Course Title: Sizing of components - pumps, fans, pipework, control valves, relief valves, compressors, air receivers

Course overview:

This course is aimed at mechanical / piping / process engineers tasked with design of the piping systems. The course covers basic procedures for sizing of key components of a piping system. This will arm engineers with techniques needed for correct selection of equipment and help design safe and efficient systems.

The course covers sizing of pipework (diameter), pumps (in terms of head and flow), fans, compressors and air receivers. On the last day, we also look at pressure relief valves and control valves.
To help good understanding of the techniques the course is full of practical exercises, where attendees have a chance to try out the calculations for set examples, this helps deepen the understanding of the subject and memorise the equations.

Correct sizing of equipment requires good engineering judgement to balance various parameters: cost, size, weight, pressure, maintenance requirements, materials, lead-time of equipment, etc. This course covers both the calculation techniques required to evaluate size requirements as well as the practical considerations of design.

Length	3 days
Aimed at	Engineers
Discipline	Piping, Mechanical, Process
Delivery	Lectures + Practical Exercises
Cost delivery on client site Estimate	£5800 Based on 8 attendees Enquire for quote
Cost at a scheduled event	£750 (See calendar)
CPD	24 hours

Course Outline

- Introduction to piping systems
- Pipes
  - Key considerations
  - Trade offs
    - Hoop stress
    - Weight
    - Spans
    - Cost
    - Back pressure / sys resistance
    - Velocity
  - Velocity calculations
  - Exercise 1
  - Typical sizing arrangements

- Pumps
  - Pump curves
  - Exercise 2
  - NPSH calculations
  - Exercise 3
  - Typical arrangements
  - Rough estimation
  - Control options
  - Throttling
  - Practical considerations
  - Efficiencies
  - Design point and vibrations

- Fan
  - Types
  - Curves
  - Sizing calculations
  - Exercise 4
  - Analysis methods
  - Speed control

- Compressed air systems
  - Compressors
  - Sizing
  - Flow
  - Pressure
  - Multi stage compression
  - Duty-cycle
  - Air receivers
  - Typical system layout
  - Exer

- Control valves
  - Sizing control valves
  - Sizing actuators

- Pressure relief valves
  - Dimentional Characteristics
  - System and Device Characteristics
  - Direct loaded valves
  - Pilot operated
  - Rapture discs
  - Sizing of valves
  - Sizing of adjacent pipework