



German gas system proves highly resilient

German gas providers coped remarkably well with the supply disruption in January. They even managed to supply extra gas to hard-hit customers in Eastern Europe. Even so the companies are expanding their storage capabilities and looking for alternative supply routes.

| by *Stefan Schroeter*

Without his chip card Reinhard Böhm cannot get into the control room of the Leipzig-based gas provider Verbundnetz Gas (VNG). The chip card gives the “gas flow manager” access to an air lock where he puts his hand in a reading device and places himself on a contact mat. At the same time he is filmed by a video camera before the door to the control room opens. Here are the two control stations operated by VNG and its gas transmission subsidiary, Ontras. ‘VNG is responsible for physically dispatching gas volumes,’ explains Böhm. ‘Ontras is in charge of processing the transport contracts.’

A large map shows VNG’s 7,000 km gas supply network which, to comply with German unbundling regulations, is operated by Ontras. Böhm explains how natural gas from Russian, German and Norwegian sources is fed into the Ontras grid at four transfer stations in the East, South and West. Russian natural gas, which supplies half of VNG’s natural gas demand, flows through the station in Mallnow on the German-Polish border and through the station in Sayda on the German-Czech border.

For 35 years Russian natural gas supplies to VNG have been reliable. Short-term interruptions on the route

through Belarus in the beginning of 2004, and on the second transport route through Ukraine in early 2006, were compensated for by increasing supplies on the routes not affected. Both supply interruptions were a result of Gazprom not being able to agree on increased prices with Belarus and Ukraine. The effect of the stoppage of Russian natural gas deliveries in Ukraine on the first of January 2009 was significantly greater. It led to a complete halt of transmission of Russian natural gas through Ukraine. As a consequence there were severe shortages in supply to Bulgaria, Slovakia, Poland, Hungary, Serbia, Bosnia and Herzegovina, as

well as Macedonia.

There was also a break in the Russian supply of natural gas to VNG on the 7th of January at the Czech-German border station in Sayda in the Erzgebirge on the southern transport route. Half of this shortfall was made up through additional supplies from the Jamal pipeline, which transports gas through Belarus and Poland to the German station in Mallnow. Another twenty percent was sourced in Norway and Germany. The rest was covered from its ample storage facilities. The company has a total of five underground gas reservoirs. 2.5 billion m³ of natural gas can be stored here in summer



Control room of VNG. Photo: Bodo Tiedemann

and fed back into the grid in winter. One of these reservoirs is in Bad Lauchstädt near Halle/Saale. Only the facilities above ground are visible. They compress, cool and dry the stored natural gas. The storage systems themselves are 750 m below the surface in a former natural gas cavern and in a salt layer. During the gas dispute the capacity of this storage system in Bad Lauchstädt was fully drawn upon. 'We had an output of up to one million cubic metres per hour,' reported Winfried Becker, head of VNG's storage service. 'This was at the upper limit of the facilities' technical capabilities.'

VNG was even able to

transport larger-than-usual amounts of Russian natural gas from Mallnow in the East to Sayda in the South. Here it was transported by the Czech RWE Transgas and pumped to the South-West German transfer station in Waidhaus. During this time VNG and Ontras also delivered Norwegian natural gas for its Czech partner from North-West Germany to Sayda. To be able to reverse the direction of the gas flow, the normal network operation had to be completely reconfigured. 'It took us three days to do the switches,' said Böhm. Some of the changes to the valve systems of the compressor stations were implemented from the control room in the

VNG headquarters in Leipzig. Network dispatcher Edgar Behrendt shows the pipeline systems of the central compressor station Bobbau on one of his many monitors. 'From here, I can change the direction of a whole valve system with a single mouse click.' It only works however if the technology on the ground plays along. At the beginning of January temperatures fell to minus 20° C, causing some equipment to freeze up. The crew on stand-by duty had to be called out to manually bring it back into operation. In addition to supplying RWE Transgas, VNG was also able to help the Slovakian gas provider SPP (Slovensky plynarensky priemysel) with



Photo: Bodo Tiedemann

Reinhard Böhm is manager of physical gas flow control at Verbundnetz Gas.

natural gas. 'We have rented underground storage capacity in Slovakia,' reported Böhm. 'From here we were able to make 100 million m³ available to SPP.'

No disruptions |

Ruhrigas, Germany's largest gas company, sources a quarter of its gas from Russia, which

The second largest German gas importer, Wingas, a joint-venture of the BASF-subsi-dary Wintershall and Gazprom, sources around 60% from Russia. The majority of this is supplied via the northern Jamal-Europa pipeline. It passes from Russia through Belarus and Poland to Mallnow. Therefore, the effects were

'The demands made on the technical systems in these two weeks were greater than ever before'

is mainly supplied through the South German border station in Waidhaus. During the Ukraine-crisis, Ruhrigas sourced larger volumes from its suppliers in Norway and the Netherlands to be able to secure supply to its South German customers. The company also made greater use of its reserves and bought additional gas at daily rates on the spot market.

This meant that Ruhrigas had to transport unusually high volumes of gas from the North to the South. 'The demands made on the technical systems in these two weeks were greater than ever before,' said ceo Bernhard Reutersberg. But there were no disruptions worth mentioning. The company used the capacities of other transport companies in addition to the pipeline network of its own subsidiary Eon Gastransport. Not only was Ruhrigas able to ensure the supply of its German customers, it was even able to supply 13 million m³ of gas daily to Hungary, Slovakia, Serbia, Croatia, Slovenia, as well as Bosnia and Herzegovina.

limited when Wingas stopped receiving Russian gas on the southern route via Ukraine on the 6th of January. 'Instead of through Ukraine, Gazprom pumped increased volumes of gas through the alternative northern route via Belarus and Poland to Germany,' said the company. 'Wingas got almost all of its contracted volumes from Russia.' The underground store in Rehden, which holds up to 4.2 billion m³ of natural gas, fed out almost the same volumes as in other winters. Even at the end of January it was still two-thirds full.

The German energy group RWE also reported that its crisis management worked perfectly during the gas supply stoppage. The Czech subsidiary of RWE, Transgas, was particularly badly hit by the transmission crisis. The company reported that the shortfalls in volumes were compensated for from storage, supplies of Russian gas via the northern route through Belarus and Poland, and through supplies from

Norway. Transgas also supplied additional customers in Slovakia from the Czech Republic. For this purpose a transmission pipeline was adapted so that for the first time ever, gas from the West could flow to Slovakia. 'RWE's crisis management made a crucial contribution to ensure security of supply for our customers in the affected countries at all times,' said Stefan Judisch who, in his role as CCO Supply of RWE Supply & Trading, is responsible for RWE's gas procurement portfolio.

Storage capacity |

During the Russian-Ukrainian crisis the strength and reliability of the German gas industry's infrastructure became apparent. Despite this, the natural gas importers are currently undertaking a large number of projects to develop further transport routes and to expand storage capacity. For instance, Eon Ruhrigas and Wintershall are involved jointly with Dutch Gasunie and Gazprom in the Nord Stream pipeline project. RWE belongs to the syndicate running the Nabucco pipeline project which aims to deliver gas from Central Asia to Central Europe. In addition, the companies are getting prepared for the introduction of liquefied natural gas (LNG).

Furthermore, German companies are pursuing numerous projects for the expansion of existing underground storages. The 46 existing storages are able to hold 20 billion m³ of gas, a quarter of Germany's annual consumption. Soon two new stores will be added,

at Jemgum on the German-Dutch border, both built by Wingas and EWE. In the future, Wingas will be able to store 1.2 billion m³ of gas here. Eon Ruhrigas is planning to expand the capacity of its storage facilities from the current 5.5 billion m³ to 8 billion m³ by 2012. VNG is also planning to further expand the capacity of its storage facilities. The East German gas provider is also undertaking a joint storage project with Gazprom at its existing site in Bernburg, between Leipzig and Magdeburg. VNG currently operates a storage facility here in an underground salt layer with almost one billion m³ of stored gas. By 2011 it will be expanded with 210 million m³. The new joint storage project with Gazprom Export will be built in the same salt layer, but it will be operated separately from the current VNG storages.

Gazprom Germania, the German subsidiary of the Russian producer, already has access to a capacity of 160 million m³ in a facility in Etzel on the North Sea coast. Gazprom Germania is currently pursuing significantly larger projects in Schweinrich and Hinrichshagen, both south of the Baltic coast. Here the company is investigating deep geological formations for their suitability as storage facilities. According to current forecasts both sites will be able to store up to 15 billion m³ of gas. That would be a significant buffer for the Nord Stream pipeline which will join the Central and Western European gas network in this region. ■