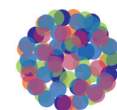


P10 PETROCHEMICALS

WHERE DID IT ALL START?



**CHEMICAL
INDUSTRIES**
RESOURCE PACK

Introduction

In the 1920s two German chemists, Franz Fischer and Hans Tropsch, developed a process to convert solid coal into a gas called synthesis gas or syngas. This process is called the Fischer-Tropsch process. Synthetic crude oil can be produced by combining syngas with hydrogen under high pressure and temperature. South Africa does not have natural deposits of crude oil and only limited deposits of natural gas near the Mossel Bay coast, but we have fossil fuel deposits in the form of vast coalfields. In the mid-20th century the industrial leaders in the country realised that if coal from these coalfields could be turned into petrol, diesel and oil, it would benefit South Africa greatly. It would help to industrialise the economy, create more jobs, reduce imports and save foreign currency, and make South Africa more self-sufficient and less vulnerable to war and other interruptions in the rest of the world.

In 1950 the government appointed a committee to investigate all options of producing petroleum from coal. The South African Coal, Oil and Gas Corporation Ltd., commonly known as Sasol, was established in September 1950 as a state-owned company. Etienne Rousseau was Sasol's first general manager and held the position for 18 years. He spearheaded the investigation into different options, and it was decided to use coal-to-oil technology based on the Fischer-Tropsch process.

Two types of plants were commissioned - the Kellogg reactors from the USA and the Arge reactors from Germany. The Kellogg reactors followed a high temperature process that produced petrol, light petroleum gas and a range of other smaller hydrocarbon molecules. The Arge process operated at lower temperature and produced larger molecules such as diesel, oils and lubricants, and waxes. The first Sasol plant was built in the Free State just south of the Vaal River. The town of Sasolburg was originally established to accommodate Sasol's workers. The plant produced its first petrol and other chemicals in 1955. In 1960 the National Petroleum Refiners of South Africa (Pty) Ltd., known as Natref, was established in Sasolburg. Imported crude oil is pumped from the coast and refined and cracked at Natref to produce petrol, diesel and other chemicals.

The next step was to exploit the various by-products from the synthetic fuels (synfuels) processes. The first chemicals to be manufactured were butadiene and styrene, (the feedstock for synthetic rubber), and ammonia for fertilisers. In 1973 the first oil crisis threatened supplies from the Middle-East and prompted Sasol to develop the Secunda mining operations and a second synfuels plant, called Sasol 2 in 1980. In 1982 Sasol 3 was built adjacent to Sasol 2. Sasol's Secunda plant still operates as one of the world's only commercial synthetic fuel-from-coal facilities.

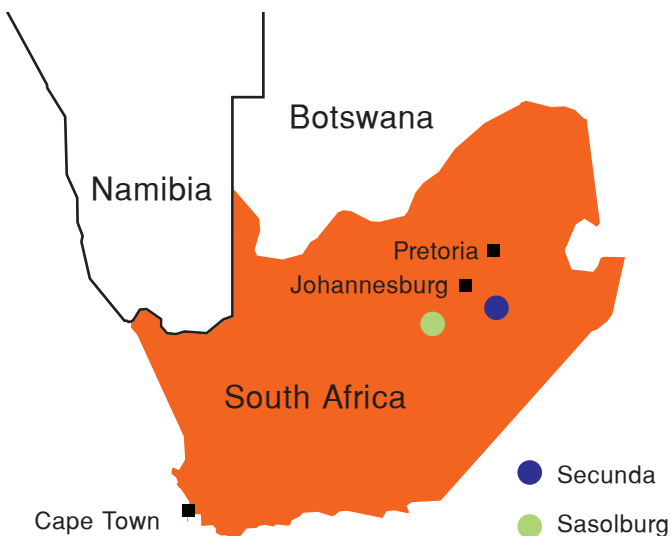
Alpha olefin plant



Source: Mind over Matter, www.sasol.com

Sasol

Sasol was listed on the JSE (Johannesburg Stock Exchange) in 1979 and on the NYSE (New York Stock Exchange) in 2003. In 1990 Sasol decided to go global and opened its first international office in Birmingham, United Kingdom. Today Sasol operates in more than 30 countries and is one of the largest industrial companies listed on the JSE. During 2004 Sasol started to extract natural gas from the Pande and Temane regions in Mozambique. This gas is piped to Secunda and Sasolburg for use in the SPD™ process. Recently a plant was also commissioned to produce high purity ethanol, n-butanol and ethyl acetate. Sasol has the largest liquid oxygen plant in the world. It produces 39 000 tonnes of oxygen per day for the gasification reactors, nitrogen for the ammonia plant, liquid nitrogen and liquid argon. Sasol Wax has factories in Sasolburg and Hamburg, Germany. It produces a diverse range of products including paraffin waxes, petroleum jelly, candle wax, wax crayons and floor polish. New innovative products include citrus fruit coatings and cheese coatings, chewing gum, lipstick and other cosmetics, skin and hand creams, packaging coatings and many others.



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Aircraft fuel threat

05/02/2008

Cape Town - The Airports Company of SA (ACSA) says it is monitoring supplies of aircraft fuel available

in Cape Town after a power outage last week caused a local refinery's aviation fuel plant to close down.

"As of today (Tuesday), we can confirm that we have seven days' worth of aviation fuel supply in Cape Town, which means that normal flight operations will not be affected for the time being," Cape Town's airport manager said.

The fuel consortium that supplied the airport was currently discussing the situation, and had undertaken to advise ACSA by Thursday morning at the latest of "what steps they have taken to restore fuel supply".

According to *Business Report* on Tuesday, the process of restarting the knocked-out refinery fuel plant takes seven days.

This news article was obtained from the website www.news24.com. Learners - if you use any part of it you need to write it in your own words and include the following in your reference list: News24.com. 2008. Aircraft fuel threat. [Online]. <http://www.news24.com/Economy/Aircraft-fuel-threat-20080205> [21 May 2010].

Sasol takes to the skies with the world's first fully synthetic jet fuel

21/09/2010

Lanseria, Johannesburg – Sasol, the world's leading producer of synthetic fuels from coal and natural gas, today flew the world's first passenger aircraft exclusively using the company's own-developed and internationally approved fully synthetic jet fuel.

The fuel, produced by Sasol's proprietary Coal to Liquids (CTL) process, is the world's only fully synthetic jet fuel to have received international approval as a commercial aviation turbine fuel.

Sanctioned by the global aviation fuel specification authorities the jet fuel is the first fully synthetic fuel to be approved for use in commercial airliners. This marks a significant development in the adoption of clean burning alternate fuels for the aviation industry. The engine-out emissions of Sasol's synthetic jet fuel, are lower than those from jet fuel derived from crude oil, due to its limited sulfur content.

This article was adapted from a media statement by Sasol Ltd on 21 September 2010. Learners - if you use any part of it you need to write it in your own words and include the following in your reference list. Sasol. 2010. Sasol takes to the skies with the world's first fully synthetic jet fuel. [Online]. Available: www.sasol.com [24 September 2010].