Course Description

Course name	**#503 - Flow of Fluids Through Piping Systems**
Duration	**2½ days**
Format	**Public classroom, Inhouse events and Online**

Overview

Mr. Wissem Bouaita, IFP School and Chimie ParisTech, France, is teaching this 2½-day course in flow of fluids through piping systems.

The most diverse substances are transported and distributed in piping systems every single day. They include aggressive fluids in the chemical industry, hydrocarbons in petrochemistry or steam for energy transmission.

Chemical engineers who are designing these piping systems and specifying associated equipment like valves, pumps and flow meters, probably face more fluid flow problems than any other. Pressure drops calculations help the engineer size pipes and ducts, determine performance requirements for pumps and fans, and specify control valves and flow meters. And although the underlying theory is rather simple, its practical application can be confusing due to the empirical nature of important correlations, multiple methods for expressing parameters, many variable inputs, and alternative units of measurement.

Course Content

Designed around a series of practical examples which we work through to a solution, this unique training course is an essential guide to understanding the flow of fluids through pipe, valves and fittings. This understanding is a prerequisite for a successful design & flawless operation of your plant and piping system.

The course features 5 major subjects:

1- An in-depth information on physical properties of fluids (weight density, specific gravity, viscosity, vapor pressure...) and how to calculate them

2- An in-depth information on compressible and incompressible fluid flow through piping systems, valves, pumps & flow meter devices (Orifice plates, Flow Nozzles & Venturi Meters) and how to calculate them

3- An iterative method for sizing flow meters and valves

4- An in-depth discussion on cavitation and choking in control valves

5- A flow problem section with 15 concrete examples to help you practice and reinforce your understanding

Who Should Attend

- Chemical, Process, Petroleum Engineers
- Design Engineers
- Piping Engineers
- Plant Engineers
- Facility Managers
- Maintenance Technicians
- Mechanics
- Plant Operators
- Safety Engineers

Course Daily Schedule

Day 1 first half

- *Physical properties of fluids*
- *Nature of flow in pipe*
- *Head loss and pressure drop through pipe*

Day 1 second half

- *Compressible flow*
- *Flow of fluids through valves and fittings*

Day 2 first half

- *Regulating flow with control valves*
- *Measuring flow with differential pressure meters*

Day 2 second half

- *Liquid flow through orifices, nozzles and venturi*
- *Compressible flow through orifices, nozzles and venturi*

Day 3 first half

- *Practice session*

Instructor Biography

Mr. Bouaita, **Chemical Engineering, IFP School and Chimie ParisTech, France,** received his Master of Science in Chemical Engineering in 2008 from IFP School and Chimie ParisTech in France. His main thesis subject was petroleum refining and petrochemical processes.

For the last 12 years Mr. Bouaita has worked in oil refineries and petrochemical plants (steam cracking, PE, PP). He has been involved in plant operation, process design, project implementation, business analysis and plant management.

With the increasing awareness of training being a necessity and the advent of e-learning playing a major role, Mr. Bouaita has founded WR Training, an e-learning platform providing online chemical engineering courses for professionals in Oil & Gas and Chemical industries.

During the last 2 years, WR Training has reached 15000 students in 140 countries and taught more than 20000 hours.

Mr. Bouiata has been a member of the Continuing Education Institute-Europe faculty since 2020.