



academy

Course

Advanced course on pressure management and pressure transients in water distribution systems

28-30
November
2018

Location: Deltares, Delft,
The Netherlands

Pressure management is now recognized as the foundation for optimal management of water supply and distribution systems. The proven benefits of pressure management in distribution systems now include not only the water conservation benefits of reducing leak flow rates and some components of consumption, but also water utility and customer benefits arising from reduced numbers of bursts and leaks. These include reduced repair and reinstatement costs, reduced public liability and adverse publicity, reduced costs of active leakage control, deferred infrastructure renewals and extended asset life of mains and service connections, and fewer problems on customer service connections and plumbing systems, all leading to fewer customer complaints. In addition, knowledge of flow behaviour, both steady and unsteady, is necessary for optimised control and safe use of water. The system parameters, for example the network elevation, hydraulic properties of pumps, PRVs and consumer taps and off-design conditions, such as maintenance operations, play an important role in the design and operational management of water supply and distribution systems.

Aim of the course

The general purpose of this 3-day intensive course is to explain and demonstrate the latest concepts and tools for optimal management of pressure in water distribution systems (including insights in analysis, prediction and validation methods for estimate of pressure management benefits) and to give a deeper insight into pressure transients in pipeline systems. The course includes latest theory and methods for practitioners developed by Allan Lambert of Water Loss Research & Analysis Ltd and other leaders in developing and disseminating best practice methods in pressure management, from IWA Water Loss Specialist Group; together with extended experience gained by instructors with international experience. It includes lessons from practice, modelling issues, risk management, transient interaction of pumping station controls, PRVs and valve operations at large consumers.



Who should attend

This course is geared towards anyone who deals with operation of water distribution systems, as well as the design of such systems. This includes engineers, technical and project managers and controllers of water pipeline systems and process installations who want to upgrade their understanding of pressure management and pressure transients. A BSc degree in water engineering, engineering science, physics, or other scientific discipline is recommended (minimum requirement).

Course Instructors

Anton Heinsbroek | Deltares, Hydraulics for Infrastructure and Industry
Marco Fantozzi | Isle Utilities

Cost and registration

The course fee is € 1,450.-- for three days, excluding VAT. In order to register for this course, please use www.deltaresacademy.com
Registration must be done before October 26th.

Date and venue

28 - 30 November 2018

The course venue will be held at Deltares, Delft, The Netherlands.

The course consists of presentations, lectures, discussion sessions and workshops, all in English. We provide a certificate of participation after completion of the course.

The following lectures will be presented

Day 1 Wednesday November 28, 2018

- Introduction to the IWA Practical Approach to Water Loss Management and Pressure Management and latest advances in Pressure Management
- The IWA Water Balance and key Performance Indicators for water loss management and pressure management
- Introduction and explanation of key concepts used in calculations
- Systematic data collection and interpretation
- Defining the pressure management points, including Average Zone Point (AZP)
- Effect of pressure on Leak flow rates using FAVAD concept and/or N1 Power Law: latest theory and application to pressure:leak flow rate relationships for practitioners
- Effect of pressure on Consumption – the FAVAD N3 exponents and how to predict them
- Effect of Pressure on Burst Frequency – how to predict changes in existing burst frequency

Day 2 Thursday November 29, 2018

- Checking for presence of surges and identifying excess pressure
- Introduction to pressure transients
- Valve transients in systems
- Time scales of transients and control systems in distribution networks
- Pressure surge reflection on T-junctions and PRVs
- How to target flow and pressure measurements, to quickly identify Water Loss management and pressure management opportunities in Zones

Day 3 Friday November 30, 2018

- Predicting effects of Fixed Outlet, Time Modulation or Flow Modulation from a 24-hour test
- Analysis of Night Flows and calculation of Night-Day Factors according to latest best practice
- Analysis of Night Flows according to latest best practice
- Analysis and prediction of the technical and financial effects of different types of PRVs (fixed outlet, time modulation, flow modulation), based on a 24 hour test
- Recent developments in assessing Extension of Asset Life following Pressure Management
- Design of control systems
- Systematic approach to transient analysis
- Practical Workshop on a distribution network



WHY ATTEND THIS COURSE?

IWA Best Practice Methods define worldwide standards in water management

The content of the course is based on the current Best Practice Methods for water loss management developed by Allan Lambert and others in the IWA Water Loss Specialist Group (e.g. IWA Practical Approach to Water Loss Management). The course builds the bridge between water hammer theory and Best Practice Methods for pressure management to control leakage, consumption and burst frequency and extend infrastructure life.

Two dedicated specialists as trainers

Dr. Anton Heinsbroek and Eng. Marco Fantozzi are both leading specialists in their fields. Dr. Anton Heinsbroek is a senior specialist at Deltares. He has long term experience in the field of water hammer research, consultancy and lecturing. Eng. Marco Fantozzi, a leading consultant in water loss management using the IWA methodology, has helped many water companies worldwide to reduce losses and increase efficiency and revenue.

Exercises using specialist software

Exercises play a major role in our courses. All presented calculation schemes are illustrated by exercises. For the water hammer exercises we use the specialist software WANDA. This helps to visualize the water hammer phenomena and enables the participant to do sophisticated calculations.

Optimum group size

The size of our course is between 16 and 20 participants. We think this is an ideal tutor student ratio so we can dedicate individual attention to each participant and participants can exchange their experience and extend their network.

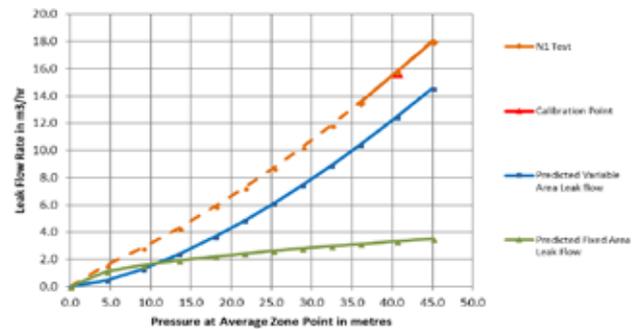
Interaction between teacher and students

We promote a vivid interaction between participants and instructors and a lively course atmosphere. Questions can be asked at any time and if you bring your own pressure management problem we will discuss it with you during the course.

Latest research results on pressure management advances

Training material has been developed with contribution from Allan Lambert (Water Loss Research & Analysis), a world leader in water loss and pressure management, and includes his latest research results on pressure: burst frequency relationships and predictions. The course includes latest theory and methods for practitioners developed by University of Cape Town, Water Loss Research & Analysis Ltd, Marco Fantozzi and other leaders in developing and disseminating best practice methods in pressure management; together with extended experience gained by instructors with international experience. It includes lessons from practice, modelling issues, risk management, transient interaction of pumping station controls, PRVs and valve operations at large consumers.

Prediction of Pressure at Average Zone Point vs Leak Flow Rate for N1 Night Test analysed using FAVAD concept



More information

This advanced course is organized by Deltares in collaboration with Marco Fantozzi of ISLE Utilities, and Allan Lambert of Water Loss Research & Analysis Ltd, leaders in developing latest best practice methods in pressure management.

Deltares is an independent institute for applied research in the field of water, subsurface and infrastructure. Throughout the world, we work on smart solutions, innovations and applications for people, environment and society. The department "Hydraulics for Infrastructure and Industry" (H2I) of Deltares is an international specialist group on fluid transients and advanced control of pipeline systems, working for the water industry, oil & gas industry and energy industry.

For more information

www.deltares.nl/en/about-deltares

www.deltares.nl/en/issues/infrastructure-for-water-and-energy/

Isle Utilities is a global team of scientists, engineers, business and regulatory experts, with a common drive to make a positive social, economical, and environmental impact through the advancement of innovative technologies and related practices.

Marco Fantozzi (Isle Utilities) is a leading consultant in water loss management using the IWA methodology, which has helped many water companies worldwide to reduce losses and increase revenue.

For more information

www.isleutilities.com

Water Loss Research & Analysis Ltd (WLR&A Ltd) specialises in research, training, software and consultancy using advanced concepts of leakage and pressure management, many of which are explained and disseminated 'free to all' as papers, presentations and Guidelines through the 'Influences of Pressure' Info-Hub in the LEAKSSuite website operated by ILMSS Ltd.

Allan Lambert (WLR&A Ltd) has had a long-standing interest in practical applied research throughout his professional career of over 50 years in the Water Industry. He was appointed to the IWA Fellows program in 2011 'in recognition of his extraordinary achievements'. In 2016 readers of Water and Wastewater International magazine voted Allan 8th out of 25 'best of the best' global thought leaders in international water/wastewater industries.

For more information

www.leakssuite.com

For more information on WLR&A

www.wlranda.co.uk or info@wlranda.com

Deltares

Enabling Delta Life



Deltares

PO Box 177

2600 MH Delft,

The Netherlands

info@deltares.nl

www.deltares.nl



Isle srl

Via Branze 45,

25123 Brescia (BS), Italy

T +39 339 5923610

marco.fantozzi@isleutilities.com

www.isleutilities.com



WLRandA Ltd and ILMSS Ltd

3 Hillview Close, Llanrhos,

Llandudno LL30 1SL,

United Kingdom

T+44 (0) 1492 581 548

info@wlranda.com

www.wlranda.co.uk

www.leakssuite.com

If you have any further queries, please do not hesitate to contact Nancy Dijkhuizen

E-mail: academy@deltares.nl | Phone: +31(0)88 335 8188

www.deltares.nl/eng/academy