As gas grids expand and emission levels continue to tighten, conversion to natural gas is an increasingly viable alternative for power plants. Wärtsilä engines are flexible and easily adapted to using gas as a primary fuel, helping to cut operational costs and exhaust gas emissions while increasing fuel flexibility.

**TECHNICAL CONCEPT**

As natural gas is both attractively priced and efficient, converting an existing engine to operate on gas offers significant economic and environmental benefits. Wärtsilä offers the following conversion options:

**Spark-ignited (SG) gas-only engines** are lean-burn otto cycle engines where the gas is mixed with air before entering the inlet valves. These pure gas engines enable the highest plant efficiency after conversion.

**Dual-fuel (DF) engines** are capable of burning most fuels – including heavy fuel oil (HFO), light fuel oil (LFO) and natural gas – and use a lean-burn otto combustion process when operating in gas mode. This is the best option when you want to achieve high efficiency while still being able to use HFO or LFO as a backup fuel.

**KEY BENEFITS**

A Wärtsilä power plant gas conversion maximises fuel efficiency while reducing your environmental footprint:

- Optimise OPEX by reducing fuel and lube oil use and cutting maintenance costs
- Reduce exhaust gas emissions
- Cut operational costs
- Increase operational flexibility
- Extend lifetime of the installation
Gas-diesel (GD) engines can run on HFO, LFO, crude, natural gas and associated gas and use the diesel combustion process in all operational modes. In gas mode, the gas is injected at high pressure after the pilot fuel and is ignited by the flame from the pilot fuel injection. This multifuel alternative is most suitable for gas/oil fields when running on associated gas.

CONVERSION OPTIONS
All conversion options involve modifications to engines, electrical and automation systems and mechanical auxiliary systems. A Wärtsilä gas conversion of an existing power plant is not just about the engine conversion – it follows the same principles as any new-build plant constructed by Wärtsilä, meaning all aspects, from safety to operational reliability, are taken into account:

Engine conversion covers elements like the turbo chargers and charge air coolers, piping and valves, cylinder heads, pistons, connecting rods and camshafts.

Mechanical auxiliary system upgrades include modifications to the safety vents, exhaust gas ventilation unit, cooling water system and gas-regulating unit.

Electrical and automation system upgrades include changes to the engine control system, WOIS and WISE HMI systems, and LV switchgear.