SPILLING GAS EXPANSION ENGINES

TURN GAS PRESSURE DIFFERENCES INTO POWER.

GAS EXPANSION ENGINES

... are ideal as power production units in pressure reducing stations with large fluctuations in pressure and flow rates thanks to their large operational range and constantly high efficiency.

GAS EXPANSION ENGINES

THE HIGHEST DEGREE OF UTILISATION.

Natural gas is compressed to high pressure in order to be able to transport it over long distances. Generally, however, customers need gas at much lower pressure so that it is reduced to the desired pressure in gas transfer stations.

Gas expansion units use the pressure difference between natural gas transport networks and distribution systems and/or consumers to extract mechanical and electrical power. Gas expansion engines are, however, also suitable for use with gases other than natural gas.

Gas expansion units are the just right kind of power plant for producing power with the highest efficiency. With good reason, for the additional energy required for expansion for preheating in Spilling gas expansion engines is converted almost 100 % into electricity depending on the type of unit. This means that efficiency is significantly higher than that of the most modern gas and steam power plants.

EXCELLENT EFFICIENCY ALSO UNDER PART LOAD

Depending on the prevailing gas pressure ratio, the Spilling gas expansion engine permits optimum exploitation of the available expansion energy with one- or multi-stage expansion.

The outstanding part load performance of the Spilling gas expansion engine is achieved by means of the Spilling charge control. It allows operation across a large performance range almost without throttle losses and thus guarantees a largely constant degree of efficiency.

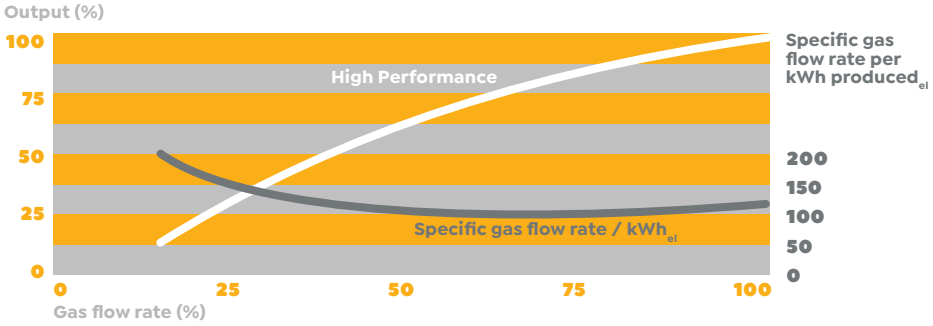
POSSIBLE USES

- As from a gas flow rate of 5,000 Nm^3/h
- Due to its design features and thermodynamic properties our engine is also highly suitable for units with variable volume flows or pressure ratios for natural gas and other gaseous media

AREAS OF USE

- Gas transfer stations and gas storage tanks
  - › Gas supply companies
  - › Industrial companies with high-pressure connections

TYPICAL OUTPUT AND CONSUMPTION CURVE



POWER GENERATION ESTIMATE

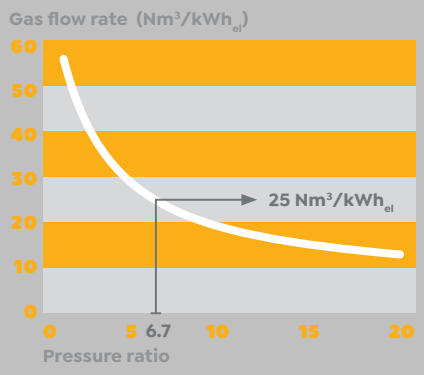
SAMPLE CALCULATION

1. Calculation of pressure ratio

$$\frac{\text{Inlet pressure } \mathbf{40\ bara}}{\text{Outlet pressure } \mathbf{6\ bara}} = 6.7$$

2. Power supply calculation

$$\frac{\text{Gas volume (available on site) } \mathbf{35{,}000\ Nm^3/h}}{\mathbf{25\ Nm^3/kWh_{el}}\ \text{Gas flow rate (from diagram)}} = 1{,}400\ \mathbf{kW_{el}}$$



A LARGE ELECTRICAL OUTPUT CAN BE PRODUCED, DEPENDING ON THE PRESSURE RATIO AND GAS FLOW RATE

BENEFITS

- High efficiency, also under part load
- Good part load behaviour meaning broad areas of use
- Robust, proven technology and low operating costs
- High availability & safe, simple operation
- Also ideal as a contracting solution
- Production of CO_2-free electricity through using waste heat to pre-heat gas
- Individual tailor-made customer solutions
- Compliant with the relevant standards (DVGW, PED, ATEX, etc.)

TECHNICAL DATA

- Gas flow rates: from 5,000 to 100,000 Nm^3/h
- Output: approx. 250 to 3,000 kW
- Inlet pressure: From 6 to approx. 60 barg
- Outlet pressures: from 50 mbarg to 25 barg

USING ENERGY FROM PRESSURE DIFFERENCES

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