POWER DISTRIBUTION / POWER PROTECTION

SUNLIGHT

www.sunlightgroup.com

Contents

Corporate Profile

Sunlight Electrical was first established in 1970 as an electrical wiring company. Growing in strength, we diversified into LV Switchgear manufacturing in 1976.

As a testament to our dedication to technical excellence, Sunlight Electrical was awarded ISO9000 certification by the Productivity and Standards Board of Singapore (PSB) in 1997. That same year, the company further expanded and incorporated Sunlight Electrical (Vietnam) Co., Ltd.

In 2000, Sunlight Electrical basked in the distinction of being one of the very few local companies to successfully achieve ASTA 5000 ampere type-test certification. Sunlight therefore has a comprehensive range of ASTA type-test certifications and is eligible for participation in a wide spectrum of projects.

By 2000, Sunlight Electrical was listed on the Singapore Exchange. 2001 represented another corporate milestone, when German electronics giant Siemens enlisted Sunlight Electrical as a certified SIVACON technology partner to serve local needs with their versatile Low-Voltage Switchgear. As a certified partner with Siemens, we draw upon Siemens technology, extensive product range and technical expertise to complement our own solutions.

We believe, however, that the journey is just beginning so we continually seek ways to improve our products, services and customer satisfaction.

Our Mission and Pledge

Our Mission

Our Mission is to be a leading regional manufacturer of electrical switchgears by providing products with the highest level of technical excellence and reliability, coupled with responsive, flexible and cost-competitive service to ensure total customer satisfaction.

Our Pledge

We are customer-focused, emphasising:
technical excellence
flexibility
responsiveness
cost-competitiveness

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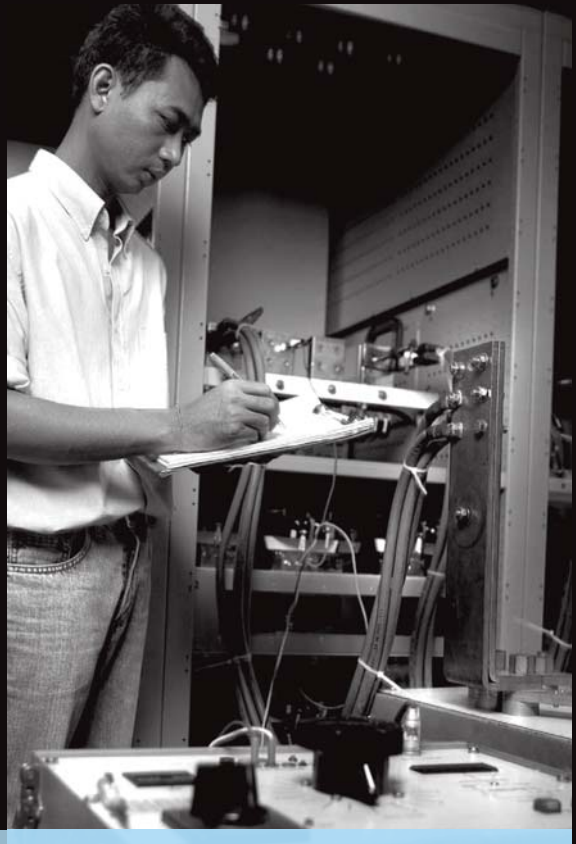
Reliability

With over 30 years of experience in the electrical industry, the Sunlight reputation has been built on reliability and value. We have successfully completed an extensive and diverse range of projects from both private and public, mechanical & electrical consulting engineers.

We attribute our reputation for reliability to a tightly controlled manufacturing process, switchgear designs that have been rigorously type-tested by ASTA (Association of Short Circuit Testing Authority based in UK) according to internationally recognised International Electrotechnical Commission (IEC) standards, and finally the use of quality components from internationally renowned manufacturers that comply with various technical specifications.

Our most distinctive recognition, however, comes from the fact that two thirds of our growing business is made up of repeat customers who are confident in our ability to deliver high standard products at competitive rates.

Management Philosophy



The secret behind Sunlight Electrical's success is our unique management philosophy comprising of a tri-focal approach.

Customer focus is the prime consideration for us. To this end, we provide tailor-made solutions optimised to suit the individual's needs and situation, responsive after-sales service, and an open management structure that allows for flexibility in servicing our customers. In addition, we provide on-time site testing and commissioning of products, and where required, we are able to provide a 24-hour standby service.

Naturally, it follows that a focus on quality is equally important throughout the process from design, fabrication, assembly, testing and commissioning, right up to service support.

Employee welfare & development is our third focus. Through an emphasis on staff training and career development as well as an open working environment, our customers are served by a team of dedicated professionals working cohesively and seamlessly.

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Technical Excellence

Sunlight Electrical's technical excellence and competency have been recognised in a few important ways. We have achieved a comprehensive range of ASTA type-test certification from 250A to 5000A which enables us to participate in most projects. We have also been awarded the ISO 9000 certification by the Productivity and Standards Board of Singapore (PSB). Committed to improvement, we continually seek ways to utilise technology and processes for product enhancement.

Green Message

Sunlight embarking on the road to protect the environment

Sunlight is one of the forerunners among the Singapore Panel builders to dedicate considerable resources towards protecting the environment.

All departments are actively involved in improving the environment management without compromising the technical excellence of Sunlight products by rationalizing:

a. The selection and usage of raw materials and components in the successful ASTA TYPE-TESTING in accordance to IEC 60439-1;
b. Preventing pollution, respecting water and air and reducing noise levels from production process;
c. Selection of packing materials; and
d. Reducing waste from certain processes.

Sunlight aims to guarantee maximum efficiency in technical and energy performance during service, control and reduce environmental impact in manufacturing to integrate into our overall switching, distribution and protection business.

Technology Partner

When German electronics giant Siemens enlisted Sunlight Electrical as a certified SIVACON technology partner to service local needs with their versatile Low-Voltage Switchgear in 2001, it was a corporate milestone that established a win-win partnership between both organisations.

As a certified partner with Siemens, we draw upon Siemens technology, extensive product range and technical expertise to complement our own solutions.

We collaborate with Siemens to produce SIVACON switchgears using Siemens components and within the specification. Switchgears are the lifeblood of buildings which control the distribution of electricity within the entire facility.

Throughout the collaboration, our engineers have successfully participated and completed several training sessions provided by Siemens in Singapore and Germany, for Siemens products, SIMARIS-SIVACON tools, quality assurance and as well as manufacturing process. We can definitely focus on manufacturing top quality switchboards that meet all specification requirements.

Facilities, Manufacturing Plant & Quality Assurance

Efficiency and quality are the hallmarks of our manufacturing plants. Equipped with state-of-the-art machinery for the entire switchboard fabrication process, our switchboard design has been refined to achieve its present full modular system.

CNC machines first shear, punch, cut and bend sheet metal to create frames, covers and sheet metal parts. These are then powder-coated with an in-house conveyorised electrostatic powder-coating system and assembled into panels for housing switches, busbars and other electrical components to form an electrical switchboard. To reduce computational errors, the specifications of the metal parts are pre-calculated and programmed before fabrication.

Over the years, the design has been enhanced to achieve improved rigidity, ease of assembly and efficient material usage in our switchboard assembly process.




Facilities, Manufacturing Plant & Quality Assurance

Pre-manufacturing
confirmation of final approved drawings
confirmation of approved components
confirmation of bill of quantity
confirmation of any other specific
instructions from client.

In-process
unassembled metal parts
structure / board assembly
component, equipment & accessory assembly
busbar & CT assembly
fibre covering
joints, bolts & screws

Post-manufacturing – in house
factory inspection
assembly, component & busbar sizes
switchgear dimensions busbar
connections electrical testing
insulation resistance test
in-house HV test
in-house primary injection test
in-house secondary injection test
function test

Post-manufacturing: prior to delivery
internal & external cleaning
danger signs
top angle bars
packaging
others

Post-manufacturing: at site
insulation resistance test
meggar HV withstand test
primary injection test
secondary injection test
all round inspection
PE report

Hero Products

Custom-design & fabrication of a full range of power distribution & protection equipment

Meter Board
Metal Enclosure Type

Meter Board
Thermoplastic - Sunmeter

Meter Board
Open Type

Consumer Unit
PVC 10Way

Consumer Unit
Concealed 16Way

Consumer Unit
PVC 16Way

Distribution Board
Double Door Metallic

Distribution Board
Single Door Metallic

MCB Pan Assembly Panel Board

MCCB Pan Assembly Panel Board

Sub Switchboard

Main Switchboard

Main/Sub-Main Switchboard

Hero Products

Control Panel

Coolroom Plant Control Panel

Sprinkler & Hosereel Pump Control Panel

Hosereel Pump Control Panel

Control Gear

Sprinkler Pump Control Panel

Fuel Pump Control Panel

Sprinkler & Hosereel Pump Control Panel

Chiller Control Panel/Main Air Conditioning Switchboard

Major Project References

Public Residential

2000
Bukit Panjang N6 C8

Consulting Engineer
HDB
Location
Bukit Panjang
Incoming Capacity
1 x 2000A

Private Residential

2000
Prince George's Park

Consulting Engineer
ST Architects & Engineers
Location
South Buona Vista Road
Incoming Capacity
3 x 2500A | 1 x 2000A | 2 x 1600A

Public Commercial

2002
Light Rail Train System

Consulting Engineer
LTA/ST Architects & Engineers
Location
Sengkang & Punggol New Towns (30 Stations)
Incoming Capacity
30 x 1600A

Private Commercial

2005
Infineon HQ

Consulting Engineer
Alpha Consulting
Location
Kallang
Incoming Capacity
3 x 5000A

Major Project Reference

Public Institutional

2001

Ministry of Home Affairs Complex

Consulting Engineer
PWD
Location
Irrawaddy Road
Incoming Capacity
3 x 3500A | 1 x 3000A | 4 x 1600A | 3 x 1000A

Public Institutional

2005

National Library Board

Consulting Engineer
Beca Cutter
Location
Bras Basah
Incoming Capacity
4 x 5000A | 1 x 2000A | 4 x 1600A & E1B System

Private Commercial

2001

Singapore Exchange Centre

Consulting Engineer
Parson Brinckerhoff
Location
Shenton Way
Incoming Capacity
4 x 3000A | 4 x 2500A

Private Commercial

2006

Vivo City

Consulting Engineer
Parson Brinckerhoff
Location
Harbour Front
Incoming Capacity
9 x 4000A | 12 x 1000A | 1 x 1600A

Significant Project References

Deep Tunnel Sewerage System (DTSS) – 2004 to 2006

1 The Deep Tunnel Sewerage System (DTSS) was conceived as a long term solution to meet the needs for used water collection, treatment and disposal to serve the development of Singapore through the 21st Century. This long term project, which will be implemented in phases, consists of two large, deep tunnels crisscrossing the island, two centralised water reclamation plants, deep sea outfalls and a link-sewer network. The 2 deep tunnels with diameters of up to 6 metres will be built at depths ranging from 20m to 50m metres below ground.

2 **Sunlight Electrical Pte Ltd** is currently undertaking 5 contracts of the first such deep tunnel i.e. Changi Water Reclamation Plant (CWRP). CWRP is a 800,000 cubic metres per day water reclamation plant with a 5 kilometres long sea outfall at Changi and some 50 kilometres of link-sewers.

3 Sunlight Electrical's five (5) contracts are:

a **C3C - Liquid Module 1**
The details of the panels supplied include: 2 nos. of 5000A; 14 nos. of 4000A; 2 nos. of 1600A; 2 nos. of 1000A; 4 nos. of 800A; 24 nos. of 630A; 3 nos. of 400A; 1 no. of 250A panels

b **C3D – Liquid Module 2**
The details of the panels supplied include: 8 nos. of 4000A; 13 nos. of 800A; 6 nos. of 600A panels

c **C4A – Non-Process Buildings, Civil & M&E Works**
The details of the panels supplied include: 1 no. of 1600A; 4 nos. of 1000A; 1 no. of 800A; 2 nos. of 500A; 1 no. of 250A panels

d **EP3 – Sludge Drying Systems**
The details of the panels supplied include: 4 nos. of 250A; 58 nos. of 160A; 10 nos. of 100A; 10 nos. of 63A panels

e **C5A – Monitor & Control Systems**
The details of the panels supplied include: 12 nos. of 100A; 19 nos. of 63A; 1 no. of 40A; 7 nos. of 32A panels

4 These contracts involve manufacturing and supplying Low Voltage Switchboards, Motor Control Centers (MCC), Auto-Transfer Switches System (ATS), Variable Speed Drive Panels (VFD) Distribution Boards (DB), Consumer Units (CU), etc.

5 As a licensed Siemens SIVACON technology partner, Sunlight Electrical works closely with the German company to manufacture and supply Siemens LV, withdrawal MCC, VFD and ATS panels, etc for these contracts.

6 As part of the project's requirements, the specifications called for a 65kA breaking capacity for MCCB panels. Hence, as a total solution provider, Sunlight Electrical develops the very first of its kind a series of high-performance vertical load centers for 40kA MCB Boards and 65kA MCCB Boards. These systems were awarded ASTA type-tested certification for successfully completing the testing sequence in Australia.

Significant Project References

Changi Airport Terminal 3 – 2004 to 2005

1 When it is opened in 2006, Terminal 3 will expand Singapore Changi Airport's annual capacity by 20 million passengers to 64 million. The S$1.5 billion ($882 million) project features the new terminal building as well as a new baggage handling facility, an automated people mover connecting the three terminals and 28 new aerobridge gates, of which eight will be able to handle the next generation of large aircraft, the Airbus A380.

2 The new Terminal 3 building was designed by CPG Corporation and will have a gross floor area of 430,000m². Spread over seven levels (of which three will be underground) the terminal will house 28 boarding gates and increase car parking by 1,800 spaces.

3 **Sunlight Electrical Pte Ltd** manufactures and supplies 3 contract packages, namely, power electrical switchgears, ACMV and the diesel generator packages. The electrical packages itself has about 16 nos. of 3200A main incomer panels, 34 nos. of 2500A main incomer panels, 110 nos. of 2000A main incomer panels and 1 no. of 1600A main incomer panel.

4. **Sunlight Electrical** works closely with the authorities and the consultants through the entire project development and progress supplying the panels with the following specifications:

Rated Assemblies	: From 1000A to 3200A;
Rated Insulation Voltage	: 690V;
Rated Impulse Withstand Voltage	: 6 kV;
Short Circuit Withstand	: up to 65kA rms for 3 seconds;
Degree of Protection	: IP43 (for Indoor Assemblies),
	: IP54 (for Outdoor Assemblies);
Pollution degree	: 3;
Ambient Temperature	: -5°C to +45°C;
Form of Separation	: Form 3;

Panels constructed and type tested to IEC 60439-1

Significant Project References

The Esplanade – Theatres On The Bay – 2001 - 2003

Esplanade - Theatres on the Bay is without a doubt, Singapore's most exciting performance arts venue to date. Located at the waterfront overlooking Marina Bay, the complex with its distinctive dome-shaped roofs comprises a 1,600-seat concert hall, a 2,000-seat theatre and several recital rooms, theatre and rehearsal studios, as well as outdoor performing spaces.

The structure work included the construction of the underground structure by excavating an area of 100m x 200m (17,400 sq.m.) to a depth of 11m. The main structure was constructed without the use of any struts in this work. It was made of reinforced concrete structure (Steel-structured at the roof), housing a total number of six (6) floors with two basement floors, a total site area of 60,000 square meters, a total building area of 22,932 square meters and a total floor area of 112,000 square meters.

Theatre Projects Consultants (TPC) was employed by Singapore Public Works Department. From the outset, TPC worked closely with Singapore performing arts organisations on planning and designing this cultural icon, uniquely blending Asian and Western inspiration. In this city with a multi-ethnic population that consists of Chinese, Malayan and Indian influences, the Centre had to be designed to cater for many different musical tastes and a variety of acoustic dimensions, such as speech, amplified and unamplified musical instruments.

Among the numerous distribution boards, **Sunlight Electrical Pte Ltd** manufactured and supplied 13 Main switchboards namely: 3 nos. of 3500A, 6 nos. of 3000A, 1 no. of 2000A, 1 no. of 1600A, 2 nos. of 1000A main incomer panels.

The main technical specifications of **Sunlight Electrical's** LV Switchboards for this project are:

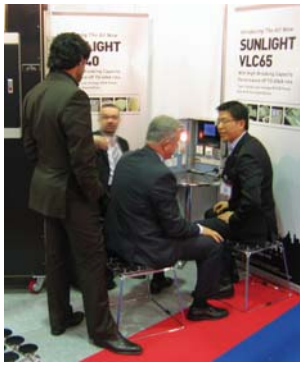
Rated Assemblies	: From 1000A to 4000A
Rated Insulation Voltage	: 690V
Rated Impulse Withstand Voltage	: 6 kV
Short Circuit Withstand	: up to 65kA rms for 3 seconds
Degree of Protection	: IP43 (for Indoor Assemblies) IP54 (for Outdoor Assemblies)
Pollution degree	: 3
Ambient Temperature	: -5°C to +45°C
Form of Separation	: Form 3 / 4

Panels constructed and type tested to IEC 60439-1

Overseas Marketing Initiative

Australia - Melbourne

Middle East



Vietnam - HCM

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