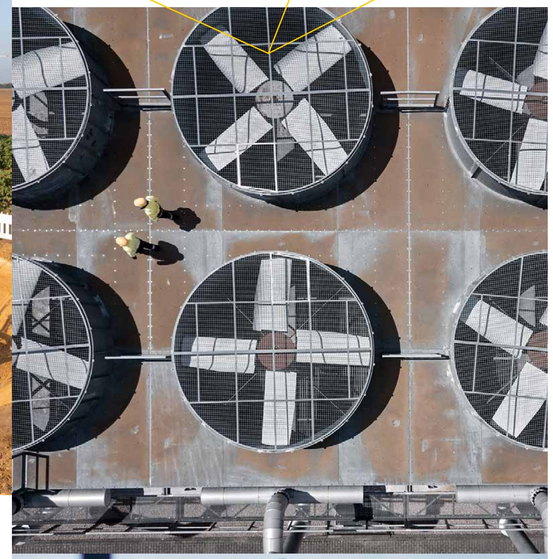


“We have to set the course for a sustainable energy future today – and that is exactly what we are doing.”

– Hans-Joachim Polk
Member of the Executive Board, Infrastructure & Technical Affairs

Transport

NETWORK WITH A FUTURE

Transmission system operator and co-creator of the German hydrogen economy

Leipzig-based ONTRAS Gastransport GmbH is one of the major players in the German energy system. As an independent transmission system operator, ONTRAS is responsible for a network with a pipeline length of 7,700 kilometres. It forms the backbone of the gas supply in Eastern Germany and guarantees reliable energy transport for industry, commerce and households – today natural gas and biomethane, in future increasingly green gases, all the way to a completely climate-neutral energy future.

INFRASTRUCTURE IN EASTERN GERMANY – ENERGY HUB FOR EUROPE

ONTRAS ensures a sustainably secure energy supply. The network connects large gas storage facilities, power plants, industrial consumers, regional network operators and municipal utilities with import points and biogas producers – a hub for the energy supply of Eastern Germany. The pipeline network extends across the federal states of Berlin, Brandenburg, Mecklenburg-Vorpommern, Saxony, Saxony-Anhalt and Thuringia. It has numerous interconnection points to other network operators, assuring a flexible and efficient gas supply. At the same time, it is a mainstay of European gas transport with border crossing points to Poland and the Czech Republic.

ONTRAS MASTERS THE GAS TRANSITION

In recent years, the “security of supply” has mostly been focused on ensuring that sufficient natural gas will reach Germany after Russian natural gas supplies were cut off in 2022. ONTRAS has optimised its network for this purpose. Today, this is history. In the ONTRAS network, gas flows from the north and west – regasified from LNG or pipeline gas, including from the Netherlands and Norway.

Network of the future: ONTRAS is expanding its infrastructure for the transport of natural gas, biogas and hydrogen.

The ONTRAS H2 start-up grid will have a total length of

600

kilometres.

Secure gas infrastructure: ONTRAS employees monitor and maintain systems to ensure a reliable energy supply.

Efficient gas distribution: state-of-the-art technology and expertise ensure a sustainable and efficient infrastructure.

RETHINKING THE INFRASTRUCTURE

Gas pipelines are never purely one-way streets. But simply reversing the flow is not easy. Existing plants had to be adapted for the new flow direction following the cutting off of Russian gas supplies from the East. Today, the ONTRAS network transports almost the same quantities of gas as before the Ukraine crisis, and just as safely and reliably.

CRISIS-PROOF INTO THE FUTURE

The reversal of direction in the network has been achieved and can secure the supply of gas via pipelines in the long term, a joint effort by the German transmission system operators. The ONTRAS grid has proven that it is crisis-proof. And on it goes: since October 2024 – with the approval of the hydrogen core network by the Federal Network Agency (“BNetzA”) – ONTRAS has been building the East German hydrogen start-up grid. ONTRAS is making itself “H2-ready”.

Power-to-gas plants have been using green hydrogen for several years as an admixture to natural gas. A Germany-wide hydrogen core network is now being created. ONTRAS connects consumers and producers in Eastern and Central Germany with import points and storage facilities, thus creating essential prerequisites for the market roll-out of the hydrogen economy in Eastern Germany.

In 2024, the application for the Germany-wide hydrogen core network was approved by the Federal Network Agency. “This will enable Eastern Germany to expand its role as an energy hub; today for natural gas and biomethane, and for the climate-neutral future increasingly also with hydrogen,” says Ralph Bahke, ONTRAS Managing Director of Control and Development. The ONTRAS H2 start-up grid is the largest single investment in VNG’s corporate history: around 600 km of H2 transport pipelines will connect industrial centres, storage facilities, producers and consumers in Eastern and Central Germany. Over 80 percent will be created by converting existing gas pipelines, while just under 20 percent will be newly built.

A YEAR OF MILESTONES

Thanks to ONTRAS, another of our future-oriented projects has also taken great strides forward: the Bad Lauchstädt Energy Park, in which ONTRAS is one of seven consortium partners. A new branch valve was installed here in September, which will soon be used to transport green hydrogen to the TotalEnergies refinery in Central Germany. With this installation, we are connecting the first industrial consumer to the new hydrogen core network. In connection with this regulatory sandbox for the energy transition project, ONTRAS is converting 25 kilometres of former natural gas pipelines to transport hydrogen, making it a leader in Germany: in April 2025, the pipeline will be one of the first in the hydrogen core network to come on stream. The project as a whole is a milestone on the way to the future supply of hydrogen – and proof that the transformation of the gas infrastructure is no longer a vision for the future, but a reality.

ONTRAS ACTS SUSTAINABLY

In addition to the hydrogen core network, ONTRAS is active in other future-oriented projects: the development of new hydrogen technologies and the conversion of measurement and control technology to hydrogen are just some of the current challenges. “The ONTRAS H_2 start-up grid is an important step. Over the next few years, we will make other systems in our network more sustainable and efficient, and make our contribution to reducing overall emissions,” comments Gunar Schmidt, Managing Director of Operations and Safety.

ONTRAS is intensively involved in the development of innovative solutions for more sustainability in gas transport. Two pilot projects, whose technologies can be transferred to other systems, serve as models:

- **Climate-neutral gas pressure regulator station in Potsdam-Nesselgrund**

ONTRAS operates Germany’s first almost emission-free gas pressure measurement and control system in Potsdam-Nesselgrund. With its combination of innovative technologies, including integrated heat exchangers and a photovoltaic system on the roof, the system operates without gas consumption and requires only ten percent of the electricity compared to conventional systems. This project is considered groundbreaking for the gas industry.

- **Gas preheating with solar thermal energy in Kienbaum**

At the Kienbaum site near Berlin, ONTRAS relies on solar thermal energy to preheat gas in the gas pressure control and measuring station. By using its own solar thermal system, a large proportion of the energy required is generated on site, resulting in considerable savings in gas and CO_2.

- **Nordic-Baltic Hydrogen Corridor**

Together with other European transmission system operators, ONTRAS is planning the Nordic-Baltic Hydrogen Corridor (NBHC). This project aims to connect the green energy production regions in North-Eastern Europe with the most important consumption centres in Central Europe. By 2040, the corridor is expected to transport up to 2.7 million tonnes of renewable hydrogen per year and thus make a significant contribution to the decarbonisation of Europe.

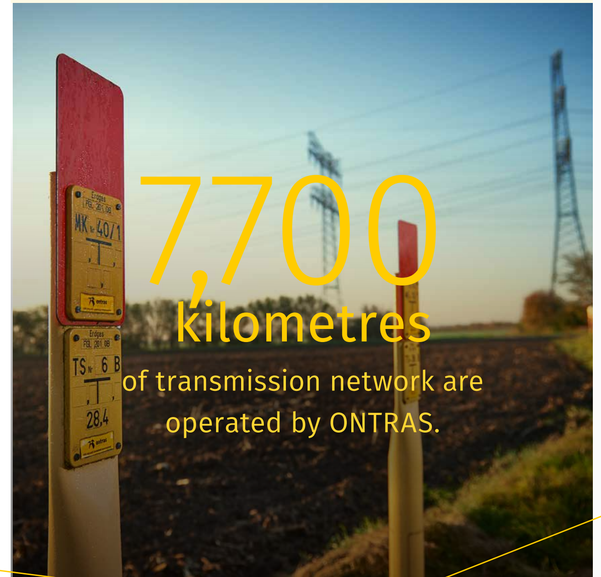
- **European Hydrogen Backbone**

ONTRAS is part of the European Hydrogen Backbone (EHB), an initiative supported by 31 gas transmission companies from 28 countries. The aim is to build a 53,000-kilometre European hydrogen transport network by 2040. This network is intended to increase the security of supply for renewable energy sources and promote their integration in Europe.

TOGETHER WITH THE MARKET AND POLITICS INTO A SECURE FUTURE

ONTRAS stands for a reliable, secure gas supply and for the transformation to a climate-friendly energy future. Whether green hydrogen for refineries or for a growing H_2 transport network, ONTRAS is at the forefront. “However, we will not be able to expand the hydrogen core network beyond our first 600 kilometres alone. On the one hand, we need market participants to generate further capacity requirements and make binding commitments. On the other, our investors need stable framework conditions that are attractive for the capital markets,” says Ralph Bahke.

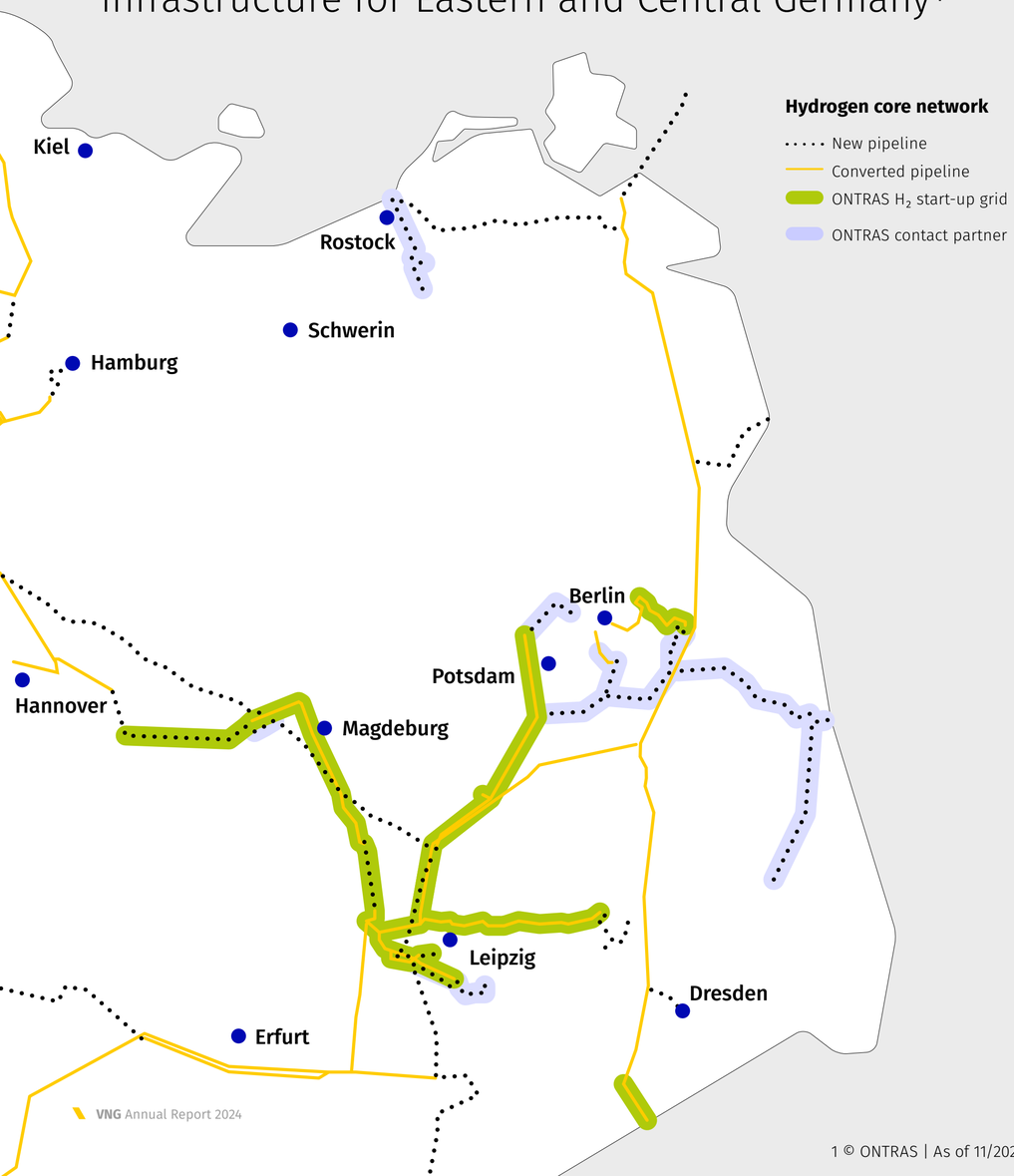
> “This will enable Eastern Germany to build on its role as an energy hub: today for natural gas and biomethane, in the climate-neutral future increasingly also with hydrogen.”
>
> – Ralph Bahke, ONTRAS Managing Director Control and Development



492
employees
work at ONTRAS to ensure reliable gas transport.

130
downstream network operators
purchase gas from ONTRAS pipelines.

Hydrogen core network: a section of the hydrogen infrastructure for Eastern and Central Germany[1]



1 © ONTRAS | As of 11/2024

The pipelines for the future

ONTRAS is one of the pioneers in the development of the hydrogen core network. Over the next few years, ONTRAS will be realising a hydrogen transport network for Central and Eastern Germany with a total length of around 600 kilometres. **This ONTRAS H_2 start-up grid is part of the Germany-wide hydrogen core network.**

The ONTRAS H2 start-up grid is intended to supply Eastern and Central Germany with sustainably produced hydrogen, help decarbonise industries and open up import corridors for H_2. The first section will go into operation in 2025, with the entire system due to be completed by 2032. More than 80 percent of the network will consist of existing gas pipelines that are being converted to hydrogen. Just under 20 percent will be newly built.

OLD PIPES, NEW ENERGY

Converting steel natural gas pipelines to the transport of hydrogen requires careful prior testing, detailed assessments, including by independent experts, and, if necessary, localised upgrades and technical adjustments:

The ONTRAS H2 start-up grid is an important step. Over the next few years, we will make other systems in our network more sustainable and efficient and do our bit to reduce overall emissions.

Gunar Schmidt, Managing Director Operations and Security

Material check

Hydrogen is the smallest molecule in the universe – it can slip through the smallest of cracks. The steel pipes, if they are to be converted, must therefore be meticulously inspected: are they leak-proof, do they tend to crack, do they have weak zones? Are all installed components and materials hydrogen-compatible? Or are there places that need to be upgraded before conversion? The good news is that most of the ONTRAS lines, including of course all those for the ONTRAS H2 start-up grid, are in good technical condition and therefore ready for the change.

Precautionary replacement

As a precautionary measure, ONTRAS replaces system components with moving parts for hydrogen operation, even if the components are classified as hydrogen-compatible in principle. This applies in particular to shut-off and branch valves. The measurement technology must also be adapted for hydrogen so that it is always clear just how pure and how much hydrogen is underway and where.

SAFETY FIRST

As has been the case for decades with natural gas, ONTRAS also applies this rule to the handling of hydrogen: safety first. Plants and pipeline system are designed to be H_2-ready. All relevant regulations and standards as well as applicable documents will be expanded to make allowance for hydrogen and adapted accordingly.