

Hossein Aghaee

Hydraulic Modelling & Non-Revenue Water Engineer | Water Distribution Networks

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Eligible to work in Italy and the EU | Italian driving licence B

SUMMARY

Civil and hydraulic engineer with 5+ years of experience, including 2+ years in Italy, specializing in water and wastewater distribution network modelling, leakage reduction, and hydrological flood forecasting. Currently responsible for hydraulic analysis of a 7,600 km network serving 96 municipalities in Italy. Field campaigns and model optimization there identified interventions cutting losses by 24 L/s (approx. 700,000 m³/year) and raised network data completeness from 67% to 98.45%. M.Sc. in Civil Engineering for Mitigation of Risks from Natural Hazards (University of Pavia & IUSS), with a peer-reviewed publication in the *Journal of Flood Risk Management*. Proficient in MIKE+, InfoWorks WS Pro, WaterGEMS, EPANET, HEC-HMS, HEC-RAS, QGIS, and Python.

CORE COMPETENCIES

Water Distribution Network Modelling · Non-Revenue Water (NRW) · Leakage Reduction · District Metered Areas (DMA) · Pressure Management & PRV Optimisation · Active Leakage Control · Minimum Night Flow & Step Testing · Water Balance & Loss Assessment · Model Calibration (Demand- and Pressure-Driven) · Monitoring Campaign Design · SCADA & Field Data Analysis · Wastewater & Urban Drainage Modelling · Hydrological Modelling & Flood Forecasting · GIS Asset Data Management · Technical Reporting & Decision Support

TECHNICAL SKILLS

Water & Wastewater Network Modelling: MIKE+ / MIKE+ Urban (advanced), InfoWorks WS Pro (advanced), Bentley WaterGEMS (advanced), EPANET (advanced), InfoWorks ICM (intermediate), SWMM (intermediate)

Hydrology & River Hydraulics: HEC-HMS (advanced), HEC-RAS (intermediate)

GIS & Spatial Analysis: QGIS (advanced), ArcGIS / ArcGIS Online (intermediate), Google Earth Pro

Programming & Data Analysis: Python (pandas, NumPy, matplotlib), MATLAB, SQL, VBA, Advanced Excel

CAD & Design: AutoCAD 2D, GstarCAD 2D

Methods: Model calibration and validation based on Pressure/demand driven methods, sensitivity and uncertainty analysis, SCS Curve Number, scenario testing, statistical analysis

EXPERIENCE

Civil and Hydraulic Engineer – Water Resource Management

Jun 2024 – Present

Enydros S.r.l.

Milan, Italy

- Lead hydraulic modelling and analysis of a 7,600 km water and wastewater distribution network serving 96 municipalities, building and maintaining models in MIKE+, MIKE Urban, InfoWorks WS Pro, WaterGEMS, and GIS platforms
- Designed and executed pressure and flow monitoring campaigns (CPIS) and step-test campaigns, raising network data completeness from 67% to 98.45% and providing a reliable basis for model calibration
- Calibrated and optimized demand-driven and pressure-driven models; localized major leakage totaling 22.3 L/s through combined model optimization and field investigation
- Recommended and specified interventions that reduced network losses by 24 L/s, equivalent to approximately 700,000 m³ of water saved per year
- Delivered targeted network strategies including DMA restructuring, valve and PRV placement, and flow-path adjustment to optimize pressure regimes and suppress background leakage
- Integrated field, SCADA, and GIS datasets into statistical decision-support workflows, producing prioritized intervention plans and technical reports for utility clients

Technical Specialist (Intern) – Hydrology and Flood Risk

Jan – Sep 2024

Consorzio di Bonifica Muzza Bassa Lodigiana

Lodi, Italy

- Performed single-event rainfall-runoff simulations to estimate peak discharge in the Brembo River Basin (800+ km²), using eleven years of rainfall, meteorological, and discharge records
- Built, calibrated, and validated HEC-HMS models supported by QGIS pre-processing, including scenario testing, model optimization, and Curve Number uncertainty analysis, achieving 97% agreement with observed peak discharge
- Findings supported development of an early-warning system and improved flood forecasting for approximately 50,000 residents, informing operational management of regional water infrastructure
- Work was peer-reviewed and published in the *Journal of Flood Risk Management* (2025)

Mandatory National Military Service

2018 – 2021

Iran – compulsory for all male citizens

Iran

- Completed the military service required by law for all male Iranian citizens before they may hold a passport or work abroad; relocated to Italy in 2021 to begin the M.Sc. programme

Project Coordinator / R&D Lead

2015 – 2018

Abi Bikaran Kavir Kerman Co.

Kerman

- Coordinated production orders and shipment planning for automatic drip-irrigation systems, acting as the interface between customers and production planning
- Led and trained a 15-person R&D engineering team, improving workflows from design stage through to finished product
- Developed and standardized production procedures that reduced downtime and maintenance incidents, supporting irrigation systems covering 120,000 hectares of agricultural land
- Delivered a 40% increase in output and a 30% reduction in processing time

EDUCATION

University of Pavia & IUSS

2021 – 2024

M.Sc., Civil Engineering for Mitigation of Risks from Natural Hazards

Pavia, Italy

- Focus: hydrogeological risk assessment and mitigation – floods, landslides, water and wastewater networks
- Key coursework: Fluvial Hydraulics & Flood Propagation, Urban Hydraulic Infrastructures, Hydrological Risk, Computational Fluid Dynamics, Hydromorphology, Landslide Hazard & Risk, Engineering Geology, Probability & Statistics, Continuum Mechanics, Applied Mathematics
- Thesis: *Water Discharge Peak Estimation Based on HEC-HMS and Predicted Curve Numbers for Flood Forecast in the River Brembo (Northern Italy)* – subsequently published in a peer-reviewed journal
- Programme ranked #101–150 in Civil Engineering (QS World University Rankings by Subject)

Azad University

2013 – 2017

B.Sc., Civil Engineering

Iran

- Curriculum covering hydraulics, water and wastewater treatment, concrete and steel structures, geotechnics, transportation, and pavement design

PUBLICATIONS

- Aghaee, H. et al. (2025). **Water Discharge Peak Estimation Based on HEC-HMS and Predicted Curve Numbers for Flood Forecast in the River Brembo (Northern Italy)**. *Journal of Flood Risk Management*. DOI: 10.1111/jfr3.70090

CERTIFICATIONS & TRAINING

- Occupational Health and Safety Training for Workers – High-Risk Workplaces (Italy, D.Lgs. 81/08), 2026
- Personal Protective Equipment for Working at Height – Fall Protection Training, 2026
- Level 3 Information Manager – ISO 19650 Expert, Plannerly, 2026

LANGUAGES

Persian: Native | English: C1 – Professional working proficiency | Italian: A2 – Elementary (currently studying towards B1)

Autorizzo il trattamento dei miei dati personali ai sensi del Regolamento UE 2016/679 (GDPR) e del D.Lgs. 101/2018.