Gas turbine technology can address fugitive emissions in a creative, cost effective and sustainable way.

Fact Sheet

What Are Gas Turbines?

Gas turbine engines are the most efficient form of combustion-based engine technology. Originally developed for aerospace applications, they use natural gas and ambient air as fuel to create rotational power for generating electricity. Their flexibility and cost effectiveness has extended their use across many industries and technologies.

Gas turbines are:
- existing and proven technology
- the most cost effective energy generator available and
- they generate electricity with minimum NOx emission

Gas Turbines are manufactured by well known companies such as:
- ABB
- Honda
- Rolls Royce
- Alstom/Siemens
- Electricite de France
- Capstone

How are Gas Turbines Used Today?

The primary application for gas turbine engines is to generate electricity in cogeneration plants for energy efficiency, distributed power supply and peak load shaving. But, there is a growing market for secondary applications, in addition to the supply of electricity, including:
- cleaning up sour gases from oil and gas wells
- destruction of odours from landfill gas drainage systems
- burning VOCs (volatile organic compounds) released from industrial processes
- destroying odours from composting and biomass processing plants
- burning lean mixes of flammable gases in mines to reduce GHG impacts
- eliminating fumes from sewage treatment plants

Managing NOx

Gas turbine engines are the lowest generator of NOx of all combustion-based power systems. The latest generation of Capstone micro turbines have NOx emissions as low as 9 ppm.

Stack Management Systems (SMS) has been developing a number of technologies for managing NOx – both the NOx in the polluted air and the NOx in the exhaust of the turbines. A number of options are available and SMS will select the most appropriate technology based on the particular application.

Not withstanding emerging systems for NOx clean up with gas turbines, **SMS Technology** can be very effectively combined with conventional catalytic systems for NOx removal where the elevated temperature of exhaust gases from the turbines will improve the catalytic scrubber action, delivering superior performance over traditional installations.

SMS TECHNOLOGY

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Managing Heat

Waste heat from gas turbine exhaust is a bonus that can be productively and beneficially harnessed in applications such as:

- generating additional electricity
- heating and cooling applications in and around the plant or factory
- providing steam and hot water to industrial premises nearby
- raising the temperature of exhaust air before discharge to atmosphere
- improving the performance of catalytic NOx scrubbers

The temperature of heated exhaust air discharged to atmosphere will be controlled to obtain efficient dispersion with minimum disruption to the ambient air temperature.

How Do Gas Turbine Engines Work?

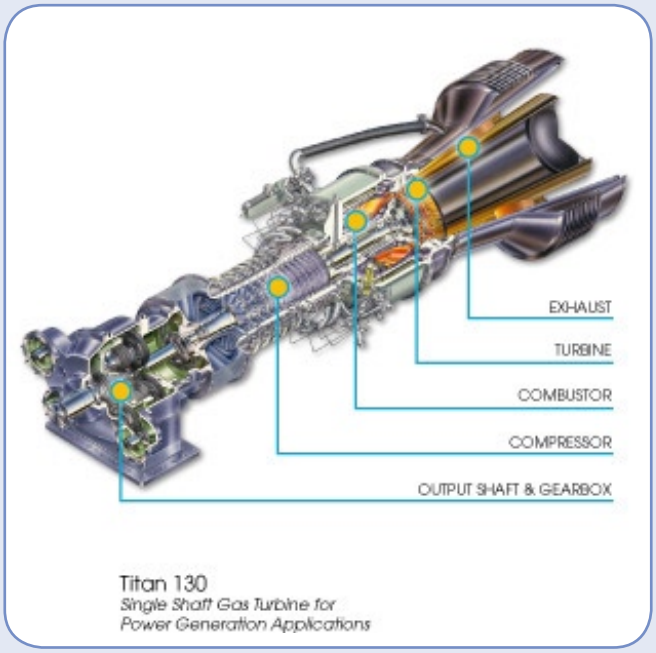
The **compressor** takes in outside air and then compacts and pressurizes the air molecules through a series of rotating and stationary compressor blades.

In the **combustor**, fuel is added to the pressurized air molecules and ignited. The heated molecules expand and move at high velocity into the turbine.

The **turbine** converts the energy from the high velocity gas into useful rotational power through expansion of the heated compressed gas over a series of turbine rotor blades. Rotational power from the turbine is delivered to driven equipment such as an electricity generator.

The engine's **exhaust** directs the spent gas out of the turbine and into the atmosphere.

The residual thermal energy in the hot exhaust gas can be harnessed for a variety of industrial processes.



Titan 130
Single Shaft Gas Turbine for Power Generation Applications

Benefits from Using SMS Gas Turbines Technology

Human Health and Environment

- Reduces the total pollutant load
- Cleans both particulate and gaseous pollutants
- Heats exhaust air to improve dispersion
- Reduces greenhouse gas impacts

Tunnel Operations

- Cleans air progressively along the tunnel route
- Reduces the total amount of air required for ventilation
- Reduces the toxicity of the tunnel air pollutants
- Allows tunnels to continue as the best road solution for congested cities

Economic

- Generates electricity to offset costs
- Pays for itself within a relatively short timeframe

For further information

SMS: www.smsventilation.com • Mobile: 61 412 500 702

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