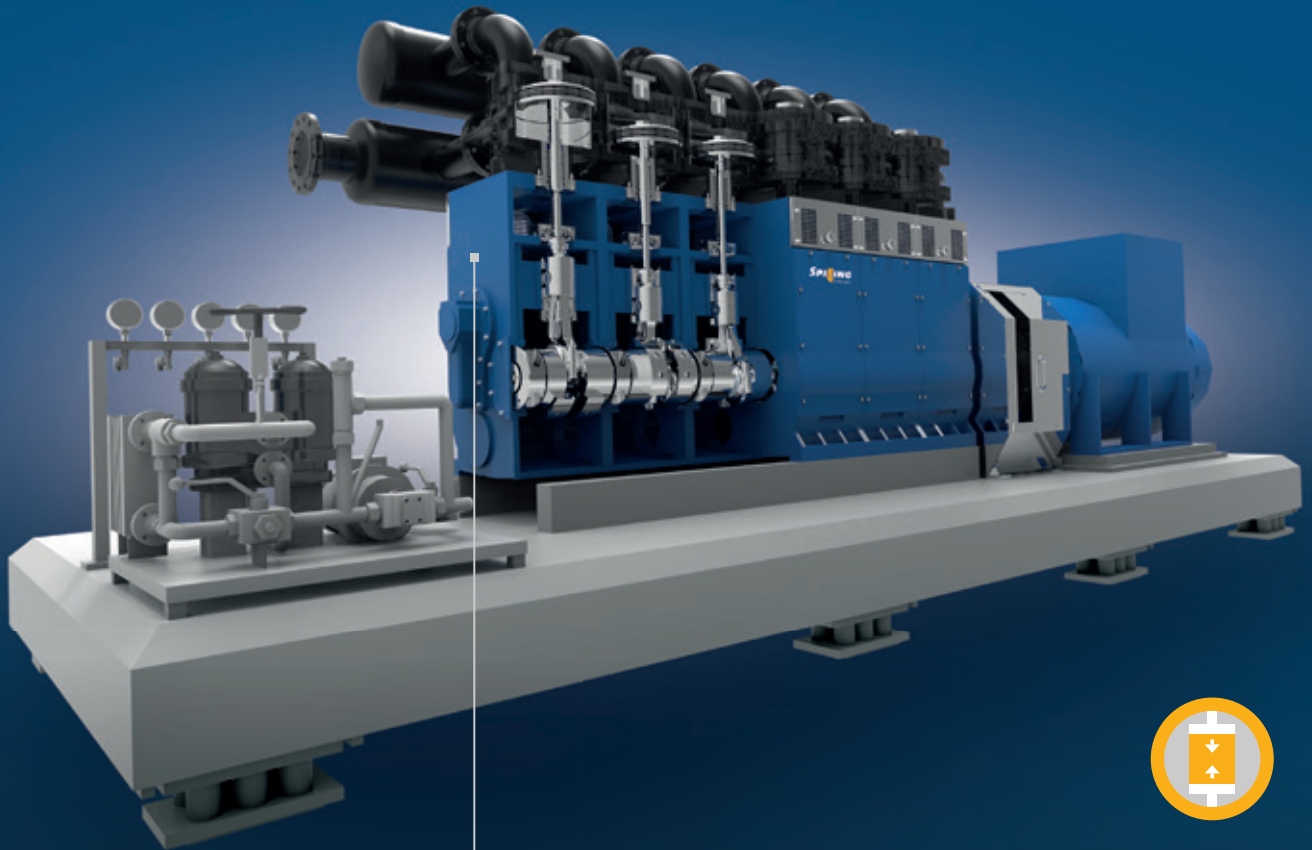




SPILLING STEAM COMPRESSION/STEAM RECYCLING

STEAM RECYCLING WITH POWER-TO-STEAM PROCESS STEAM.



STEAM COMPRESSORS

... make low-pressure steam usable for your processes and recycle surplus steam.

STEAM COMPRESSION/STEAM RECYCLING

USE POWER-TO-STEAM LOW-PRESSURE STEAM AS PROCESS STEAM.

Existing steam can be raised to a higher pressure level by means of mechanical steam compression. Whether it is by compressing currently unusable low-pressure steam or waste/excess steam from production.

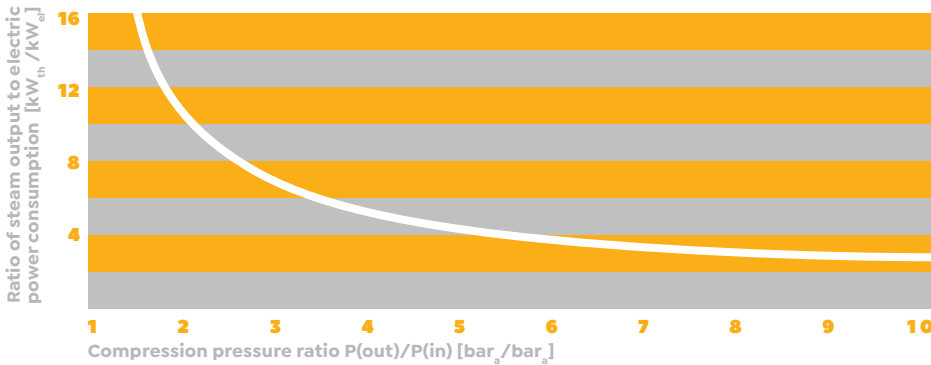
Higher pressure steam is provided by a Spilling steam piston compressor, which is usually driven by an electric motor. This means that the steam supply is generated without the further use of fossil fuels and in addition to the increase in the efficiency of the steam supply also contributes to a significant reduction of CO₂.

Steam recycling leads to greater energy efficiency through sustainable steam generation, especially in times of increasing reliance on fossil fuels in modern industry.

HIGHLY ECONOMICAL

The high efficiency of our steam compression solution lies mainly in the fact that the latent heat already contained in the low-pressure steam (applied evaporation energy) can be used and does not have to be generated again for the high-pressure steam. This saves energy in steam generation to a significant degree.

The electrical energy required for compression depends on the pressure ratio, i.e. the ratio between the existing pressure level of the district heating supply and the required steam pressure at the customer's site. The lower this ratio, the less electrical energy needs to be used. This means that, at a compression ratio of factor 2, it can supply up to 11 times the thermal energy per unit of electric energy used. In practice, compression ratios of factor 6 up to factor 9 can be effectively reproduced.



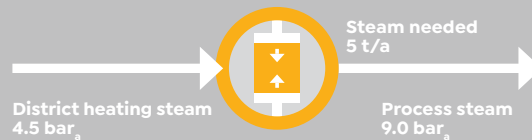
ADVANTAGES

- High level of efficiency and economically attractive solution for providing steam
- Efficient use of previously unused steam energy
- Significant CO₂ reduction compared to fossil fuel steam production
- Integration of steam production into integrated energy solutions
- Also ideal as a contracting solution
- High degree of availability & easy to use
- Robust design & low operating costs

PRACTICAL EXAMPLES

USING LOW-PRESSURE STEAM

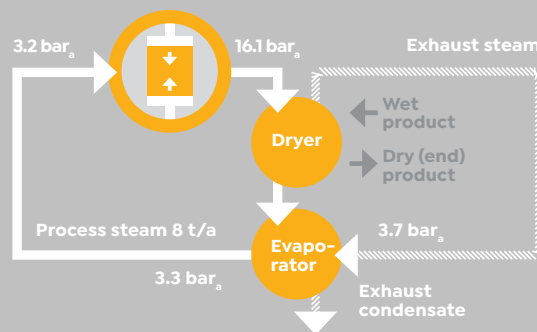
The needed process steam for a company in the beverage industry is provided via a connection to the existing district heating network by means of a Spilling steam compressor.



**> 50 % COST SAVINGS
UP TO 5,600 t/a CO₂* REDUCTION**

RECYCLE WASTE STEAM

For a company in the paper industry, the residual steam produced in the drying process is used via an evaporator to vaporise the condensate from the steam drying process again and to raise it to the required process steam level by means of a Spilling steam compressor. As a result, the need for fossil fuel steam generation for the drying processes is completely eliminated.



**> 20 % COST SAVINGS
UP TO 8,900 t/a CO₂* REDUCTION**

TECHNICAL DATA

- Inlet pressures: ≥ 1 bar(g)
- Final compression pressures: up to approx. 60 bar_g
- Steam mass flows: approx. 1 to 20 t/h



**STEAM RECYCLING –
MADE BY SPILLING**

* When using electricity from renewable sources compared to conventional steam generation using natural gas



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