

# **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**.



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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*



Ashwini Ausekar, IKT

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