

# AUTONOMOUS ROBOTS FOR SONIC BURIED PIPE INSPECTION

## Speaker

**Prof. Kirill HOROSHENKOV**

**Department of Mechanical Engineering  
University of Sheffield, UK**

## Abstract

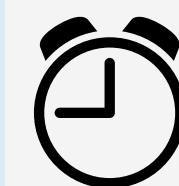
The length of the clean water buried pipe network in the UK is over 300,000 km. The length of the wastewater network is over 600,000 km. These systems are vast, but little is known about their condition. As a result, the maintenance of these networks is reactive so that there are far too many incidents of sudden structural failure and environmental pollution associated with their structural deterioration and poor hydraulic performance. This talk will cover the research into miniature autonomous robots equipped with sonic sensing solutions for the inspection of buried pipe networks on a massive scale. These robots will radically change the way these networks are maintained. The talk will discuss key research challenges related to the robot's autonomy, sensor performance, robot navigation and communication. This technology is now being explored by UK water utilities to detect blockages in sewer pipes and onset of damage in pressurised water pipes.

## Biography

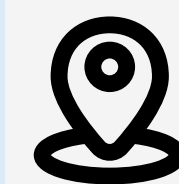
Kirill Horoshenkov is a Professor of Acoustics in the Department of Mechanical Engineering at the University of Sheffield, UK. His expertise is in acoustic materials and sensing. He leads the UK Acoustics Network+ with over 1700 members and Programme Grant to develop new methods of pervasive sensing for buried pipes. This work is sponsored by the UK Engineering and Physical Sciences Research Council. He is a Fellow of the Royal Academy of Engineering, UK Institute of Acoustics and Acoustical Society of America (ASA). He is a Panel Member of Hong Kong Research Grants Council. He was a Panel Member for Hong Kong RAE2020. He is author/co-author of over 200 papers and 10 patents. He was awarded the Tyndall Medal by the Institute of Acoustics in 2006 for his contribution to acoustics and Harold Jan Schoemaker Prize in fluid mechanics in 2018 by the International Association for Hydro-Environment Engineering and Research. He is a founder of two spin-off companies to explore commercially the results of his research.



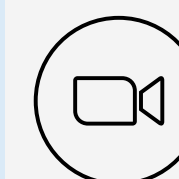
**10 January 2024  
Wednesday**



**4:00 pm - 5:00 pm**



**Civil Engineering  
Conference Room  
Room 3574 (Lift 27/28)  
HKUST**



**Zoom Link  
Meeting ID: 922 4612 9717  
Passcode: 945763**

## Enquiry:

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