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Our Vision
To be recognized by our customers as a
responsible leading essential chemicals producer with
• High standard in sustainable HSE
  performance through subscription to
  Responsible Care;
• Reliable and Responsive supply of
  sustainable quality products;
• Competitive cost, and
• Open, pro-active culture
to achieve profitability, sustainability and
growth.
PCS, at the forefront of the essential chemicals industry today, and in the future.

The Pioneer

PCS Pte. Ltd. (formerly known as Petrochemical Corporation of Singapore (Private) Limited) (PCS) is the pioneer of the essential chemicals industry in the region. In 1977, the Singapore Government and the Japan-Singapore Petrochemicals Co., Ltd., (JSPC), led by Sumitomo Chemical in collaboration with the Government of Japan and major Japanese companies, jointly established PCS. In February 1984, PCS put on stream the first full-fledged ethylene plant in Southeast Asia. In 1989, Shell Eastern Petroleum (Pte) Ltd took over the Singapore Government’s 50% share in PCS.

The present shareholders with equal equity share are (1) JSPC and (2) QPI and Shell Petrochemicals (Singapore) Pte. Ltd. (QSPS), which took over the shares of the Shell Eastern Petroleum (Pte) Ltd in 2009. And now, the Company with 2 plants of capacities totaling more than 1.8 million tonnes of ethylene and propylene spearheads its future growth to meet tomorrow’s needs of the people and society.

Corporate Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of incorporation</td>
<td>10th August 1977</td>
</tr>
<tr>
<td>Authorized capital</td>
<td>S$750 million</td>
</tr>
<tr>
<td>Paid-up capital</td>
<td>S$343.353 million</td>
</tr>
<tr>
<td>Number of Employees</td>
<td>410</td>
</tr>
<tr>
<td>Area of Site</td>
<td>175 hectares (Complex on Ayer Merbau)</td>
</tr>
<tr>
<td>Shareholding Ratio</td>
<td>Japan-Singapore Petrochemicals Company, Limited (50%) QPI and Shell Petrochemicals (Singapore) Pte. Ltd. (50%)</td>
</tr>
</tbody>
</table>
The Singapore Essential Chemicals Complex makes further inroads into regional and global markets.

**Strategic Location**

PCS is the centre company of the S$5.4 billion Singapore Essential Chemicals Complex on Jurong Island, the premier hub of Singapore’s energy and chemicals park. Our operations are fully integrated with the pipeline-customers and leverages on Jurong Island’s excellent infrastructure and facilities. Coupled with Singapore’s strategic location in Southeast Asia, supportive government policies and availability of skilled manpower, PCS is in a prime location to sustain and improve its competitive position as a regional leader in the essential chemicals industry.
Our State-of-the-Art Facilities

PCS’ ethylene plants incorporate the latest technology, allowing for the flexible use of naphtha, gasoil and LPG to achieve the most economical mix of feedstocks. Our other plants further optimise the value of all our product streams. The entire manufacturing operation is controlled by state-of-the-art process control systems. A comprehensive network of pipelines and storage tanks allows for a seamless flow of products to our customers on Jurong Island and beyond.

We also supply utilities such as seawater, steam, compressed air as well as provide common facilities and services such as berths, security and fire fighting services to ensure the efficient and safe operation of the Complex.

Manufacturing Capacity

PCS is recognised as a leading producer of ethylene and propylene, and other by-products in the region. The capacities of our two crackers together with our metathesis plant; total 1.1 million tonnes per year of ethylene, and more than 800,000 tonnes per year of propylene. We also produce acetylene, butadiene, 1-butene, MTBE, benzene, toluene and xylene. Products that are not consumed in the Complex are exported to the region.

With debottlenecking and additional facilities, including a 200,000 tonnes per year metathesis plant and a 100,000 tonnes per year butadiene plant, PCS’ manufacturing capacities have increased over the years. To further strengthen its infrastructure, a 240,000 m³ Naphtha Import Facilities were constructed. Additionally, a PCS/Shell joint-venture condensate splitter unit in Shell Bukom is another source of supply of PCS’ naphtha needs, via a five-kilometre long submarine pipeline. These investments further strengthen PCS’ competitiveness and provides increased flexibility to the Complex.

<table>
<thead>
<tr>
<th>Product</th>
<th>Plant I (Tonnes per year)</th>
<th>Plant II (Tonnes per year)</th>
<th>Total Capacities (Tonnes per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene</td>
<td>465,000</td>
<td>635,000</td>
<td>1,100,000</td>
</tr>
<tr>
<td>Propylene</td>
<td>270,000</td>
<td>375,000</td>
<td>645,000</td>
</tr>
<tr>
<td>Propylene (Metathesis)</td>
<td>-</td>
<td>200,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Butadiene</td>
<td>80,000</td>
<td>100,000</td>
<td>180,000</td>
</tr>
<tr>
<td>MTBE</td>
<td>-</td>
<td>140,000</td>
<td>140,000</td>
</tr>
<tr>
<td>1-Butene</td>
<td>-</td>
<td>63,000</td>
<td>63,000</td>
</tr>
<tr>
<td>Benzene</td>
<td>105,000</td>
<td>165,000</td>
<td>270,000</td>
</tr>
<tr>
<td>Toluene</td>
<td>55,000</td>
<td>90,000</td>
<td>145,000</td>
</tr>
<tr>
<td>Xylene</td>
<td>26,000</td>
<td>59,000</td>
<td>85,000</td>
</tr>
<tr>
<td>Acetylene</td>
<td>5,500</td>
<td>7,500</td>
<td>13,000</td>
</tr>
</tbody>
</table>
Our Greatest Asset

Our people are indeed one of the keys to our success. We believe that the excellence in skills and the commitment of our people make the Company grow and build up PCS to what it is today. Our benefits encompass systematic training and development schemes. And as PCS grows, our employees grow too. We offer job rotation, multi-skill training programmes, technical and management development courses aimed at building a highly motivated workforce.

At PCS, we believe in accountability and integrity, a shared responsibility in meeting our customer’s expectations. To achieve this, all our employees share in five core values:

**Teamwork**
Strong commitment to working together for mutual benefit and co-ordinated efforts.

**Integrity**
High ethical standards and business integrity, trustworthiness, dependability, and reliability.

**Professionalism**
Excellence in all aspects of individual’s and organisation’s performance.

**Innovation and Creativity**
Ability to come out with better ideas and solutions.

**Open Communication**
Recognising the diversity of nationalities working in our Company and the Complex, open and free exchange of views and ideas is valued.

Our people are given every opportunity to grow in their work, to upgrade their skills and acquire new knowledge.
Responsible HSE Care

At PCS, Health, Safety and Environment (HSE) issues are given top priority. We adopt stringent measures to improve and sustain the health and safety of every individual in our workforce, and strive for a best in class environment.

Our employees and contractors undergo regular comprehensive HSE training and participate actively in various HSE activities aimed towards achieving zero lost-time injury. We reach out to our customers on sharing of HSE best practices. Our workforce and customers benefit from this entrenched safety culture.

Our plants are designed to meet the stringent HSE requirements, with sophisticated safety systems to ensure process safety and monitor all parts of plant operations. Facilities and plants are well-equipped to treat solid, liquid and gaseous wastes. Our HSE Management System is independently assessed to be in line with international standards, obtaining the ISO 14001 Certification in January 2000 and OHSAS 18001 in November 2002.

PCS takes a serious view of process safety, having its own Process Safety Policy and tracking its own Process Safety Key Performance Indicators for continual improvement. On the environmental front, PCS is proactive in promoting greater consciousness and responsibility, and striving to reduce its carbon footprint.

PCS became the first enterprise to achieve certification to Singapore Standard SS 506 : Part 3 : 2006, accredited by Singapore Accreditation Council in December 2009. SS 506 Part 3 is an amalgamation of Process Safety elements and Occupational Safety and Health (OSH) elements into one integrated system.

PCS actively reaches out to industry and the public, specifically working closely with the Singapore Chemical Industry Council (SCIC) to promote HSE activities and share our experience and expertise. We also work closely with Workplace Safety and Health Council, as a bizSAFE Mentor, in helping companies build up their workplace safety and health capabilities.
Through the years, PCS has forged a close-knit rapport with the community which we belong. We give our support to various charitable programmes and projects. As a socially responsible corporate citizen, we dedicate ourselves to developing a mutually beneficial long-term relationship with our community.

**Our Contribution**

We are regular participants in Community Chest fund-raising activities for the underprivileged in the community. Together with our employee donations, we match dollar for dollar to the SHARE (Social Help Assisting Raised by Employees) programme.

In other areas of community relations, PCS is committed to the training of highly-qualified manpower for the industry. We offer scholarships to aspiring engineers and technicians at the local tertiary educational institutions. We also participate in internships and industrial attachments with these educational institutions.
The Complex scheme is characterized by the close inter-connected relationships at every level. PCS now serves more than 10 world-class essential chemicals pipeline-customers on Jurong Island in their production of essential chemicals products, such as, high/low-density polyethylene, polypropylene, styrene monomers, ethylene oxide, ethylene glycols, vinyl acetate monomers, acrylics, polyols, etc.

PCS is committed to providing a reliable supply of olefins, aromatics and other essential chemicals products as well as excellent supporting services for the efficient and safe operation of our customers. On Ayer Merbau, we have The Polyolefin Company (TPC), Chevron Phillips Singapore Chemicals (CPSC), Shell Singapore (SSPL), Denka Singapore (DSPL), Rohm and Haas Chemicals Singapore (RHCS), Ethoxylates Manufacturing (EMPL), Tetra Chemical Singapore (TCS), Mitsu Elastomers Singapore (MELS) and Sumitomo Chemical Asia (SCA) forming the integral part of the Singapore Essential Chemicals Complex, receiving feed stocks and utilities from PCS.

Product pipelines from PCS are also extended to Shell Chemicals Seraya (SCSL) and Denka Singapore (DSPL) on neighboring Seraya, to Singapore Methy Methacrylate (SMM), Singapore Acrylic (SAA), Celanese Singapore (CSPL), Ineos Phenols Singapore (IPS) and Mitsubishi Chemical Methacrylates Singapore (MCMS) on Sakra on Jurong Island.

PCS is also connected by pipelines to Singapore Refinery Company on Merlimau, ExxonMobil on Ayer Chawan, Shell Bukom and more recently Vopak Banyan Terminal for the LPG feed stocks.

In order to help strengthen the local essential chemicals industry’s competitiveness, PCS continues to seek opportunities to upgrade, integrate and synergise with neighbouring chemical companies to transform Jurong Island to a sustainable energy and chemicals park.
Scheme of Singapore Essential Chemicals Complex

**Centre Company**

PCS Pte. Ltd.

**Pipeline-Customers**

**Usage**

- **Chevron Philips Singapore Chemicals (Private) Limited (CPS)**
  - High Density Polyethylene (HDPE) 390,000
  - Injection Moulding, Film, Geomembrane and Pipe

- **Celanese Singapore Pte. Ltd. (CSP)**
  - Vinyl Acetate Monomer (VAM) 190,000
  - Water-based Paint, Emulsifier, Adhesive

- **Mitsui Chemical Methacrylate Singapore Pte. Ltd. (MCMS)**
  - Methyl Methacrylate Monomer 150,000
  - Coating and adhesives, etc.

- **Mitsui Chemicals Singapore Pte Ltd (MCS)**
  - Ethylene Butene Rubber (EBR) 35,000
  - Polypropylene (PP) 15,000
  - Film, Injection Moulding, Lamination, Cable, Pipe, Yarn, Fibre

- **The Polyethylene Company (Singapore) Pte Ltd (TPC)**
  - Low Density Polyethylene (LDPE) 250,000
  - Polypropylene (PP) 600,000
  - Resin Modifier (Films, Bottles, Automotive Parts), Flexible Moulding Material (Sports Goods), Food packaging

- **Shell Chemicals Saraya Pte Ltd. (SCS)**
  - Styrene Monomer (SM) 360,000
  - Polypropylene (PP) 150,000
  - Polypropylene Glycol 55,000

- **Singapore Acrylic Pte Ltd (SAA)**
  - Methyl Methacrylate Monomer 300,000
  - Food Containers, Home Electrical Appliances, Shrink Film, Packaging Materials, etc.

- **Ina Chemicals Singapore Pte Ltd. (IPS)**
  - Polyethylene 160,000
  - Paint, Adhesive, Disposible Diaper

- **Denka Singapore Private Limited (DSPL Saraya)**
  - General Purpose Polyethylene 200,000
  - Food Container, Home Electrical Appliances, Shrink Film, Packaging Materials, etc.

- **Boh and Haas Chemicals Singapore Pte Ltd. (BHCS)**
  - Methylenediacrylate-Styrene Butadiene Rubber Copolymer (MBS), 17,000
  - Processing Aids/Acrylic Impact Modifier (PA/AMI) 13,000

- **Sumitomo Chemical Asia Pte Ltd (SCA)**
  - Solution Styrene Butadiene Rubber (S-SBR) 40,000

- **Tetra Chemicals (Singapore) Pte Ltd. (TCS)**
  - Methyl Isobutyl (MIB) Ethers (MTE) 58,000
  - Octane Booster for Motor Gasoline

- **Singapore Methyl Methacrylate Pte. Ltd. (SMM)**
  - Methylmethacrylate Monomer 223,000
  - Cast MMA Sheet, Plastic Modifier, Paint, Adhesive

- **Denka Singapore Private Limited (DSPL)**
  - Acetylene Black 12,000
  - Dry Cell Battery, Electrical Conductive Rubber and Plastic

**E**-export market

Note: PCS' name plate capacities are based on 5-yr average.

**Unit: tonnes per year**
Jurong Island is being developed by the Singapore Government to serve as a world-class hub for the energy and chemicals industry. Since March 1995, intensive land reclamation had taken place to merge seven of Singapore’s southern islands, including Ayer Merbau, into a 3,200-hectare self-contained essential chemicals island. It is now home to more than 100 leading energy and chemical companies. More is expected as there is still room on Jurong Island for further expansion of Singapore’s chemical industry.

Jurong Island is now linked to the Singapore mainland by an eight-lane highway. Travelling time to and from the mainland via the road link is shortened considerably. This has helped to reduce transportation and operating costs.

PCS has a strategic location on Jurong Island. This has and will enable us to serve our current and future customers better.
As the Asian economies continues to grow, the essential chemicals industry remains one of the most dynamic in the world. With Asia’s large population base, demographic profile and changing lifestyle, the growth in demand for essential chemicals products is amongst the highest in the world.

Applications of essential chemicals products are widely spread across both the industrial and consumer fields:

- Household products: textiles, furniture fabrics, carpeting, paints, luggages, electrical appliances, kitchen accessories, detergents, etc.

- Transportation: automotive products such as polyester car and truck bodies, acrylic automobile finish coats, styrenic car bumpers, synthetic elastomers for tires, tire treads and hoses, vinyl seat covers, methacrylate traffic lights and road signs.

- Electronics: computers, digital hi-fi, audio-visual consumer products, and telecommunications/office equipment.

- Other industrial sectors: agriculture, packaging, building, medical and surgical equipment, parts and components.

With growing demand and changing markets, coupled with greater competition, PCS looks forward to continue playing a leading role in the industrial development and rise of living standards, and providing our customers a reliable source of cost-effective products in an environmentally and socially responsible manner.
### PCS Growth

<table>
<thead>
<tr>
<th>Month</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 1977</td>
<td>Incorporation of Petrochemical Corporation of Singapore (Private) Limited (PCS)</td>
</tr>
<tr>
<td>July 1980</td>
<td>Start of construction works of PCS on Pulau Ayer Merbau</td>
</tr>
<tr>
<td>February 1984</td>
<td>Start up of PCS I and its pipeline-customers: The Polyolefin Company (Singapore) Private Limited (TPC), Phillips Petroleum Singapore Chemicals (PPSC), and Denka Singapore (Private) Limited (DSPL)</td>
</tr>
<tr>
<td>February 1985</td>
<td>Startup of Ethylene Glycols (Singapore) Private Limited (EGS)</td>
</tr>
<tr>
<td>March 1985</td>
<td>Official Opening of PCS I as part of the Singapore Petrochemical Complex</td>
</tr>
<tr>
<td>March 1989</td>
<td>1st Debottlenecking of PCS I capacity</td>
</tr>
<tr>
<td>October 1989</td>
<td>Shell’s participation in PCS</td>
</tr>
<tr>
<td>October 1992</td>
<td>2nd Debottlenecking of PCS I capacity</td>
</tr>
<tr>
<td>December 1994</td>
<td>Ground Breaking Ceremony of PCS II and Complex II companies</td>
</tr>
<tr>
<td>April 1997</td>
<td>Start up of PCS II and additional pipeline-customers’ plants in Pulau Seraya and Pulau Sakra</td>
</tr>
<tr>
<td>December 1997</td>
<td>Official Opening of PCS II as part of Singapore Petrochemical Complex</td>
</tr>
<tr>
<td>July 1999</td>
<td>3rd Debottlenecking of PCS I capacity</td>
</tr>
<tr>
<td>January 2000</td>
<td>ISO 14001 certified</td>
</tr>
<tr>
<td>June 2000</td>
<td>Startup of Condensate Splitter Unit jointly owned with Shell Eastern Petroleum and constructed on Pulau Bukom</td>
</tr>
<tr>
<td>August 2001</td>
<td>Debottlenecking of PCS II capacity</td>
</tr>
<tr>
<td>December 2002</td>
<td>OHSAS 18001 certified</td>
</tr>
<tr>
<td>April 2003</td>
<td>Startup of Mitsui Elastomers Singapore Pte Ltd</td>
</tr>
<tr>
<td>April 2005</td>
<td>Ground-Breaking Ceremony of PCS Metathesis Plant</td>
</tr>
<tr>
<td>May 2006</td>
<td>Start-up of PCS Metathesis Plant</td>
</tr>
<tr>
<td>November 2006</td>
<td>Official Opening of PCS Metathesis Plant</td>
</tr>
<tr>
<td>November 2009</td>
<td>Start-up of Shell’s MEG Plant</td>
</tr>
<tr>
<td>December 2009</td>
<td>QPI and Shell Petrochemicals (Singapore) Pte. Ltd.’s participation in PCS</td>
</tr>
<tr>
<td>October 2012</td>
<td>Ground-Breaking Ceremony of PCS 2nd Butadiene Plant</td>
</tr>
<tr>
<td>May 2014</td>
<td>Start-up of PCS 2nd Butadiene Plant</td>
</tr>
<tr>
<td>October 2014</td>
<td>Official Opening of PCS 2nd Butadiene Plant</td>
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<tr>
<td>March 2016</td>
<td>Ground-Breaking Ceremony of PCS Naphtha Import Facilities</td>
</tr>
<tr>
<td>November 2017</td>
<td>Start-up of PCS Naphtha Import Facilities</td>
</tr>
<tr>
<td>March 2018</td>
<td>Official Opening of PCS Naphtha Import Facilities</td>
</tr>
</tbody>
</table>