



Smart Water Network Monitoring using innovative On-line Sensors

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The recent development and dissemination of Information and Communications Technology (ICT) has a key role to drive cities to be smarter. The economic growth needs of cities that become smarter, sustainable, more efficient and liveable. Smart water represents a key core of the smart cities and the application of smart solutions will allow the cities to use ICT and big data to improve infrastructure and services (i.e. network efficiency, protection from contamination, etc.). In the water sector, the integration and implementation of novel technologies for water systems monitoring (drinking, distribution, sea, river water, etc.) as smart meters and sensors together with cloud computing systems introduce an innovative management that transform the traditional water networks into modern *Smart Water Networks* (SWAN). The introduction of innovative on-line sensors in the water system can contribute to monitor and control many water quantitative (e.g. flow, pressure, etc.) and quality (e.g. residual chlorine, PH, organic matter, etc.) parameters providing smart water management solutions contributing to prompt Smart Water Network as subsystem of the Smart City, recently recognized by the scientific and technical international community. In fact, the use of innovative on-line sensors allows to overcome the traditional management of water networks and to handle important issues such as reduction of water losses, analysis of big data, improvement of water quality, etc. The Ctrl+SWAN (Cloud Technologies & Real time monitoring+Smart Water Network) Action Group (AG) was created within the European Innovation Partnership on Water, in order to promote innovation in the water sector by advancing existing solutions. The vision of the AG consists of treating water network not as a traditional system with devices trivially added, but as a SWAN featuring new applications to promote optimal management and protection. The paper presents an update of a previous work on the state of the art on the best On-line Measuring Sensors (OMS) already available on the market and innovative technologies in the Research and Development (R&D) phases. Ctrl+SWAN membership bring up to date the list of parameters measured with innovative on-line sensors, the new sensor technologies and their innovative applications.