PROGRESS: 100% - COMPLETED
AUSTRIA

SAFETY FIRST

Gas Connect Austria operations building

Text: Markus Huber

Following a gas explosion in December 2017, PORR built a new operations building for the Baumgarten gas hub within a remarkably short time.

Safety was a top priority for both the building work and the subsequent use of the building. As well as the operations building, PORR was also responsible for replacing a damaged gas pipeline.

Project data

Employer	Gas Connect Austria GmbH
Contractor	PORR Bau GmbH
Architect	Convex ZT GmbH
Order type	Generalunternehmer
Project type	Construction . Special civil engineering
Project scope	General contractor for construction of a new plant . Replacing a gas pipeline
Order volume	9 million euros
Construction start	09/2018
Construction end	11/2019

Overview

Gas Connect Austria operates a network in Austria comprising 900 km of high pressure natural gas pipelines.

It distributes a transport capacity of 140 billion cubic metres annually, thereby playing a significant part in safe natural gas distribution in Austria and Europe.

Baumgarten an der March is a central node of this network, with various pipelines meeting at the Austrian gas station. The gas, mostly from Russia, is distributed to Germany, France, Italy, Slovenia, Croatia and Hungary. However, in December 2017, there was a serious gas explosion at the station.

Following an exhaustive investigation of the incident and detailed damage assessment, work began on rebuilding the station as soon as possible. The first parts of the plant were operating again within a few weeks.

In light of the urgency, Convex ZT GmbH had plans for the new operations building ready for planning permission in just three months.

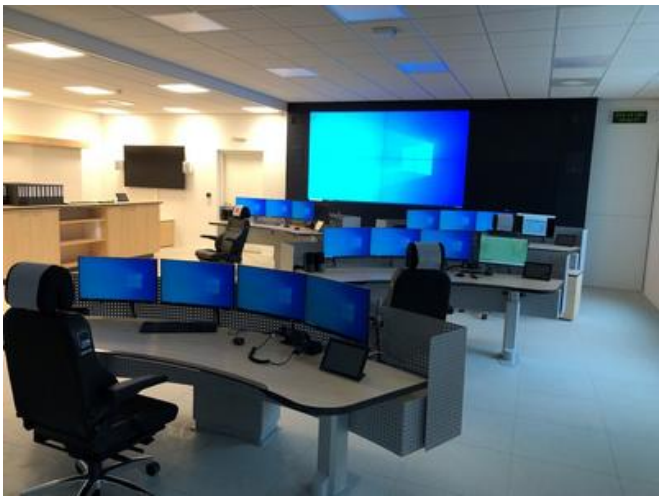
PORR was accepted as the best bidder in the resulting tender process.

Special contractual features

Before construction could start, PORR had to provide a construction schedule incorporating contractual penalties.

The contract also specified handover of the canteen on the ground floor by July 2019. In August 2018, less than a year after the accident, PORR began the soil exchange.

In order to make room for the cables that would be needed, the raised floor was elevated by 1m and constructed to be earthquake-resistant. This process required 4-5m high reinforced concrete walls to be concreted in situ in the carcass.



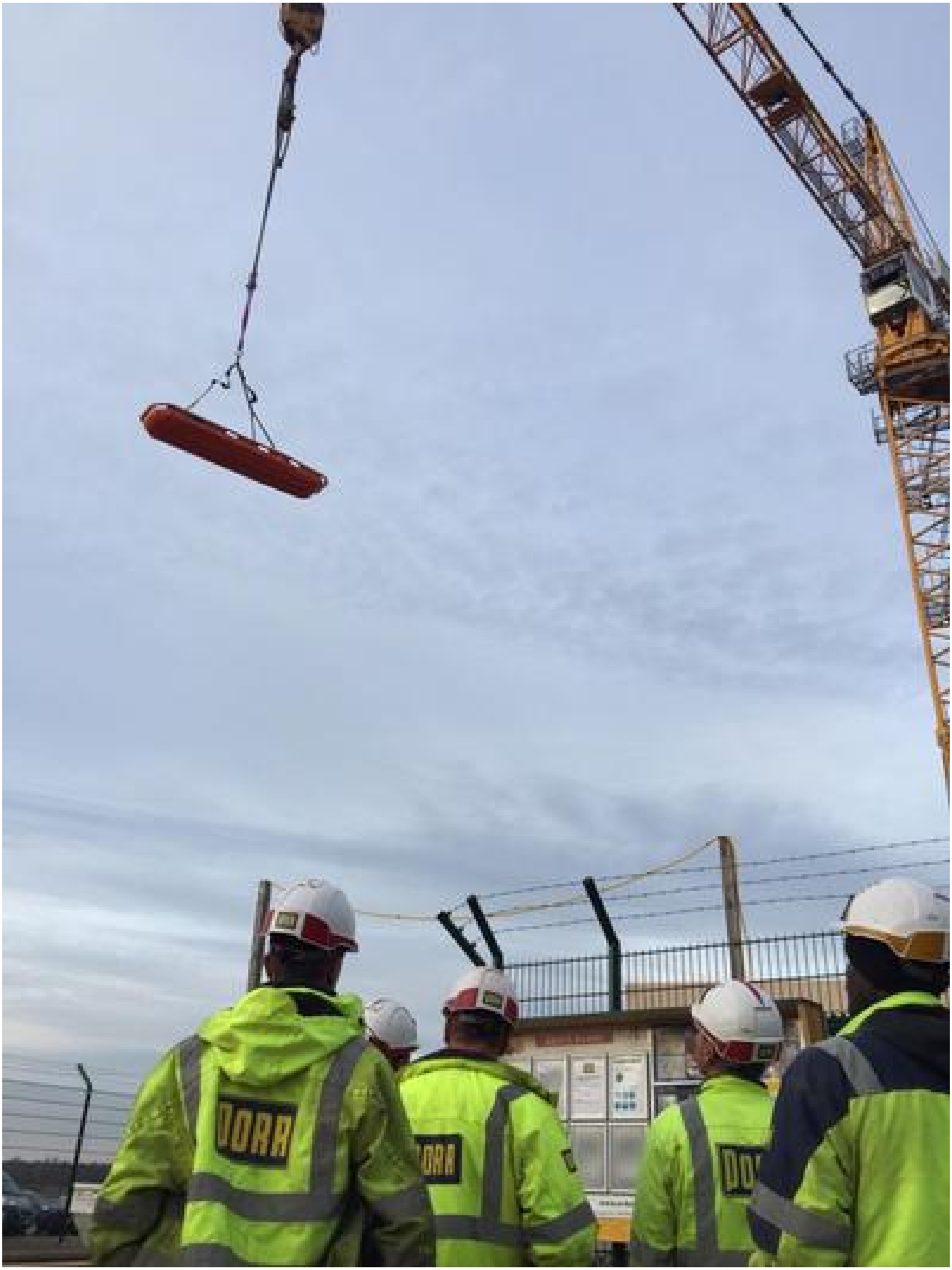
The operations control room is built on an earthquake-resistant raised floor. Source: PORR

Technical data

2,750m²
Gross floor area

Excavated soil	10,000m³
Soil exchanged	3,500m³
Asphalt	3,000m²
Concrete built in	3,430m³
Reinforced concrete built in	3,640t
Raised floor	350m³
Glass separating walls	100m²
Solar panels	45.6KWp
Mineral wool EIFS system	3,000m³

The carcass was completed in May 2019. In order to ensure safety during the structural work, an exercise was carried out with the local fire service in Marchegg, simulating rescue of people from the highest point of the construction.



In order to ensure maximum safety, a joint exercise with the fire service was held on the construction site, simulating rescuing people from the highest point of the construction. Source: PORR

Safety on the site

Safety is a high priority on every PORR construction site, but it was a particular focus of this project.

Due to the history and the dangerous environment, comprehensive safety measures and regulations were put in place and rigorously complied with.

No one could so much as set foot on the site without completing safety training covering appropriate conduct on the site – including a multiple choice test to be passed at the end. Personnel were fully equipped with suitable personal protective equipment before entering the site.

Depending on their construction section, this could include helmets, safety shoes, or a full fire-resistant suit. Failure to follow regulations led to a warning; a second infraction would result in a lifelong ban on entering the site.

All work had to be announced a week before it was started, so that the active 20kV power lines could be disconnected as necessary.

THE GLASS SEPARATING WALLS HAD TO BE ANCHORED TO BOTH FLOORS AND CEILINGS WITH SPECIALLY PREPARED STEEL SUPPORT STRUCTURES EMBEDDED IN THE CARCASS CONCRETE.

Markus Huber
Project Manager, PORR Bau GmbH

Operations building: finishing work

The finishing work for the canteen on the ground floor forged ahead under high time pressure.

The 17cm-thick polystyrene insulation and the floor screed were completed within an accelerated 7-day schedule.

Construction of the roof over the canteen was prioritised; the flat roof was insulated with mineral wool and completed with three layers of sealing.

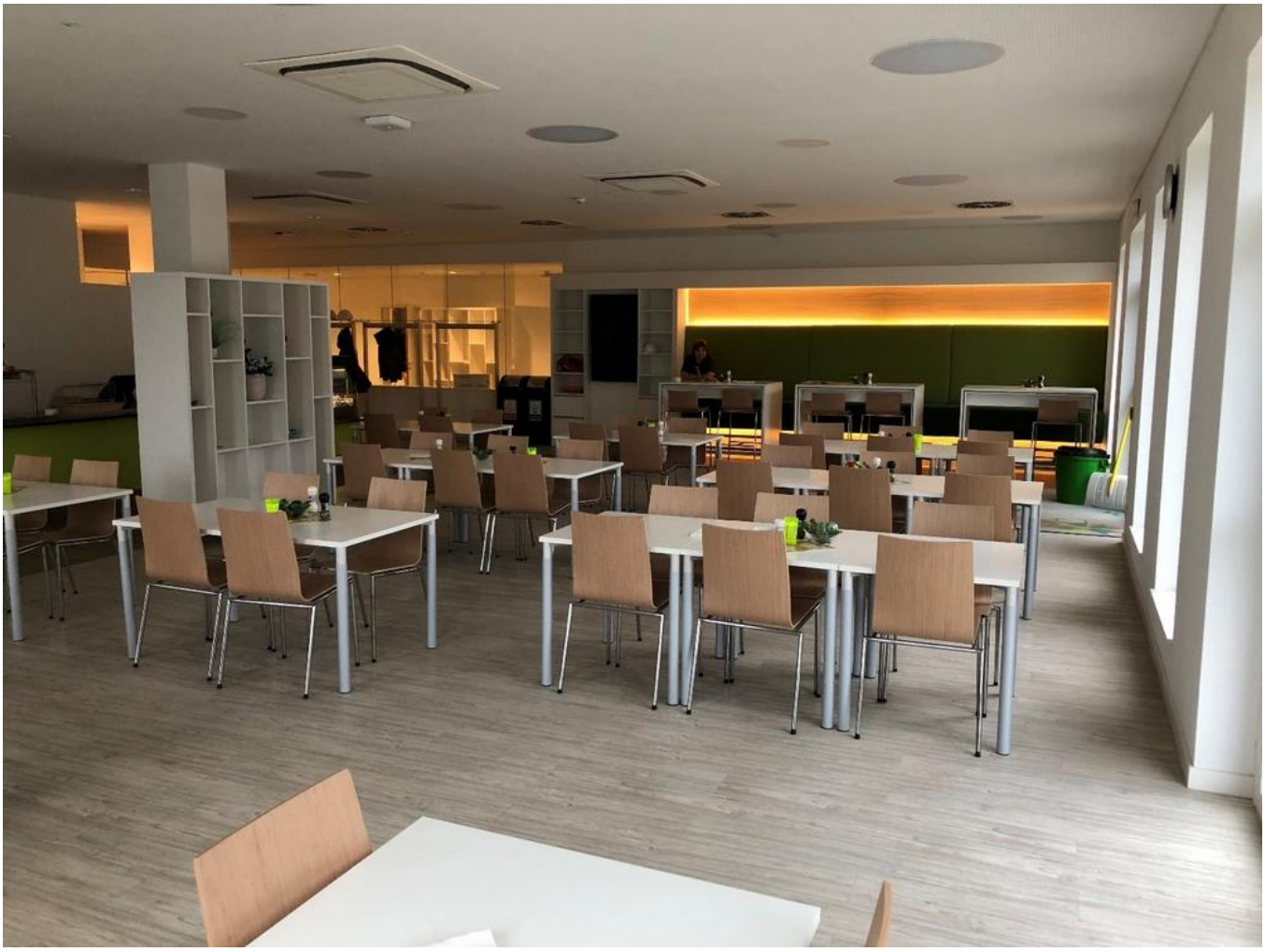
The heat-insulating façade was likewise insulated with mineral wool. The aluminium windows have explosion-resistant film on the plant side.

PORR built double-skin, extremely soundproof separating walls between the offices on the office level.

Since floor screed was to be laid right across this storey, the glass separating walls had to be anchored to both floors and ceilings with specially prepared steel support structures embedded in the carcass concrete.

The changing rooms for plant workers also have an unusual feature: they include lockers with ventilation. There is another striking feature in the inner courtyard: part of the Nordstream 2 pipeline, currently being laid beneath the English Channel, is on display here.

The section of piping was lifted into place by crane. Here at the Baumgarten gas station, it represents the future continuation of gas supplies from the North. The canteen was handed over to the client in July, as contractually agreed, and subsequently opened in September.



The canteen was handed over as contractually agreed in July 2019. Source: PORR

NUMEROUS EMBEDMENTS SUCH AS ELECTRIC CABLES AND DUCTS ADDED TO THE COMPLEXITY OF THE PIPELINE REPLACEMENT.

Markus Huber
Project Manager, PORR Bau GmbH

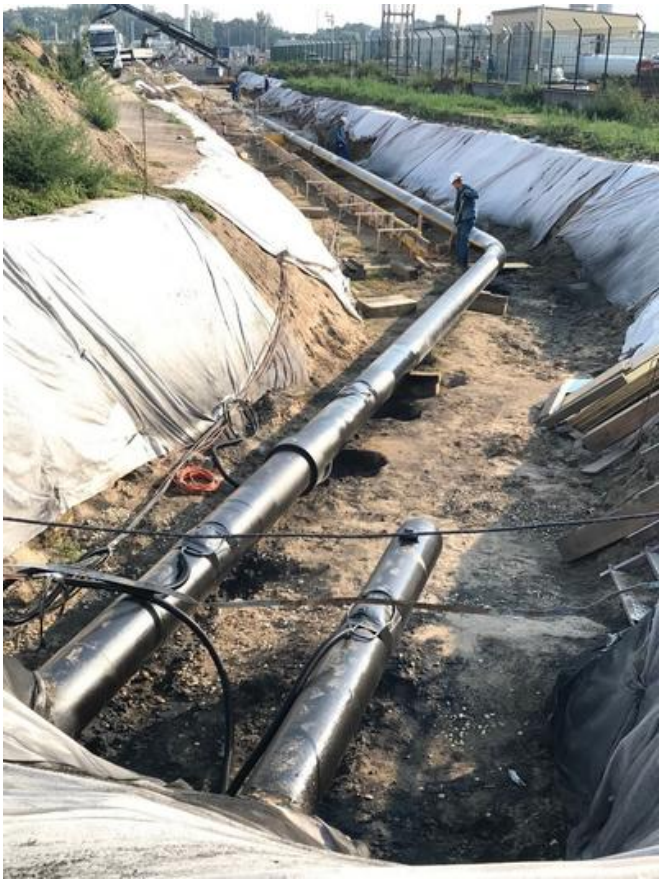
Repairing the gas pipeline

In parallel with the operations building being constructed, the tendering process was being held for the gas pipeline damaged in the explosion. PORR was also awarded this contract. The pipeline had to be exposed along a length of 140m while under full pressure.

Numerous embedments such as electric cables and ducts added to the complexity of the work, and a lot of the excavation had to be carried out manually.

For safety reasons, despite the summer heatwave, the team had to wear fire-resistant clothing in addition to the usual personal protective equipment.

Once the pipeline had been exposed, the gas was evacuated and the pipeline was replaced, backfilled with sand and the trench filled in.



The damaged pipeline had to be excavated along a length of 140m in preparation for replacement. Source: PORR

Successful handover

PORR successfully completed all elements of the project on schedule.

This was only possible due to the dedication of every single member of the team.

The new operations building was officially inaugurated at the Baumgarten gas station on 14 February 2020.

A modern three-storey building with offices and a central measurement room was built on an area of 2900m² in just one year of construction work.

All the plant areas of the Baumgarten gas station can be monitored and controlled from this building.