Course Syllabus

Module Title	Sub Divisions				
	Introduction	Materials	Layouts	Stress Analysis	Supports
Basic Piping Design	✓	✓	✓		
Advanced Piping Design				✓	✓
Complete Piping Design	✓	✓	✓	✓	✓
Pipe Stress Analysis				✓	

Introduction to Piping Design:

- Introduction.
- Piping Design Concepts
- Review of Codes & Standards
- Pipe Sizing, Pressure Drop Calculation & Hydraulic Analysis

Piping Materials Engineering:

- Pipe Wall Thickness Calculation
- Piping Material Specification
- Piping Bill of Materials
- Pipe Support Bill of Materials
- Specialties B.O.M

Layout Engineering Design:

- Plot Plan
- Equipment Layout
- Piping Layout
- Piping Isometrics

Pipe Support Engineering Design:

- Pipe Support Layout Drawings.
- Pipe Support Design Calculation.
- Pipe Support Fab. Detail Drawings.
- Pipe Support Bill of Materials.

Stress Analysis

Theory

- Piping Design Code Requirements
- Stress Analysis Basics
- General elements of Stress Analysis:
  - Above Ground & Buried Piping - Process Plant, Yard, Tank farm Piping
  - Insulated, Externally/ Internally Lined, Jacketed Piping.
  - Materials - Metallic Piping – CS, AS, SS, Etc. | Non-Metallic - FRP, Etc.
  - Load Consideration: Weight (Pipe, Valves, Flanges, Strainers, Fluid, Insulation, External/ Internal Lining, Jacket Pipe, Etc.), Fluid Pressure, Support Loads due to Spring Stiffness, Thrust Force of Expansion Bellow, Thermal (Hot fluids, Jacket Fluid, Sunlight, Etc.), Cryogenic, Etc.
  - Occasional: Hydro test/ Wind/ Earthquake/ Relief Valve's Reaction Force.
  - Displacement Loads (Thermal Expansion of Equipment, Foundation Settlement of equipment, Building Settlement, Etc.)

Practice:

- Software used: CAESAR II.
- Modeling, Error Checking & Model Correction, Analysis and Result Interpretation.
- Stress and Load reduction within limits.
- Report Preparation

Course Director's Profile

Velpandian. M, CEO

Velpandian. M is a Mechanical Engineering Graduate (1st Class), passed out from Institute of Road & Transport Technology, Erode, [*Bharathiyar University, Coimbatore, Tamilnadu, INDIA*], 1988 **(27+ Years of Industrial Experience)**.

He is a Member and Chartered Engineer conferred by Institution of Engineers (IEI), India. He is further pursuing to obtain FIE (IEI), PMI Certification & Certified Management Consultant from IIMC, India.

He had been working with leading Engineering (Domestic & MNC) Consulting firms, EPC Companies & Manufacturing industries, etc. in various positions such as CEO, Chief Consultant, Engineering Manager, HOD – Piping & Pipeline, Project Manager, Construction Supervisor, Piping Trainer, Piping Failure Analyst, Piping & Pipeline Stress Analyst, Etc.

He is a serial entrepreneur who have started and operated 5 organizations. His 1st company was merged with BGR Energy Ltd., Chennai.

He has visited foreign countries (UAE, Qatar, Bahrain, Saudi Arabia, Germany, Switzerland, France, Netherlands, Singapore, Malaysia, Indonesia & South Korea) for providing Training, attending Seminars and Conferences, Business Development & Project review meetings and for Employment purposes.

Training Conduction References:

- **Annamalai University**, Chidambaram
- Focus Projects and Consultants, Chennai
- **Fribourg University**, Switzerland
- **BHEL**, Hyderabad
- Jurong Engineering Ltd., Singapore

Training Delivery Method:

- **Theory Modules:**
  - Instructor led Class room lecture (Projector, White Board).
  - Question & Answer Session
  - Test will be conducted after completion of each Module.
  - Course Material will be provided at the beginning of each Module.
- **Practical Modules:**
  - Computer based training will be provided to each individual.
  - On the Job Training will be provided for real time projects.
  - Test will be conducted.

FOCUS PROJECTS AND CONSULTANTS

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Learn from the expert

FOCUS Projects and Consultants

PIPING ENGINEERING DESIGN TRAINING

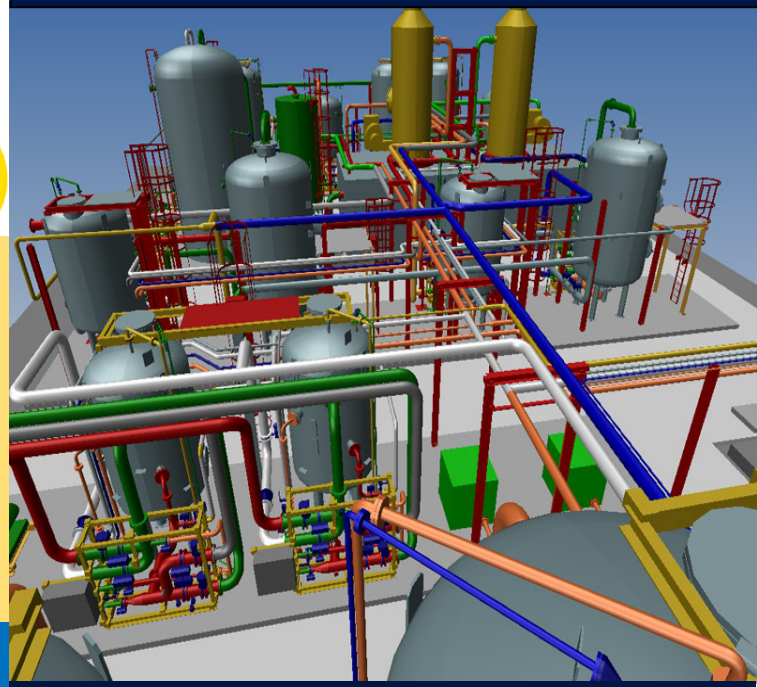
Conducted by

Mr. Velpandian. M, B.E (Mech.), MIE, CE
(27+ Years experience in Piping Engineering)

Target Attendees:

- **Fresh Engineering (Mechanical/ Production/ Chemical) Graduates.**
- **Engineering Students (1st Year to Final Year)**
- **Experienced Engineers who wish to accelerate their career growth.**

100 % Placement Assistance Provided



Focus Projects and Consultants
Chennai

Introduction

Engineering is one of the most exciting and potentially lucrative professional paths a young person can choose, and is highly sought after as a career. However, it is also highly demanding in terms of gaining the skills and knowledge required to get a foothold in the industry.

Most firms require potential applicants to not only possess relevant qualifications but also to display evidence that they possess other skills, which can be more difficult to quantify.

The "top" engineers all have different strengths and weaknesses that they bring to their teams and projects. However, they have some essential skills in common which allow them to work on the biggest engineering projects all over the world.

These skills are:

1. Technical Skills
2. Soft Skills

In the job market we see that the demands for fresh engineers are not increasing at the rate at which these engineers are produced.

We also understand that the existing capabilities (Technical & Employable) of these engineers are not sufficient to attract employers (*employers seek skilled engineers*) to provide placement opportunities.

Hence in order to increase placement opportunities engineers should develop their technical & employable capabilities by getting trained from an expert organization before passing out of the institution. However it is not late if the fresh engineers quickly develop their skills.

Piping Design (is a part of Industrial Plant Design) is a very attractive and lucrative career field. We at **FOCUS** are providing **Piping Design engineering training** for interested engineers at a nominal cost.

What is Piping?

Piping is an assembly of piping components used to convey, distribute, mix, separate, discharge, meter, control or snub fluid flows. Piping also includes pipe-supporting elements but does not include support structures. Piping means a complete fluid conveying system which includes:

- Pipes [BE/ PE/ Threaded/ Flanged]
- Pipe Fittings [BW/ SW/ Screwed/ Flanged/ Bell & Spigot]
  - Bends [Elbows (45°, 90°), LR/ SR, 5D,]
  - Branches [Equal Tee, Red. Tee, Half Coupling, ('O' lets), Pipe to Pipe, Etc]
  - Reducers [Conc./ Ecc.]
  - Caps, Etc.
  - Joineries (Flanges, Couplings, Etc.)
- Valves [BW/ SW/ Screwed/ Flanged]
- Accessories (Strainers, Watch Glass, Expansion Bellows, Hoses, Etc.)
- Gaskets [Metallic/ Spiral wound/ CAF]
- Fasteners (M/c / Stud Bolts & Nuts),
- Pipe Primary Supports

What is Piping Engineering?

Piping Engineering is a discipline that is rarely taught in a university setting.

- It consists of 50% art and 50% science.
- Artistic ideas are applied during planning the routing of the pipes.
- Scientific ideas are applied while designing the piping systems considering Safety (Plant + Personnel), Maintenance, Operation & constructability requirements and economy.
- Reliability of an industrial plant facility.

Piping Engineering Activities

The following are the various engineering activities involved in a project life cycle:

- Manufacturing of Piping Items.
- Conceptualizing.
- Feasibility Study (Pre- FEED).
- Front End Engineering design
- Pre- Tender Engineering Design
- Detailed Engineering Design
- Procurement.
- Fabrication & Erection
- Inspection & Testing
- Operation & Maintenance

Industrial Sectors covered

- Hydrocarbon & Petrochemicals
- Thermal Power Plant & Nuclear
- Water , Cement, Dyes & Paints
- Metals & Mines, Minerals, Textiles.
- Fertilizer, Specialty Chemical.
- Pulp & Paper, Pharmaceuticals.
- Food & Beverages, Yarns & Fiber

Piping Design activities

- Conceptual Design
- Front End Engineering Design
- Pre- Bid Engineering Design
- Detailed Engineering Design
- Procurement Support
- Construction Support
- Piping Failure Analysis
- Fitness for service Assessment

Key Benefits of learning PIPING DESIGN

- Increases placement opportunities.
- Starting salary and annual growth is high when compared to other career sectors.
- Accelerates Career growth.
- Job satisfaction is very good, since it is a white collar job.
- Provides a higher position responsibility.
- High Foreign visit opportunities (Deputation with MNC Companies, Etc.)
- High Foreign Employment opportunities.

Why learn from us:

- The trainer Mr. Velpandian. M has 27+ years of experience in Piping Design.
- He had been providing Piping Design Training since 1998 for a period of 19 years in Indian and overseas locations (Switzerland, Singapore, etc.)
- We have been approved by **FEAT, Annamalai University** for providing training for their students.
- We are continuously updating the training features for appropriate delivery.
- We have the following training facilities:
  - Conference room with necessary chairs, White Board, Projector, Etc.
  - Desktop Computers with all necessary software.
  - Course Material, Etc.
- Periodic Assessment is done.
- 100% Placement assistance provided (Resume, Cover Letter, Company Database, Job searching methods, interview facing techniques, How to Follow-up, Etc).
- Training completion certificate is provided which is valued by employers.

Training Modules

Module Title	Code	Total Hours	Course Delivery, (Days)		
			Full Time	Part Time	Week -End
Basic Piping Design	PPG - BPD	70	9	35	9
Advanced Piping Design	PPG - APD	90	12	45	12
Complete Piping Design	PPG - CPD	160	21	80	21
Pipe Stress Analysis	PPG - PSA	70	9	35	9

Days & Timings:

1. Full Time programs - From Monday to Friday between 9.30 A.M to 6.00 P.M.
2. Part Time programs - From Monday to Friday between 6.30 P.M to 8.30 P.M.
3. Week-end programs - On Saturdays and Sundays between 9.30 A.M to 6.00 P.M.