

GASCADE

THE GAS COMPRESSOR STATION RECKROD

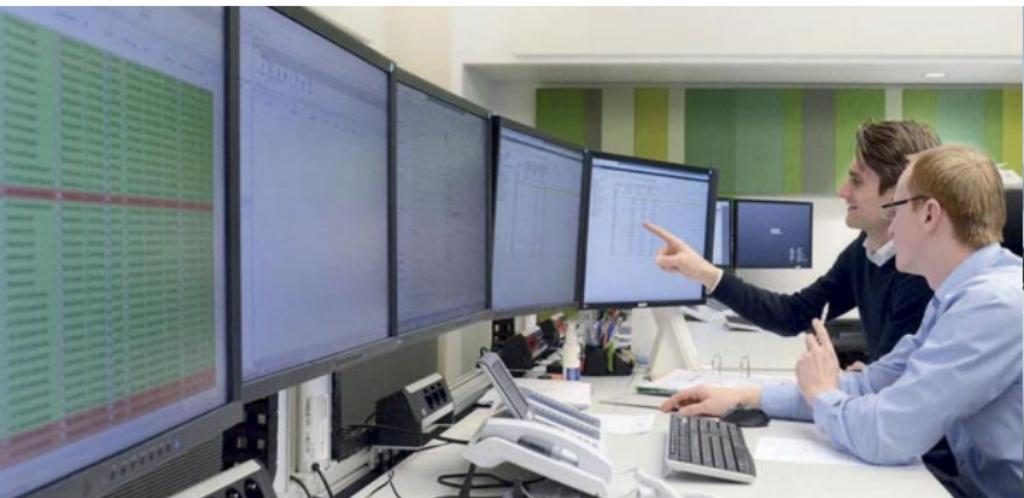


GAS FOR EUROPE



On the path to climate-neutral supply with renewable energies, the gas market is changing: Declining natural gas production within Europe, the diversification of supply sources, and the development of new sources such as hydrogen and climate-neutral gases are issues that also concern GASCADE. In line with the climate targets, we are already developing approaches to make our pipeline network in the middle of Europe fit for the energy future. We take natural gas and climate-neutral gases to where they are needed. Our system receives the gas from transit pipelines at Germany's borders and transports it reliably to consumers in Germany and Europe. We directly connect a total of five European countries, thus making a significant contribution to supply security, both now and in the future.

PRESSURIZING GAS



From the source to where it's used, the gas travels many thousands of kilometers in pipelines measuring up to 1.4 meters in diameter. During this journey it loses pressure as the molecules rub against each other and the inside of the pipe.

To keep the density and hence the transport speed of the gas constant, it is compressed in gas compressors.

These are the core of the eleven GASCADE compressor stations that are spaced at around 250 kilometers apart in the pipeline network.

What happens in the compressor?

Several impellers are securely arranged behind each other on a rotating, cylindrical shaft in a steel casing and rotate at a speed of up to 3,600 and 10,300 revolutions per minute. This spins the molecules of the inflowing gas outward, thus compressing them more densely together. The compressors are driven by gas or electric motors located in enclosures in compressor houses for the purpose of noise control. The gas' volume is reduced when it is compressed. That means more energy can be transported through the pipeline. The pipeline's capacity increases – and so does supply security for customers.

RECKROD COMPRESSOR STATION



The Reckrod compressor station near Fulda is located in the center of Germany and hence at the center of the GASCADE pipeline network. The station is where the STEGAL (Saxony-Thuringia Gas Pipeline Link), MIDAL South and MIDAL Central (Central Germany Pipeline Link). From here, the gas can be transported in all directions. The maximum flow rate is two million cubic meters of gas per hour. By comparison: The average European household uses around 2,700 cubic meters per year.

Expertise and know-how, no compromises

GASCADE employees on site have already been making sure that the station runs smoothly since 1994. It currently has five gas turbines with a total compressor output of 76 megawatts. The maximum operating pressure is 90 bar. Alongside the compressor units, the technical facilities include various gas pressure control and measuring systems, and intake filters. The site covers 4.3 hectares and has three gas compressors, a utility and an operations building, and a workshop. In addition, the GASCADE employees also look after sections of the MIDAL and STEGAL pipelines covering a length of 300 kilometers. There is also a team on site that takes care of the optical fibre network (FOC). Fibre optic cables lie parallel to the line. All signals from the stations are brought together via the fibre optic cable in the dispatching centre in Kassel. Here, the GASCADE network is controlled and monitored around the clock.

TECHNICAL INFORMATION

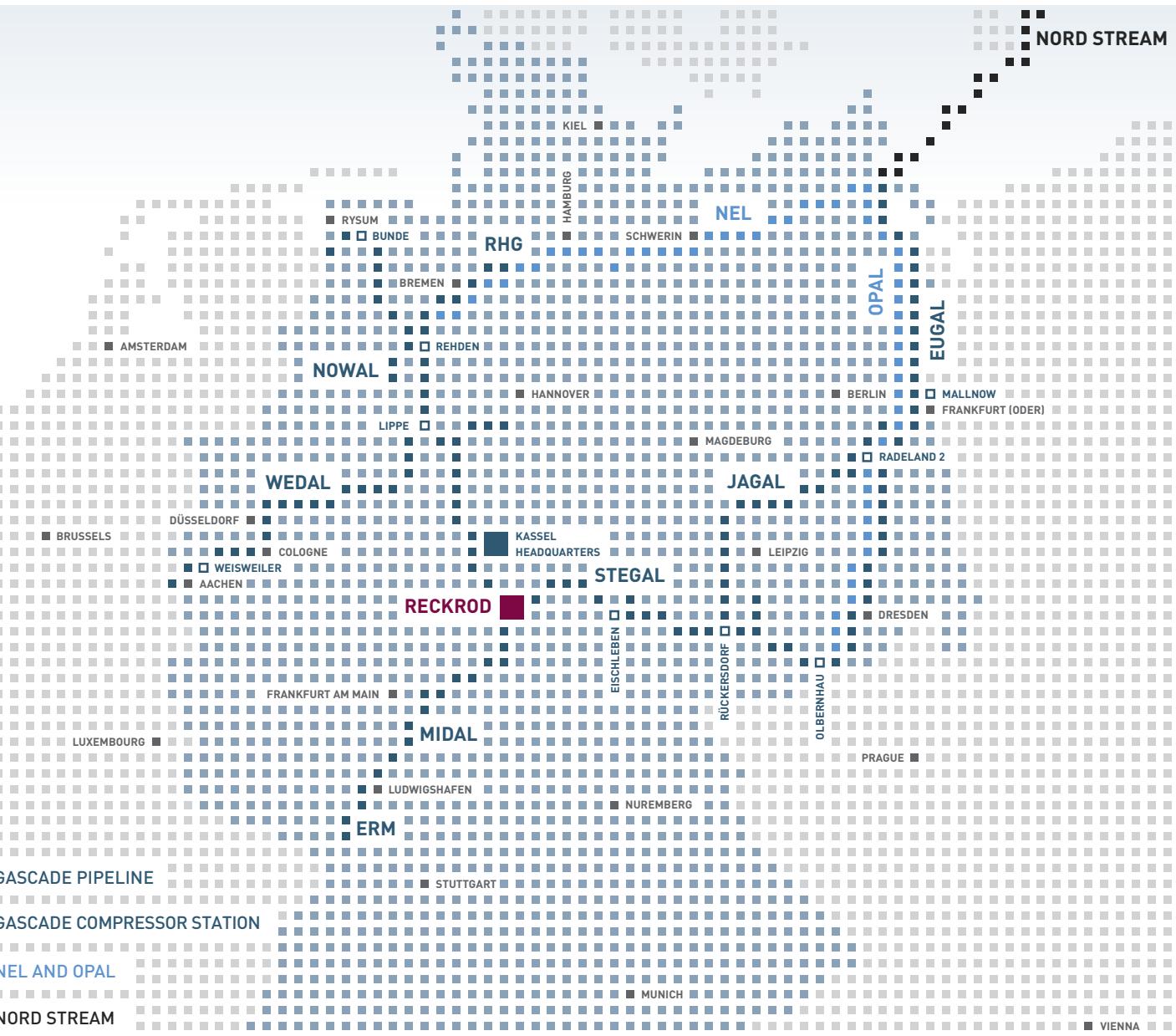


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|--|--------------------------------|
| 1 Service building and workshop | 2 Fuel gas conditioning |
| 3 Compressor buildings | 4 Gas coolers |

TECHNICAL DATA

Compressor output	75.8 megawatts (4 x 12.6 MW and 1 x 25.4 MW)
Number of compressors	5
Type of drive	Gas turbine THM 700, gas turbine FT8
Max. operating pressure	90 bar
Capacity (m ³ /h at normal conditions)	1.91 million
Commissioned in	08/94 (THM), 04/05 (FT8)

GASCADE'S PIPELINE NETWORK



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