DAMF AUTOMATION TECHNOLOGY

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TIANJIN
DAMF


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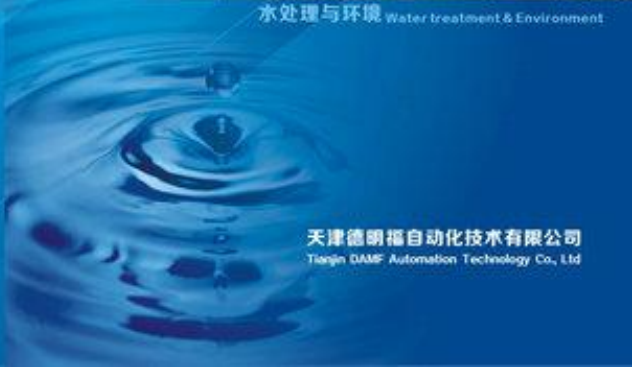
水处理与环境 Water treatment & Environment



天津德明福自动化技术有限公司
Tianjin DAMF Automation Technology Co., Ltd

DAMF AUTOMATION TECHNOLOGY

## 公司简介
## Company profile

天津德明福自动化技术有限公司是一家全心致力于工业自动化整体解决方案的高科技企业，位于美丽的环渤海黄金三角的滨海城市—天津，它以国际化创新发展理念和独具特色的自动化技术及产品，向客户提供具价值、高品质的自动化系统整体解决方案。

公司成立以来，在制药、污水处理、钢水制备以及工业循环水等专业水处理方向完成了若干套电气自动化系统，得到了用户好评。通过不断系统的实践，公司积累了大量的水处理行业电气自动化系统设计经验和施工经验，熟悉各种水处理工艺，培养了一支专业化程度高、技术精湛的专业化工程队伍，能为水处理行业用户提供包括设计、采购和实施于一体的“交钥匙”工程。

公司通过 GB/T19001-2008 idt ISO9001：2008 标准质量管理体系认证，建立了完善的质量保证体系，为客户提供最优可靠的自动化系统。

公司本着“立德明福，兴业造福”的企业精神，以诚信、互利为原则，坚持质量第一、信誉第一，客户第一的方针，愿与各界同仁合作，携手未来，共创辉煌。



Tianjin DAMF Automation Technology Co., Ltd. is a high-tech enterprise dedicated to total industrial automation solution, located in the beautiful and vigorous seaside city -- Tianjin, and provides total automation solution of high value and high return to customers, thanks to international innovative development concept and unique automation technology and products.

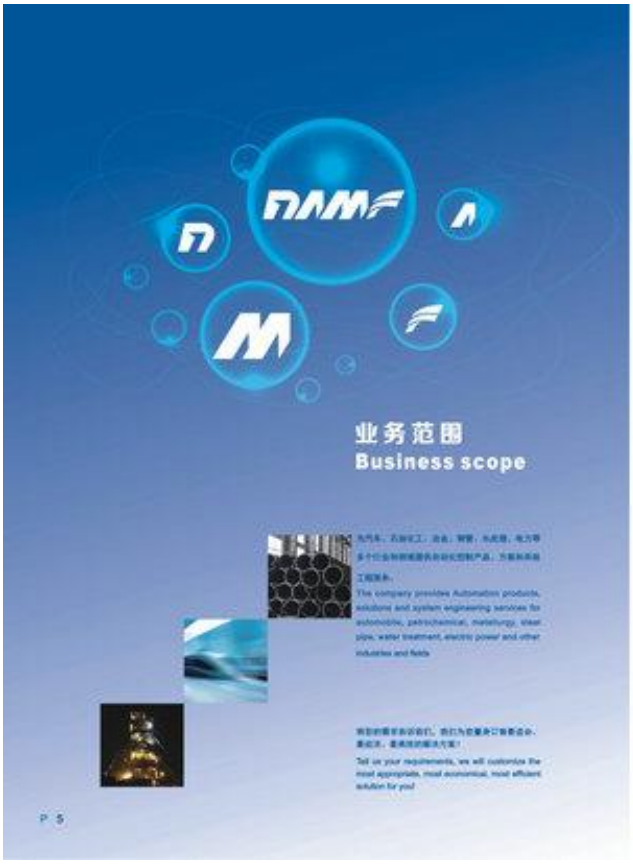
Since its establishment, the company has provided many electric automation systems used for water treatment, such as in pump stations, sewage treatment, water purifying, and recycling of industrial water. The systems are well received by the user. Implementation of the systems offers the company valuable experiences in design and construction of electric automation systems for water treatment, leaving it with a better conversanting of the techniques used for water treatment and a professional and highly skilful team of engineering. It now offers users in this sector with "turn-key" automation solutions including design, procurement, and implementation.

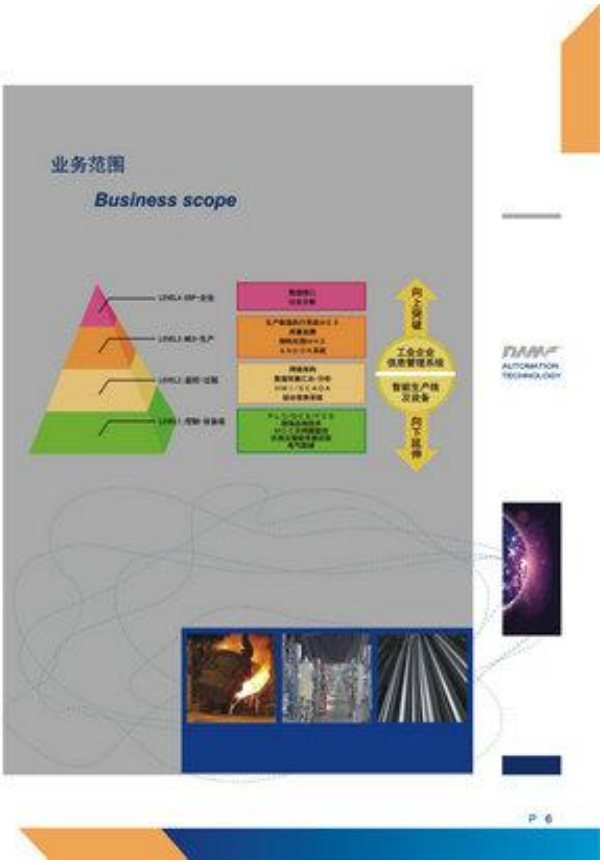
It operates with a well-developed quality assurance system, and has passed the certification of GB/T19001-2008 idt ISO9001: 2008 standards of quality management. It also provides reliable automation systems of great quality.

Inspired by the spirit of "keep good morality for industrial benefits", the company always put quality, reputation and customers as its top priority. Being honest and for the mutual benefit is its long-time criterion of operation. It desired to work with partners and customers from all sectors to create a splendid future.

企业文化
Corporate culture
立德明道 兴业造福
立德 —— 以德为根，诚信为本
明道 —— 通道中立，术业专攻
兴业 —— 事业共同，追求卓越
造福 —— 家福在手，国福在肩
P 3

DAMF
With our technologies and services, you will get more automatic production and equipment, more modern management.
Your trust is our driving force, your satisfaction is our unremitting pursuit!
Insist innovative concept, keep leading technology. Use new technology to manufacture excellent products and create the preferred brand!
Intensify service awareness, persist in customer-oriented. Guarantee high quality, maintain high efficiency, pursue win-win cooperation!
P 4


DAMF
业务范围
Business scope
The company provides Automation products, solutions and system engineering services for automobile, petrochemical, metallurgy, steel pipe, water treatment, electric power and other industries and fields
Tell us your requirements, we will customize the most appropriate, most economical, most efficient solution for you!
P 5


业务范围
Business scope
工业企业信息管理系统
智能生产线及设备
DAMF
AUTOMATION TECHNOLOGY
P 6

# 泵站自动化系统
# Automation systems at pump stations

泵站是城市给排水、水资源调配的重要组成部分，构筑城市水泵站是市政建设和管理工程的重要公用基础设施，担负着城市排水防涝的重要任务，而取水泵站、加压泵站则在供水系统起到重要的作用。

**泵站自动化系统的特点包括：**

**（1）自动化水平高**

系统达到“无人值守，少人值守”的控制要求；

**（2）性能优良**

系统采用高性能、高可靠性、成熟的工业现产品组建；

**（3）功能完善**

系统将设备监控、视频监视、安防等功能集成在一个平台

**（4）技术先进，网络性好**

采用最先进的计算机和网络技术，具备各种通讯接口，可以很方便的集成到各种中央监控/调度系统中

Pump stations play an important role in water supply & drainage, and allocation of water resources in a city. For example, the rainwater pump station is a major facility for urban construction and management, while water pumping stations and booster pumping stations are crucial to the water supply system.

**Features of the automation system at a pump station:**

**1.** High level of automation: The system needs no man or fewer men during operation;

**2.** High performance: Highly performing, reliable, and well-developed industrial products are used to set up the system;

**3.** Complete functions: Equipment control, video monitoring, security and protection are integrated into the system;

**4.** Advanced technology, and open system: The most advanced computer and network technologies are applied. Multiple communication interfaces are available to facilitate connection into various central monitoring/allocating systems.

**泵站自动化系统主要功能**

（1）泵启停的自动控制

（2）故障保护动作

（3）运行实时监视

（4）各种参数（液位，电量，流量等）显示记录

（5）参数超限报警，故障状态显示记录

（6）利用模拟图的方式直观显示泵站的状态

（7）数据远程上传功能

（8）视频监控功能，包括视频监控，周界报警，门禁系统等

**Major functions:**

**1.** Auto on/off control of the pump;

**2.** Interlock protection;

**3.** Real time monitoring of operations;

**4.** Display and recording of parameters (liquid level, power and flow, etc.);

**5.** Warning about over-limit parameters, and display and recording of error status;

**6.** Use simulation images to show the status of the station;

**7.** Remote data uploading;

**8.** Safety control, including video monitoring, perimeter alarm, and access control, etc.

**泵站的主要组成部分**

1、低压电气柜　　3、泵站综合自动化

2、视频监控系统　　4、数据上传系统

**Major components in a pump station**

**1.** LV electric cabinet;

**2.** Integrated pump station automation system;

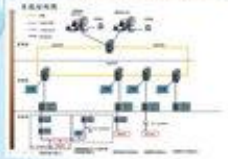
**3.** Video monitoring system;

**4.** Data uploading system.

# 水处理 Water treatment

污水处理包括各种形式的市政污水处理厂、污水处理站，也包括工厂内污水、废水处理站。广泛存在于工农业生产当中。污水处理的生产过程的特点是：各种物料在管道、构筑物、设备、容器中不停地进行着物理的变化、化学或生物化学的反应。各种工业参数时刻在变化。为了保证污水处理的运行效果高，需要运用自动化装置进行检测和调节。部分污水厂还包括中水处理部分。

Sewage treatment involves urban sewage treatment stations and plants, as well as those inside factories. It is a necessary step for almost all the industrial and agricultural production. During the treatment, various materials will undergo physical changes, chemical or even bio-chemical reactions inside pipes, structures, equipment, and containers. Then industrial parameters keep changing all the time. To assure efficient treatment, automatic devices are needed for test and adjustment. Some sewage plants also deal with water reclaiming.



大中型污水处理厂自动化系统通常“集中管理、分散控制、资源共享”的原则。一般采用光纤环网的方式，通过工业以太网将分散在各个区域的控制系统集中起来进行控制。控制器一般采用大中型的（系统具有如下特点）：

1、有良好的适应性；

2、采用分布式结构，具有良好的通讯能力；

3、有友好的人机界面和良好的后备能力；

4、有良好的开放性；

5、采用自动检测设备对水质等参数进行在线测量；

Automation systems used in large or medium sized sewage treatment plants generally follow the principle of “centralized management, decentralized control, and sharing of data”. Often, the fiber-optic ring network is applied, through which control systems located in different areas are integrated for the purpose of control. A large or medium sized PLC is used as the controller. It possesses the following **advantages:**

**1.** Good adaptability;

**2.** A distributed structure that assures good communications;

**3.** Friendly interfaces, and strong backups;

**4.** Open;

**5.** Online measurement of parameters such as water quality via automatic test equipment.

# 污水处理自动化系统
# Automation system of sewage treatment

**污水处理厂自动化系统的功能：**

1、根据污水处理工艺对工艺所需的阀门、泵、风机设备、刮泥机等设备等设备进行顺序控制；

2、采用先进控制算法，对污水处理工艺中整个的控制对象进行调节控制，例如生化池、MBR池等核心工艺的自动控制；

3、采集各种工艺参数，同于显示、储存；

4、报警功能：通过声光等各种方式显示参数超限，设备故障报警；

5、自动保护动能；　6、操作功能；　7、历史记录以及报表功能；

8、调度功能；　9、视频监视及管理功能；　10、安全管理功能。

**Functions of an automation systems in the sewage treatment plant:**

**1.** Offer program controls over valves, pumps, fans, mud suction machine, mud scraper and other equipment used in the treatment;

**2.** Advanced control algorithm is applied to deal with complicated objects, such as auto controls over the bio-chemical pool, the MBR pool, etc;

**3.** Collect process parameters, for display or storage;

**4.** Audible and visual alarm: over-limit parameters, errors of equipment, etc;

**5.** Interlock protection;

**6.** Operations;

**7.** History and reporting;

**8.** Dispatching;

**9.** Monitoring and management of energy consumption;

**10.** Safety management.

**污水处理厂全厂自动化系统**

1、全厂SCADA；

2、生化池、MBR池等核心工艺的自动控制；

3、仪表或离散量；　4、视频监控系统

**Automation in the whole plant:**

**1.** Whole plant SCADA;

**2.** Auto control over the bio-chemical pool, MBR pool, and other core technologies;

**3.** Complete instrument terminal;

**4.** Video monitoring system.

# 纯水自动化系统
## Automation systems for water purification

纯水主要为工业生产用水或生活饮用水，对水质要求比较高，例如锅炉补给水、除盐水等。其处理工艺一般分为过滤、反渗透和除盐三部分。在过滤部分一般有机械过滤、盘滤、精滤（MF）、超滤（UF）。根据进水水质进行组合选择，反渗透可以认为除盐水处理中很重要的部分，但过滤和超纯处理后，除盐水的导电率大大降低，但过除盐处理（一般为离子交换器、EDI等设备）。

**纯水处理自动化系统的特点包括：**

（1）自动化水平高

纯水处理的主要设备如多介质过滤器、精滤、反渗透和混床均包含反洗（正洗）流程，阀门和泵的操作步骤多，均需要自动化实现。

（2）检测水平高

系统采用大量过程仪表和分析仪表，包括液位、流量、压力、电导率、PH值、浊度、SDI、酸碱度、硅表和钠表，这些仪表组合加上处理的自动控制和连锁，要求这些仪表的精度和检测水高。

（3）控制复杂、功能完善

包括大量步序控制、定值调节、精密调节以及起点的间接精神经算法调整。

（4）可靠性高

由于纯水在生产的重要地位，要求控制系统的可靠性，采用冗余的上位系统、冗余的控制器、重要的控制回路的冗余。

（5）技术先进、开放性好

采用最先进的计算机和网络技术，具备多种通讯接口，可以很方便的集成到DCS中。

**Features:**

**1.**High level of automation: Water purification equipment such as multi-media filters, UF, RO and the mixed bed, all involves the backwashing or washing process. There are also many operations on the valves and pumps. These all need the support of automation.

**2.**High level of test: The system applies many process and analysis meters to measure liquid level, flow pressure, conductivity, PH value, turbidity, SDI, silicon and sodium. These meters all participate in auto control and interlocks during water treatment. They must be of great precise and testing ability.

**3.**Complicated control and complete functions: It involves a large number of step sequence control, set point adjustment, servo regulation, and determination of backwashing time via fuzzy neural algorithm.

**4.**Reliability: Due to the significance of purified water in production, the control system must be reliable. Redundant host systems and controllers are applied. Important control circuits are also redundant.

**5.**Advanced technologies: open systems: Most advanced computer and network technologies are applied. various communication interfaces are available to facilitate connection into DCS.

Purified water is used largely for industrial production or as potable water, requiring for high water quality, for example, water used for boiler supply and desalinated water. Filtering, RO and desalination are most often used in purification. Mechanical filter, dual-fiter, microfiltration (MF) and ultrafiltration (UF)can be selected based on the quality of water. RO is regarded as essential to desalination of water (by ion exchanger、EDI, etc.), after which the desalinated water will loose much conductivity.

**纯水自动化系统的功能：**

1、工艺设备大量阀门、泵、风机的步序及连锁控制；

2、步序控制、定值调节、精密调节以及应对的间接精神经算法调整；

3、采集各种工艺参数，用于显示、储存；

4、报警功能：通过声光等各种方式提示参数超限，设备故障报警；

5、连锁保护功能；

6、操作功能；

7、历史记录以及报表功能；

8、安全管理功能。

**Functions:**

**1.**Step sequence and interlock controls over valves, pumps, and fans.

**2.**Step sequence controls, set point adjustment, servo regulation, and determination of backwashing time via fuzzy neural algorithm.

**3.**Collect process parameters for display or storage.

**4.**Audible and visual alarm: over-limit parameters, errors of equipment, etc.

**5.**Interlock protection. **6.**Operations.

**7.**History and reporting. **8.**Safety management.



**纯水自动化系统包括**

1、模块系统；

2、上位监控系统及水网接口

3、气动阀门以及仪表供氮装置

4、电磁阀以及现场操作盒

5、配套的安装服务

**The system includes:**

**1.**Program control system.

**2.**Host monitoring systems and interfaces to water network.

**3.**Pneumatic valves and meter services.

**4.**Solenoid valve box and operation panel.

**5.**Immersi pump







# 工业循环水电气自动化系统
## Electric automation systems for industrial water recycling

随着工业的发展和生活的需要，水的用量急剧增加。因此，节约水资源成了当务之急。工业生产中，采用循环水是节约水资源的重要途径。在电厂中水直接是重要转换的介质，在其它工业如冶金行业，水同样也等在各行业，采用循环水来进行冷却。

循环水电气自动化系统的目的是组合循环水管道、泵、风机、加药设备、热交换和冷却塔等设备保证水在循环水系统自动正常循环。循环水的水利用率主要依靠大功率的水泵。系统利用变频技术水流环处于恒压检测状态。循环水自动控制主要采用可编PLC系统，循环水同一个重要的环节是水质监测和处理，保证循环水水质适合水循环，减少结垢和对设备腐蚀，达通常利用PLC系统，在现场表以及远的装置配合完成。**系统具有以下特点：**

1.高可靠性和适用性；

2.采用分布式结构，具有良好的通讯能力；

3.有友好的人机界面和良好的后台备电力；

4.有良好的开放性；

5.采用自动检测设备对水质等参数进行在线测量；

**循环水电气自动化系统的功能：**

1、采用变频、软启动等技术对水泵风机进行自动调节控制；

2、自动控制循环水的补水；

3、监测循环水的水质，并根据水质自动控制加药系统；

4、报警功能：通过声光等各种方式提示参数超限，设备故障报警；

5、连锁保护功能；　6、操作功能；

7、历史记录以及报表功能；　8、通信功能；

9、电机监视及管理功能；　10、安全管理功能。

**循环水是工厂水利用的重要部分**

1、PLC及监控系统；

2、低压电气；

3、变频控制系统；

4、仪表检测系统；

industrial development and rising domestic demand drives up consumption of water. Therefore, water conservation becomes an urgent task for everyone. Water recycling is a major way to save water resources in industrial production. In a power plant, water is the media for energy exchange. In many other sectors has grave and cement, recycled water is used for cooling.

The purpose of an electronic automation system for water recycling is to ensure water recycling within the recycle system by using pipes, pumps, fans, drug feeder, heat exchangers and cooling towers. Transmission of water in the recycling depends on large power pumps. The system applies frequency conversion technology to guarantee a constant pressure and current flow. The auto control is achieved through a central PLC. Another key step of water recycling is monitoring of water quality and treatment of water to reduce scale and corrosion to the equipment. This can be achieved by co-working of the PLC, online meters, and the drug feeder. Features of the system are:

**1.**High reliability and adaptability.

**2.**A distributed structure ensures good communications.

**3.**Friendly interfaces, and strong backup.

**4.**Open. **5.**Online measurement of parameters such as water quality via automatic test equipment.

**Functions:**

**1.**The inverter and soft starting technology are applied for auto control of the fans.

**2.**Auto water supply to the recycling.

**3.**Watch the water quality, and apply an auto control over the drug feeder.

**4.**Audible and visual alarm: over-limit parameters, errors of equipment, etc.

**5.**Interlock protection.

**6.**Operations. **7.**History and reporting.

**8.**Dispatching. **9.**Monitoring and management of energy consumption.

**10.**Safety management

**Water recycling is an important part of water consumption in factories.**

**1.**PLC and the monitoring system.

**2.**Low electric appliances.

**3.**Variable frequency control system.

**4.**Meters.

# 工程业绩表 Case studies

| 序号 No | 用户名称 Clients | 项目名称 Projects | 竣工日期 Date of Delivery |
|---|---|---|---|
| 1 | 威尔纳建设安工程技术（广州）有限公司 Novo Environtech (Guangzhou) Ltd | 番禺中水处理 Putian reclaimed water treatment<br>Siemens S7-300控制系统+WinCC上位监控<br>Siemens S7-300 control system +WinCC I/O host control | 2011.6 |
| 2 | 延长石油集团榆林化得化工厂 Yanchanghuahe Chemical Factory, Yanchang Petroleum Group | 锅炉补给水控制系统改造项目<br>Upgrading of the control system for boiler water supply<br>系统采用Siemens S7-414H双系统+WinCC<br>Siemens S7-414H redundant system +WinCC | 2011.6 |
| 3 | 海南中航特钢材料有限公司 Hainan Zhonghang Special Steel Co., Ltd | 第三供排水监控系统项目 The 3rd line water recycling control system<br>Siemens S7-416H冗余系统+WinCC监控软件<br>Siemens S7-416H redundant system + WINCC monitoring software | 2011.7 |
| 4 | 广州新威材料科技有限公司 Metnstar Technology (Guangzhou) | 新出循环水处理电控系统<br>Controls for reuse of reclaimed water Treatment System<br>Siemens S7-200控制系统+变频器<br>Siemens S7-200 control system + converter panel | 2011.8 |
| 5 | 海南中航特钢材料有限公司 Hainan Zhonghang Special Steel Co., Ltd | 第四污水处理系统 The 4th line water recycling control system<br>Siemens S7-417H冗余系统+WINCC监控软件<br>Siemens S7-417H redundant system + WINCC monitoring software | 2011.9 |
| 6 | 天津滨海北塘污水处理厂 Tianjin Binhai Beitang Sewage Treatment Plant | 再生水车间供热监控系统<br>Water's and monitoring system in the recycled water +供热站<br>E+H的系列HACH的表+电磁流量表等<br>E+H series HACH meter + video monitoring system | 2011.11 |
| 7 | 威尔纳建设安工程技术（广州）有限公司 Novo Environtech (Guangzhou) Ltd | 南沙污水厂中水控制系统<br>Nansha Sewage Plant, reclaimed water control system<br>Siemens S7-300控制系统+KINGSCADA监控软件<br>Siemens S7-300 control system +KINGSCADA monitoring software | 2011.11 |
| 8 | 天津泰丰餐饮管理有限公司 Tianjin Weiqu Catering Management Ltd | 饮用水供给控制系统 Potable water supply control system<br>Siemens S7-200控制系统+变频控制柜<br>Siemens S7-200 control system + VV control cabinet | 2012.3 |
| 9 | 天津铁建建设投资控股（集团）有限公司 Tianjin Railway Construction Investment Holding Group Co., Ltd | 九座智能给排水控制系统 Nine Pcs pump station control system<br>西门子S7-300控制系统+WinCC监控软件+模拟仪+西门子S7-200系统<br>Siemens S7-300 control system + WinCC monitoring software + video monitoring of three meters + remote signal maintenance | 2012.7 |
| 10 | 碧水（天津）水务工程有限公司 EM (Tianjin) Water Treatment & Engineering Co., Ltd | 海南东方电厂循环水回用系统 Hainan Dongfang power plant reuse of reclaimed water<br>饮用水供给控制系统 Potable water supply control system<br>西门子Siemens S7-200控制系统+WinCC监控软件+变频控制柜<br>Siemens S7-200 control system + WinCC monitoring software + VV control cabinet | 2012.8 |
| 11 | 威尔纳建设安工程技术（广州）有限公司 Novo Environtech (Guangzhou) Ltd | 辽阳中石油化污水处理控制系统 Liaoyang Petrochemical sewage treatment control system<br>Siemens S7-414H控制系统+KINGSCADA监控软件<br>Siemens S7-414H control system + KINGSCADA monitoring software | 2012.10 |
| 12 | 神华集团东港港煤码头 Shenhua Group, Tianjin Port Coal & Charcoal Terminal | 生活水回用给水处理系统 Recycling of domestic waste water treatment system<br>Siemens S7-200控制系统+WinCC上位监控软件+变频控制柜<br>Siemens S7-200 control system + WinCC host monitoring software + VV control cabinet | 2012.11 |
| 13 | 渤海石油装备（天津）中成机械制造有限公司 Bohai Petroleum Equipment (Tianjin Zhongcheng Machinery | 注水泵智能控制系统 Injection pump intelligent monitoring system<br>Siemens S7-300控制系统+KINGSCADA上位监控软件+ABB ACS800变频器<br>Siemens S7-300 control system + KINGSCADA host monitoring software + ABB ACS800 | 2012.12 |
| 14 | 威尔纳建设安工程技术（广州）有限公司 Novo Environtech (Guangzhou) Ltd | 辽阳污水处理中控监控系统 Liaoyang Petrochemical sewage treatment control system<br>Siemens S7-300控制系统+KINGSCADA监控软件<br>Siemens S7-300 control system + KINGSCADA monitoring software | 2013.4 |
| 15 | 广州市中新水务有限公司 Guangzhou Zhongxin Water Treatment Co., Ltd | 西河污水处理厂中控监控系统 Sewage Treatment Plant at Xihe, Huangpu District Development Modicon PM876/MLM 系统+WINCC监控软件<br>Modicon PM876/MLM system + WINCC monitoring software | 2013.4 |
| 16 | 威尔纳建设安工程技术（天津）有限公司 Novo Environtech (Tianjin) Ltd | 中石化水地石化污水处理控制系统 Sinopec Guanghou Purified Water Station, control system<br>S7-400冗余控制器CPU 412-5H+WINCC监控软件<br>S7-400 redundant controller CPU 412-5H + WINCC monitoring software | 2013.5 |
| 17 | 渤海石油装备（天津）中成机械制造有限公司 Bohai Petroleum Equipment (Tianjin Zhongcheng Machinery Manufacturing Co., Ltd | 注水泵智能监控系统 Injection pump intelligent monitoring system<br>Siemens S7-300控制系统+KINGSCADA监控软件+ABB ACS800变频器<br>Siemens S7-300 control system + KINGSCADA monitoring software<br>+ ABB ACS800 control cabinets | 2013.5 |