



**Singapore Technologies
Electronics Limited**

Large-Scale Systems Group
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Advancing Lifestyles



**Large-Scale
Systems Group**

Vision

To be a Global World-class System House
in Electronics Technologies

Mission

To deliver innovative and world-class
Systems Solutions in Intelligent Buildings,
Transportation and Defence Electronics
and create value for its stakeholders

Our Company

Singapore Technologies Electronics Limited (ST Elect) is one of the largest electronic system houses in the region specialising in the design, development and integration of advanced electronic systems for commercial, defence and industrial applications worldwide. Established in 1969, ST Elect has achieved a firm global presence covering mainly the Asia Pacific region, and marketing to more than 50 countries worldwide. Our expertise spans three business groups: Communication and Sensor Systems, Software Systems and Large-Scale Systems.

The Large-Scale Systems Group (LSG) is one of the three core

business groups of ST Elect. It specialises in world-class electronic systems for use in Transportation, Intelligent Building and Defence Electronics. Since our formation, LSG has served customers in high profile and diverse projects ranging from road traffic and rail transportation to high-rise buildings and airports.

Our knowledge and expertise in project management, as well as our technical know-how in operating domains, have equipped LSG with the capability to offer our customers innovative and seamless turnkey solutions. Working with our extensive network of partners, we deliver comprehensive and

integrated solutions that fully meet customers' requirements.

LSG is a global system house providing customers with an unsurpassed level of service. It leverages upon ST Elect's presence in Australia, China, Korea, Malaysia, Mexico, Philippines, Singapore, Taiwan, Thailand and the US, as well as its growing overseas ventures.



Our Philosophy

Being customer-oriented is the key to our success. We value our customers' interest and we strive to understand and fulfil their needs by rendering valuable and practical solutions that facilitate their businesses.

Aggressive research and development activities allow us to remain at the forefront of technological advancement whilst

benefiting customers with progressive solutions.

Our staff work as a cohesive team that is committed to building operational excellence and robust systems to serve our customers effectively.

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The image shows a control room environment. In the background, a large wall of monitors displays various industrial process diagrams, including piping and flowcharts. A digital clock at the top center shows 10:49. In the foreground, a person is seated at a desk, talking on a mobile phone. The desk has several computer monitors, a keyboard, and a telephone. The person is wearing a light-colored shirt and a watch. The overall scene suggests a professional setting focused on system integration and monitoring.

Integrated system solutions

LSG Business Solutions

TRANSPORTATION

As geographical, political and economic borders become blurred, transportation infrastructure has become a critical factor in a country's progress. With increased passenger capacity in airports, transit systems and expressways, it is vital to carefully plan a country's infrastructure. LSG is well placed to offer transportation systems that combine leading-edge technology, safety, comfort, speed and cost effectiveness.

Rail

For almost two decades, LSG has played a major role in the field of rail transit. In Singapore, we facilitate the smooth, efficient and safe operation of Mass Rapid Transit (MRT) and Light Rapid Transit (LRT) trains with our integrated solutions.

Our integrated Command, Control and Communication system allows for effective operation and maintenance management of MRT and LRT lines, whilst reducing life-cycle costs. This system is fully scalable and specified to customer

requirements. In addition, the system improves safety for both operators and commuters by providing for the handling of various types of incidents, including emergency response.

LSG was awarded a contract to supply Electrical & Mechanical Systems for the eagerly anticipated MRT Circle Line. The Circle Line will connect the eastern and western parts of Singapore directly to the northern suburbs, bypassing the city centre. LSG will provide the Communications and Integrated Supervisory Control Systems, Platform Screen Doors, Maintenance Management System, Access Management System and Traveller Information System.

Further away from home, LSG had installed the Communications System for Nankang/Panchiao Line in Taipei, Taiwan. This is a 15.9km MRT line that stretches over 17 underground stations and one depot. The Communications System facilitates the essential communication among

trains, stations, depot and operation control centre to ensure safe and efficient operations for the MRT network.

LSG was also involved in providing an electronic system package for the Manila LRT Line 2 project in the Philippines. This consists of a Communications System, Supervisory Control and Data Acquisition System, Automatic Fare Collection System and Management Information System.

LSG achieved another breakthrough recently when it secured a major contract to supply, install and commission platform screen door systems at 28 underground stations of the Kaohsiung Red and Orange MRT Lines in Taiwan. In a second contract for the Kaohsiung rail system, LSG will supply, install and commission the communications, supervisory control and data acquisition and access management systems for the two lines consisting of 38 stations and three depots.



Intelligent Transportation Systems (ITS)

Keeping roads safe and traffic flowing smoothly are the key objectives of the Intelligent Transportation Systems (ITS).

LSG has developed the Expressway Monitoring and Advisory System (EMAS), allowing motorists to be kept updated on traffic alerts and enabling them to make well-informed travel plans. EMAS was first implemented on the Singapore Central Expressway (CTE), helping to minimise congestion on this busy arterial highway. Thirty-five detection cameras and 12 surveillance cameras provide 24-hour monitoring along the entire 13.6km of the CTE. EMAS has since been rolled out to all the expressways in Singapore.

Our new Light Emitting Diodes (LED) Traffic Signal Lights which have been deployed throughout Singapore and in the region, increase safety for both motorists and pedestrians by eliminating the 'sun-phantom effect'. They give better visibility, consume less power and require less maintenance, making them a cost-effective solution for modern traffic control.

Airports

Efficiency and safety are paramount for airports and LSG offers a wide array of solutions to ensure that these objectives are met.

At Singapore Changi Airport, our Airfield Lighting Computer Control System (ALCCS) ensures the highest degree of safety by monitoring and controlling over 800 airfield lighting circuits, critically guiding the simultaneous movement of aircraft through the complex network of taxiways.

Our Flight Information Display Central System (FCS) at Singapore Changi Airport Terminals 1 and 2 provides fully automated flight and information displays to airport and airline personnel at both local

and remote locations. The system also supplies flight information to the various remote external systems via connections through secure networks.

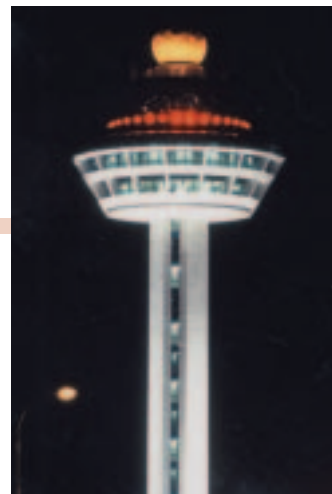
INTELLIGENT BUILDING MANAGEMENT SYSTEMS

LSG is the leading supplier of Intelligent Building Systems for commercial buildings, residential homes and schools. By integrating computer, communication and control technologies, we provide state-of-the-art devices and systems to provide for the comfort and convenience of occupants.

Intelligent Buildings

SecurNet ST8100, one of LSG's core products, is an Integrated Security Management System that has been

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installed in numerous public and commercial buildings and government complexes such as checkpoints, universities, MRT stations, prisons and rehabilitation centres. The Capital Tower, a premier 52-storey landmark intelligent office building located along Singapore's prime financial and business district, is one such installation. It embodies all major security system components in and around the building while maintaining full system integrity. In the light of the 911 event, SecurNet has emerged as a key product of the ST Elect's Homeland Security Solutions.

LSG is also a pioneer in offering solutions for building automation and controls. Enhanced with energy conservation tools, these solutions provide effective monitoring and control for clients like the world's best and most efficient airport – Singapore Changi Airport.

Outside Singapore, LSG has been very active in China over the past decade and has an impressive track record in building related projects. Our SecurNet ST8100 is recognised in the market as the leading supplier for security systems in museums.

LSG was awarded the contract to design and install the entire Intelligent Building Management System for the tallest building in China – Shanghai's Jin Mao Tower, an 88-storey complex. The Shanghai Museum, equipped with the best automation and security system, is a role model for the construction of modern museums in China. Our system provides heightened security and controls environmental conditions to safeguard the museum's priceless relics, treasures and artifacts.

Intelligent Homes

Sentinel 8X, LSG's home automation system, provides homeowners with the benefits of a modern, automated home. Appliances and home systems such as air-conditioning and lighting are fully automated, creating an environment of total comfort and convenience. Sentinel also incorporates a spectrum of home security features for added peace of mind. Stretching beyond the individual home, LSG provides integrated solutions that cater for the needs of intelligent townships. LSG has successfully completed several residential projects in China, namely Beijing, Nanjing, Tianjin and Chengdu.

Intelligent Schools

Schools are increasingly turning to technology as an innovative means to facilitate better quality and value-added education. LSG's intelligent school system offers integrated solutions to help schools reduce the amount of administrative tasks, leading to improved efficiency and reduced administrative workloads.

In Singapore, Balestier Hill Secondary School installed the "i-school" system to encourage an IT-based teaching and learning environment. The system benefits its teachers and 1,300 students, incorporating facilities booking, access control and security. It also allows students to purchase items from the cafeteria using contact-less smart cards – the same cards that are used to track students' attendance and even as fare-cards on public transport.

LSG brings to its customers a wealth of experience and expertise in the area of Intelligent Building Management Systems, be it security, comfort or special environmental controls.



DEFENCE ELECTRONICS

LSG provides integrated system solutions for naval and land applications to enhance the operational efficiencies of our defence customers.

Our solution incorporates system requirements and definitions, design and development, implementation, and integrated logistics services to ensure seamless integration of multi-disciplinary systems. We develop capabilities in system and product engineering and integrated logistics services.

System Engineering

In system engineering, we provide quality services in Combat Systems Integration (CSI), real-time software development, and design of advanced electronic systems for naval and land applications. Our involvement in major platform building and multi-CSI programmes cover the full spectrum of activities from front end studies, generation and translation of requirements into specifications, design and development, installation, test and evaluation of combat systems with the platform.

We started systems integration in 1985 as an integrator of Receive Only Systems. By 1988, we were undertaking complex CSI for a class of missile corvettes. To date, we have integrated Communications Relay Systems for a number of major naval, land and non-defence programmes.

Product Engineering

Our product engineering activities encompass the design and development, manufacture and support of electronic and mechatronic products for both defence and industrial markets, and the ruggedisation of commercial-off-the-shelf systems and subsystems. Products include the multi-function operator consoles in the naval and land platforms and gates for security and access control. Comprehensive CAD/CAE resources support the entire production cycle from prototyping to final delivery and site services.

Integrated Logistics Services

With more than three decades of experience in providing integrated logistics services, our integrated maintenance solution supports a wide range of advanced electronic

systems in naval combat and air defence arenas. This includes specialised areas of shipboard communications systems, radar and fire control systems, laser and electro-optical equipment amongst others. In addition, LSG provides preventive and corrective maintenance, system integration, checkout, installation and test, system engineering support and system upgrading.

We are partners to our customers in providing full operational support for naval and air defence bases in Singapore. Our maintenance activities have since extended to support airport systems in civilian applications.

Our capabilities are well supported by comprehensive world-class facilities such as the Instrument Calibration and the Automatic Test Equipment Centres that provide calibration and repair of test and measuring equipment, printed circuit board assembly and electronic modules.



At LSG, we push the limits of technology to improve the quality of daily living. With our integrated system solution, we have conquered transportation challenges, realised intelligent buildings and enhanced defence electronics – all for the purpose of advancing lifestyles.

Awards & Achievements

LSG is a core business group within Singapore Technologies Electronics Limited which is part of the Singapore Technologies Engineering Group that achieved the Singapore Quality Award in 2002 – the most prestigious award in Singapore for business excellence.

In recognition of our quality and safety standards, we have also been awarded the ISO 14001 for our Environmental Management System, the OHSAS18001 for our Occupational Health & Safety Management System and the ISO 9001:2000 for our Quality Management System.

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Cert No.: 92-1-0004
SS ISO 9001 : 2000



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SS ISO 14001 : 1996



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OHSAS 18001 : 1999

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