Siemens R&D in China

Siemens is one of the world’s most innovative companies. The company aims to be a trendsetter in all its business sectors, and to shape its technologies with a clear focus on delivering tangible and valuable benefits to customers and stakeholders for their sustainable growth.

With diverse market needs and customers who are willing to try new things, China is an ideal place to develop world-class innovations. Siemens has been increasing investment to enhance R&D capabilities in China, which is one of the most important R&D bases for the company. The company has over 4,500 R&D researchers and engineers, 20 R&D hubs and more than 10,000 active patents and patent applications in China as of Fiscal Year 2014 (October 1, 2013 - September 30, 2014).

The emphasis is to locally design and develop the right products and solutions for the Chinese market to meet local customers’ needs and integrate into local innovation system, and also to use China’s advantages to develop technologies in the country for global application. Siemens raises several innovative concepts and models that apply to China innovation environment, such as S.M.A.R.T. Innovation (Simple, Maintenance-friendly, Affordable, Reliable, and Timely-to-market), need-driven disruptive innovation, which have great influence on innovation and industry fields. In 2013, Siemens established innovation center in Wuhan and Wuxi, which are dedicated to drive local innovation industry with need-driven innovation projects and to achieve mutual development with local government and local partners through cooperating with local small and middle-sized business on developing pilot projects.

For long Siemens Technology-to-Business China has been working with external sources to systematically bring their innovations into commercial use. Siemens set up Intellectual Property department to bundle intellectual property strategic functions in China in the areas of intellectual property, including patents, trademarks, technology transfer and licensing issue. Siemens Corporate Technology
Development Center was established in Nanjing and Shanghai to provide efficient product development and service. Siemens also signed a memorandum on education cooperation with the Ministry of Education of China, establishing good relationships with over 200 Chinese universities and colleges. Siemens helps the universities and institutions establish laboratorial centers and set up Siemens scholarships to further promote the bilateral cooperation on scientific and technical exchanges and talent cultivation.

**Digitalization to value creation**

Our world is becoming ever more connected. Billions of intelligent devices and machines generate massive data, creating a bridge between real and virtual worlds. Turning these vast amounts of data into value is a key success factor for Siemens. Siemens has the domain know-how to develop innovative solutions using various hardware and software technologies. Across all domains, Siemens, as one of the largest software companies in the world, helps Chinese customers transform their core operations through the integration of data, software and hardware.

Siemens software solutions across the entire lifecycle of products and manufacturing facilities increase productivity and efficiency, and reduce time to market by up to 50%. Intelligent traffic information and management systems from Siemens help reduce congestion, accidents and CO₂ emissions by up to 20%. Smart grid technologies balance supply and demand to accommodate increasing demand, while also enabling the large-scale integration of renewables at 40% less cost. Siemens syngo.via software can significantly help save time when reading medical images. For instance, reading time for cardiac exams with Computed Tomography (CT) can be saved by 77%, compared to other reading solutions.

**Brace the Future of Manufacturing**

Siemens is laying the foundation for Industry 4.0 with its leading technologies, enabling manufacturers to simulate, forecast and intelligently automate processes leading to quantum leaps in productivity, efficiency and flexibility. As one of the most advanced electronics plants in the world, Siemens Electronics Works Chengdu (SEWC) becomes the first “digital enterprise” of Siemens outside Germany. A part of
Siemens global industry automation research and manufacturing system, SEWC realizes the highly digitalization in the process from design to manufacturing and shorten the time-to market time by up to 50%. The state-of-the-art design of SEWC also makes factories highly flexible to satisfy mixed production of different products, and allows a reasonable plan for capacity.

To better serve the automation and drive markets in China, Siemens has developed and launched a number of S.M.A.R.T. products, including SIMATIC IPC 3000 SMART, S7-200 SMART, SINUMERIK 808D ADVANCED CNC and SINAMICS V 90 Servo Drive System. Two of the SINAMICS Perfect Harmony GH180 products, GH180 10kV (40-140A) and GH180 10kV (315-550A), hit the market in 2014. The company also launched SITRANS P310 and intelligent valve positioner VP160 for local customers. Beide Motor, the specially designed by Siemens for China’s markets, covers low-voltage and high-voltage motors.

**Build intelligent infrastructure**
Siemens has the domain know-how to turn the masses of data generated in an infrastructure system into tangible improvements in its daily operations and make it smarter. Megatrends like fast urbanization process in China and climate change place increasing burdens on infrastructure systems.

Siemens building technologies drive efficiency, and reduce energy costs while maintain the comfort in people’s daily life. Beijing Siemens Cerberus Electronics Ltd. (BSCE) is a key global Center of Competence of Building Technologies for fire safety and HVAC (heating, ventilation, and air conditioning) products. Its advanced products and systems combine the highest comfort and safety with energy efficiency in an intelligent way. BSCE develops, manufactures and markets more than 1,200 products to more than 60 countries in Asia, America and Europe.

The investment in mobility system by Siemens helps the rapid development of Chinese railway and guarantees its safe operation. The innovation hub of Siemens Signalling Co. Ltd., Xi’an (SSCX) takes the responsibilities in rail automation product and system management. By September 2014, SSCX had been awarded 27 utility
model patents and three invention patents by China’s State Intellectual Property Office. Currently, S700 K-C electric point machine, S 21 Balise system, Az S 350 U axle counting system, introduced and adaptation-designed by SSCX, are widely used in China’s speed-up lines, passenger-dedicated lines, high-speed lines and metro lines. Besides, the JM2 end position detector and SRT6 contact group, independently developed by SSCX, passed the technical audit by the Ministry of Railways and are now widely used in passenger-dedicated lines and high-speed lines.

As the trusted partner for the development and extension of an efficient and reliable power infrastructure, Siemens provides utility, industry, infrastructure and building in China with the portfolio they need. This includes facilities and systems for the low- and medium-voltage and distribution power grid level, smart grid and energy automation solutions, power supply for industrial plants, and high-voltage transmission systems. Therefore, Siemens has R&D teams in cities like Shanghai, Wuxi and Hangzhou to develop high-voltage gas-insulated switchgear, high-voltage circuit breaker, high-voltage disconnector, circuit protection, medium-voltage gas insulated switchgear, medium-voltage air insulated switchgear, vacuum circuit breaker and vacuum contactor for better serving intelligent infrastructure, combining local competence and know-how with Siemens global design and high quality.

Reliable smart grid and energy automation are the components within infrastructure system. Siemens vows to keep the safety, stability and high-efficiency of the equipment. Siemens Power Automation Ltd. (SPA) develops high-quality protection and energy automation products and solutions for Chinese customers, and also works on Siemens’ international R&D projects. Its R&D team passed CMMI (Capability Maturity Model Integration) level 3.5 in 2008, becoming one of the leading teams among the Siemens’ worldwide R&D organizations. SPA R&D is joining hands with local universities to develop high-tech solutions in the areas of protection algorithm and energy automation applications.
Develop sustainable energy

Siemens is the world’s leading energy technology and solutions provider. As a trusted partner with China’s energy industry, Siemens better serves the customers’ needs along the value chain of electrification.

With the rapid development of China’s power industry and higher demands for green power, Siemens provides safe, economical and optimized operational products and services with overall solutions to power plants. Siemens Power Plant Automation Ltd. (SPPA) can offer various automation control strategies and optimization control software for supercritical and ultra-supercritical units, environmental protecting units (air cooling, desulphurization and deNox cycle units) and combined parameter operation, so as to meet the requirements of the integration of management and control for modern power plants, for example, the SPPA-T3000 for Shanghai Waigaoqiao Power Generation Co. Ltd. Phase III (2X1000MW). SPPA develops research and development in optimization management software for power plants. SPPA also helped establishing the first digital power plant in China.

Siemens Steam Turbine Engineering Hub aims to build up steam turbine expertise in China, and focuses on engineering activities on the next-generation steam turbine products development for large coal-fired power plants modernizations, to increase power generation efficiency and reduce CO₂ emission, as manifested in the Chinese 12th Five-Year Plan. Meanwhile, Siemens Gas Turbine Engineering China Hub carries out a series of projects and tasks, including new gas turbine frame R&D, existing frame modification and upgrade, customer order engineering, field service support, supply chain management support and manufacturing support, etc.

In 2013 Siemens started cooperation with Shanghai Jiaotong University to set up a gas turbine joint research center to conduct researches on fields like turbine design, processing technologies and high temperature alloy and coating. Also a R&D hub in Siemens Industrial Turbomachinery (Huludao) Co., Ltd. offers engineering and manufacturing of turbo compressors and steam turbines for petrochemical and power generation and waste water treatment plants in China.
Deliver high quality healthcare

For years, led by its innovative technology and customer’s need, Siemens has been providing high-quality medical solutions and service to more patients.

A part of the Siemens global Computed Tomography (CT) R&D, Siemens Shanghai Medical Equipment Ltd. (SSME) develops high quality CT scanners for the customers worldwide. The SSME developed SOMATOM 128-slice CT scanner, first of its kind in China, marking a milestone of high-end CT developing and manufacturing in China. In addition, SSME CT software team has collaborated with R&D team in Germany on developing of the advanced software for CT system. SSME also has X-Ray R&D and manufacturing center, the largest developing and manufacturing site for Siemens X-Ray system outside Germany, to develop high-quality and affordable products, such as a remote-controlled fluoroscopy system Axiom Iconos R100, for China’s basic healthcare market. In China Siemens also develops key components for medical imaging devices.

Siemens Shenzhen Magnetic Resonance Ltd. (SSMR), the biggest research & manufacturing center outside Siemens Magnetic Resonance (MR) headquarters in Germany, has the full capacity in developing and manufacturing the entire MR Imaging systems and key components. Siemens also set up a research & manufacturing base of Angiography Imaging (AX) and Component and Vacuum (CV) in Siemens MR centre. SSMR AX acts the role to produce the new Artis series products, and becomes an important research and innovation base for emerging markets. SSMR CV supports the customers with high quality, integrated electronic assemblies, subsystems and complex components.

Siemens developed a new X-ray tube dedicated to the locally rapidly growing digital radiography market after one and a half years’ developing, making it one of the fastest projects within global healthcare industry.
About Siemens in China:
Siemens AG, founded in 1847, is a global technology powerhouse active in more than 200 countries, focusing on the areas of electrification, automation and digitalization. One of the world’s largest producers of energy-efficient and resource-saving technologies, Siemens has leading positions in offshore wind turbine construction, combined cycle turbines for power generation, power transmission solutions, infrastructure solutions, automation, drive and software solutions, as well as medical imaging equipment and laboratory diagnostics. For more than 140 years since its entering into China in 1872, Siemens has pioneered cooperation with the country with its solutions, technologies and products, and has been known in the country for its quality and reliability, technological excellence and innovation. In Fiscal Year 2014 (October 1, 2013– September 30, 2014), Siemens generated revenue of €6.44 billion in China, with more than 32,000 employees. Siemens has become an integral part of the Chinese economy and society, and continues to partner with the country to address her pursuit of sustainable development.

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