# Sewer construction and rehabilitation

## Review of the IKT Practice Days, 2015

**Inside, specialists stand in small groups, excitedly talking, intensive discussions are in progress at the exhibitors' stands while, outside, practical demonstrations pop and hiss. The IKT's 2015 Practice Days are in full swing.**

Around two hundred wastewater experts attended IKT in Gelsenkirchen, Germany, for the 2015 „New Construction, Rehabilitation, Repair" Practice Days. Here they heard informative specialist papers on new developments in sewer construction and rehabilitation, and exchanged ideas and experience. Live demonstrations showcased a large range of technologies and methods.


IKT director Roland W. Waniek welcomes visitors to the IKT Practice Days.

### Sewer construction and renewal

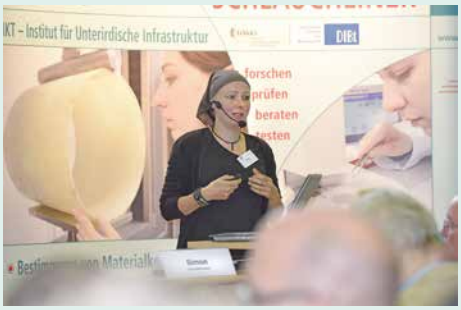
#### DIN EN 1610

What is new in the sewer-construction „Bible" – the DIN EN 1610 standard? . Karl-Heinz Flick (Dipl.-Ing) of the Fachverband Steinzeugindustrie association of vitrified clay manufacturers and Bert Bosseler (Prof. Dr.-Ing. habil,), Scientific Director of IKT, provided an overview of new criteria including water tightness test requirements. Looking to the future, Karl-Heinz Flick announced „an ISO standard is coming" and appealed for delegates to cooperate in the standardisation bodies.

Fundamental rules of sewer construction: Prof. Bert Bosseler explains DIN EN 1610

#### Liquid soil: preventing root infiltration

Roots intruding into sewers – something no one wants. This is why root-inhibiting liquid soils are enjoying ever greater popularity for backfilling of pipe trenches. Jana Simon (Dipl.-Ing.,) of the University of Kassel and Marcel Goerke (M.Sc), IKT project manager, explained the advantages of temporarily flowable, self-compacting backfill materials, and outlined where attention is needed in their use.




Jana Simon (Dipl.-Ing. ) of the University of Kassel explains backfilling pipe trenches using liquid soil

Jana Simon also reported on a University of Kassel research project focussing on further optimisation of liquid soil. Marcel Goerke discussed IKT's plans for a „liquid soil" product test and called on network operators to participate in it, one aim being the drafting of specimen supplementary technical contract conditions.

#### Expansion of broadband coverage via sewers

The aim: High-speed Internet in even the most remote corners of countries. However, burying broadband cables across long distances is extremely expensive. So why not use existing infrastructures and install them in, for example, sewers? Frank Grauvogel (Dipl.-Ing.,) of the Burscheid municipal utilities and Dr. Sissis Kamarianakis of IKT spoke on the potential and risks of this method based on the experience gained in Burscheid and recent IKT studies. Their conclusion: interesting potential, but crucial questions remain to be answered.


Frank Grauvogel reports on experience in Burscheid on installing broadband in sewers

## Certificates for the world's first IKT-certified sewer operation managers

The world's first IKT-certified sewer operation managers received their certificates during the Practice Days. All twelve candidates had passed the necessary examinations and nine were awarded at the event.


Proud graduates: the first IKT-certified sewer operation managers receive their certificates.

## Live demonstrations: new sewer construction and current trends

Around midday, the participants and exhibitors were refreshed and reinvigorated with a tasty barbecue before the afternoon's „potentials market" and practical demonstrations. Numerous manufacturers showcased their technologies and methods live, and at eye level, on the IKT site. It was fascinating to see things usually hidden in a trench, and what happens in a sewer. The welding of a branch joint to a PE pipe, substrate preparation, use of a water-jet cutter prior to the rehabilitation of a manhole and the functional mechanism of a liquid-soil mixing system were among the attractions on show.

Practical demonstration: trimming off the projecting socket after welding a joint

## Exhibitor interviews

Exhibitors who did not have technical demonstrations had the opportunity to showcase their companies, products and services to the visitors in short interviews. The IKT „film crew", Sebastian Beck (Dipl.-Ing.) and Dr. Sissis Kamarianakis, took a microphone and camera to exhibitors on their stands and these interviews were relayed directly to a large-format screen.

## Lively debate: which material for which situation?

The live demonstrations were followed by the now almost traditional lively debate session „tough, but fair". This time on the controversial subject of „sewer construction; "which material for which situation?". There was intensive discussion between the advocates of various lines of thought on this subject: Dr. Ulrich Bohle (Steinzeug-Keramo GmbH), Manfred Fiedler (Göttingen Disposal Services/Fiedler Consult), Wilhelm Niederehe (FBS – Fachvereinigung Betonrohre und Stahlbetonrohre e.V.), Jürgen Rammelsberg (Fachgemeinschaft Guss-Rohrsysteme (FGR) e.V.), Andreas Redmann (KRV – Kunststoffrohrverband e.V.) and Dr. Claus Henning Rolfs (Düsseldorf municipal drainage services). Discussion focussed, among other things, on the durability of the various materials and their resistance to root damage at joints. IKT then invited all participants, speakers and exhibitors to join the evening programme of events. Here discussions continued in an informal atmosphere – as we don't, after all, see each other every day, so it's a good idea to take every opportunity to talk!

„Tough, but fair" debate – the issue of materials: intensive discussion between the advocates of various lines of thought

## Sewer repairs

The papers on the second day focussed on sewer rehabilitation and repair.

### Rehabilitation wastewater manholes

There is, on average, a manhole in the road every 40 m in the town of Hagen, a total of some 17,000, reported Vera Rabe (Dipl.-Ing.) of Hagen municipal services. All these manholes need maintenance, and rehabilitation when necessary. But which system is the right one for which particular case? Plastic, mortar or a lining? IKT's „Manhole Rehabilitation" comparative test deals with this question. Serdar Ulutaş, Dipl.-Ing. (FH), MBA, head of IKT Comparative Tests, reported on this work, which has since been completed, but was still very much ongoing at the time of the Practice Days.

Vera Rabe explains Hagen municipal services' experience of manhole rehabilitation

The test results have now been published (see the article in this issue on page 5). Conclusion: reliable manhole rehabilitation is possible using commercially available systems, even with subsequent exposure to groundwater pressure. Good test results proved to be a question less of the particular material than of the system used.

### Rehabilitation of main sewers

Erik Laurentzen (Ing.) of the City of Arnhem and Dr. Götz Vollmann of Ruhr University Bochum focussed in their papers on risk analysis for a combined sewer, citing the case of the Moerriool, in Arnhem. The Moerriool is a 130-years-old main sewer and is of great importance for urban drainage in the city, but was in an extremely poor condition.

Dr. Götz Vollmann, Ruhr University Bochum

Potential risks involved in rehabilitation were first identified prior to any action being undertaken. These risks were then classified by their probability of occurrence and magnitude of damage. The result: the repair method that had been proposed was not viable over the long-term, so an alternative rehabilitation method is urgently needed, even if it results in greater costs.

### Rehabilitation of sewer laterals

Sascha Köhler (M.Sc.) of the Herne municipal drainage department discussed the procedure used in the city for private site drainage system rehabilitation. During work on the collecting mains, the drainage department also inspects the connecting lines. This data is then evaluated and property owners are advised accordingly. This takes place around 800 times each year. Where rehabilitation is necessary, the owner can decide whether he or she will commission the necessary work, or entrust this to the municipal drainage department.

Sascha Köhler, municipal drainage department, Herne

Sebastian Beck (Dipl.-Ing.) of IKT provided additional general information on the legal basis, the predicted need for rehabilitation, and the various rehabilitation methods, including renewal. He also presented useful information compiled by IKT on behalf of the North-Rhine Westfalia environmental ministry for owners and wastewater management organisations.

### Large technical exhibition

The participants used the breaks for their own discussions and to exchange experience. They were also drawn to the large technical exhibition, featuring twenty-five exhibitors from the industry. Details of technical innovations were explained to visitors, who also asked the stand personnel plenty of questions.

**Make a note!**
**IKT Practice Days, 2016:**
**New construction, rehabilitation, repair**
7-8 September 2016
www.ikt.de/seminare
IKT, Gelsenkirchen, Germany
**Contact**
Dipl.-Ing. Sebastian Beck

## 1st Dutch „Sewer Repair" Practice Day

Intensive discussions, practical presentations and technology in action – IKT Netherland's first Practice Day aroused the enthusiasm of both participants and exhibitors. Some 350 international guests, three quarters of whom were from municipal wastewater management organisations, attended the event in Harderwijk under extremely pleasant weather conditions. Around thirty exhibitors from the Netherlands and Germany demonstrated their products and methods through practical presentations.

### Experiencing technology in action

The spacious setting of the Bouw & Infra Park in Harderwijk provided the exhibitors with scope to show their technologies, equipment and methods live to the participants. Inspection, milling/cutting and liner fitting were all popular attractions. And, above all, the weather was on our side!

### Fascinating range of presentations

The technical papers were received with great interest by the participants. Dutch sewer network experts spoke on topics including inspection, tendering and guarantees, injection-grouting and manhole rehabilitation. The reports on actual experience by the municipalities were of particular interest.

**Make a note!**
2nd Dutch Sewer-system Practice Day
22 September 2016
Bouw & Infra Park, Harderwijk
www.ikt-nederland.nl

**Contact**
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IKT Nederland

Around thirty exhibitors showed their technologies, equipment and methods in action.

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independent
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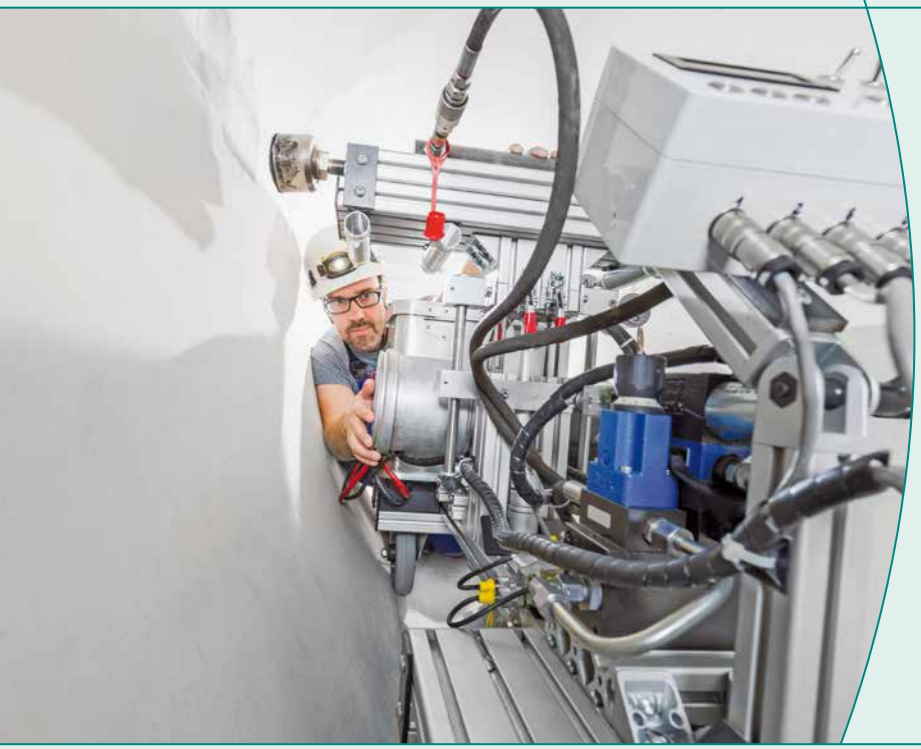
IKT - Institute for Underground Infrastructure

# ABOUT IKT



**IKT - Institute for Underground Infrastructure** is a research, consultancy and testing institute specialized in the field of sewers. It is neutral and independent and operates on a non-profit basis. It is oriented towards practical applications and works on issues surrounding underground pipe construction. Its key focus is centred on sewage systems. IKT provides scientifically backed analysis and advice.

IKT has been established in 1994 as a spin-off from Bochum University, Germany.

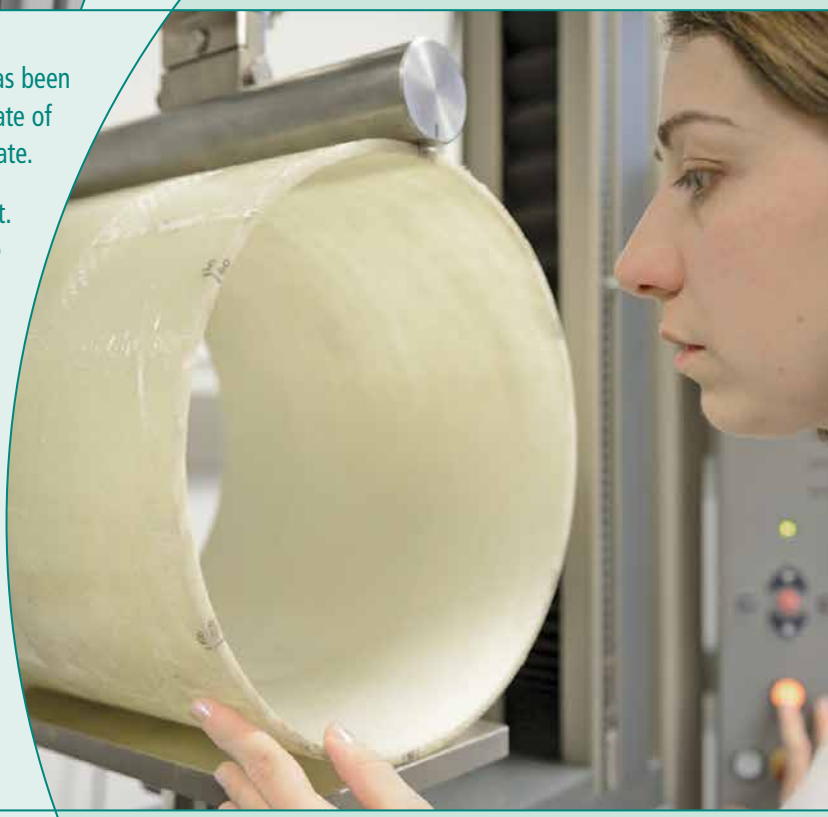
The initial funding for setting up the institute has been provided by the Ministry for the Environment of the State of North-Rhine Westphalia, Germany's largest federal state.

However, IKT is not owned by the Government. Its owners are two associations which are again non-profit organizations of their own:

**a) IKT-Association of Network Operators:**
Members are more than 130 cities, among them Berlin, Hamburg, Cologne and London (Thames Water). They hold together 66.6% of IKT.

**b) IKT-Association of Industry and Service:**
Members are more than 70 companies. They hold together 33.3% of IKT.

You can find information on projects and services at:
**www.ikt-online.org**

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IKT is located ca. 30 min. off Düsseldorf International Airport.



Published: May 2016
Circulation: 1.500 copies
Protective charge: 19,95 €