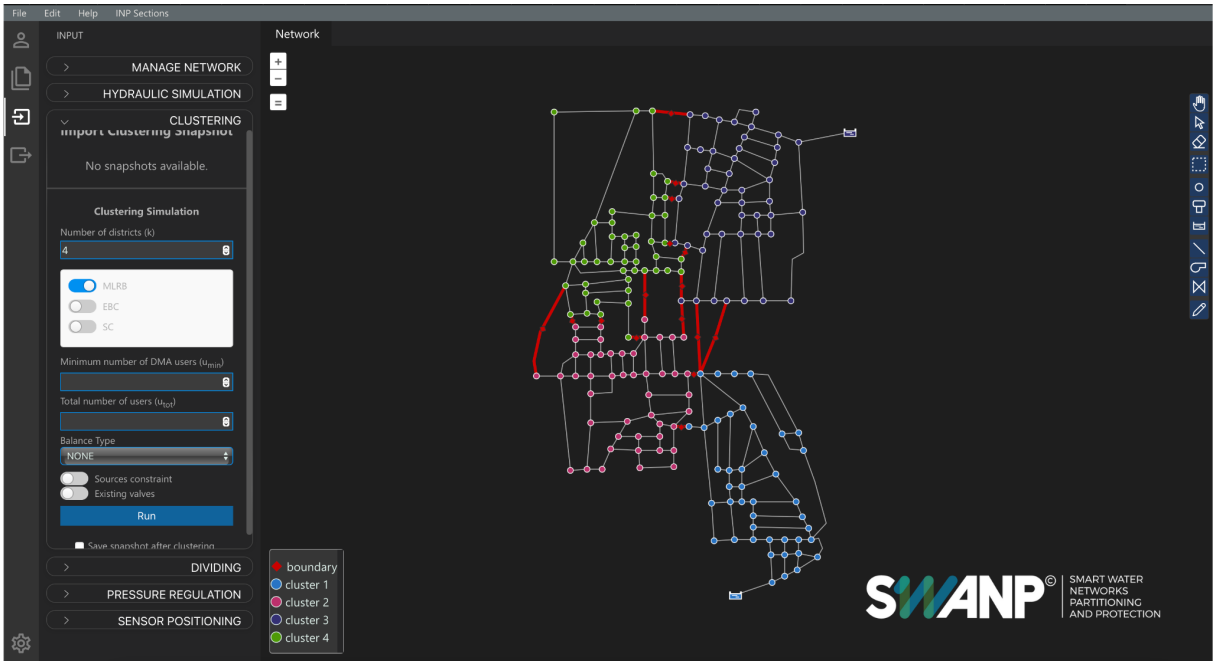
Product factsheet

Smart Water Network Partitioning and Protection

Software solution



Description

SWANP (Smart Water Network Partitioning and Protection) is an advanced decision-support software designed to perform hydraulic simulations and automatically divide water distribution systems into optimal District Metered Areas (DMAs). It combines graph theory, hydraulic simulation, and multi-objective optimization to identify the best locations for flow meters, valves,, and sensors, all within a GIS-based web platform.

SWANP supports both **topological clustering** and **hydraulic dividing**, enabling utilities to design district-based management strategies that enhance operational efficiency, reduce water losses, improve pressure control, and facilitate water quality monitoring.

The tool includes pre-configured performance indicators to compare districts layout alternatives and offers editable reports to support transparent decision-making and regulatory compliance.

Target audience

Water utility operators, Hydraulic engineers and consultants, Municipalities and infrastructure managers, Research groups and academic institutions

Actors, their roles and interactions

SWANP is primarily targeted at:

- Water utility operators
- Hydraulic engineers and consultants
- Municipalities and infrastructure managers
- Research groups and academic institutions

It is particularly useful during:

1. Design of water distribution systems or implementation of DMAs in existing WDNs
2. Water safety planning, EU innovation projects focusing on smart and sustainable water management and pressure management programs
3. WDNs resilience assessment and evaluation of the benefits of implementing DMAs

Unique selling points

- Fully automatic clustering and dividing of water networks
- Integrated placement of **flow meters, PRVs, and quality sensors**
- Supports **Demand-Driven and Pressure-Driven** hydraulic simulations
- Web-based GIS interface – no installation required
- Option to georeferenciate the WDNs
- Editable, ready-to-export **technical reports**
- **Validated on real-world networks**, including large-scale systems
- **Regulatory alignment**: supports D.M. 99/1997 (Italy) and EU WSP principles

Technical requirements

Operating environment:

- Web-based application (no installation required)
- Compatible with all major browsers (Chrome, Firefox, Edge)
- User credentials provided upon subscription

Data input:

- EPANET .INP files (network model)
- For clustering and dividing: number of desired clusters/districts to create
- For sensor positioning: number of sensors

Software data

- Operating environments:
  - SaaS - Web application

Technologies applied by the product

- **Civil and Environmental Engineering**
- **Hydraulic Engineering**
- **Hydraulic Systems Optimization**
- **Optimisation**

Related tags

water network | water dis | DMA | Hydraulic Simulation

Downloads

The following file can be downloaded from the online page of the product: https://mp.watereurope.eu/d/product/190

- Brochure