



**Marie Curie Actions-People-International Research Staff
Exchange Scheme (FP7-MC-IRSES)-318985-SmartWater**

Smart Sensor Networks with Energy Harvesting for Real Time Monitoring in Urban Water Infrastructure

欧盟第七框架智能传感网络对城市水系统实时监控项目

The SmartWater (318985) project aims to improve intelligent monitoring by investigating smart sensor networks with Energy Harvesting for real time monitoring of the water infrastructure. The project will look at the problem of limited power resources to carry out monitoring of the water distribution system. Benefits of the research to end users will be: reduced dependency on battery power, reduced installation and maintenance costs, real time monitoring, water consumption reduction, detection of abnormalities in the water supply system and energy saving. These areas are all important to the European Commission's policy 'Addressing the challenge of water scarcity and droughts in the European Union' (2007). This exchange programme will bring together well established research teams from UK, the Netherlands, and China with complementary skills and knowledge that demonstrate a clear commitment to research, networking and management of complex research programme involving multiple partners. The project will investigate employing **energy harvesting** technology to provide a sustainable power supply for inaccessible **wireless sensor networks** in **water distribution systems** (WDS). A methodology will be developed on energy harvested wireless sensor network and a prototype will be implemented in water distribution system applications. A new and long term international research partnership will be established and potentially commercialize and transfer research findings to water industries.

The SmartWater project is divided into 3 technical Work packages. Staffordshire University (SU) also working with Dalian University of Technology (DUT) focused on the research challenges in WP3 for intelligent monitoring and control using wireless sensor network in water distribution system, main achievement from WP3 is to investigate potential self-sufficient smart sensors for monitoring, various WSN structures and wireless transmission methods. University of Exeter and Harbin Institute of Technology (HIT) are investigating in energy harvesting techniques for WSN in WP2, the potential energy harvesting methods are suitable for monitoring water distribution system are investigated; Tsinghua and TUDelft working on optimal modelling and predictive control using WSN for water distribution system in WP4.

Professor Wenyan Wu from Staffordshire University UK coordinates and manages the project. The project was successfully organized three main Smartwater workshops in China and UK. All the partners are contributed to knowledge transfer activities and dissemination and impact event led by SU with support of all partners. Experienced researchers (ER), Early Stage researcher (ESR) and senior management staff are in this scientific exchange during the project. The scientific exchange consists of individual ESR long secondment and ERs short visit; and participates workshops organized by

SmartWater and attending international conferences. The Smartwater project has trained a body of researchers in area of energy harvesting, smart sensor and WSN and modelling and optimization in water distribution system who play a key role internationally in this research area and will contribute significantly to future research and innovation European and worldwide. The project also outreach to other academia, stakeholder and potential end users through various knowledge transfer activities and dissemination events. 33 papers have been published in international conference and journals during the period of SmartWater project in international conferences and journals. We also published SmartWater project on Staffordshire University website.

http://www.staffs.ac.uk/schools/art_and_design/cmat/projects/project-rt_water.html



SmartWater Project on smart sensors and sensor network with energy harvesting in water distribution system in China

