

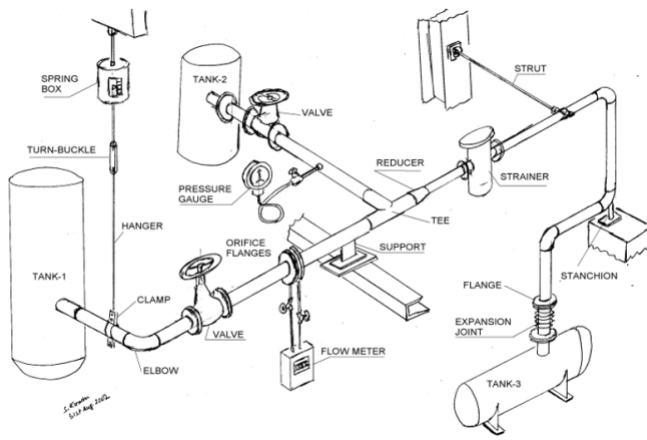
General Technical knowledge

Technical knowledge

MATERIAL, PIPING SYSTEM

PIPING vs PIPING SYSTEM

Date: October 25, 2017 Author: Thanh (QC) Nguyen Le 0 Comments



1) Piping:

- **Piping** includes pipe, flanges, fittings, bolting, gaskets, valves, and the pressure-containing portions of other piping components. It also includes pipe hangers and supports and other items necessary to prevent overpressurization and overstressing of the pressure-containing components. It is evident that pipe is one element or a part of piping. Therefore, pipe sections when joined with fittings, valves, and other mechanical equipment and properly supported by hangers and supports, are called **piping**.



2) Piping system:

- Interconnected piping subject to the same sets of design conditions.

Piping System - What is that?

- Concept Layout Development**
- Piping Components & their access requirement.**
- Straight length requirements.**
- Orientation of various tapings, components, etc.**
- Piping Drains & Vents**
- Insulation.**
- Material & Sizing**
- Critical piping system consideration.**
- Pipe Stress Analysis.**
- Pipe Supports**

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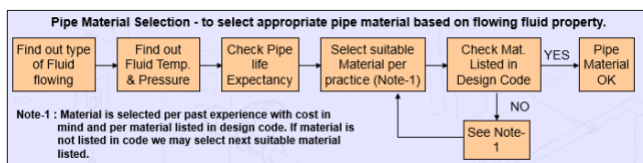
Pipe Stress Analysis.

Pipe Supports

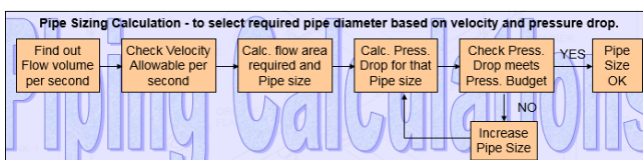
3) Piping components:

- Mechanical element suitable for joining or assembly into pressure tight fluid containing piping system included.
- Piping components include:
 - Pipe & tube
 - Fittings (elbow, reducer, flange...)
 - Gasket, bolt...
 - Valve
 - Support
 - Special item such as expansion joints...

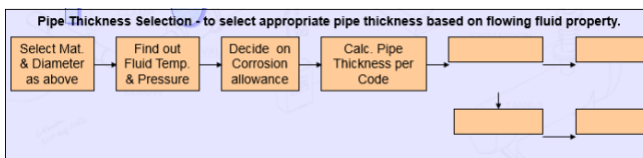
4) Pipe material selection:



5) Pipe sizing calculation:



6) Pipe thickness selection:



7) Some Special Considerations for Pipir

***When pipes are routed UNDER GROUND (Buried) following points to be kept in mind:**

- Minimum pipe size to be routed under ground shall be not less than 1 inch.
- Avoid flange joint in U/G piping.
- Keep in mind if pipe leaks U/G, it will be difficult to detect, so avoid U/G routing of pipe carrying hazardous fluid.

- Pipe to be laid below Frost Zone at areas where ambient temperature goes below freezing.
- U/G, Buried piping should be properly protected from corrosion.
- Pipe may be properly wrapped and coated to prevent corrosion.
- Or U/G piping be protected by using Cathodic protection.

***Freeze Protection of outdoor Piping:**

- In the areas where the ambient temperature goes below freezing there is a possibility that the liquid content of pipe may freeze while the plant is under shut down.
- For similar case pipes are wrapped with heat tracing elements to maintain the content temperature above freezing (around 4 deg. C) even when the ambient temp. is below freezing.
- Electric Heat tracing is done by wrapping electric coil around pipe, which turns on as the ambient temperature goes down. Pipes are insulated over the heat tracing coils.
- Heat tracing can also be done by winding Steam tubes around main pipes.

This topic just general about piping system only. Pls refer to other part in this blog for more information.

Ex: refer to Piping general – PART 1

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