Our List of Services

Your One-Stop Partner For Testing, Inspection, Calibration Product Certification, Training & Consultancy Services.

SETSCO SERVICES PTE LTD
Business Registration No: 196900269D

Singapore (Headquarters)
SETSCO Services Pte Ltd
18 Teban Gardens Crescent
Singapore 608925
Tel: (65) 6566 7777
Fax: (65) 6566 7718
Enquiry: marketing@setsco.com
Website: www.setsco.com

Malaysia
SETSCO Services (M) Sdn Bhd
31, Jalan Industri Mas 12,
Taman Mas, 47100 Puchong
Selangor Darul Ehsan,
Malaysia
Tel: (603) 8052 6822 / 7822
Fax: (603) 8052 5822
Biological & Chemical Technology Division

Environmental Monitoring & Consultancy Services

Commercial / Light Industries
- Respirable dust / particles / microbes
- O3, CO, etc.
- Hazardous / toxic gases / vapours
- Heavy metals contaminants / Organic contaminants
- Relative humidity, temperature & lighting
- Noise & vibration
- Activity / Effluent compliance

Environment Assessment / Consultancy
- Conservation programmes
- Accidental discharge / spillage
- Environmental impact studies / Environmental Baseline Studies
- Health science services / Monitoring programme
- ISO 14001 EMS

Environmental Analysis
- Indoor Air Quality, Ambient Air monitoring
- Classroom Air monitoring (Class 10 & Class 100)
- Source emission or Stack emission
- Industrial Hygiene monitoring
- Hydrogen sulphide, mercaptans, ammonia in sewerage air
- Drinking Water, New water, RO Water, Trade
- Effluent, potable water, water storage tank cooling tower water, seawater, swimming pool water, ground water, industrial water, water for making concrete
- Volatile & Semi-Volatile Organic Compounds, Pesticides, PCBs, Toxaphene, Herbicides in water & soil
- Pharmaceuticals and Personal Care Products in Water
- Heavy metals in soil / sludge, soil contamination
- Toxicity characterising leaching procedure (TCLP)
- Odour measurement

Chemical & Microbiological Testing Services

Building Materials and Chemical Analysis
- Concrete, cement, sand, fly ash, silica fume, slag
- Refractory materials and Ceramics
- Polypropylene, Admixtures
- Soil Treatment Chemicals, Timber
- Metal & metal alloys (ferrous and nonferrous metals such as steel, cast iron, brass, bronze, aluminum alloy, etc)
- Asphalt products, bitumen
- Paint & coatings
- Tiles, Asbestos, Petroleum
- Metal Extraction of in-line and end of line products for use in contact with drinking water

Building Materials Testing (Microbiological)
- Asbestos / fungous resistance
- Toxicity evaluation of materials by tissue culture studies using Vero cells of African Green Monkey (PUB recommended SS 375 and BS 8250 Standard)

Food and Water Microbiology Analysis
- Indicator bacteria (Total Plate Count, Total coliform, Yeast and Mould Count, E. coli, E. aerogenes, etc)
- Pathogens testing (Salmonella spp, Vibrio spp, Campylobacter spp, Listeria spp, Shigella spp, Lactobacillus spp, Enterococcus spp, Pseudomonas aeruginosa, Escherichia coli, Salmonella / Shigella, Aeromonas, etc)
- Air and Surface Monitoring
- Legionella and standard plate count testing for cooling tower and water fountain

Food Chemistry Analysis
- Nutritional labelling
- Food contaminants (toxic metals, pesticides, etc)
- Determination of additives (colourings, alcohol, preservatives)
- 3 MCPD test for sauce and seasonings
- Vitamin A, Vitamin B1, Vitamin B2, Vitamin C
- Dietary Fibre
- Protein, Fat, Carbohydrate

Toxin Testing
- Alpha & Mycotoxin Testing
- Staphylococcal Enterotoxin Testing
- Bacillus Cereus, Diarrhoeal Enterotoxin Testing

Chemical Contaminants & Residue
- Antibiotics residues
- Antioxidants and preservatives
- Artificial Colouring
- Melamine
- Heavy metals
- Formaldehyde

Phthalates Tests in Food & Packaging
- Butyl benzyl phthalate (BBP)
- Butyl benzyloxyphthalate (BBP)
- Butyl benzyl phthalate (DBP)
- Butyl benzyl phthalate (DNP)
- Dimethyl phthalate (DMP)
- Diethyl phthalate (DEP)

Pharmaceutical/Medicinal Products Analysis
- Heavy metals (mercury, arsenic, lead, copper)
- Microbial limits
- Hygiene / sterility testing

Antibacterial Efficacy Studies
- Detergent, sanitizer

Food Hygiene Consultancy & Training Services
- Kitchen audits on food hygiene
- Food hygiene course (accredited by WDA)

Microcontamination Testing Services
- Ultrapure Water and Ultrapure Chemicals Testing
- Ultrapure water quality analysis in accordance with ASTM standard D5127
- ICP-MS for trace elemental analysis (34 elements)
- Ion chromatography (anions and cations)
- Assay for organic solvent
- Water content in organic solvent
- Total organic carbon (TOC)
- Total value (ppm)
- Total bacteria count (colony/100ml)
- Total particle counts (PAL)

Airborne Molecular Contaminants (AMC) and Surface Molecular Contaminants Analysis (SMC)
- Cleanroom air or gas analysis in accordance with ISO 14644-1 and SEMI standard F2-95
- AMC baseline studies: MA, MB, MC, MD & MM, etc.
- Determine the yield problem that correlates with AMC, their sources and effects on wafer
- Identity the AMC effects on wafers through witness water analysis
- Particle identification on wafer surface
- Material outsourcing analysis and evaluation by TD-GCMS

RoHS and REACH Compliance Tests
- Cadmium, Mercury, Lead, Chromium by ICP-OES
- Hexavalent Chromium by UV-VIS
- PBDEs and PBDEs by GCMS-MS
- Phthalates analysis
- Other Hazardous Substances
- REACH SVHC Items

Green Label Testing
- Volatile organic compounds (VOCs)
- Formaldehyde emission
- Heavy metals

Failure Analysis (Surface Analysis)
- Coating thickness measurement
- Electrical Testing by Curve Trace
- Non-destructive Failure Analysis by X-ray Imaging and G-Scanning Acoustic Microscope (G-SAM)
- Electromagnetic Failure Analysis by Decap and Cross section
- Surface Roughness Analysis by Atomic Force Microscope (AFM)
- Surface Analysis by SEM-EDX, FTIR, Focused Ion Beam (FIB), Transmission Electron Microscopy (TEM), TOF-SIMS, XRF and AUGER Electron Microscopy

Reliability Testing
- Temperature cycling, temperature humidity
- Vibration, shock & drop test
- Combined temperature, humidity with vibration test
- Highly accelerated life testing (HALT) and stress screening (HASS)

Micro-contamination Analysis for Microelectronic Devices
- Ion chromatography (anions, cations and organic acids)
- Non volatile residue (NVR)
- FTIR for silicon oil, phthalate and amines slip
- Liquid particle count (LPC & USLPC)
- Outgassing by static headspace (GMSD SHS)
- Outgassing by dynamic headspace (GMSD DHS)
- Particle analysis by SEM-EDX & Microscope FTIR
- Magnetic particle inspection (MPI)
- Electroless Nickel (EN) coating chemical composition by SEM-EDX
- Replacing film extraction of polishing deburring compounds
- Extractable metals (Cu & Sn) etc.

Cleanroom Consumables and Packaging Materials Testing
- Cleanroom gloves finger cots, wipes and jumboizu test kits as per IEST standards
- Ion chromatography (anions, cations and organic acids)
- Non-volatile residue (NVR)
- FTIR for silicon oil, phthalate and amides slip
- Liquid particle count normal extraction (LPC)
- Outgassing by static headspace (GMSD SHS)
- Outgassing by dynamic headspace (GMSD DHS)

Electrostatic Discharge Testing (ESD)
- Surface resistance / Volume resistance
- Static decay test
- Biohazard Electrostatic generation test
- ESD latch up tests, HBM & MM
- IC Assembly & packaging test
- ESD Garment
- Sleeve To Sleeve Resistance Test
- Point To Point Resistance Test
- ESD Stray Current
- Continuity Test and resistance Test
- Tuff Resistance Test
- Breakaway Force Test
- Connection Integrity
- Ground Cord Extensibility
- Bending Life Test
- ESD Work surface and Flooring Material
- Resistance-To-Static-resistant Point (Rg)
- Point To Point Resistance (Rr)
- ESD Foot Wear
- Resistance Test
**Construction Technology Division**

### Structural & Integrity Testing Services
- Surface hardness (rebound hammer) test
- Ultrasonic pulse velocity test
- Electromagnetic cover meter survey
- Penetration resistance (windo probe) test
- Half cell potential measurement
- Concrete resistivity measurement
- Impulse response test
- Impact echo test
- Surface penetration radar survey
- Infrared thermography inspection
- Fiberscope inspection
- In-situ carbonation test
- In-situ tensile pull-out and shear tests on structural fixtures and architectural finishes
- Sprayed fireproofing material compatibility test
- Crack monitoring (mechanical strain gauging)
- Temperature and strain monitoring of mass concrete casting
- Structural instrumentation and monitoring during full scale load test
- Visual inspection of buildings in collaboration with professional engineers and accredited checkers
- Third party quality assurance and quality control inspection
- Third party witness for household shelter air tightness test
- Structural investigation and appraisal
- Investigation of structural healthiness after fire incident / accidental impact
- Field inspection (optic scan) and testing of glass
- Water tightness test on windows, curtain walls, precast panel, etc.

### Geotechnical & Pavement Testing Services
- Laboratory soil test
- In-situ soil test
- Asphalt test
- Runway and pavement assessment
- Surface friction by Grip Tester
- Soil investigation & instrumentation
- Ground penetration radar survey
- Borohole radar survey
- Electrical resistivity by Werner probe method
- Vibration monitoring
- Noise monitoring

### Building & Material Consultancy Services
- Tiling failures
- Weathering of building stone
- Cracking/abating of glass
- Painting failure
- Debonding/cracking of flooring
- Concrete degradation
- Plastering failure
- Rising dampness treatment
- Materials consultancy
  - Materials selection
  - Failure analysis
  - Performance evaluation
  - Product research
- Ground engineering consultancy
- Structural appraisal consultancy
- Building performance consultancy
  - Built environment consultancy
  - Facade & building maintenance/upgrading consultancy
- Restoration & conservation consultancy
- Building Audit
  - Pre-acquisition due diligence
  - Periodic maintenance audit
  - Renovation/upgrading audit

### Building & Material Testing Services
- Microscopic Analysis
  - Aggregates
  - Concrete
  - Stones
  - Paint coatings (layers and thickness)
- Concrete (strength and durability)
- Fibre reinforced concrete (strength and toughness etc)
- Concrete admixtures (organic and mineral)
- Concrete products
  - Autoclaved aerated concrete (AAC)
  - Ferrocement slabs
  - Precast facade panels
  - Paver block
- Cement
  - Portland cement
  - Sulphate resistance cement
- Aggregates
  - Fine aggregates
  - Coarse aggregates
  - Plastering sand
- Reinforcing materials
- Stones (granite, marble, sandstone and slate)
- Rocks
- Ceramic tiles
  - Ceramic floor and wall tiles
  - Clay roofing tiles
  - Mosaic
  - Terrazzo
- Glass test
  - Surface edge stress
  - Surface compression stress
  - Fragmentation
  - Roller wave
  - Boiler test
  - Impact test
- Tile adhesive
- System testing
  - Water & air tightness test for building enclosure and blast-door household shelter
  - Water penetration test on wall/window joint components
  - Wall partition
  - Watertightness for blast door household shelter
- Tile grout
- Repair materials
  - Cement-based bonding aid
  - Polymer modified cement sand mortar
  - Non-shrinking cement grout
  - Epoxy mortar
  - Resin for injection
- Flooring
  - Floor hardener
  - Epoxy screeds
  - Waterproofing screeds
  - Self-leveling screeds
  - Floor screeds
- Waterproofing system
  - Integral waterproofing system
  - Cementitious waterproofing membrane
  - Water stops
  - Preformed membrane
  - Wood and timber
- Decorative finishes (skim coats & renders)
- Polymeric materials
  - Epoxy
  - Paintcoating
  - Sealant
  - Elastomeric waterproofing membrane
  - Plastic components
  - Fibre/carbon composites
  - Rubbers
- Geotextiles
- Mechanical fixings
  - Anchor bolts (chemical, expandable)
  - Cast in anchors
- Sports hall surfaces
  - Shock absorption
  - Vertical deformation
  - Vertical ball behaviour
  - Rolling load behaviour
- Friction test
- Playground inspection
- Playground testing
  - Impact attenuation
  - Ease of ignition
### Mechanical & Maintenance Testing Services
- Mechanical Testing (metals, polymer, timber, textile)
  - Hardness tests (Brinnell, Rockwell, Vickers, Micro-hardness)
  - Tensile, bend, shear, impact, compressive & flexural strength test
  - Creep, fatigue, wear, stress rupture, tear slip & life cycle strength test
- Hydrostatic pressure test & flow measurement
- Viscotest, heat distortion test & stress relief test
- Mechanical testing for welder and procedure qualification test sample.
- Endurance test
- Vibration test
- Compress air pressure test
- Moisture content measurement
- Aging test

### Calibration & Measurement Services
- Mass calibration (weighing balance, mass)
- Pressure calibration (pressure gauge, pressure chart recorder, transducer)
- Temperature calibration (thermometer, precision thermocouple, digital temperature display, oven, furnace)
- Dimension equipment calibration (gauge block, profile projector, small measuring tools, go and no-go gauge, thread ring / plug gauge)
- Thermo-hygrometer / graph calibration
- Environmental Chamber / Humidity Chamber calibration
- CMM Measurement Services
- Torque meter, torque wrench
- Electrical, electronic instrument calibration
- Sound level meter verification
- Hardness testing machine calibration
- Tachometer / extensometer calibration
- NDT gauges / equipment calibration
- Optical Instrument calibration
- Flow meter calibration

### Non-Destructive Testing Services
- Radiographic Testing
  - Weldments, castings, forgings & tubes
  - Pipelines, storage tanks & pressure vessels
  - Electronic, electrical & mechanical components
  - Structural steels
- Ultrasonic Testing
  - Flow detection in welds, castings, forgings, plates, bars, tubes and machine components
  - Thickness measurement
  - Material characteristic through acoustic attenuation
- Eddy Current Testing
  - Flow detection (crack, corrosion, de-bond)
  - Metal spraying / Electrical conductivity
  - Coating, plating, cladding and thin sheet thickness measurement
- Magnetic Particle Testing
  - Surface and subsurface discontinuities e.g. cracks, seams & inclusions on ferromagnetic materials
  - Monitoring service flaws in bars, forgings, weldments, shafts and components
- Liquid Penetran Testing
  - Surface discontinuities eg cracks, pinholes, laps and seams on non-porous and non-absorbing materials
  - Locating flaws in weldments, joints, tubings & castings

### Advance Non-Destructive Testing Services
- Eddy current testing of non ferrous air conditioning and heat exchanger tubes
- Flux leakage testing of ferrous boilers and heat exchanger tubes
- Remote field eddy current testing of ferrous tubes
- Positive material identification (PMI)
- NDT development and consultancy work
- Multi-sector advanced NDT techniques
- Storage tank inspection
- Internal Rotary Inspection System (IRIS) on tubings
- Remote video probe inspection
- Ultrasonic testing by time of flight diffraction (TOFD)
- Digital radiography

### Safety & Reliability Management (SRM) Services
- Safety & Reliability
  - Safety Management Systems
  - Training and workshops
  - Gas analysis and development of safety management processes
  - Procurement support and supplier evaluation
- Safety Engineering & Consultancy
  - Safety planning
  - Hazard analysis and risk assessment
  - Safety requirements and validation
  - Safety audits
  - Safety case development
- Independent Safety Assessment (ISA)
  - Electromagnetic Capability
    - EM management planning
    - Assessment of complex installations
    - Control Plans
    - Audits
    - Business process solutions
    - On Site Measurement
    - EMC & HIRF trials
    - Assessment and Certification
    - Surveys
    - EM Modelling
    - Radiation Hazard
- Engineering Consultancy Services
  - Plant and Equipment Condition Assessment
  - Forensic Engineering and Expert Witness
  - Materials and Design Consultancy
  - Power Engineering
    - Strategic Asset Management
    - Electrical Plant and Equipment
    - Rotating Plant
    - Gas and Steam Turbines
    - High Temperature Plant
    - Earing Systems
    - Lightning Protection Systems

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### Electrical & Electronics Services
- Household Appliances, Accessories, IT & Home Entertainment products
- Product testing & Batch Testing
- Hydrostatic pressure test & flow measurement
- International Approval for Safety, EMC & Radio Product
- Saudi Arabia Certificate of Conformity Application

### Aerospace Inspection Services
- Federal Aviation Administration (FAA) repair station for NDT
- Civil Aviation Authority of Singapore (CAAS) approval for NDT
- Approved Vendor by Pratt & Whitney Canada for Chip & Debris Analysis
- NADCAP accredited NDT inspection organisation for aerospace manufactured components

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**Ministry of Manpower approved Noise Monitoring Consultant**
### Quality Assurance Services

**Inspection & Expediting Services**
- Independent / 3rd party inspection agency
- Expediting & pre-shipment inspection
- Inspection survey of chiller & condenser water systems and suspended ceiling
- Failure analysis on industrial equipment
- Inspection of air and steam receivers as per MOM requirement
- Inspection of diesel storage tanks as per SCDF's requirement
- Inspection of portable storage tanks for transportation of petroleum and flammable materials
- Auditing of vendor quality system, facilities & personnel

- Consultancy on welding, quality control, assurance & testing/inspection
- Batch inspection & certification
- Qualification of welders & welding procedures
- Inhouse QA/QC personnel
- Risk based inspection
- Equipment/Plant life assessment
- Ministry of Manpower approved
- Inspection agency for survey of fabrication of piping
- Approved 3rd party inspection agency for lifting equipment
  - Design review and prototype testing of tower crane for type approval
- Inspection and assessment of mobile crane for the purpose of extending the service life

- Approved external test center for welding certification in the marine industries for lower levy conversion
- External auditor for schemes for extension of statutory inspection period of pressure vessels
  - API 575/570 authorized inspector
  - Building Construction Authority (BCA) & Singapore Welding Society (SWS) approved test center for welder
- ISO/IEC 17020 Accredited Inspection Services
  - Structural Steelworks
  - Pressure Vessels & Lifting Equipment
  - Central Alarm Monitoring Stations (CAMS)

### Training & Personnel Certification

#### Training Courses

**Non-Destructive Testing (NDT) Training Courses**
- Introduction to NDT
- Eddy Current Testing (ET) Level I & II
- Penetrant Testing (PT) Level I & II
- Magnetic Particle Testing (MT) Level I & II
- Radiographic Testing (RT) Level I & II
- Radiographic Film Interpretation (RFI)
- Radiation Safety (RSH)
- Ultrasonic Testing (UT) Level I & II
- Level III Refresher Course
- Thermography
- Advanced NDT
- Visual Testing Level II
- Phased Array Ultrasonic Testing
- Certified Coating Inspector Level I & II

SETSCO is a BS EN ISO 9001 certified PCN training center and approved by the British Institute for NDT (BINDT)

**Welding Technology Courses**
- American Welding Society (AWS) Certified Welding Inspector
- Visual Inspection of Welds
- Introductory Welding Metallurgy
- Metal Joining & Cutting Processes
- Safety in Welding & Cutting Processes
- Structural Welding Design

**American Petroleum Institute (API) Courses**
- API 510 Pressure Vessel Inspector
- API 570 Piping Inspector
- API 571 Supplemental Inspection
- API 653 Aboveground Storage Tank Inspector

**Food Safety Courses**
- WSG Food Hygiene Course
  (Accredited by Singapore Workforce Development Agency (WDA))

#### Short Courses

**Construction Technology**
- Non-structural cracks & crack repair methods
- NDT for concrete structures
- Self-leveling concrete
- Electro-chemical repair methods for concrete structures

**Structural Engineering**
- Design of pre-stressed concrete for buildings
- Lesson learnt from failure of concrete structures
- Structural cracks in buildings
- Strengthening of reinforced concrete structures

**Stainless Steel**
- Stainless steel for buildings & structures
- Stainless steel for water & wastewater industries
- Stainless steel for refining & petrochemical industries
- High performance stainless steel for chemical & process industries
- Material engineering workshop

**Other Training Courses**
- Heat Treatment
- Pressure Equipment Inspection
- Protective Coating Inspection

#### Certification Examinations

- NDT Employer based certification using SNT-TO-1A Level I, II & III in ET, MT, PT, RT & UT
- British Institute of NDT (BINDT) Personnel Certification for NDT (PCN)
- Level I, II & III for Aerospace (ET, MT, PT, RT & UT), Welds (RI, RT & UT) & Multi Sector (PT & MT)
- National Aerospace Standard (NAS) 410 Certification Level II, II & III for Aerospace (ET, MT, PT, RT & UT)
- Civil Aviation Authority of Singapore (CAAS) Practical Test for NDT personnel testing N11 (PT), N12 (MT), N13 (ET), N14 (RT) & N15 (RT) exam.
- American Society for NDT (ASNT) Level III
- AWS Certified Welding Inspector (CWI) & AWS Senior Certified Welding (SCW) Inspector
- API 510 Pressure Vessel Inspector
- API 570 Piping Inspector
- API 653 Above Ground Storage Tank Inspector
- Thermography Level I & II
### Ready-Mixed Concrete (RMC)
- Ready-Mixed Concrete (RMC)

### Fire Safety Products (FSP)

### Electrical & Electronics Products (EEP)
- Household appliances, accessories, IT & home entertainment products
- Product listing and batch testing
- International approval for Safety, EMC & Radio Product
- Saudi Arabia Certificate of Conformity Application

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## Our Credentials

**SETSCO** Services Pte Ltd is one of Singapore's largest test and inspection companies accredited by the Singapore Accreditation Council – Singapore Laboratory Accreditation Scheme (SAC-Singlas) to ISO/IEC 17025 as well as to Singapore Laboratory Accreditation (SAC) ISO/IEC 17020 and ISO/IEC Guide 65.

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<thead>
<tr>
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<tbody>
<tr>
<td>SAC-Singlas</td>
<td>Accredited Laboratory Scheme (ISO/IEC 17025)</td>
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<tr>
<td>SAC</td>
<td>Accredited Inspection Bodies Scheme (ISO/IEC 17020)</td>
</tr>
<tr>
<td>Nadcap</td>
<td>Accredited under National Aerospace and Defense Contractors Accreditation Program (NADCAP)</td>
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<tr>
<td>CERLabs</td>
<td>Singapore representative to the World Network of National Ceramic Laboratories (CERLAB)</td>
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<tr>
<td>WDA</td>
<td>Singapore Workplace Development Agency Approved Training Organisation</td>
</tr>
<tr>
<td>BNDT</td>
<td>Certified PCN Training Centre and Approved by the British Institute for NDT (BINDT) (BS EN ISO 9712:2001)</td>
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**NOTE**: The document contains information about various products and services, including fire safety products, electrical and electronics products, and laboratory accreditation schemes. The credentials section highlights SETSCO's accreditation and compliance with international standards.