

Mallow Natural Gas Compressor Station

Climate-friendly Gas Supply

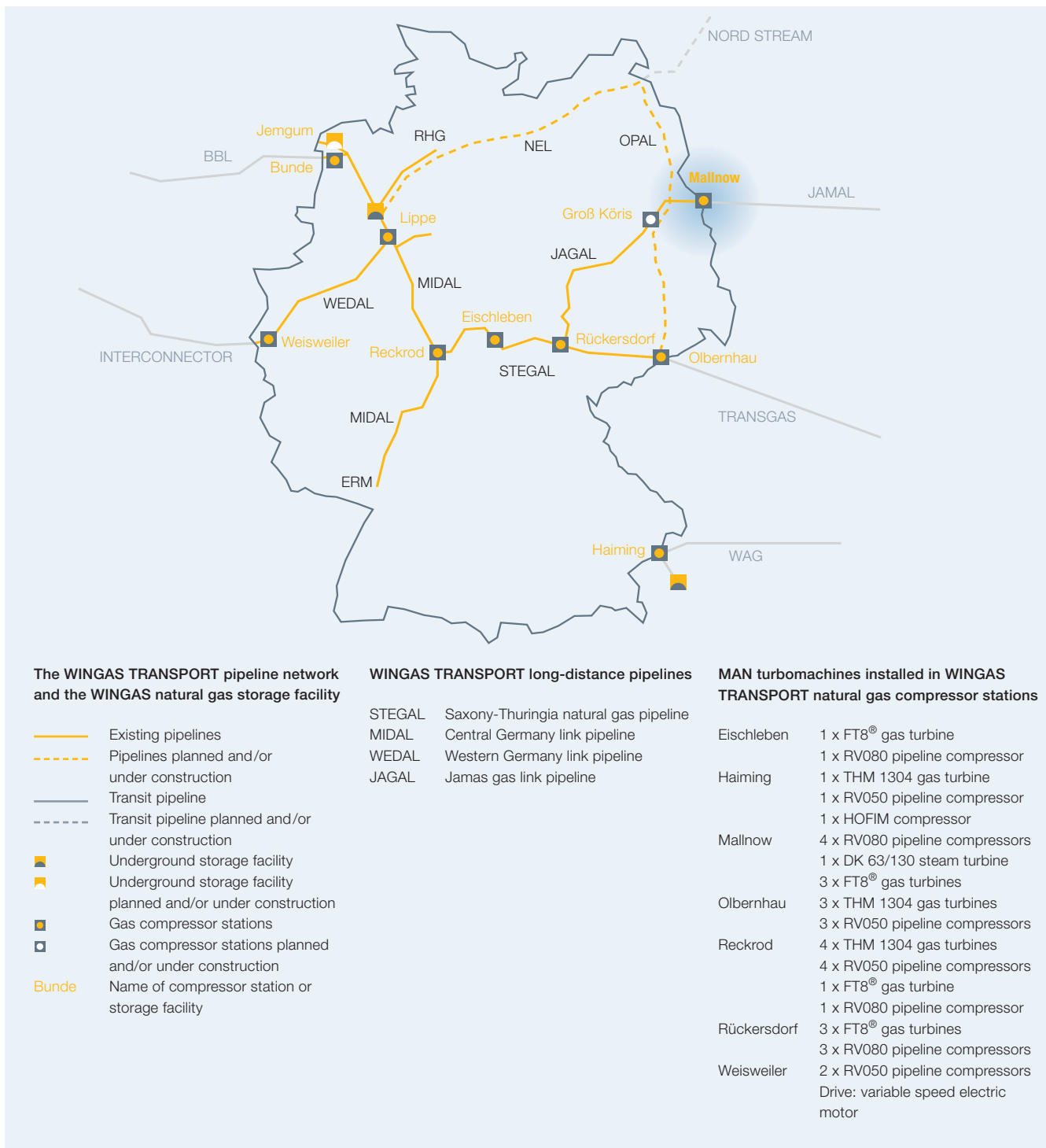
Engineering the Future –
since 1758.

MAN Turbo



Modern pipeline networks

The backbone of gas supply





- The Mallnow natural gas compressor station
- is one of WINGAS TRANSPORT'S largest compressor hubs;
 - transports volumes of gas that make up around a third of Germany's natural gas requirements;
 - uses the waste heat of the gas turbines to drive an additional steam turbine.

Compressor stations are critically important to the transportation of natural gas. The natural gas covers a distance of several thousand kilometres en route to the final customer. Pressure losses arise in the pipelines, and these are equalised by compressors sited roughly every 200 km. In this way, the requisite pipeline pressure of 75 to 100 bar can be guaranteed.

Mallnow – new standards for natural gas compressor stations

The natural gas compressor station at Mallnow near Frankfurt/Oder, close to the border between Germany and Poland, is one of the most important hubs in the supply network of WINGAS TRANSPORT GmbH & Co. KG (WINGAS TRANSPORT). WINGAS TRANSPORT is a subsidiary of WINGAS GmbH & Co. KG (WINGAS) and operates a natural gas pipeline network which is over 2,000 kilometres long, running right across Germany.

The concept for the Mallnow station, planned by the WINGAS experts, provides for the waste heat from the gas turbine driven units to be used to operate an additional steam turbine unit. In this way, the station's aggregate output can be increased by almost a quarter without consuming additional energy. Intelligent and efficient plant technology guarantees secure gas supply, economic plant operation and low CO₂ emissions.

The central gas supply long-distance pipeline network

The WINGAS TRANSPORT pipeline network has developed into a key supply grid for the transport of natural gas around Europe, thanks to its position right in the middle of Europe and its direct links to the major European transit pipelines coming from Russia and the North Sea.

WINGAS TRANSPORT's main long-distance pipelines are:

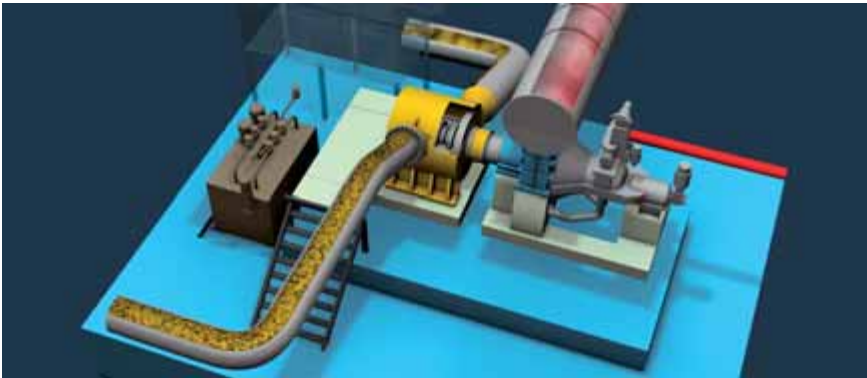
- JAGAL (Jamal gas link pipeline) and STEGAL (Saxony Thuringia natural gas pipeline). Both are responsible for transporting Russian natural gas around central Germany.
- MIDAL (Central German link pipeline) crosses Germany from north to south and represents the core of the pipeline system.
- WEDAL (Western Germany link pipeline) supplies Germany with British North Sea gas and also with Russian natural gas through the link with MIDAL.



RV080 pipeline compressor and DK 63/130 steam turbine. Output: 22 MW

Additional technical information

Number of compressors	3 RV080 pipeline compressors with FT8 [®] gas turbine
Output	3 x 26 MW
Maximum operating pressure	100 bar
Capacity	4 mill. m ³ /h (in standard state)



The steam turbine compressor unit was installed whilst the Mallnow station was in operation. MAN Turbo's knowledge in the integration of different types of turbomachinery made a significant contribution to the optimisation of the Mallnow station.

The order package

Three MAN Turbo RV080 pipeline compressors have been in operation in Mallnow since 1999. These are driven by three type FT8[®] industrial gas turbines. As part of the expansion of the pipeline network and an increase in the capacity of the Mallnow compressor station, MAN Turbo was awarded the contract to supply, install and commission an additional machine unit in 2006. This also consists of an RV080 pipeline compressor, although in this case it is driven by a DK 63/130 industrial condensing steam turbine.

A combination of gas and steam turbines is less commonly used in compressor stations. As a result, a main feature of the project was an intensive conceptual phase, during which MAN Turbo's experience in the integration of steam turbines made a significant contribution. The entire project execution was extremely demanding in terms of the technological expertise of the project partners and their cooperation. It proved possible to expand the station

without impairing its ongoing operation, and the station has been running continuously since the end of 2007.

Optimum integration

MAN Turbo pipeline compressors are frequently used in conjunction with MAN Turbo industrial gas turbines, and have proven their worth during their frequent use in the transportation of natural gas. The fourth pipeline compressor in Mallnow is driven by a MAN Turbo industrial condensing steam turbine. The flow gases of around 460° Celsius from the three gas turbine driven units are diverted into a common heat recovery steam generator which supplies a continuous flow of steam. Up to 85 tonnes of steam per hour, at a temperature of 420° Celsius, are available.

The integration of the steam turbine compressor unit was extremely challenging technically. MAN Turbo engineers developed special solutions for the foundation of the steam turbine, its pipes and drainage, and also for components of the steam turbine and compressor;

these have since stood up to the demands of practical operation extremely well.

As a result, the Mallnow natural gas compressor station is an outstanding example of how proven standard technologies coupled with innovative plant design lead to climate-friendly gas supply. This plant concept is especially suited to large stations such as Mallnow, which can guarantee uninterrupted steam generation during continuous operation.

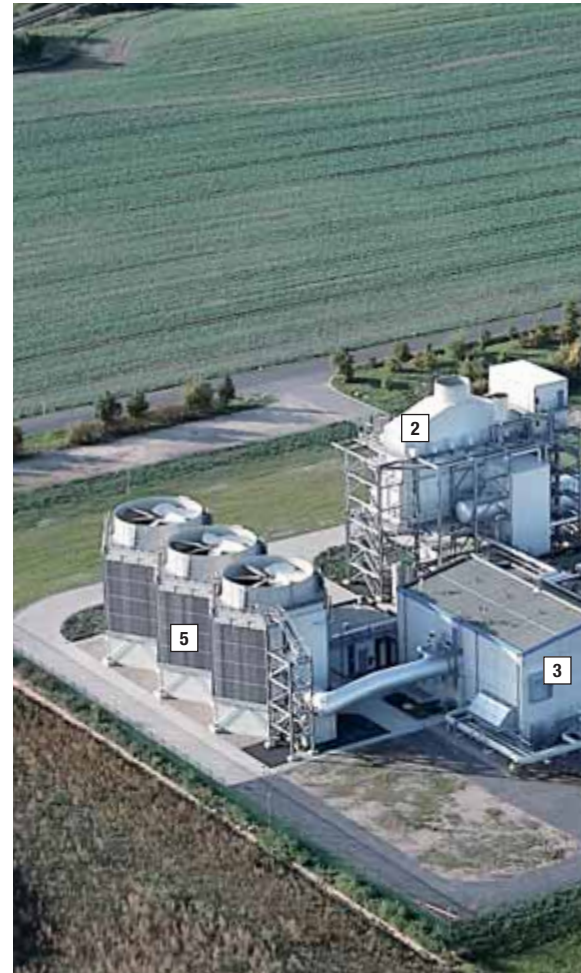
Turbomachines from a single source

An overview of the Mallnow plant

The compressors and their drive units represent the key elements of every compressor station. MAN Turbo supplied all the turbomachines installed in Mallnow.

Three pipeline compressors are driven by gas turbines (1 – compressor house with gas turbine and compressor). The special feature of the Mallnow station is the fact that the gas turbine flue gases are recovered in a generator (2) for steam production. This steam supplies the steam turbine, which then drives the fourth compressor (3 – compressor house with steam turbine and compressor).

Further processes are used specifically for media supply and natural gas processing. These include gas processing (4) with filtration and drying. In addition, the water steam cycle needs a large number of components and systems, such as the air condenser (5).





- 1 Compressor house with gas turbine and compressor
- 2 Heat recovery generator
- 3 Compressor house with steam turbine and compressor
- 4 Gas processing
- 5 Air condenser

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