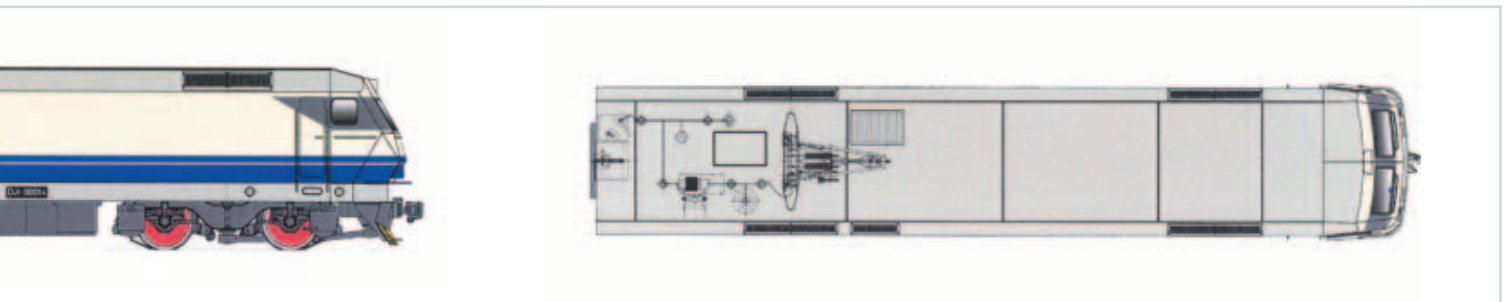
DJ1 loco is an 8-axle heavy duty AC electric freight locomotive which consists of two identical 4-axle half loco being connected together via mechanical and electrical connectors. It adopts AC-DC-AC electric drive technology, including water cooling GTO converter, asynchronous traction motor, SIBAS32 computer control/communication/diagnoses system, as well as 4QS auxiliary converter. DJ1 also features low traction rod, high flexibility spring for secondary suspension with better traction and dynamic performance. Its car-body is an entire welding structure. (Note: Production of DJ1 loco has been stopped since 2004)







DJ1 机车主要参数 Main data of DJ1		轴重 23t Axle load	轴重 25t Axle load
轴式	Axle arrangement	2(Bo-Bo)	
轴重	Axle load	23t	25t
总质量	Total weight in working order	2x92t	2x100t
电流制式	Current system	1 phase, 25kV, 50Hz	
持续功率	Traction power (at continuous rating)	6400kW	
最大功率 (10 分钟)	Max. traction power ( 10 min.)	8100kW	
持续牵引力	Tractive effort (at continuous rating at 50 km/h)	≥ 461kN	
最大起动牵引力	Locomotive adhesive tractive effort at starting	≥ 700kN	≥ 760kN
持续速度	Speed of the locomotive (at continuous rating)	50km/h	
最大速度	Max. speed	120km/h	
恒功范围 (牵引和电制动)	Speed range of loco with constant power (motoring/braking)	50-120 km/h	
功率因数	Power factor ( $\lambda$ )	99%	
机车总效率	Total efficiency of locomotive	≥ 0.85	
等效干扰电流 (双节均全负荷时)	Psophometric current (double loco operate under full load)	1.5A	
电制动功率	Electric braking power	6400kW	
最大电制动力	The regenerated braking effort in range of 0~50 km/h	≥ 461kN	
牵引电动机悬挂方式	Suspension of the traction motor	抱轴式 Nose suspension	





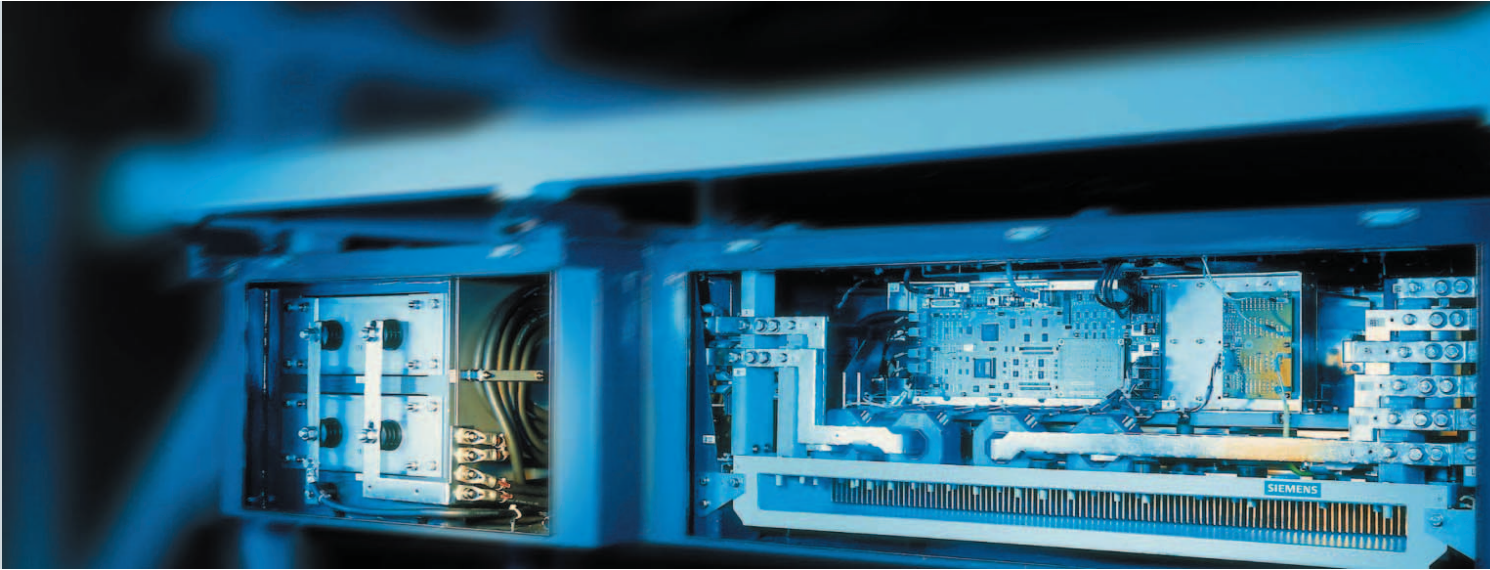
## 产品介绍－城市轨道交通牵引变流器 Traction Converter for Mass Transit

我们具备月生产 25 台城轨车辆牵引变流器的能力，参与了相关单位与西门子的联合体工作，为中国的城市轨道交通项目提供牵引变流器。目前已完成或正在参与的项目如下：

STEZ has been able to produce 25 sets of mass transit converter per month, and participating mass transit business activities as a consortium leader together with Siemens and domestic partners to provide traction converter to modern mass transit projects in Chinese cities. The projects completed or on-going are as follows:

- 上海明珠线 Shanghai Pearl Line
- 广州 3 号线 Guangzhou 3rd line
- 上海 1 号线延伸线 Shanghai 1st line extended
- 深圳 1 号线二期 the second part of Shenzhen 1st line
- 广州 2 号线 & 8 号线 Guangzhou 2nd & 8th line
- 上海 11 号线 Shanghai 11th line
- 广州 - 佛山线 Guangzhou - Foshan Line
- 杭州 1 号线 Hangzhou 1st line
- 长春轻轨 Changchun light rail
- 广州 3 号线北延伸 Guangzhou 3rd line north extended





## 城市轨道交通变流器 Mass Transit Converter

技术数据 Technical Data	
主变流器类型 Main converter type	重型 CI Heavy CI
持续功率 Continuous power at traction converter output	1000 KW
直流电压 Tolerance of line voltage	DC 1500 V +20% -30%
牵引变流器数据 Data traction converter	
额定输入电压 Rated input voltage	1500V DC
额定输入电流 Rated input current	660 A
额定输出电压 Rated output voltage	3 AC 1480V
额定输出电流 Rated output current	3 AC 400A
输出频率范围 Output frequency range	0 Hz to 130 Hz
冷却模式 Cooling mode of main converter	Forced air cooling
尺寸 Dimension per inverter (L x W x H)	2700mm x 1700mm x 520mm
重量 Weight	990kg





## 产品介绍－机车牵引变流器

# Traction Converter for Locomotive

此牵引变流器专为中国 6 轴机车而设计。变流器由 25kV、50Hz、单相交流电网通过装在机车上的变压器供电，变压器将网侧输入电压降为 2121V 供给变流器。

每台机车上安装 2 台牵引变流器柜，每个变流器柜包含 2 个四象限整流器、3 个逆变器（每个逆变器向 1 台牵引电动机供电）和 1 个辅助逆变器（向机车辅助设备供电，如冷却风机、空气压缩机等）。

变流器对供电侧到牵引电动机的能量流进行控制，以使电动机运行于所希望的转矩和转速。为此，电动机的电流和电压波形必须由变流器的牵引控制单元（TCU）按照要求进行调节。

牵引变流器交付时是一个完全组装好的部件，TCU 安装在柜体内。

### 主要特性

牵引变流器采用了现代电子技术（IGBT 半导体器件，SIBAS-32 计算机控制系统等），显现出以下特点：

- 总效率高
- 具有输出过载和短路保护
- 重量轻
- 坚固耐用的设计，适合铁路机车应用
- 模块化设计、结构紧凑

The traction converter has been designed for the Chinese locomotive type HXD1B. The converters are supplied from 25kV, 50Hz AC line supply through a transformer (onboard of the locomotive) that transforms the input voltage down to 2121V.

Each locomotive contains two converters. One traction converter comprises of two 4-quadrant converters, three inverters each for one traction motor and an auxiliary inverter for auxiliary equipment (e.g. as fans, compressors).



The traction converter controls the flow of energy between power supply and traction motor in order to control the desired torque and speed of the motor. To achieve this, the current and voltage waveforms on the motor terminals have to be adjusted on demand by the TCU of power converter.

The traction converter is delivered as a completely assembled device. The TCU is situated inside of the container.

## Main Features

Using modern technologies (IGBT-semiconductors, micro-processors SIBAS 32) the main inverter features the following:

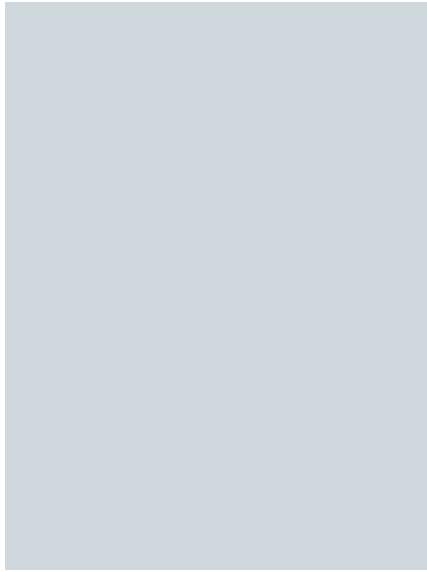
- High degree of overall efficiency
- Overload- and short circuit protected outputs
- Low weight
- Robust design for railway application
- Compact and modular structure

## 主要技术参数 Technical Data

变流器型号: SIBAC E34-3000-1AC-4S3P-3ST-1STm

Main converter type SIBAC E34-3000-1AC-4S3P-3ST-1STm

牵引变流器输出持续功率 Continuous power at traction converter output	2x4800 kW
网压范围 Tolerance of line voltage	17,5kV up to 31kV 17,5kV 到 31kV
<b>牵引变流器数据 Data traction converter</b>	
额定输入电压 Rated input voltage	2121 V
额定输入电流 Rated input current	2x1297 A
额定输入频率 Rated input frequency	50 Hz
额定输出电压 Rated output voltage	3 AC 2730 V
额定输出电流 Rated output current	3x420 A
最大输出电流 Max. output current	3x480 A
主变流机组的效率 Efficiency of main converter set	≥ 97.5% (额定功率) ≥ 97.5% (rated power)
主变流器机组冷却方式 Cooling mode of main converter set	强迫水循环冷却 (有添加剂) forced water circulation (with additives)
每个变流器尺寸 Dimension per inverter	3400 mmx1060 mmx2000 mm (L x W x H)
重量 Weight	2800kg ± 2%



# 质量体系 Quality System

## 质量方针

通过提供最好的员工培训，最佳质量的产品和服务，坚持不断持续的改进，以实现最高的客户满意，最大的企业效益。

## 质量承诺

质量是每个人的质量—每个人都可以做出贡献。我们可以满足我们的客户、员工和社会的期望。

质量是一种义务—每个人都必须遵守，并持续改进我们的流程。

质量具有全面性—每个人都通过他/她的创造力和全情投入为公司的成功做出自己的贡献。

## 过程控制

- 制定质量控制计划；
- 对员工进行充分的培训；
- 编制完善的操作指导说明书；
- 不定期的工作检查；

- 确保过程满足规定要求；
- 确保产品满足规定要求。

## 体系认证

公司已通过了必维国际检验集团进行的ISO 9001:2008 版的质量体系认证。

## Quality Policy

Achieving the highest level of customer satisfaction, highest level of company benefit through providing products and services with best quality and continuous improving processes by best trained people.

## Quality Statement

**Quality is personal**-Everyone has a contribution to make. In this way we will fulfill the expectations of our customers, employees and society.

**Quality is obligatory** -Everyone must adhere

to and continually improve our processes.

**Quality is comprehensive**-Everyone contributes to the success of our company through his/her creativity and commitment.

## Process Control

- Development of quality control plan;
- Adequate training of staff;
- The preparation of a sound operational instruction manual;
- Regular work check;
- To ensure that the process meet the specified requirements;
- To ensure that the product meet the specified requirements.

## Certificate of Quality System

Our quality management system was certified by France BV according to ISO 9001:2008.



# EHS 体系

## EHS System

我们将给员工和公众提供相关信息；不断努力改进我们的EH&S表现，利用现有的先进技术构成我们行动的基础。

We inform our employees and the public, continuously strive to improve our performance on EHS, and to use the best available technologies to form the basis of our actions.

### EHS 方针

STEZ 秉承西门子对社会的承诺：

- 员工在安全的环境中工作；
- 合理利用自然资源；
- 促进员工的身体健康；
- 生产安全、环境友好的产品；
- 遵守法律是我们恪守的原则；
- 持续改进。

### EHS Policy

STEZ will continue to undertake the Siemens Mobility EHS policy:

- Places of work which our employees safely work on;
- Economical use of natural resources;
- The promotion of the health of our employees;
- Safe and environmentally friendly products;
- Legal compliance is for us a matter of course;
- Continual improvement.

### 体系认证

公司已通过了必维国际检验集团进行的ISO 14001:2004 版和OHSAS18001:2007 版的体系认证。

### Certificate of EHS System

Our EHS management system was certified by France BV according to ISO 14001:2004 and OHSAS18001:2007.



## SAP 体系 SAP System

Spiridon 涵盖于西门子提高企业竞争力计划之中，是西门子企业共享 IT 服务的一部分，目标是在西门子内部将 IT 应用巩固并标准化，同时建立用户和服务导向的组织结构。Spiridon 项目还将支持 STEZ 加速商业模式转换及节约开支，从而实现更高的效率。

到目前为止，我们公司已经有 FI/CO、MM、SD、PP、WM、PS 六个模块投入正常使用。为了满足公司业务持续发展的需求，我们将进一步完善我们的 SAP 系统，在近期内 HR 和 QM 两个模块也即将上线。

Spiridon is part of the Corporate Shared Services IT initiative within the top+ and Global Competitiveness program of Siemens and aims to standardize and consolidate IT applications as well as to implement a customer- and service-oriented organization. The program is further expected to enable STEZ to speed up the Siemens business transformation and to reduce overall costs, which leads to a higher efficiency for the organizations.

Up to now, STEZ has six modules of FI/CO, MM, SD, PP, WM and PS implemented smoothly. In order to fulfill the business requirement of our company, we will make further efforts to perfect the SAP system, as well as in the near future, HR and QM modules will go alive.







## 合规介绍 Introduction of Compliance

STEZ 的企业责任是按照最高的职业和道德标准和管理来开展业务，而员工的个人责任则是在每项工作中执行这些标准—公司绝不容忍任何不合规的行为。同时，我们还必须支持和鼓励我们的商业伙伴、供应商和其他利益相关者遵循同样高的道德标准。

STEZ 将严格遵守西门子的合规规定。

**Siemens has  
no tolerance  
for  
non-compliant  
behavior!**

At STEZ, we are determined to meet - and wherever possible, exceed - all legal and ethical requirements. Our responsibility is to conduct all business according to the highest professional and ethical standards and practices: there is no tolerance for non-compliant behavior. In the meantime, we also encourage business partners, suppliers and other stakeholders to adopt a similar standard of ethical behavior.

STEZ will strictly abide the compliance regulation of Siemens.

预防 - 监查 - 应对  
Prevent-Detect-Respond



## 董事会成员介绍 Board of Director



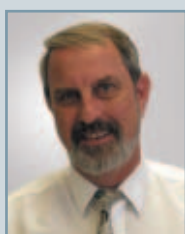
**克劳赛克 Karl-Hermann Klausecker**  
**董事长 Chairman**

现任西门子工业领域交通技术集团总裁  
President of Locomotive & Components, Siemens AG.



**李志轩 Li Zhixuan**  
**副董事长 Vice Chairman**

现任中国南车株洲电力机车股份有限公司董事长  
Chairman of CSR Zhuzhou Electric Locomotive Co., Ltd.



**替兹 Alfred Titz**  
**董事 Board Director**

现任西门子工业领域交通技术集团财务及行政副总裁  
VP of Locomotive & Components, Siemens AG.



**丁荣军 Ding Rongjun**  
**董事 Board Director**

现任中国南车株洲电力机车研究所有限公司总经理  
General Manager of Zhuzhou Electric Locomotive Research Institute Co. Ltd.  
株洲南车时代电气股份有限公司董事长  
Chairman of Zhuzhou CSR Times Electric Co., Ltd.



**董恩 Frank Dorn**  
**董事 Board Director**

现任株洲西门子牵引设备有限公司首席财务长官  
CFO of Siemens Traction Equipment Ltd., Zhuzhou



**卢澎湖 Lu Penghu**  
**董事 Board Director**

现任株洲南车时代电气股份有限公司执行董事，总裁  
Executive Board Director & President of Zhuzhou CSR Times Electric Co., Ltd.

# 股东情况介绍 Brief Introduction of Share Holders

## 西门子(中国)有限公司(股份 50%) Siemens Ltd., China(50% of share)

西门子最早在中国开展经营活动可以追溯到1872年，当时西门子公司向中国出口了第一台指针式电报机。在过去130多年的时间里，西门子一直活跃在中国市场，并在工业、能源和医疗业务领域处于领先地位。多年来，西门子已经成为中国经济不可分割的一部分，是中国可靠、忠诚、值得信赖的合作伙伴。至今，西门子已在中国建立了90多家公司，61个办事处。在2008财年中（2007年10月1日—2008年9月30日），西门子在中国的销售收入达到570亿元人民币，新订单总额达到655亿元人民币。西门子在中国拥有超过43000名员工，是在华拥有员工数最多的外商投资企业之一。

The history of Siemens in China dates back to 1872, when the company delivered the first pointer telegraph to China. For more than 130 years, Siemens has been active in the country, where it holds leading positions in the company's three sectors: Industry, Energy and Healthcare. Over the years, Siemens has become an integral part of the Chinese economy and a reliable, committed and trustworthy partner of China. To date, Siemens has established more than 90 operating companies and 61 regional offices in China. In fiscal 2008 (October 1, 2007 - September 30, 2008), sales to customers of Siemens in China amounted to RMB 57 billion. And new orders totaled RMB 65.5 billion. With a workforce of over 43,000, Siemens is one of the largest foreign-invested employers in the country.

## 株洲南车时代电气股份有限公司(股份 30%) Zhuzhou CSR Times Electric Co., Ltd. (TEC) (30% of share)

株洲南车时代电气股份有限公司（简称南车时代电气）于2005年由南车株洲电力机车研究所有限公司等五家单位共同发起设立，注册资本为108426万元人民币。主要涉足铁路机车、动车组、城市轨道交通及轻轨车辆用电传动系统与网络控制系统领域，具备研发、制造、销售及客户服务的综合能力。2006年12月20日，南车时代电气在香港H股上市。公司始终坚持核心技术多元化发展战略，逐步树立起在电气传动和控制系统领域国际化专业供应商的新形象。

Zhuzhou CSR Times Electric Co., Ltd. (TEC) was found in 2005 originated by CSR Zhuzhou Electric Research Institute Ltd. and other 4 units with registration capital of RMB1.08426 billion. Its business covers electric drive system and train network/control system for locomotive, EMU/DMU, metro and light rail vehicles, and TEC has the comprehensive competence on R/D, manufacturing, sales, and after sales service. On Dec. 20th, 2006 TEC came to issue H-shares in the stock market of Hong Kong. TEC insisted on continuously the stratagem of multi-orientation-development on core technologies, and is gradually establishing a new appearance of international professional supplier on electric drive and control system.

## 南车株洲电力机车有限公司(股份 20%) CSR Zhuzhou Electric Locomotive Co., Ltd. (ZELC)

始建于1936年，1958年成功地制造中国第一台干线电力机车，是中国第一个和全球最大的电力机车研发制造企业，包括转向架、牵引电动机、变压器、电气设备等，拥有50多年的设计制造电力机车的经验。ZELC累计生产各种型号电力机车4500余台，占全国铁路电力机车保有量70%。1997年以来向伊朗、乌兹别克斯坦、哈萨克斯坦等国已出口或已经接受订单共120多台电力机车。ZELC近年通过技术转让已经掌握最先进的交流传动电力机车和轨道交通车辆设计制造技术，是国家城轨交通设备国产化定点单位。8年来与西门子等国外先进公司合作获得了1000多台大功率交流传动电力机车订单和上海、广州、深圳等地1600辆城市轨道交通车辆订单，提供了性能优异的交流传动机车车辆，客户普遍感到满意。2009年能后年生产能力将达550台电力机车和800台城轨车辆。

CSR Zhuzhou Electric Locomotive Co., Ltd. Was founded in 1936, and produced the first mainline electric locomotive of China. ZELC is the first E-loco enterprise in China and the biggest one in the world with experiences of more than 50 years in designing and manufacturing E-loco, including bogie, traction motor, transformer, electric device, etc. ZELC has produced more than 4500 E-loco of different models in accumulative total, it is 70% of total number of E-loco of China Railways. Since 1997 ZELC has exported to or accepted orders from Iran, Uzbekistan and Kazakhstan for more than 120 E-locomotives. Recently ZELC has also mastered the technology for design and manufacture of modern AC E-loco and mass transit vehicle via TOT, and was designated as qualified enterprise for localization of mass transit equipment. In past 8 years ZELC has been awarded orders for more than 1000 modern AC E-loco and 1600 mass transit vehicles for Metro of Shanghai, Guangzhou, Shenzhen, etc. via cooperation with Siemens and other competent companies, and the delivered rolling stocks satisfy customers very well. After enlarging in 2009 its production capacity, ZELC will be able to manufacture 550 locos and 800 metro vehicles yearly.

**株洲西门子牵引设备有限公司(STEZ)**

地址：湖南省株洲市田心

邮编：412001

电话：+86 731 2844 0088

传真：+86 731 2844 0000

E-mail: info.stez@siemens.com

**Siemens Traction Equipment Ltd., Zhuzhou**

Address: Tianxin, Zhuzhou City, Hunan Province

Postal Code: 412001

Tel: +86 731 2844 0088

Fax: +86 731 2844 0000

Email: info.stez@siemens.com

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