SIEMENS

Case Study

Industry Sector
Building Technologies Division

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Siemens showcases integrated solutions for maximum business continuity and energy efficiency in Beijing data center

In September 2008, Siemens China opened its new Siemens' Center Beijing (SCB). Located in Wangjing in the Chaoyang District of Beijing, the cutting-edge and environmentally friendly 30-storey building, covering an area of 17,500m^2, is also the company's largest real-estate project worldwide. It houses the headquarters of Siemens China and partly consolidates the offices of local Siemens companies, subsidiaries and operating companies under one roof. It also includes the Beijing Data Center, the company's largest and most advanced data center in Asia, comprising 630 servers, 100 racks and covering 490m^2 of floor space.

Siemens, the leading provider for energy efficient, safe and secure buildings and building infrastructure, provided the technology to maximize the energy efficiency of its new HQ, optimize the management of its technical infrastructure, ensure maximum business continuity and enhance the comfort and safety of its occupants themselves.

Prof. Dr. Hermann Requardt, member of Siemens AG Managing Board said at the opening of the building: "With the opening of the new China head office, we have not only provided a brand new home to Siemens China employees in the SCB, but we have also reaffirmed our commitment to helping the long-term and sustainable development of China".

The immense development in China over the past few years has led to a large increase in demand for IT capacity. One of the main concerns of companies there too, who rely on IT systems to run their operations, is business continuity; if, for any reason, a system becomes unavailable, company activity may be impaired or brought to a complete halt. As a result, Siemens China decided to build the new data center to provide capacity, performance and assured continuity for both Siemens itself and external customers in China and throughout Asia. The new building is strategically important for Siemens, as it functions as the regional headquarters concentrating the infrastructures for the IT and voice services of more than seventy locations in China and Mongolia. The data center also provides computing and storage space for all of Siemens' Asian subsidiaries, along with a reliable infrastructure and a secure environment.

Siemens Schweiz AG
Industry Sector - Building Technologies Division
Gubelstrasse 22, 6301 Zug, Switzerland

Public and Press Relations: Marc von Ah
Telephone: +41 41 724-5617
E-mail: marc.vonah@siemens.com

The SCB was equipped with the company's own tailored fire safety and security solutions, amongst others integrating and managing fire detection and extinguishing, evacuation, access control, video surveillance and building automation systems. For no commercial organization today can afford breaches of its data security, disruption of its computer network or the loss of irreplaceable data. For some, even one or two hours of downtime can be not only financially crippling, but also very damaging for their reputation. Housing as they do such sensitive, vital information and systems essential to the survival of their clients, data centers therefore present a greater need for absolute protection whilst demonstrating a greater level of risk – especially when it comes to fire and security.

The electrical power and extensive cabling that drive the computer systems provide a constant potential source of ignition, particularly under the raised floors - and the many thousands of plastic components supply a plentiful source of combustible materials. In computing environments, a fire will typically start slowly with a long period of overheating and smoldering before ignition takes place. It is therefore essential that preventive and active fire protection is employed in such vulnerable locations.

The fire safety solution implemented by Siemens for the Beijing Data Center is based on extremely fast, very early and reliable smoke detection to detect any overheating before combustion occurs. The AlgoRex fire detection system comprises 57 integrated and centrally-monitored smoke detectors and 63 heat detectors. The smoke detectors provide early recognition and detection accuracy as they distinguish between genuine danger of combustion and deceptive phenomena. Aspirating detection, integrated on the same loop, provides rapid and reliable warning wherever high ventilation levels are likely to prevent any smoke reaching the detectors (as is the case in closed server racks, raised floors, ceilings, cable ducts, and air inputs/outputs). If any particles of combustion are found, a pre-alarm or a full alarm is triggered, depending on the smoke concentration and the application. Even a minimal smoke concentration can be identified unequivocally at an early stage of fire. When a pre-alarm is generated, it triggers a shutdown of the ventilation system to enable the smoke detectors to verify the alarm.

The fire control panel at the heart of the building's safety system offers a simple user-interface that allows operators to check the system status quickly either locally or by remote access. It is integrated with a video fire controller that is connected to the fire detection loop. On alarm, it provides live video image transmission for immediate event verification and analysis, thereby enabling the correct course of action to be taken. Pre-and post-alarm video footage can also be recorded for subsequent analysis and reporting In the event of a confirmed fire, the fire control panel converts the alarm into actions for alarm notification, evacuation and extinguishing: it is set to automatically shut down the ventilation and air-conditioning, disconnect power from the protected equipment and to activate the extinguishing process. Inert gas is released into the protected area after a defined pre-warning time. The extinguishing system is zoned and is independent of the

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systems for the main building.

For the security of the data center, Siemens' Building Technologies division installed a SiPass access control system that secures controlled areas through the use of access cards in conjunction with a personal identification number (PIN). Access through the main entrance is secured via man-traps, where access control with anti-passback functionality is used in conjunction with biometric systems (fingerprints, retinal scans, etc.). The Sipass system integrates with the video surveillance and intruder detection systems to provide optimal security. The video surveillance system includes a Sistore digital recording system from Siemens, combined with the IVM (Interactive Video Management) software. It provides live and recorded images from the four day/night dome cameras, 13 day/night cameras and eight fixed colour cameras installed inside and outside the data center, providing clear pictures even in very low lighting conditions. The IVM system combines the control, operation and visualization of all the video surveillance elements, thereby ensuring a quick access to all monitored areas and system components. Dual technology intrusion detectors are fitted in all rooms, providing additional protection for both data and equipment.

The fire safety and security systems are centrally managed and controlled through an MM8000 danger management station from Siemens. The system provides centralized supervision and handling of all safety and security alarms by enabling interaction between the different functionality, thereby supporting an efficient incident response at all times. For example, on confirmed fire alarm, access controlled doors are automatically unlocked to support a faster evacuation of the risk areas. Graphical maps enable a quick localization of the alarm as well as real time video monitoring of the danger zone, adjacent rooms and escape routes. By centralizing this information, the system gives operators the tools required to respond to events, trigger the appropriate actions following pre-defined procedures and allocate response resources efficiently.

The new, high-capacity Siemens' Center Beijing also incorporates intelligent building technology that lowers the building's energy consumption to around one third less than that of comparable Chinese buildings. As buildings currently contribute to 40% of the global energy consumption, the development, design and operation of the high-capacity SCB, are all ecologically oriented in order to create a facility with a favorable energy balance. In contrast to buildings featuring individual, 'green' IT strategies, the concept behind the SCB incorporates all of its infrastructures: design, fire safety, security, energy, water management, building engineering, communication and traffic. The building utilizes open-air cooling and low-energy lighting along with servers needing over 35% less energy.

Integration of all data from the building control, fire safety, security, lighting and power systems is through Apogee Insight - the building automation management station from Siemens. The open, multi-tasking architecture allows SBC's managers to collate information efficiently using open communications protocols. It provides the latest, easy-to-use, interface design to simplify the tasks

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which operators commonly perform, providing a graphical approach to manage and control the building.

Siemens' Center Beijing is indeed the perfect showcase for Siemens' integrated solutions. The building demonstrates the very real and obvious advantages of energy-efficiency and the many benefits of Siemens' integrated building systems in providing a pleasant, safe, secure and – above all - *controlled* working environment. But, in the future, it will be the security and reliability of IT environments that will determine any organization's continued success and ongoing longevity. For many Asian companies, critical business functions are now assured thanks to the services provided in the Beijing Data Center - just one example of many where Siemens has provided the solutions needed to guarantee the availability of important IT infrastructures.

In April 2010, the Siemens Beijing Data Center was given the "New Generation Data Center Award 2009" during the fifth annual Data Center World Conference 2010. The criteria of this award included 'Green Energy', 'Intelligentization', 'Security, Stability, & Availability'.

The **Siemens Industry Sector** (Erlangen, Germany) is the worldwide leading supplier of environmentally friendly production, transportation, building and lighting technologies. With integrated automation technologies and comprehensive industry-specific solutions, Siemens increases the productivity, efficiency and flexibility of its customers in the fields of industry and infrastructure. The Sector consists of six divisions: Building Technologies, Drive Technologies, Industry Automation, Industry Solutions, Mobility und Osram. With around 207,000 employees worldwide (September 30), Siemens Industry achieved in fiscal year 2009 total sales of approximately €35 billion. www.siemens.com/industry

The **Siemens Building Technologies Division** (Zug, Switzerland) is the world's leading provider of safe, secure and energy efficient solutions for buildings („Green Buildings") and building infrastructure. As a service provider, system integrator and product supplier Building Technologies offers building automation, HVAC, fire safety, security, electrical installation technology and low voltage power distribution. With around 43,000 employees worldwide (September 30), Building Technologies achieved a turnover of €7.0 billion in fiscal year 2009. www.siemens.com/buildingtechnologies

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