

# Water Software Systems

## **Specialists in computer based methods for solving engineering problems in the water industry**

**Water Software Systems (WSS)** is a multidisciplinary research group that provides consultancy and research services to organisations in the area of water distribution systems and wastewater treatment and reuse. WSS are pioneers of computer modelling in water distribution networks in Britain. Our expertise has been applied to energy and pressure management, burst detection, leakage control and network design.

### Mission

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WSS' mission is to be the leading centre of research and commercial development excellence for engineering systems as applied to the clean water and wastewater sectors.

### Background

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The group was founded in 1980 to research and develop computer based methods for solving engineering problems in the water industry. WSS is one of the leading UK research and development groups and provides a range of tailor-made services including consultancy, software development and training. The team is multi-disciplinary and consists of specialists coming from a wide range of backgrounds such as control engineering, computer science, water and wastewater engineering and environmental engineering. WSS pioneered the computer modelling of water distribution networks in Great Britain and the group's software and other



solutions have been applied to networks serving tens of millions of customers to validate and compare network designs and operational strategies. WSS has been funded mainly by the UK Research Councils, European Commission, Royal Society and British Council. WSS also works directly with industry through contract research, consultancy, software application development and training. WSS has worked on projects of different scales, starting from small consultancy and feasibility studies to leading major workpackages in big international consortia with tens of academic and industrial partners.

## Expertise

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The group's expertise lies in:

- Modelling complex engineering systems
- Numerical optimisation applied to engineering systems
- Software development for engineering applications
- Solving engineering problems in the clean water area, including:
  - Modelling water supply and distribution systems
  - Energy and pressure management
  - Leakage management and burst detection
  - Network design for water distribution systems
- Solving engineering problems in the wastewater area, including:
  - Dynamic modelling of wastewater treatment plants
  - Wastewater treatment plant design, feasibility studies and optioneering
  - Wastewater treatment process piloting, optimisation and control
  - Plant troubleshooting
- Computational fluid dynamics (CFD)

## Facilities

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WSS has a state of the art water sustainability laboratory equipped with a set of pilot-scale units for the treatment of wastewater, range of laboratory devices for physico-chemical examination of wastewater and wastewater sludge and a high-performance computer monitoring and control system. The equipment allows us to pilot different processes, derive and validate models and to test different control strategies. We have also access to a bio-chemical laboratory where all standard and non-standard wastewater measurements can be carried out.

## The Water Software Systems group can offer:

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- Innovative solutions in complex multi-faceted engineering problems
- Reductions in operational costs and environmental impact by

- Saving energy
- Minimising water losses
- Reducing pollution discharge to rivers
- Assistance with the compliance of requirements imposed by regulatory bodies
- Training courses

## Key Collaborations

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### Academic

- University of Exeter
- University of Sheffield
- Cranfield University
- Imperial College London
- University of Leicester
- Technical University of Ilmenau (Germany)
- Wroclaw University of Technology (Poland)
- Warsaw University of Technology (Poland)
- Bauman Moscow State Technical University (Russia)
- Harbin Institute of Technology

### Industrial

- Veolia Water UK
- Yorkshire Water Services Limited
- United Utilities
- Midas Technologies Ltd
- Thames Water Utilities
- South Staffordshire Water
- Anglian Water
- W.S. Atkins
- Société du Canal de Provence (France)
- Société Wallonne des Eaux (Belgium)

## Contact details

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