WATER RESCUE

Water resources efficiency and conservative use in drinking water supply systems

WP	4

| Deliverable
Tool | **4.3.2 Water Use Efficiency Joint Methodology**
Deliverable |
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| **Project Beneficiary No** | **PB3** |
| **Beneficiary Institution** | **University of Thessaly-Special Account Funds for Research-Department of Civil Engineering** |

WaterGEMS software operates as a web-based platform with the provision of licenses. The University of Thessaly-Special Account Funds for Research-Department of Civil Engineering (PB3) was supplied with a license for WaterGEMS for unlimited pipes.

Use: WaterGEMS software platform operates in Windows environment and supports the International System of units (SI). It can be used as a decision-making tool as it is used to model water distribution networks. The software is used to design and size new water infrastructure, retrofit existing aging infrastructure, optimize operations of tanks and pumps, reduce energy usage, investigate water quality problems, and prepare for emergencies. It can also be used to model contamination threats and evaluate resilience to security threats or natural disasters.

The software allows the user to:

- Perform fire flow simulations;
- Water quality simulations;
- Analysis of criticality and energy cost.

Functionalities: WaterGEMS capabilities include:

- Simulation of the hydraulic operation of a water distribution network without limitation regarding the number of nodes and pipes, pumps, tanks, etc.
- Development of the model of a water distribution network, determining the different water users at every node with a specific consumption pattern.
- Model the operation of complex water supply networks including pumps, valves, reservoirs, tanks, pipes and joints.
- Planning for system reliability, for example evaluate the system in case of new customers added, identify problem areas, accommodate service area growth and plan capital improvements.
- Capacity assessment for fire flow.
- Water losses identification.
- Networks simulation at real time. It has the possibility to connect to SCADA system.
- Perform a steady-state analysis or model the water distribution network over time using the extended period simulation.
- Water quality simulation, for example simulating the diffusion of pollutants and chlorine and also simulate water age.
- Provide graphs and tables with the results.

Purpose: WaterGEMS is used as one of the tools proposed under the methodology for water use efficiency. In WATER RESCUE project it is used by PB3 to develop the hydraulic simuation model for the water distribution network of Thermi.