



REINHARD STURM

General

Full Name: Reinhard Sturm
Current Position: Vice-President Operations
Specialization: Water Loss Management - Non Revenue Water Reduction
Professional Affiliations:

- Member International Water Association (IWA)
- Member Water Loss Control Committee of the American Water Works Association (AWWA)
- Member of the Utility Operations Committee of the California Urban Water Conservation Council
- Member of the Austrian IWA - National Committee

Professional Offices held: Secretary of the IWA - Water Loss Task Force

Key Qualifications

Reinhard Sturm has specialized in water loss management since the early stages of his professional career. He has worked in many locations around the world, including Asia, Africa, Eastern Europe, and North America. Reinhard has wide ranging experience with both management and a broad practical field experience in state-of-the-art technologies associated with all aspects of Non Revenue Water reduction, water loss control, system optimization, pressure management, target setting, pipe rehabilitation and computer modelling techniques. The focus of his work includes conducting water audits (IWA/AWWA Water Audit Methodology), developing strategies for water loss management practices, implementation of water loss reduction projects, design and implementation of water loss control training courses and research in the field of water loss management.

Reinhard is author or co-author of several leading publications in the field of Water Loss Management including two reports for the American Water Works Association Research Foundation: AWWARF Report #2811 "Evaluating Water Loss and Planning for Loss Reduction Strategies" and AWWARF Report # 2928 "Leakage Management Technologies".

Reinhard is also co-author of the McGraw Hill text book "*Water Loss Control – Second Edition*".

Employment and Project Record:

Since 2007 Vice President Operations - Water Systems Optimization, Inc.

Client Eastern Municipal Water District: Project Director responsible for implementing audit, component analysis of real and apparent losses and review of current leakage intervention strategy. Design of short and medium term water loss control strategy.

California Urban Water Conservation Council: Responsible for design and implementation of statewide water loss auditing and control workshops to train CA water utility managers and personnel in all aspect of water loss control and implementation of BMP1.2.

Client: City of Folsom: Project Director responsible for implementation of two year water loss control and management project. Project includes leak detection, pressure management, and development of online water loss monitoring and tracking system.

Client: City of Hayward: Project Director responsible for implementing AWWA water audit, component analysis of real and apparent losses and review of current leakage intervention strategy. Providing CoH with a detailed water loss control strategy.

Client: City of Folsom: Project Manager responsible for implementing AWWA water audit, component analysis of real and apparent losses and review of current leakage intervention strategy. Providing CoF with a detailed water loss control strategy.

Client: City of Panama City. Project Manager responsible for implementing AWWA water audit, component analysis of real and apparent losses and review of current leakage intervention strategy. Providing CPC with a detailed water loss control strategy.

Client Contra Costa Water District: Project Manager responsible for testing the accuracy of crucial system input export meters as part of the data validation necessary for conducting a top down distribution water audit. The top down water audit is being carried out by Contra Costa Water District with technical input and guidance from WSO.

Client Southern California EDISON: Project Manager responsible for carrying out water audits and field leakage assessments for three Southern California water utilities with the goal of assessing the most appropriate water loss assessment and control methods currently available; plus quantifying water loss and energy savings that can be achieved through proactive distribution side water loss control. This study also included a substantial research component – assessing the state wide water loss volume for California and providing EDISON with a Water Loss Control program road map for its member agencies.

Client: City of Phoenix. Project Manager responsible for implementing AWWA water audit, component analysis of real and apparent losses and review of current leakage intervention strategy.

Client: Philadelphia Water Department. Project Manager and technical advisor, providing specialist support to PWD staff, tasked with updating the water balance model and undertaking detailed validation of the components and water loss performance indicators.

Client: San Francisco Public Utilities Commission. Project Manager responsible for testing all reservoir outflow meters for their accuracy and preparing IWA/AWWA water audits for each of the nine city wide supply zones, component analysis of real losses and development prioritized leakage intervention by supply zone. Design and implementation of a two week leak detection training course for the SFPUC leak detection team.

2003 – 2007 Project Manager – Water Systems Optimization, Inc.

Client: California Urban Water Conservation Council. Technical advisor to the Council on the revision of Best Management Practice (BMP3)

Client: San Francisco Public Utilities Commission. Project Manager responsible for implementing IWA/AWWA water audit, component analysis of real and apparent losses and development of an optimal leakage intervention strategy.

Client: City of Phoenix: Project Manager responsible for testing the accuracy of all export meters and providing recommendations on improving the current finished water flow meter installations and technologies.

Client: Philadelphia Water Department. Project Manager and technical advisor, providing specialist support to PWD staff, tasked with updating the water balance model and undertaking detailed validation of the components and water loss performance indicators.

Client: City of Phoenix: Project Manager responsible for assessing the installation conditions and appropriateness of all finished water flow meters used for at the City's water treatment plants.

Client: Awwa Research Foundation. Project Manager and Co-Principle Investigator on research project #2928.

Client: El Dorado Irrigation District, (California). Project Manager responsible for implementing IWA/AWWA water audit.

Client: City of Phoenix, (Arizona). Project Engineer managing on-site activities related to the implementation of the IWA/AWWA recommended water audit methodology including both the top down analysis along with bottom up analysis. Project encompassed all areas of water loss.

Client: Orlando Utilities Commission, (Florida). Project Engineer performing system input meter accuracy testing and analysis.

2001 – 2003 Project Engineer – Bristol Water Services Limited, UK

Client: World Bank, India. NRW Modeling Specialist for World Bank funded Karnataka Urban Water and Sanitation Sector Improvement project. Scope of work included assessment of present water supply situation, preparation of Annual Water Balance and selection of suitable demonstration zones for future Private Sector Participation project. Work also included preparation of required investments for Request for Proposals, for implementation of Demonstration Zones and Priority Investments.

Client: World Bank, Sri Lanka. Water Loss Reduction Specialist for the World Bank funded Base-lining Study to assess NRW situation for several water supply systems on the centre and southern coastal strip of Sri Lanka. Tasks included assessment of current level of service, supply time and pressure, establishment of water balances.

Client: World Bank, Moldova. Technical Project Manager and NRW Modeling Specialist for World Bank funded “Water Consumption, Distribution Network, Leakage Management, Production Assessment and Investment Analysis” project covering four cities in Moldova. Scope of work included, supervision and co-ordination of field assessments of the present situation, data analysis as well as the development of Medium and Long Term investment programs.

Client: Awwa Research Foundation, Canada. Non-Revenue Water Reduction Analyst, responsible for data collection and analysis of the water distribution systems of Halifax, Nova Scotia. Works carried out within the Performance Indicator Study financed by the American Water Works Association Research Foundation (AwwaRF).

Client: Awwa Research Foundation, United States of America. Non-Revenue Water Reduction Analyst, responsible for data collection and analysis of the water distribution systems of Charlotte County (Florida) and Boston (Massachusetts). Works carried out within the Performance Indicator Study financed by the American Water Works Association Research Foundation (AwwaRF).

Client: Consulting Engineers Salzgitter, Egypt. NRW - Data Analyst for the Kafr El Sheikh “Leak Detection and Network Rehabilitation K18” project. Analyzing NRW Zone data and adapting component analysis models to local circumstances.

Client: PABW Sdn Bhd, Malaysia. Data Analyst for the Selangor Phase II NRW Reduction Performance Based Project. Involved in the establishment of control systems and the analysis of statewide NRW reduction work related data.

Client: World Bank, Kazakhstan. Measurement Engineer in the “Northeast Kazakhstan Water Supply and Sanitation Project” (PHRD financed), working on the project components “Water Consumption, Distribution Network, Leakage Management, Production and Treatment Facilities Analyses.

Client: Bristol Water plc, UK. Project Engineer for a water loss assessment project on the transmission system, responsible for design and implementation of the flow and pressure measurement program as well as result evaluation.

1999 – 2001 Manager - Zivilingenieur Büro D.I. Herbert Serno, Consulting Company, Kuehnsdorf, Austria

Manager of municipal infrastructure department, responsible for all water and waste water related projects as well as flood protection projects and river management plans. Special emphasis on applied hydraulics for feasibility studies as well as detailed designs. The scope of projects included Extension and rehabilitation of water and wastewater distribution networks, pumping stations, reservoirs, transmission systems, several flood protection projects and the establishment of several river management plans. Overall responsibility for construction supervision of these water & sanitation sector projects in the province of Carinthia.

- 1998 – 1999 Project Manager - Austrian Government, Department for Geographic Information Systems**
Project manager for an applied Arc-Info project, co-ordination between end-users and IT personnel.
- 1997 – 1998 Project Assistant - University of Natural Resources and Applied Life Science, Institute for Water Management and Applied Hydraulics**
Project Assistant on the study 'Morphologic and hydraulic investigations on selected sections on the River Traisen' – part of the River Management Plan for the river Traisen. Hydraulic and geodetic assessment of relevant river sections and modelling of different flow situations and cross sections for several conversion options.
- 1996 – 1997 Project Assistant - University of Natural Resources and Applied Life Science, Institute for Water Management and Applied Hydraulics**
Collaboration as free-lancer on project the 'Future management plan for the Alpine Rhine'
- 1995 – 1996 Project Assistant - University of Natural Resources and Applied Life Science, Institute for Water Management and Applied Hydraulics**
Collaboration as free-lancer on several projects related to water quality analyses of rives and open reservoirs.

Education

University of Natural Resources and Applied Life Science, Vienna, Austria
Environmental Engineering
Graduated as Dipl.- Ing. (equiv. to M.Sc.) with distinction, 1998

Languages

	Speaking	Reading	Writing
German	Native	Native	Native
English	Excellent	Excellent	Excellent
Italian	Excellent	Excellent	Good
Spanish	Basic	Good	Basic

Selected Publications:

Text Book:

Thornton J., R. Sturm and, G. Kunkel. 2008. *Water Loss Control – Second Edition*. New York: Mc Graw Hill

Research Reports and Peer Reviewed Publications :

Fanner, V.P., R. Sturm, J. Thornton, R. Liemberger, S. Davis and T. Hoogerwerf. 2007. *Leakage Management Technologies*. Denver, Colo.: AwwaRF.

Fanner, V.P., J. Thornton, R. Liemberger, and R. Sturm. 2007. *Evaluating Water Loss and Planning Loss Reduction Strategies*. Denver, Colo.: AwwaRF.

Kunkel. G., Sturm R. 2011. *Piloting Proactive, Advanced Leakage Management Technologies in Philadelphia*, American Water Works Association, AWWA Journal, February 2011.

Papers and Presentations:

Understanding the components of your Infrastructure Leakage Index (ILI) is necessary to develop a successful strategy to reduce the overall ILI value – especially in systems with a low ILI. Preston S.J. and Sturm R. Paper to be presented at IWA – Water Loss 2007 in Bucharest, Romania published by the World Bank Institute in September 2007.

The Way Forward After Completion of a Full Scale Water Audit in a System With a Low Level of Real Losses – The San Francisco Public Utility Experience. Sturm R. and Haasz D. Paper to be presented at AWWA Annual Conference and Exhibition (ACE) in Toronto, Ontario Canada, June 24-28, 2007.

Water Loss Control in North America: More Cost Effective Than Customer Side Conservation – Why wouldn't You Do It?, Sturm R. and Thornton J. Paper to be presented at AWWA CA/NV Spring Conference 2007, Las Vegas, Nevada, April 17 -20, 2007.

How to Implement Proactive Leakage Management Technologies in North America – Results and Lessons Learned, Sturm R. (AWWA Research Symposium – Distribution Systems the Next Frontier, Reno, Nevada, March 2-3, 2007).

Implementing Selected Leakage Management Technologies in North American Cities – Results and Lessons Learned. Sturm, R. Paper presented at DSS 2006 (The Conference and Exposition for Water Distribution and Plant Operations Professionals), Phoenix, Arizona, September 17-20, 2006.

Proactive Leakage Management Using District Metered Areas (DMA) and Pressure Management – Is It Applicable to North America. Sturm, R. and Thornton, J. Paper presented at the Leakage 2005 Conference in Halifax, Canada, and published by the World Bank Institute in September 2005.

Progress to date on AWWA Research Foundation Project # 2928: Leakage Management Technologies. Sturm, R. Report presented at DSS 2005 (The Conference and Exposition for Water Distribution and Plant Operations Professionals) in Tampa, Florida, September 18-21, 2005 and published in the conference proceedings.

Applying UK Leakage Management Technologies to North American Water Utilities. Hoogerwerf, T., Davis, S., Sturm R. Poster presented at the AWWA Annual Conference and Exhibition in San Francisco, June 2005.

Progress Report on AwwaRF Project 2928: Leakage Management Technologies. Fanner, P. and Sturm, R. Report presented at AWWA Annual Conference and Exhibition (ACE) in San Francisco, June 2005 and published in the conference proceedings.

Use of the Infrastructure Leakage Index (ILI) in Malaysia. Preston, S. and Sturm, R. Paper presented at the IWA Conference “Leakage Management, Practical Approach” Cyprus, 2002 and published in the conference proceedings.