

Towards Sustainability in Water Distribution Networks

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Abstract

Today, it is crucial to fully understand the actions that water distribution network managers must take toward sustainability. Sustainable management in any activity related to the urban water cycle will be related to the responsible and efficient use and control of the network to meet current needs without compromising the ability of future generations to meet theirs. To this end, various actions are proposed to take the network from the line to the circle.

This entails shifting from linear management (where collection takes place at a specific point and wastewater is discharged at another) to management based on the circular economy, which allows the system to reuse water and (recoverable) energy through integrated resource management. This will entail optimization, sectorization, monitoring, and, above all, a path toward digitalization of the water distribution network (which, with the digital twin as the culmination of these actions, will allow managers to lead the water network toward maximum sustainability).

This vision towards more sustainable water distribution networks, particularly in the water urban circle answers to the need to confront the global water crisis and ensure a future with adequate access to water and sanitation for all. Therefore, the challenges and opportunities for achieving sustainability in these systems are immense. Many problems must be faced and solved: aging infrastructure, the impact of climate change, growing demand, and isolated management models.

To do so, the suggested actions include optimizing, sectorizing, monitoring, implementing energy actions, using renewable energy and implementing energy recovery techniques, and finally, making a strong commitment to digitalization. This is the that the managers of water distribution systems must take towards sustainability.