

# 17th Nuremberg exchange of information and experience on pipe jacking

by Dipl.-Ing. Marco Reinhard

On 18 April 2024, the 17th exchange of experience on pipe jacking took place on the premises of the LGA in Nuremberg. In the still unfamiliar atmosphere of the remodelled 'Franken-Saal' of the TÜV Rheinland Academy, around 125 participants and many exhibitors once again gathered in Nuremberg to find out about and exchange information on trenchless pipe laying using the closed construction method.

Thanks to the increased space available, it was possible to guarantee participation for all registered interested parties, as last year - due to the limited number of seats available at the time - some people had to cancel. The event was well received, even if a few improvements still need to be made to the technology.

After the opening of the exchange of experiences by Dipl.-Ing. Dieter Walter from Güteschutz Kanalbau and Dipl.-Ing.(FH) Markus Maletz from the LGA, the morning began in the usual way with the 'theoretical' part of the event.

Dipl.-Ing. Michael Hentrich, representing the GSTT, presented the work results of the EM task group, which has been working on homogeneous areas for soil and rock (separately) since 2017. Among other things, bandwidths are specified in various working aids in order to establish a correlation between DIN 18196, the homogeneous ranges and ATV DIN 18319. The results of the past few years have now been summarised in a paper in GSTT Information 28-2, which is available for download on the GSTT website.

## Digitalisation and no end in sight?

It is well known that digitalisation has long been established in the construction industry - even in pipe jacking, computer technology is indispensable these days. Dr Stefan Trümpi-Althaus from Switzerland first gave a review of what has happened in recent decades (lubrication, navigation, TBM data, etc.) and then went on to discuss new developments. He was particularly focussed on the topic of the large amount of unstructured data, which tends to cause confusion rather than provide clarity. A new type of cloud solution makes it possible to process the data in real time and present it impressively via visualisations and in a relatively simple manner. The individual modules were explained with a live demonstration of a tunnelling operation in France - the most important thing is that it is possible to actively intervene during the tunnelling work even before a possible damage event occurs and that the system already offers help to make the right decisions.

The fascinating topic of inspection and leak testing of large profiles after a corresponding drive was addressed by the speakers Dipl.-Ing. Diana Mette and Dr.-Ing. Olaf Kaufmann. The latter made it clear that the many standards and specifications on the market are not suitable for achieving the required objective in certain areas - engineering expertise should be utilised here in order to define practical inspection criteria that can then be completed in a reasonable time (economic efficiency).

Ms Mette went on to explain that there are a few special features of inspecting pipes, which is also carried out manually in the large profile area. In addition to the illumination (which has its limits), the inspectors also have to be very disciplined in order to produce a high-quality sound/image recording, which is then analysed by an engineer in the office. She also listed the advantages and disadvantages of a large profile inspection - above all work safety, as many sewers and pipes cannot be completely shut off or diverted and therefore carry water. The 'aerial survey' of pipes using drones and AI support was also mentioned - however, further developments are still necessary here, as the process is currently still rather limited in its use. The robot dog called 'Spot' - which brought a smile to the faces of many participants - was also mentioned; here, too, development is continuing, as the issue of occupational safety often restricts inspections in some areas.

## HDD in practice

After the lunch break, the topic of horizontal directional drilling methods, which was started in 2023, was continued by Dipl.-Ing. Marco Reinhard from DCA (Drilling Contractors Association – DCA-Europe), who reported on various construction sites and began his presentation with a look at the history and development of HDD in Germany. He pointed out areas of application and presented the advantages and disadvantages of the method and used many construction site images to show how the system can work in practice - or not, for example when unforeseeable geological conditions occur. This is where it becomes clear whether an experienced company is carrying out the drilling work, as even with the HDD method there is no 100% certainty of a trenchless new installation.

## Jacking pipes - what's new?

The brief presentations by the most important pipe manufacturers for the following materials brought participants up to speed on jacking pipes:

- Reinforced concrete (Dipl.-Ing.(FH) Stefan Niedermeier)
- Stoneware (M.Eng. Lars Schröder)
- Polymer concrete (Mario-Andreas Eckert)
- GRP (Dipl.-Ing.(TU) Alexander Dörfer)

In addition to the advantages and disadvantages of the individual products, the areas of application were also presented and many an audience member may have wondered whether there might be an alternative for the next tender, as the range of applications overlaps in some cases. The experts were also available to the audience after their presentation, as there were one or two special, project-specific questions.

## Practical report from pipe jacking

Practical examples based on selected tunnelling sites and special processes or products are always the 'classic' topics of the afternoon at the tunnelling seminar in Nuremberg.

Dipl.-Ing.(FH) Miriam Liß, Dipl.-Ing.(FH) Thomas Kraus - both from Stadtentwässerung u. Umweltanalytik Nürnberg - and Dipl.-Ing. Christian Trittenbach from the Sonntag construction company in Bingen reported on an unusual pipe jacking project in Nuremberg, in which a DN 2600 reinforced concrete pipe string was jacked over a total length of 1000 m in BA 1 (Minvervastrasse) using the partial cut method under compressed air.

Mr Kraus went into particular detail about the planning of the measure, which was very challenging due to the location of the 'Siedlungen Süd' collector. In addition to the actual tunnelling measure, various aspects of the 'ancillary works' had to be considered - for example, the heavy goods route, the divisions, public and private transport, cycle traffic and the trees that had to be taken into account. This was a planning challenge for everyone involved, but it was

carried out almost without a hitch with a long lead time. After the usual exploratory measures, the procedure, pipe type, etc. were determined and finally put out to tender.

At this point, Mrs Liß took over the further explanations, as she was the site manager for this project. The realisation of the planning resulted in a detailed bill of quantities, which also included the time specifications for the executing company. Weekly four hour appointments on the construction site were used to discuss the most important points regarding the status of the construction site, any problems that had arisen, as well as quality controls and changes, thus ensuring that the construction process ran as smoothly as possible.

Last but not least, Mr Trittenbach then presented the execution of the work from the point of view of the construction company and explained the overall project from the beginning with the construction site installation, the construction of the excavation pits, etc. In particular, he went into the conveying of the spoil, which was carried out by means of an automatic screw conveyor under compressed air in order to avoid long haulage times. One of the screw conveyor's bearings still needed to be reworked to minimise increased wear. The practical presentation was concluded with a few construction site photos.

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At the end of the seminar, Dieter Walter and Markus Maletz thanked the organisers, speakers and participants, who had all contributed to the success of the seminar. The next event is already planned for 3 April 2025 in Nuremberg.