

HAMMER V8i, Transient Analysis and Design (metric)

Course Type: Classroom Learning: Hands-on

Products Covered: HAMMER

Target Audience: Civil Engineer; Civil Engineering Technician; Consultant; Designer; Design Engineer; GIS Specialist; Hydraulics Engineer; Piping Designer; Planner; Plant Engineer; Project Manager; Site Developer

Course Description: This transient analysis training teaches the student how to understand the causes of hydraulic transients and water hammer, and learn how to protect systems against them. Through this course, you will gain the knowledge necessary to recognize the types of systems prone to transients and to proactively manage the associated risks. Hands-on exercises and real-world examples will enrich your learning experience with a convenient balance of strong transient flow theory and the application of a robust software tool.

This course material has been developed for the HAMMER V8i platform, Version 08.11.00.30. Modelers currently using versions prior to HAMMER V8i, version 08.11.00.30, are strongly encouraged to consider upgrading today to start taking advantage of the latest features and interoperability advantages of V8i.

After this course students will be able to:

Learning Objectives:

- Identify critical points in a network that require surge protection,
 - Avoid costly pipe breaks and service interruptions,
 - Reduce wear and tear on infrastructure,
 - Map the risk of contamination due to short-lived low pressures,
 - Correlate break records to transient results,
 - Plan maintenance on reservoirs and tanks.
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Course Topics:

- Complete hydraulic review
 - Transient modeling objectives
 - Method of characteristics
 - Cavitation theory
 - Column separation theory
 - Rigid column theory
 - Elastic theory
 - Air pocket movement tracking
 - Modeling transients
 - Unique data requirements
 - Pumps and valves
 - Modeling protection devices
 - Surge attenuation
 - Results analysis
 - Real-world case studies
 - Transients in networks
 - Integration with WaterCAD
 - Transient forces calculation
 - Streamlined data entry
 - Generating animated plots
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Course Details:

Course Prerequisites: This course is designed for engineers and managers in the water, wastewater, hydropower, and oil industries who are tasked with preventing damage to their pipeline and pumping infrastructure caused by hydraulic transients and water hammer.

earning Units:

16