

IKT International Conference 2025: AI, Drones, Sensors and Robots for Smart Sewers and Urban Drainage



IKT International Conference
2025:
AI, Drones, Sensors and Robots
for Smart Sewers and Urban
Drainage

This international conference brings together experts and innovators to explore cutting-edge AI, robotics, and sensor technologies for real-time monitoring, predictive maintenance, and smarter infrastructure solutions.

The future of urban drainage and sewer management is here!

Key topics for Smart Sewer Systems and Urban Drainage:

- AI – How digitalization can transform their management
- Drones and Robotics – Improving safety and cost-effectiveness
- Robotics – Automating maintenance for efficiency
- Sensor Technologies for Inspection & Real-Time Data – Enhancing decision-making
- Predictive Analytics – Preventing failures before they happen

Programme:

International Conference 2025: AI, Drones, Sensors and Robots
for Smart Sewers and Urban Drainage
2 – 3 April 2025

Venue

IKT – Institute for Underground Infrastructure
Gelsenkirchen / Germany

Who should attend?

Municipalities, utilities, innovation teams, engineers,
industry professionals, contractors and suppliers who are
shaping the future of sewer systems and urban drainage!

For delegates: Registration

For exhibitors: Registration is open

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Celebrating 30 Years of IKT: “Sewers for the 21st Century”

International Conference



IKT International Conference
“Sewers for the 21st Century
II” took place on 11. – 12.
September 2024 in
Gelsenkirchen, Germany.

Held to celebrate IKT – Institute for Underground Infrastructure’s 30th anniversary, on September 11th and 12th, 2024, in Gelsenkirchen, Germany, the event brought together IKT’s research collaborators with sewer and urban drainage network owners from around the world.

The value of providing **face to face** opportunities for international exchanges in experience to address common problems was the key takeaway from IKT’s recent, in person, “Sewers for the 21st Century II” International conference.

The feedback from guests confirmed the conference was a resounding success, fostering an environment of collaboration and knowledge exchange. With a focus on resilience, sustainability, and innovation in **sewer and urban drainage systems**, attendees left with new insights, strengthened personal networks, and a shared vision for the future.



Dr Iain Naismith, IKT

Iain Naismith, the conference organizer and moderator commented:

The event took place was exactly as planned – by providing an informative and relaxing environment for our guests to hear and exchange their ideas for solving issues they face with ageing infrastructure and climate change adaptation. There was with plenty of time and opportunity in the programme to get to know each other, develop new contacts and initiate future collaboration.

Day 1: International Perspectives on Sewerage Issues

Session I was planned as a series of short presentations on current issues from different countries, we initially heard how different regions are tackling the challenges of ageing sewer networks and urban drainage systems.



Dr. Irene Scheperboer, IKT,
with James Gardner, WSAA

The event began with a warm welcome from IKT's Managing Director, Roland W. Waniek, followed by an introduction from Dr Iain Naismith, Senior Research Fellow and International Project Manager at IKT.

The first session, centered on the key sewerage issues of the 21st century, highlighted diverse experiences from around the world.

- **James Gardner**, Water Services Association of **Australia**, opened the discussions with a presentation on environmental research innovations in Australia and New Zealand.
- **Dr Ajit Salvi**, Brihanmumbai Municipal Corporation, **India**, particularly focused on the issue of improving the health and safety of sewage workers.



Prof. Jean-Luc Bertrand-Krajewski,
INSA,
Lyon/France

- **Prof. Jean-Luc Bertrand-Krajewski**, INSA Lyon, **France**, used coping with the consequences of urban sprawl in the City of Lyon as a case study for issues in France.
- **Wendy Franken**, Vlarlo, **Belgium**, emphasized collaboration between sewer network owners on multi-year planning, implementing rainwater and drought plans, making space for water and budgeting. In her role as President of the

EWA (European Water Association), she also highlighted addressing implementation of the revised Urban Wastewater Treatment Directive.

- **Saskia Holthuijsen**, Stitching Rioned, **The Netherlands**, highlighted additional issues including recruitment to the sector, digitalisation, circular economy and energy.



Tom Ogden, Yorkshire Water, UK

- **Thomas Ogden**, Yorkshire Water, **United Kingdom**, considered dealing with storm overflows, flooding and pollution and explained how collaborative research was addressing issues.
- **Thomas Brueggemann**, IKT, **Germany** explained how changes in climate, demographics, sustainability and technologies are affecting networks and how collaboration between municipalities was helping address some issues.

The session gave guests a broad view of how countries are working to future-proof their infrastructure.



Prof Dr Bert Bosseler, IKT

In the afternoon IKT's Scientific Director, **Prof. Bert Bosseler**, gave a vision of where IKT is heading in its research and knowledge sharing on risk-oriented asset management and rainfall management, before guests were given a conducted tour of new research facilities and current projects.

IKT has just taken over from the builders its **new Materials Testing Laboratories**, which have EU funding support for their construction, to enable us to stay ahead of the curve in testing the new materials and products being brought to market. Dieter Homann, Director of Materials Testing and his team demonstrated a range of new testing machines including impact testing, visual inspection and destructive testing.



Visiting IKT's laboratory with Dieter Homann, Director Material Testing, IKT

The current research element of the tour comprised first a viewing of the Mini-MAC, a novel non-destructive inspection

system for determining the structural stability of pipes and the pipe-soil system in smaller diameter pipes.

In the yard outside the laboratory guests viewed and discussed 1:1 scale test rig mock-ups and pipe damage scenarios for our current **LinKa project examining the limits of performance of CIPP lining**, end sealing and lateral connection repair of larger diameter pipes.

LinKa ('Liners für Kanalisation' (sewers)) and LinKa Partner Projects – International Collaboration



LinKa project examining the limits of performance of CIPP lining

This is a Euro 2.5m project examining the limits of performance of CIPP liners for the rehabilitation of larger diameter sewers. Funded by the Ministry of the Environment of North Rhine-Westphalia and a steering group of 10 municipalities, it has involved development of 1:1 scale test rigs with a variety of damage scenario into which CIPP (Cured In Place Pipe) liners will be installed and evaluated. Alongside this major German project, IKT is running Partner Projects with network owners from Ireland, UK, Isle of Man, States of Jersey, Belgium, The Netherlands, Australia and New Zealand, addressing specific issues with CIPP they have raised. A total of 40 networks owners are involved across the

main project and partner projects.



IKT large test facility, an 18m x 6m x 6m floodable test chamber for 1:1 scale underground infrastructure evaluation

Guests also viewed the **IKT large test facility**, an 18m x 6m x 6m floodable test chamber for 1:1 scale underground infrastructure evaluation. This is currently being prepared to host LinKa project test rigs to determine how complete CIPP systems (liner, manhole end seals and later connection repairs against groundwater pressure.

They also heard how IKT plans to develop its rainfall/urban drainage testing facilities with a new laboratory building for a **large rainfall** generating test rig and enhancement to the large test facility and flow rig capabilities. These are also supported by EU research infrastructure funding.



Guided tour of Zollverein Coal Mine Industrial Complex, a UNESCO World Heritage site in the city of Essen, Germany

Guided tour of Zollverein Coal Mine

North Rhine-Westphalia has been grappling with sewer and urban drainage issues relating to its **coal mining and industrial heritage** and its impact on subsidence, topography and ground water levels.

It was therefore fitting that guests were treated to an evening guided tour of Zollverein Coal Mine Industrial Complex, a **UNESCO World Heritage** site, where they could hear about and see this history. This also tied in with a visit the next day to see new sewer pumping station facilities.

Day 1 finished with a Conference Dinner near the Zollverein Mine.



Ilda Clos, South Australia
Water

Day 2: Addressing Ageing Infrastructure and Innovation

The second day continued two sessions focusing on extending the life of ageing sewer infrastructure and new innovations.

- **Maria Rus**, City of Almere, **The Netherlands**, mentioned the outcome of field experiments on tree root barriers and pipe joint resistance, but focused on how Almere, the newest city in the Netherlands already has many issues with sewers and how they are working to improve things.
- **Ilda Clos**, SA Water, **Australia**, explained how SA Water is improving how it makes informed responses to new housing developments connecting to its network and how the state is addressing network infrastructure investment.



Francieli Thums and

Valentin Kovachev, Wessex Water, UK

- **Francieli Thums**, Wessex Water, **United Kingdom**, presented a range of solutions that Wessex Water has adopted for optimising its sewer infiltration investigations and for sealing sewers against infiltration.
- **Dr Iain Naismith**, IKT, **Germany**, provided an overview of how the EmscherGenossenschaft, the regional sewer network operator in the Emscher Catchment Area around IKT, has made a **Euro 5 Billion investment** over 15 years to install hundreds of kilometers of new foul sewer to disconnect it from surface run off. This was also an introduction to the afternoon visit to one of the EmscherGenossenschaft's very large pumping stations.

Innovation in Urban Drainage Technology



Caroline Wadsworth, Isle Utilities, UK

The final session of the conference emphasized innovation in urban drainage technology.

- **Caroline Wadsworth**, Isle Utilities, **United Kingdom**, inspired the audience by showing how innovations can move from concept to implementation.

- **Aaroh Swarup**, **Indian** Society for Trenchless Technology, discussed bold steps in subsurface markets in India.
- **Prof. Simon Tait**, University of Sheffield, **United Kingdom** introduced Pipebots, a cutting-edge technology that deploys autonomous robots for sewer inspection and repair.
- The session concluded with a presentation on the progress with the EU funded Co-UDlabs Project by **Prof. Jean-Luc Bertrand-Krajewski**, INSA Lyon, **France**, which is a collaborative community of seven urban drainage laboratories, including INSA, Sheffield University and IKT.

Consortium of Urban Drainage Laboratories



Across borders: research institutions from Europe network their laboratories.

“Co-UDlabs” is an EU Horizon Funded ‘start-up community’ of European research organisations that have urban drainage testing facilities.

This 4-year project has involved a large number of ‘Trans National Access’ projects where industry and academia have been using facilities in other countries to undertake research on solutions to climate change and ageing drainage

assets.

IKT to take part in €4M Horizon 2020 project to build collaborative Urban Drainage research labs communities



Emschergenossenschaft's very impressive Pumping Station in the Emscher Catchment

Visit of Huge Pumping Station

To conclude the two days, guests were taken to see the **Emschergenossenschaft's very impressive Pumping Station** in the Emscher Catchment with an 8-storey deep shaft and 12 pumps, with a lift of 25m.

Part of Emschergenossenschaft's multi-billion-euro project, nicknamed the Ruhr Area's "**Sewer Autobahn**", which separated surface water from foul drainage, it served as an inspiring example of Germany's forward-thinking approach to sustainable water management.



Networking: exchange of ideas, and connecting with peers to form valuable professional relationships.

Takeaways – networking and collaboration: the highlights of the Conference

One of the most significant outcomes of the event was the enthusiasm participants expressed about **networking**. The conference provided ample opportunities for attendees to **connect with peers**, exchange ideas, and form valuable professional relationships.

Many participants remarked on the importance of expanding their networks to include experts from **across the globe**, recognizing that the challenges faced by the underground infrastructure sector demand international cooperation and **knowledge sharing**.



IKT Conference “Sewers for the 21st Century II” took place on 11. – 12. September 2024 in Gelsenkirchen, Germany.

The event also fostered a **deeper understanding** of the role that global collaboration plays in overcoming regional sewerage challenges. By connecting with colleagues from various sectors, participants were able to share best practices and innovative solutions, which many are eager to implement in their own projects.

As the conference wrapped up, attendees expressed **excitement for future events** where they can continue to grow these professional networks and work together to tackle the challenges of modern urban drainage systems.

Conclusion: A Future Driven by Innovation and Collaboration



IKT's international conference: Fresh insights and a renewed commitment to international collaboration – and good fun!

IKT's 30th-anniversary conference was a landmark event, showcasing the latest innovations and research in sewer and urban drainage management. Attendees left with **fresh insights** and a renewed commitment to international collaboration. The conference not only deepened participants' technical knowledge but also highlighted the importance of **building lasting relationships** with industry leaders worldwide.

As we look ahead, it's clear that the connections forged and the knowledge shared at this event will continue to drive the development of resilient, sustainable infrastructure systems for the future. Participants are already looking forward to future IKT conferences, where they can continue growing their networks and contributing to the global effort of **shaping the sewers of the 21st century**.



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***Click here to view
all conference pictures:***

Photo Gallery



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IKT attends the China-Europe

Trenchless Conference

Technology



Roland W. Waniek and Prof Dr. Bert Bosseler from IKT at the “2024 China-Europe Conference on Pipelines and Trenchless Technology”

IKT’s Managing Director, Roland W. Waniek, and Scientific Director, Prof. Dr. Bert Bosseler, have attended the “China-Europe Conference on Pipelines and Trenchless Technology” at the end of March 2024, where they presented the latest IKT research results on the subject of pipe liner quality. The event was organised by Prof. Dr. Jingguo Cao from the Tianjin University of Science and Technology.



Participants at the “2024

China-Europe Conference on Pipelines and Trenchless Technology” in Jinan, China

The event brought together more than 700 experts in the metropolis of Jinan, the capital of Shandong province on the south bank of the Yellow River.

Prof Bosseler spoke about “Quality Assessment of CIPP Lining in Sewers” and Roland W. Waniek spoke about “International Trenchless Development Trends”.



Prof Dr. Bert Bosseler gives a lecture on “Quality Assessment of CIPP Lining in Sewers”

Bert Bosseler presented the latest IKT research results on the quality assurance of CIPP liners, whilst Roland Waniek highlighted the advantages of trenchless construction and renovation in densely populated regions against the backdrop of economic and climate-related challenges.

The two had further interesting discussions at the Tianjin North China Geological Exploration Bureau, at the Tianjin Municipal Drainage Department and at the China International Petroleum & Petrochemical Technology and Equipment Exhibition in Beijing.



CIPP liner construction site
in China

The programme also included a visit to a CIPP liner construction site in Jinan and a tour of a CIPP liner and Spiral Wound Lining manufacturer in Gongjiatun.

And at the end there was also a short detour to the Great Wall of China to the north of Beijing – very impressive!

The Chinese hosts will be making a return visit to the IKT with a delegation in May 2024 to discuss further cooperation on the topic of sewer rehabilitation. Before that, they will visit the IFAT exhibition in Munich.



Roland W. Waniek speaks at the
Tianjin Municipal Drainage
Department / China

You can find a detailed report from our Chinese hosts about this trip here:

Chinese report on the IKT visit to China

More information about quality assurance for CIPP liners:
Neutral and independent: IKT test centre for CIPP liners



Talks at the “Tianjin North China Geological Exploration Bureau”



Prof. Dr. Bert Bosseler visits a CIPP liner construction site in Jinan, China



Prof. Dr. Bert Bosseler speaks at the Tianjin Municipal Drainage Department / China



Audience at the Tianjin Municipal Drainage Department / China



Lecture by Prof. Dr. Bert Bosseler at the "2024 China International Petroleum & Petrochemical Technology and

Equipment Exhibition" in
Beijing