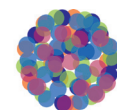


P9 PETROCHEMICALS

FISCHER-TROPSCH TECHNOLOGY CONTINUED



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A graphic representation of the Sasol Slurry Phase Distillate process, which employs unique technology that will be key in producing high-quality diesel

Source: www.sasol.com

Comparison between conventional diesel and Fischer-Tropsch diesel

	Conventional diesel	Fischer-Tropsch diesel
Sulfur content	500 ppm	< 5 ppm
Aromatics content	10 - 25 %	< 1,0 %
Cetane number	45 - 55	> 70

Slurry Phase Distillate (SPD™) process

The SPD™ process converts natural gas at a lower temperature than in the SAS™ reactors to yield linear hydrocarbon waxes and paraffins. The waxes and paraffins are reformed to produce mainly diesel.

Natural gas

Natural gas is typically a mixture of methane and ethane and may also contain propane, butane, pentane and other, heavier, hydrocarbons. Other gases are also found in natural gas, including nitrogen, carbon dioxide, hydrogen, hydrogen sulfide and rare gases like helium. The gas also contains water vapour.

A pipeline pumps natural gas from the Pande region of central Mozambique to Secunda and Sasolburg. The natural gas is first reformed to synthesis gas in two autothermal reformers. Methane in the natural gas is reacted with steam and oxygen over a catalyst and at high temperatures to produce synthesis gas, a mixture of carbon monoxide and hydrogen.

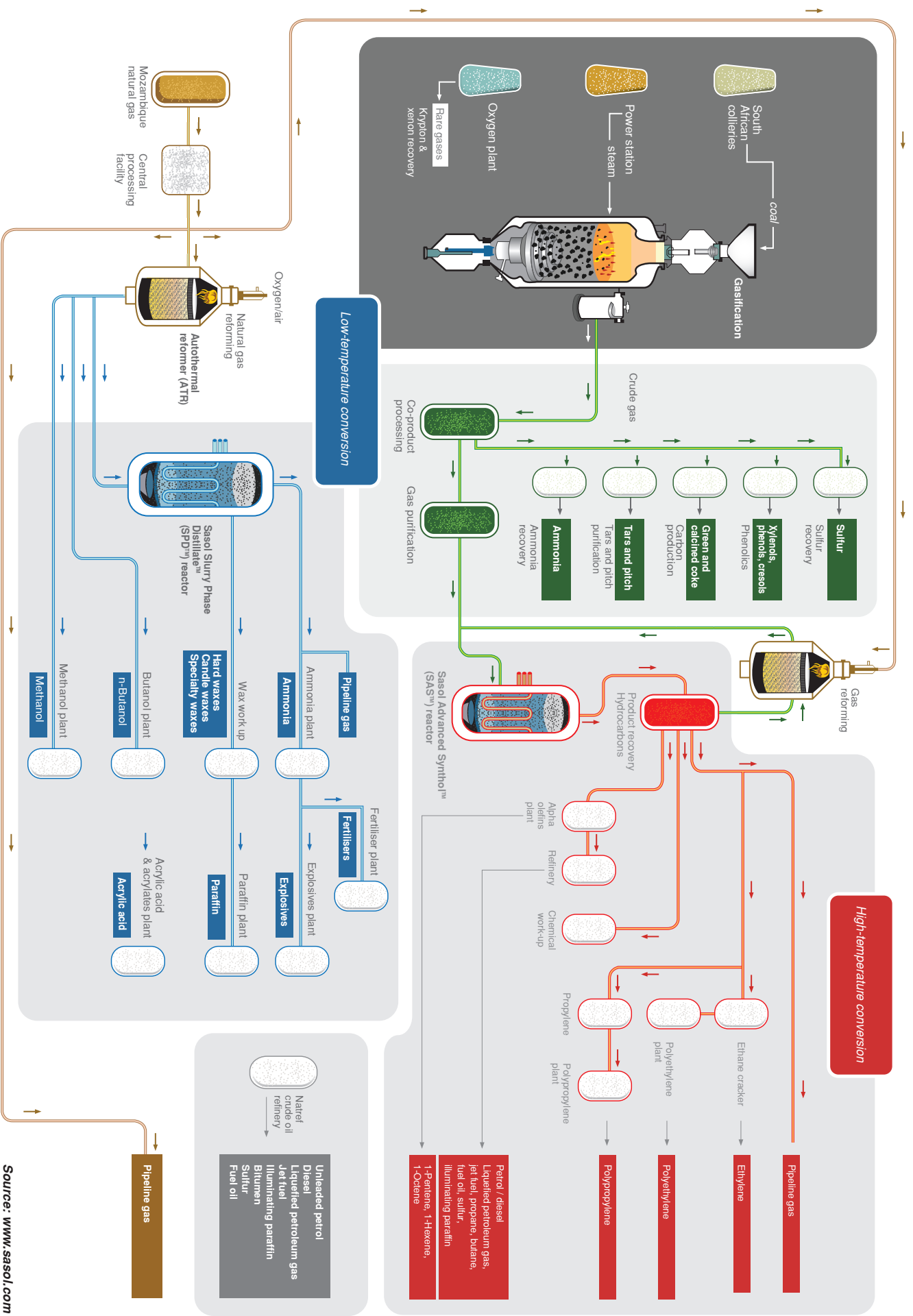
Conversion

The synthesis gas is converted in a low-temperature (220°C) Fischer-Tropsch synthesis process to produce intermediate hydrocarbons that contain mainly long-chained linear hydrocarbon waxes. These intermediate products are upgraded and refined through cracking and isomerisation to produce diesel, kerosene and naphtha. The synthesis gas is also used to produce methanol, butanol and other higher value compounds.

The diesel produced by the SPD™ process is of much higher quality than diesel derived from crude oil. It is virtually sulfur-free, has a high cetane number, low aromatics and good cold flow properties. Emission levels of hydrocarbons, carbon monoxide and particulates produced by SPD™ diesels are also much lower than conventional diesels. The table on the left shows the results produced by independent laboratory tests.

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Petrochemical processes in South Africa



Source: www.sasol.com