



SEATM Since 2002

SANJARY EDUCATIONAL ACADEMY[®]

(Governed by Sanjary Educational Academy Society, Govt Regd. No. 347 / 08)

By Mohammed Saleem President of Sanjary Educational Academy

DUTIES & REPONSIBILITIES OF PIPING DESIGN ENGINEER

Piping Design Engineer should have four year technical degree as basic qualification is a standard requirements to inter in field of piping design as well as need to eligible for SEA CERTIFIED PIPING DESIGN ENGINEER – certification course

Piping Design Engineer will be reporting to the Senior Piping Design Engineer / Manager

Piping Design Engineer should be :

- Familiar with the International Code and standards, rules and specifications relevant for the Process Piping Design and Power Piping Design etc.
- Perform Pipe Stress and Pipeline Stability Analysis. Detailed design and development of Piping Drawings-Piping Plan, Isometrics, etc. as per project specification/standards. Should have hands on exposure to Ceasar II & Pipeline Simulation Softwares.
- Review and analyse project specification and documents. Perform pipe stress analysis etc. using softwares, etc. and conduct detailed design and development of drawings details (namely: piping plan / section details / isometrics / hydro test diagram/tie-in schedules etc.)
- Conduct detailed Piping design Calculations including
 - Pipe Sizing and Pressure Integrating
 - Pipe Stress analysis and Flexibility analysis
 - Pump calculations
 - design of Pipe Support calculation and systems
 - Familiar Process Flow Diagram (PFD) , Piping and Instrument Diagram (P & ID)

Head office : M/s SANJARY EDUCATIONAL ACADEMY

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- Develop/prepare piping specifications, bill of materials including material requisitions etc. Provide guidance/assistance to drafting staff and develop detailed construction drawings. Assist in scheduling/monitoring and co-ordination with other design discipline/proponents etc. and ensure conformance with Project Requirements.
- Participate in Technical discussions with Consultant / Client, assist in trouble shooting. Provide support to estimation, assist in preparing MTO (when required), develop pre-bid design details as required. . Co-ordinate with other discipline engineers for detailed piping/mechanical design implementation.
- Assist in preparation of documents required for final handover of Project; Participate in start-up, commissioning, balancing / testing, shutdown etc., as per project requirements.
- Used applicable Company's Procedures, Work Instruction and Client / Project specification (if any) to perform the job and maintained effective implementation of ISO 9001:2008 Quality System of Company.

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PIPE STRESS ANALYSIS

General

The main objectives of the pipe stress analysis are to:

- Satisfy the code requirements in ASME B31.3
- Confirm that the piping load on sensitive exceed the allowable values.
- Identify the support locations and special support requirements such as springs, rigid struts, etc.

Load cases to be considered

The stress analysis for different pressure piping systems shall be carried using CAESAR II software and shall comply with the requirements of the codes, standard and specifications defined , and shall take into consideration the following:

- Weight effects – live loads and dead loads.
- Design and Operating Temperatures.
- Design Pressure.
- Temperature differential settlement of piping, equipment and vessels.
- Effects of support, anchor and thermal movements.
- Friction effects.
- Wind load on exposed piping.
- Hydrotest.
- Sea Transportation (Tow / Load out case)
- Earthquake
- Load due to slug flow or pressure surge

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Pipe Stress Analysis Methods

Based on review of all information, the category of the analysis shall be determined in accordance with the following guidelines.

Category 1 – Exempt from Analysis

All lines covered in this category shall be reviewed initially for material properties and service to ensure that they are not critical. A final review of the system geometry shall be undertaken to evaluate any possible expansion, clearance, equipment interfaces, displacement, support span or support loads problems that may occur.

Review of this category does not require any specific documentation. However, the review shall be done by an experienced stress engineer or piping design engineer

Lines that fall on category 2 or category 3 may be re-classified as category 1 when the subject lines may be readily judged by comparison with previously analysed systems

Category 2 – Simplified Analysis

All lines identified in category 2 shall be verified using simplified methods;

- a. Stress Nomographs / Charts
- b. Guided Cantilever method
- c. Lines are of uniform size and have no more than two points of fixation, no intermediate restraints and fall within the limitation of equation

Category 3 – Comprehensive Computer Analysis

All lines in category 3 shall be analysed using CAESAR II software. Piping geometry shall be modelled based on pipe routing available during the analysis. Where necessary, the complete piping system shall be modelled to ensure that all interactions have been taken into account

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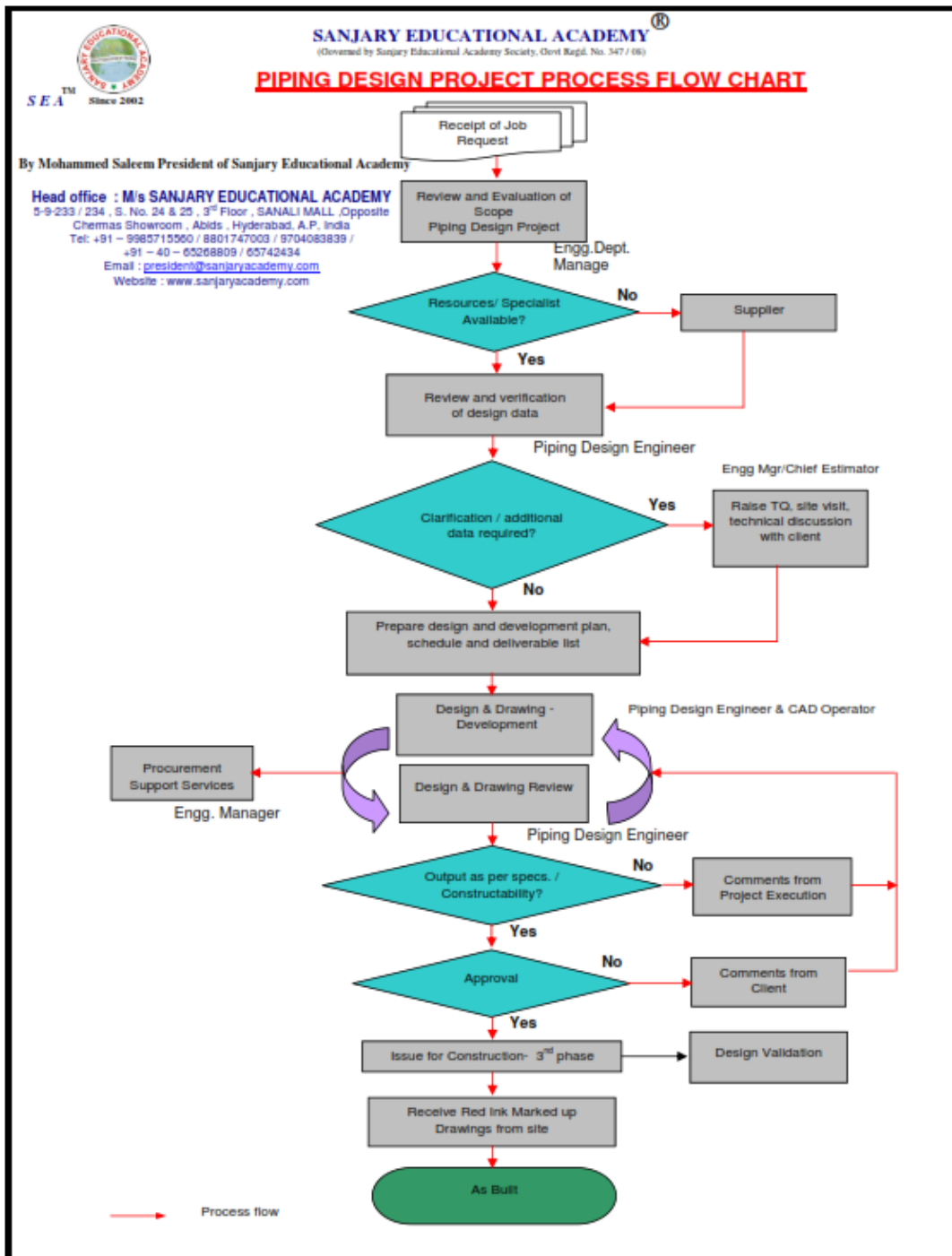
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