



EXPRESS  
ENGINEERING  
SOLUTIONS

# HEAT EXCHANGER DESIGN

**AS PER  
ASME SEC VIII DIV 1 & TEMA**



No one can de-code the code like us...!



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training@express-engg.com

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# Course Content

Heat Exchanger Design (29 hrs)

| Lecture No | Topics<br>CLICK ON TOPICS FOR DETAILS | Hours (hrs) |
|------------|---------------------------------------|-------------|
| 1          | Introduction                          | 3           |
| 2          | TEMA                                  | 10          |
| 3          | ASME UHX                              | 8           |
| 4          | PDS/HTRI Reports                      | 2           |
| 5          | Bolt Torque                           | 6           |

HEAT EXCHANGER DESIGN



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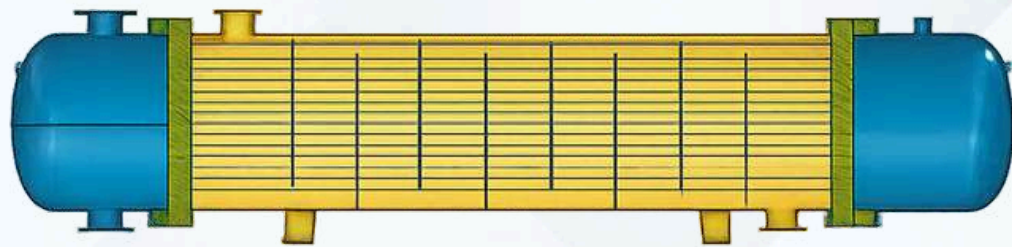
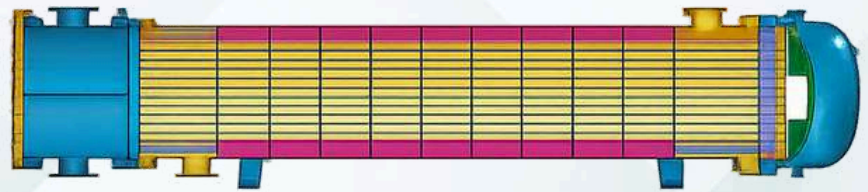
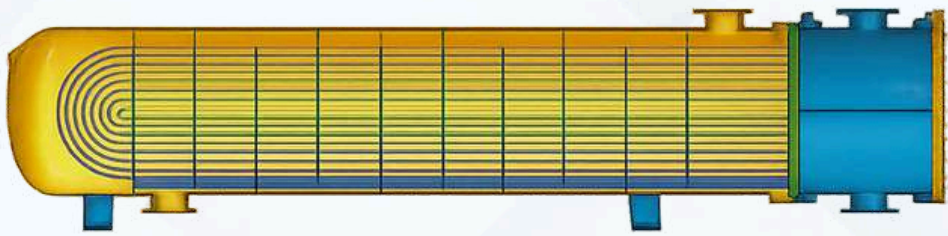
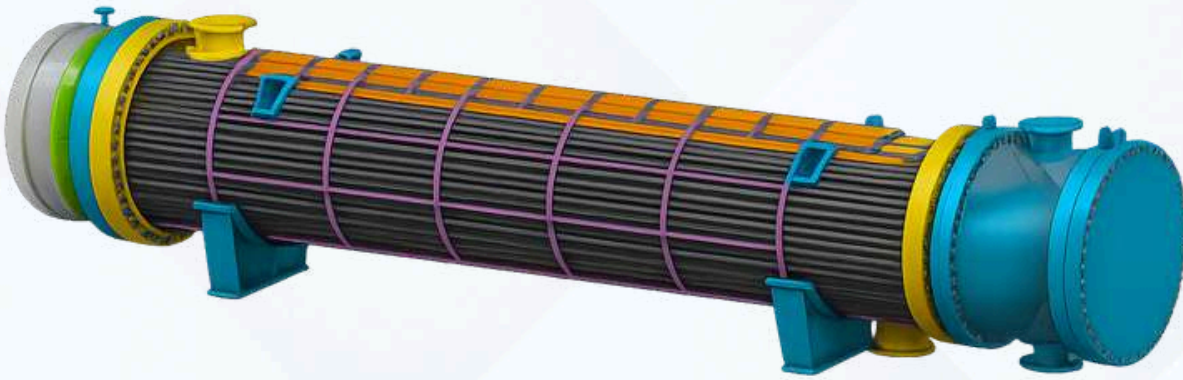
## 2) Heat Exchanger Design (29 HRS)

1

### Introduction

(3 hrs)

- Heat Exchanger Types.
- Significance of each type of heat exchanger.



2

### TEMA (Continued Next Page..)

10 hrs)

- Nomenclature.
- Bundle pulling loads (Horizontal Units).
- Bolt Tightening Sequence.
- Scope-TEMA.
- Definitions of.
  - Design Pressure.
  - Standard Test.
  - Pneumatic test.
  - Metal temperatures.
  - Corrosion allowances.
- Tube Pattern.
- Tube Pitch.
- Minimum shell and cover thickness.
- Baffle types and cuts.
- Baffle clearances.
- Baffle Thicknesses.
- Longitudinal baffles thickness calculations.



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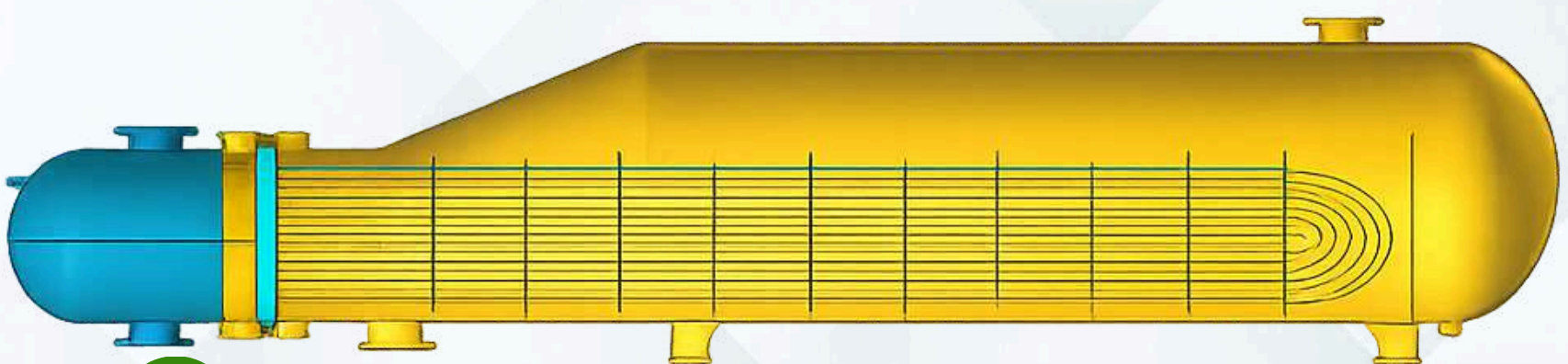
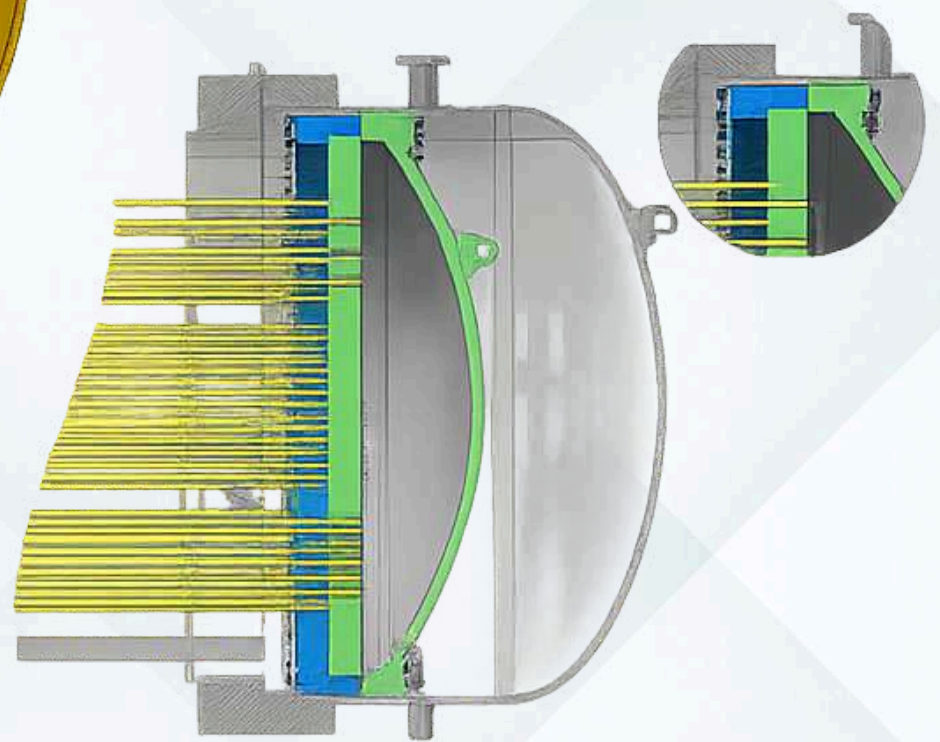
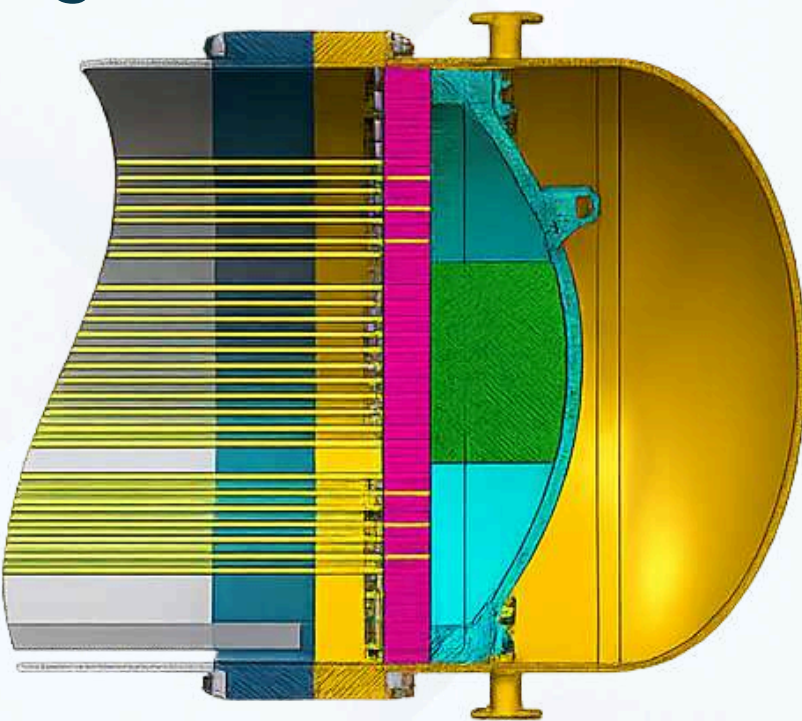


## 2) Heat Exchanger Design

2

### TEMA

- Maximum Unsupported Tube spans/ For U-bends.
- Impingement plate requirement and entrance areas.
- Tie Rod size and Numbers.
- Gaskets.
- Tube Sheet thicknesses.
- Tube Hole diameters and clearances.
- Tube Hole grooving.
- Tube –Tube sheet Joints.
- Minimum thickness of Channel covers.
- Minimum inside depth.
- Pass partition plate thickness.
- Bolt Spacing.
- Entrance and exit areas.
- Bypass Sealing arrangement.
- Flow induced vibration.
- Design considerations for vibration.



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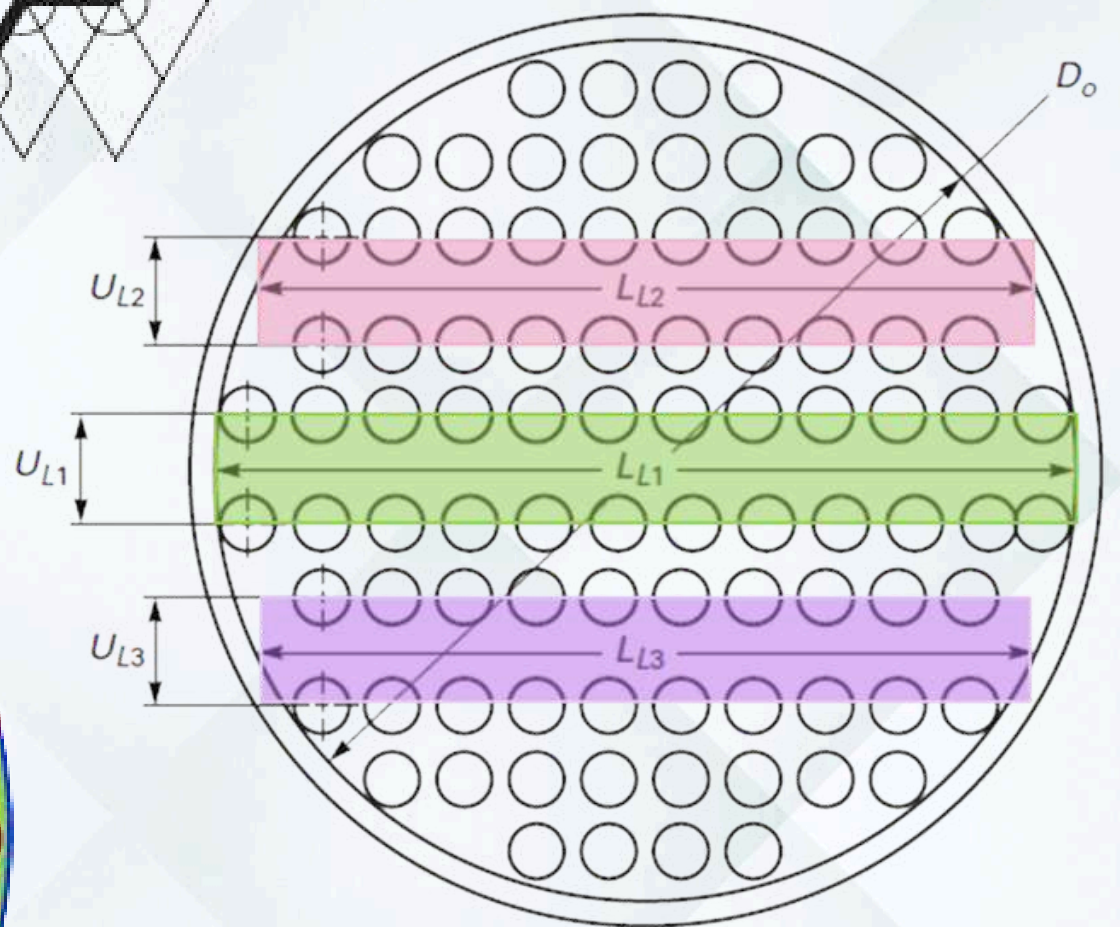
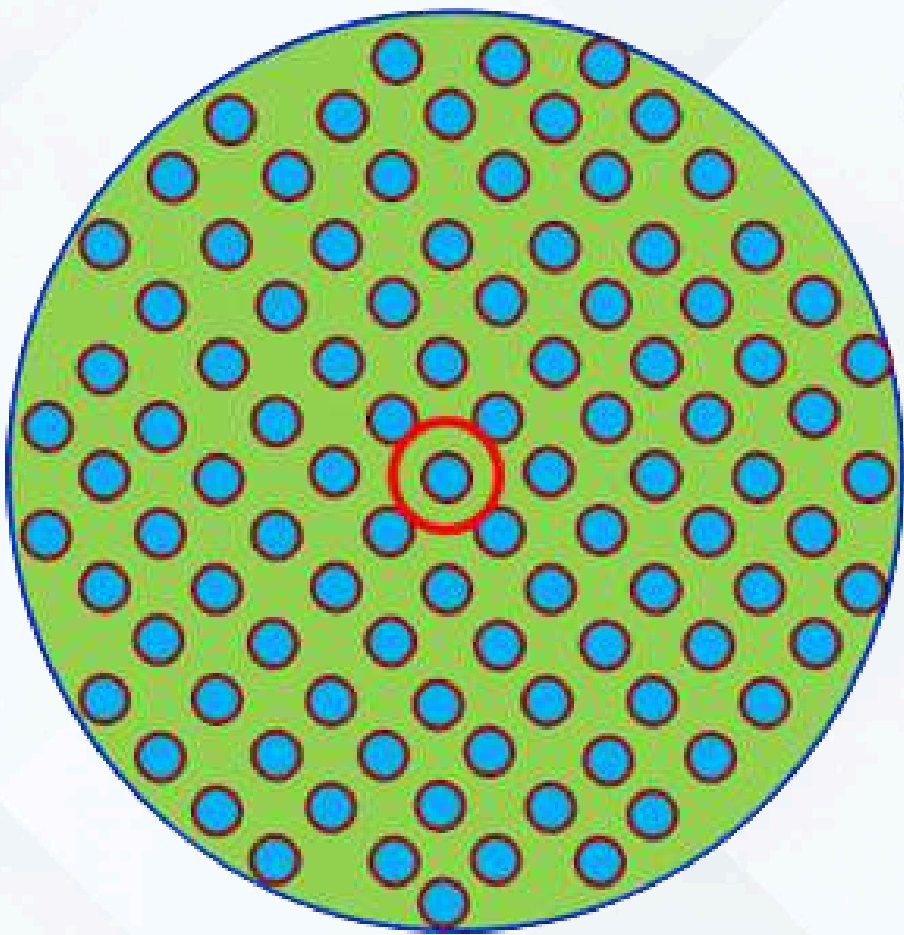
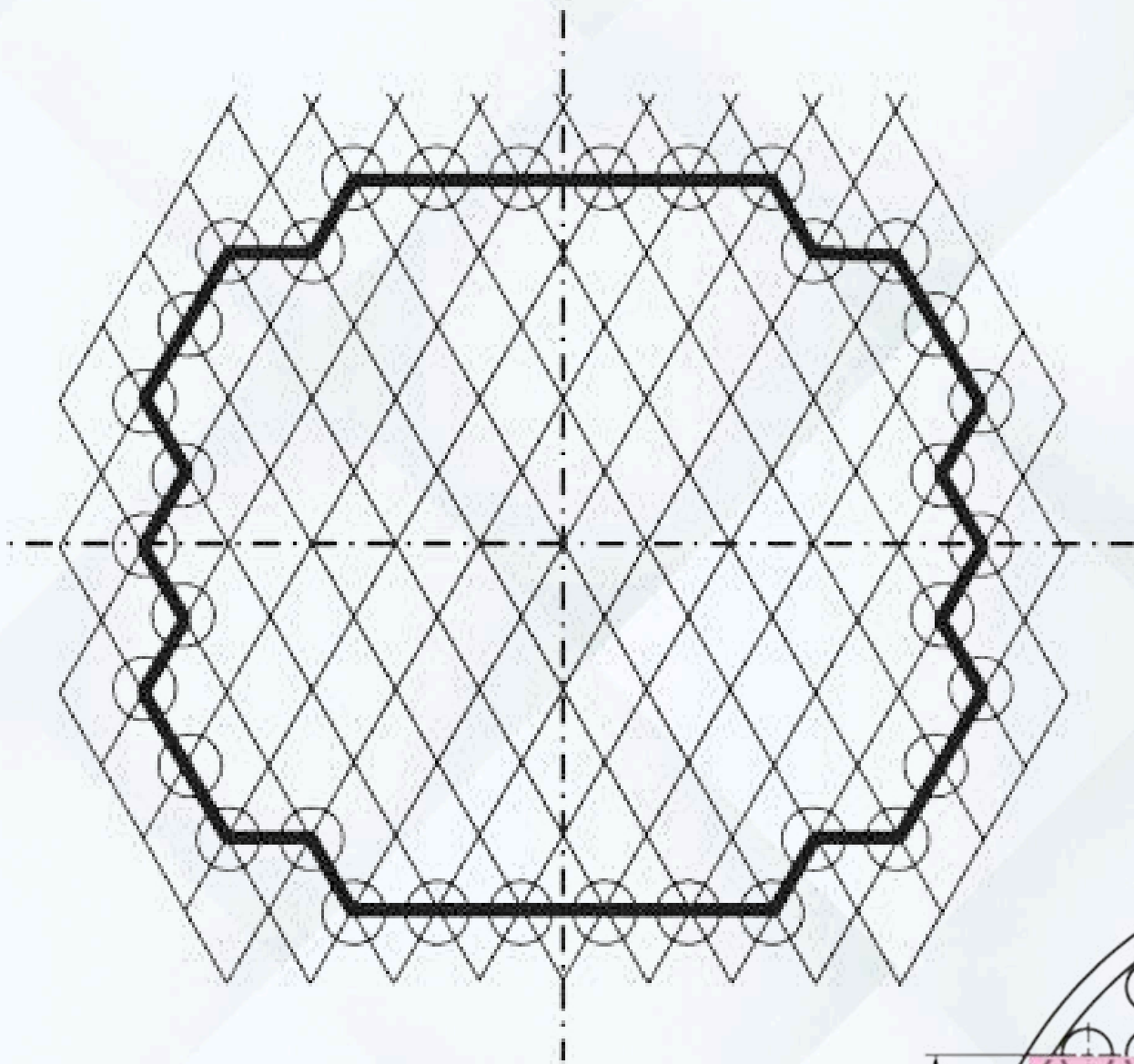
## 2) Heat Exchanger Design

3

### ASME UHX

(8 hrs)

- Scope.
- Terminology.
- Condition of applicability.
- Rules for the design of Fixed Tubesheets.
- Rules for the design of U-tube Heat Exchanger.
- Rules for the design of Floating head Heat Exchanger. Concept of shell bands.



$$A_L = U_{L1}L_{L1} + U_{L2}L_{L2} + U_{L3}L_{L3}$$



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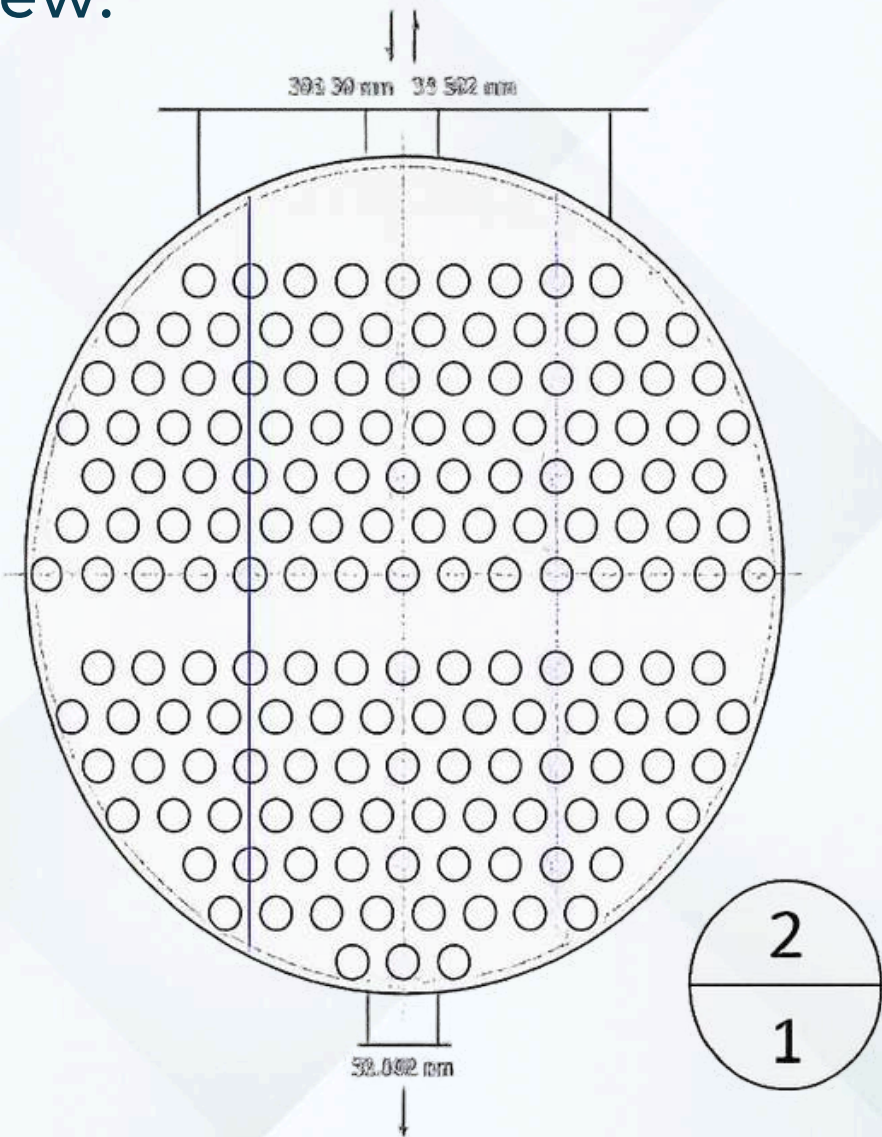
# 2) Heat Exchanger Design

4

## PDS/HTRI Reports

(2 hrs)

- Understanding of PDS/HTRI report.
- Important parameters from Mechanical design Point of view.



5

## Bolt Torque

(6 hrs)

- Bolt Tightening torque calculations as per ASME PCC-1 and Dennismoss.
- Manual Calculations and Validation with PV Elite software.



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# About Us



## Why Choose Us

With vast domain experience, highly capable & equipped Engineering Team we are specialized in providing the most professional Engineering services with fast turn around time. We also help businesses meet their goals with our cutting edge Engineering & Training services.



## Mission

Our mission is to deliver world-class engineering solutions with simplicity, precision, and speed, while empowering professionals through comprehensive training that meets global industry standards.



## Vision

To create a future where our cutting-edge expertise in engineering solutions and professional training empowers both clients and the industry, making us an indispensable partner in their success.



## Our Core Values

### 1) INNOVATION

We consistently challenge the status quo by exploring new ideas & technologies to deliver creative, cutting-edge solutions.

### 2) INTEGRITY

We operate with unwavering honesty & transparency, building lasting trust with every client and partner.

### 3) CUSTOMER FOCUS

We are committed to understanding our clients' unique challenges & providing tailored, value-driven solutions.

### 4) ETHICS

We collaborate & support one another, believing our collective strength drives the best results for our clients.



# Know The Trainer



Sachin Pol

Sachin is a Mechanical Engineer from Pune University and a Postgraduate in Pressure Vessel Design. He has **15+ years experience in Static Equipment Design**. He has worked in the field of Process Industry, Renewable Energy, Oil & Gas and Power Sector.

He is a well-known **corporate trainer** with versatile experience in the field of Static Equipment Design and FEA. He has successfully conducted trainings on PV Elite and ASME Codes across the globe for **more than 3500 professionals**.

Sachin served in some esteemed organizations like PRAJ, Thermax, Quadrogen.

He was an official presenter for Flange Design, Lifting Lug Design & WRC sign conventions at **CAU 2018** organized by Image Graphix across 8 cities in India.

With thorough technical knowledge and unmatched problem solving ability he has supported the customers to address their challenges and deliver quality output.



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# Who Should Do This Course?



## How We Can Help..!



**Mechanical Engineer** aspiring to make a career in Static Equipment Design in the field of Oil & Gas, Process Industry, Refinery, EPC, Chemical, Pharma & Power Sector.



**Static Equipment Design Engineers** looking to develop and excel in their role. This training will help them to **better understand** the code requirements and to **optimize the Design**. They will be able to **understand & resolve the queries and comments from customers and authorized inspectors**. They can **get answers** to their questions related to **live projects** as well. **No more delay** in Design due to any technical queries or questions.



**Any Engineer** seeking to switch to Static Equipment Design. The **in-depth** course content with detailed explanation of **code requirements, manual calculations** and easy to understand training material make it convenient to **transform** themselves into a **highly proficient** Static Equipment Design Engineer **in few months**.



**Proposal/ Estimation Engineer** looking to enhance their knowledge about materials, Design & various code requirements. This will help them to **optimize Design in a very short time** to match the proposal submission schedule.





# Design Services

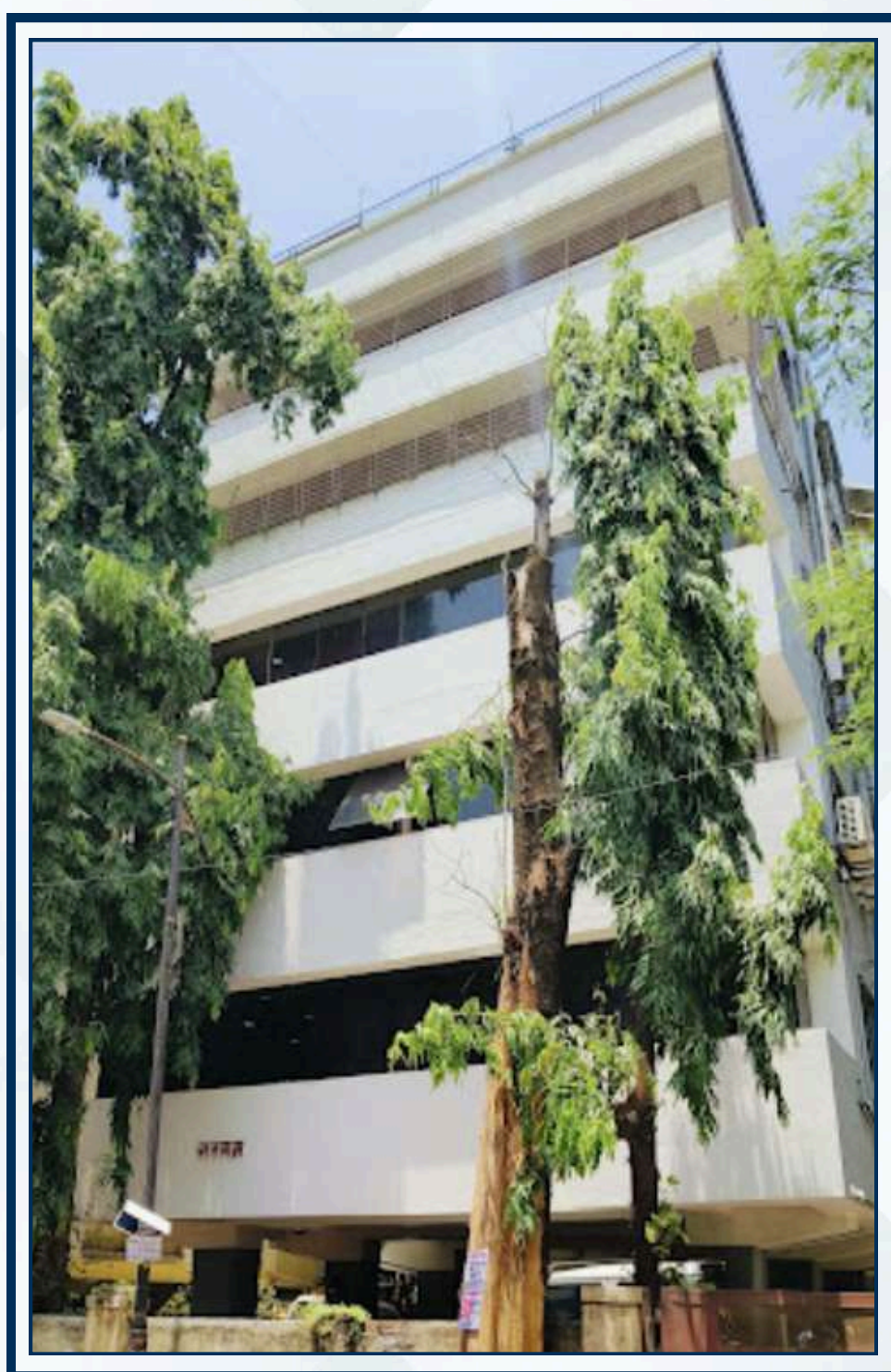
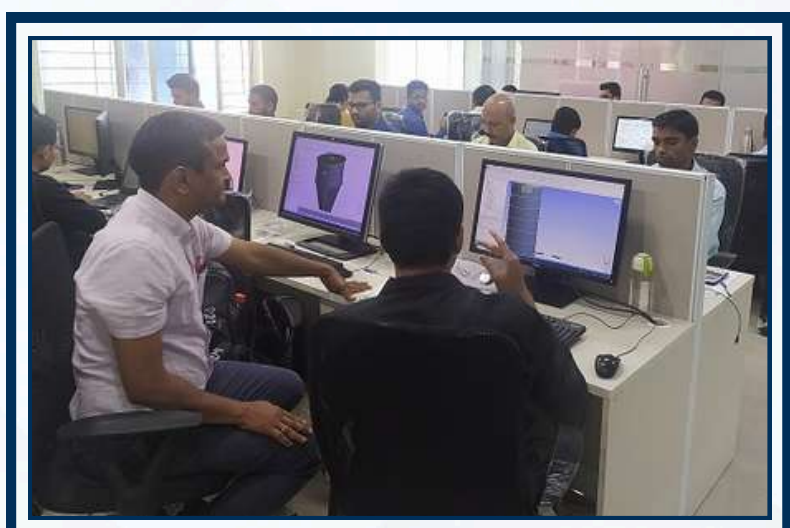


## About Us

With vast experience in Static Equipment, Structure, Thermal & Piping Design, offer the best cost-efficient solutions to our customers. Our Engineering team is capable to deliver Design of Pressure Vessel, Heat Exchanger, Condenser, Reactor, Column, Storage Tank, and other static equipment, as per various national and international codes and standards.

The team is well experienced and trained to deliver Design as per ASME Sec VIII Div-1, Div-2, PED, AD Merk Blatter, PD5500, AS1210, GOST, TEMA, API 660, API 650, API 620, IBR, EN13445, etc.

We have successfully completed many ASME U-stamp audits and worked on hundreds of U-stamp vessels closely with many certifying agencies.



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# Training Services



## About Us

Our training program is the most professional and unique platform for Static Equipment Engineers. We are an Authorised Training Provider for ASME. We mean it, when we say, **“No one can de-code the code like us”**, as we have the experience and knowledge of working on various national and international codes and standards.

With a vast experience of Designing various Static Equipment, we provide the most **comprehensive** and **detailed** training courses to meet your needs. Within a short period, we have become the **most preferred training provider** to a lot of corporates and individuals.



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# Corporate Training



## Onsite Corporate Trainings

We have been instrumental in developing the workforce for organizations through our onsite training under our corporate training program. These training has helped the corporates to develop the skills and knowledge of their resources and as a result increase the output with better and optimized design of equipment.



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# Our Customers



## Our Corporate Customers

We have been instrumental in developing the workforce for organizations through our onsite training under our corporate training program. These training has helped the corporates to develop the skills & knowledge of their resources & as a result increase the output with better & optimized design of equipment.



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# Our Track Record



## How We Have Been Doing..!



100+

Corporate Customers



4000+

Satisfied Trained Individual  
Online & Offline Combined



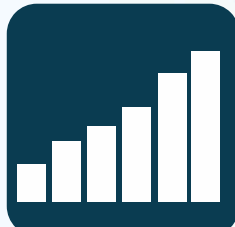
20+

Countries With Beneficiaries  
Across The Globe



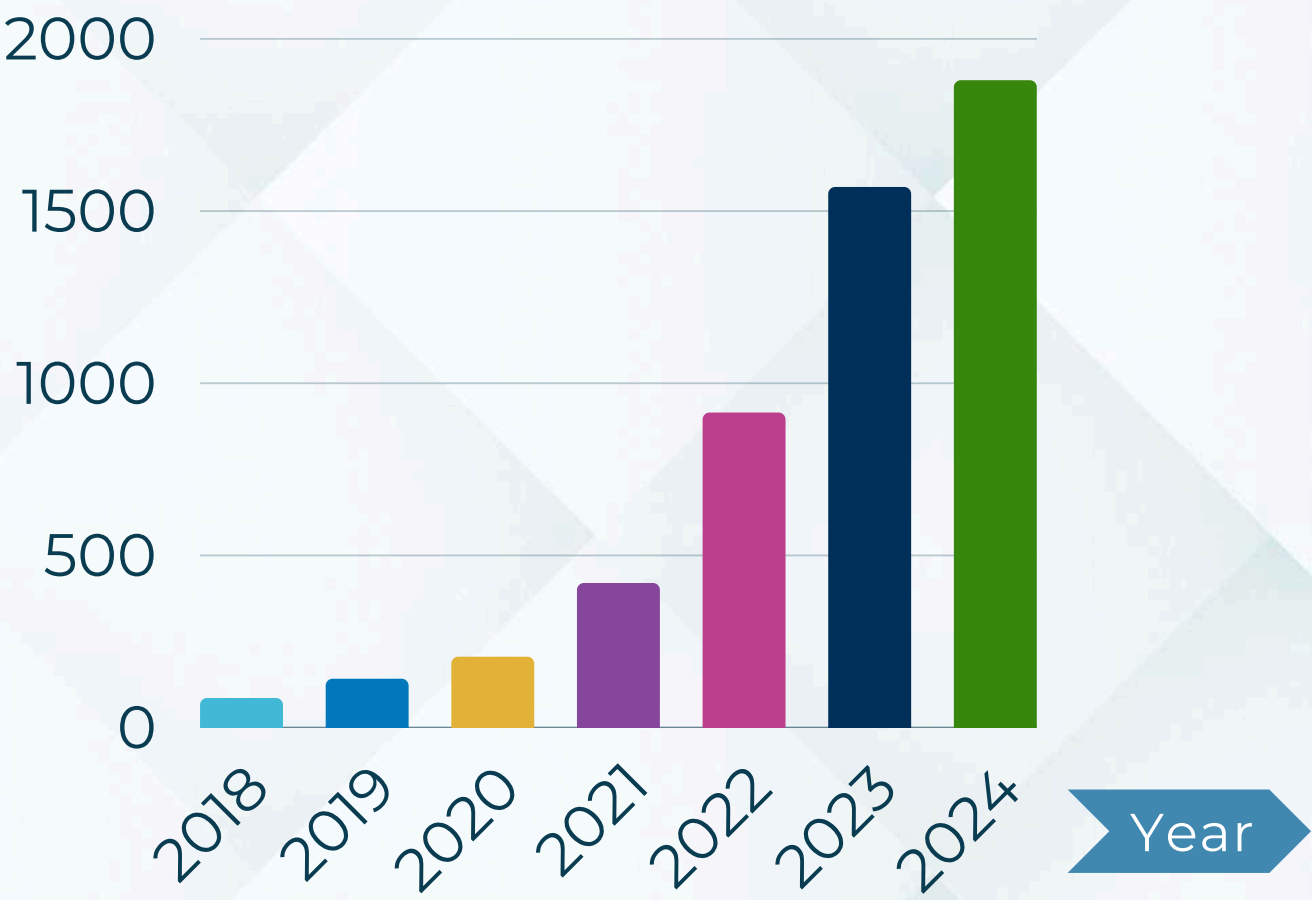
0-28

Experience Range Of  
Engineers Trained



## Over The Year...!

Professionals Trained So Far..!



## Beneficiaries Across The Globe



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# About Training Platform



Mobile & Laptop/ Desktop

Expert and Professional training available at your convenience, with our Mobile & Desktop application.



WATCH FREE  
LECTURE VIDEOS

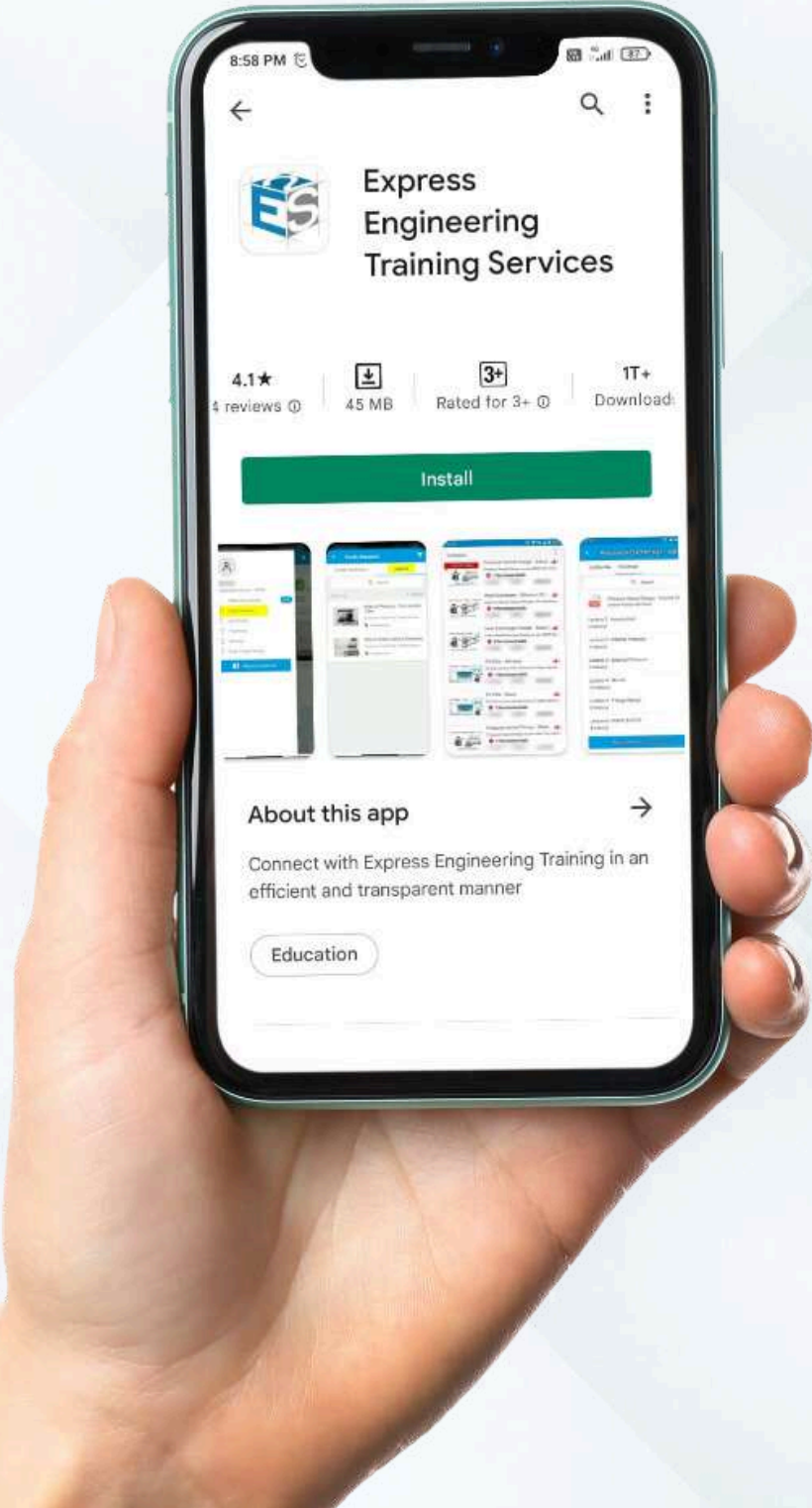


PLAYSTORE



IOS APP

use organization code **yatgi**



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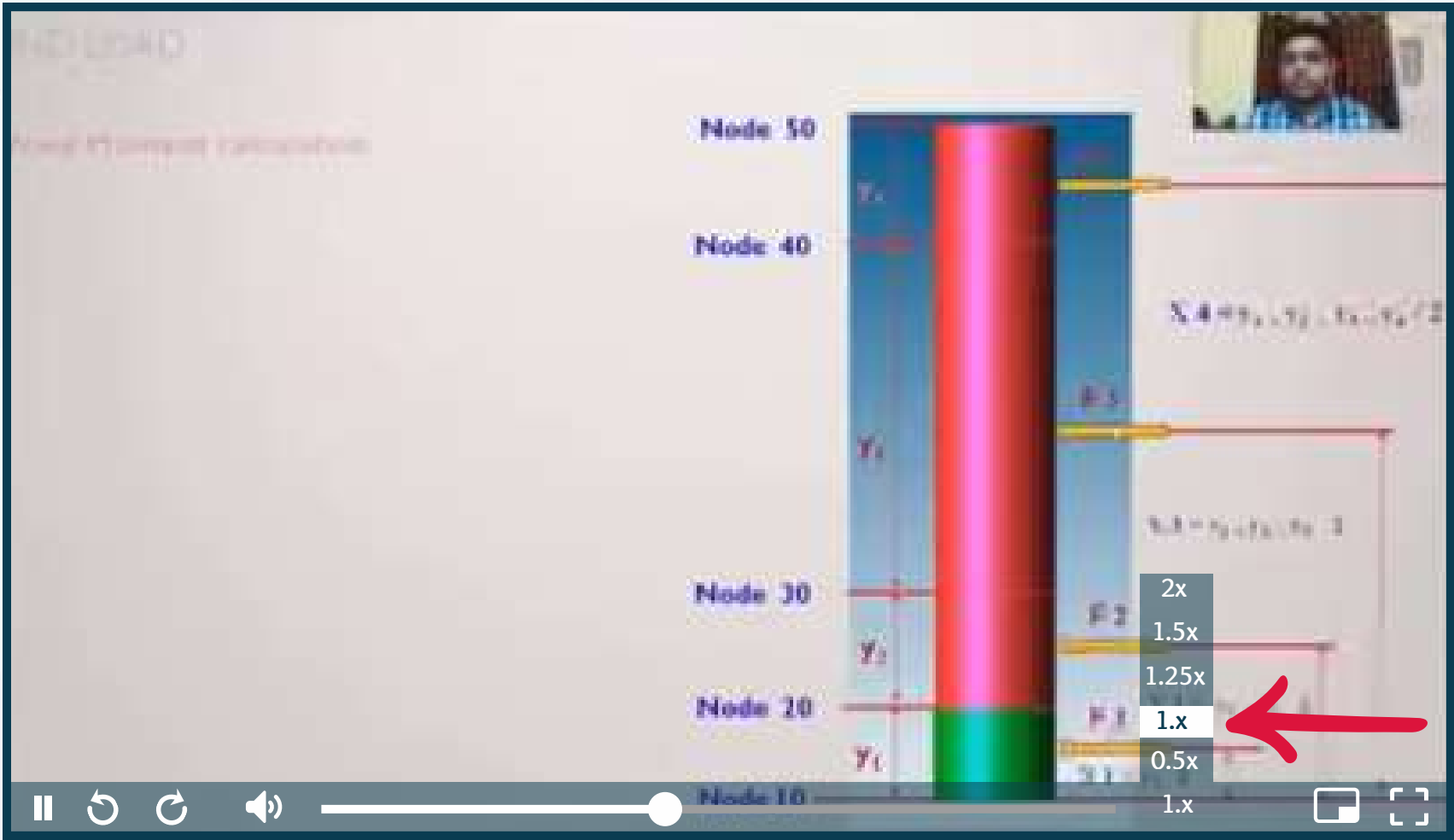


# About Training Platform

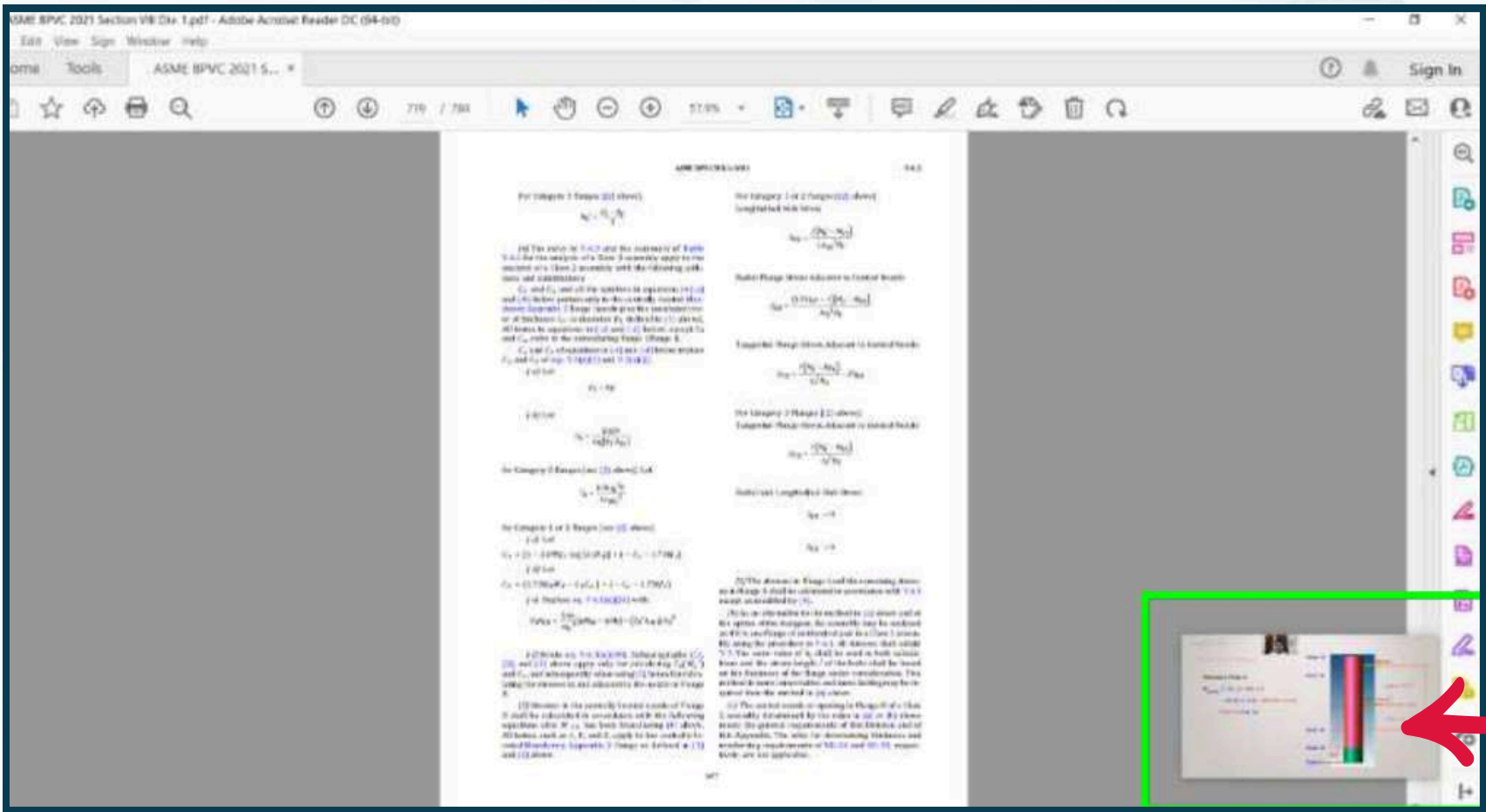


## Special Features

It has never been so convenient to learn...! Check out some special features of our Training Platform. Adjust video speed from 0.5x to 2x to suit your requirement.



PIP mode enables you to work or practice simultaneously while watching the lectures.



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# Advantages Over Offline Courses



## Benefits Of Online Training

Offline

Online

No more compromise on work or personal schedule

Getting late for the class. **Need to rush** or I'll miss the lecture.



I can **save travelling time** and **avoid stress** by watching lectures online **as per my convenience**.



Get answers on the go...!

I am stuck in the Project. But this topic is scheduled after 4 weeks in the live class. **How can I solve it now?**



I was stuck..! But I **just watched this topic online** and bingo..! **the problem is solved**. I simply love this platform.



Live Q&A session every week

The Classes are over. **Whom can I ask** the questions now?



My Course **validity is 18 months**. Also the **live Q&A session is twice a week**. I can get all the answers.



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# Advantages Over Offline Courses



## Benefits Of Online Training

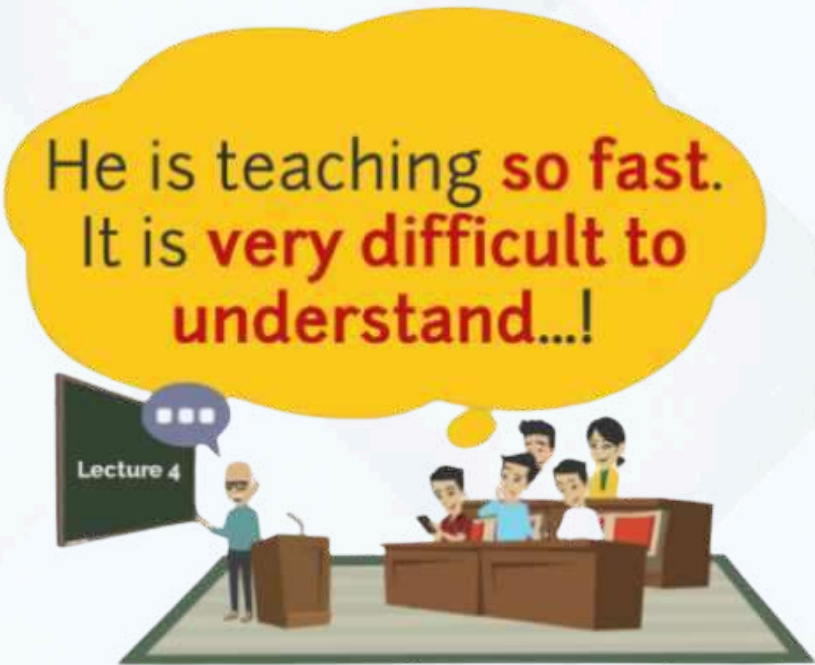
Offline

Online

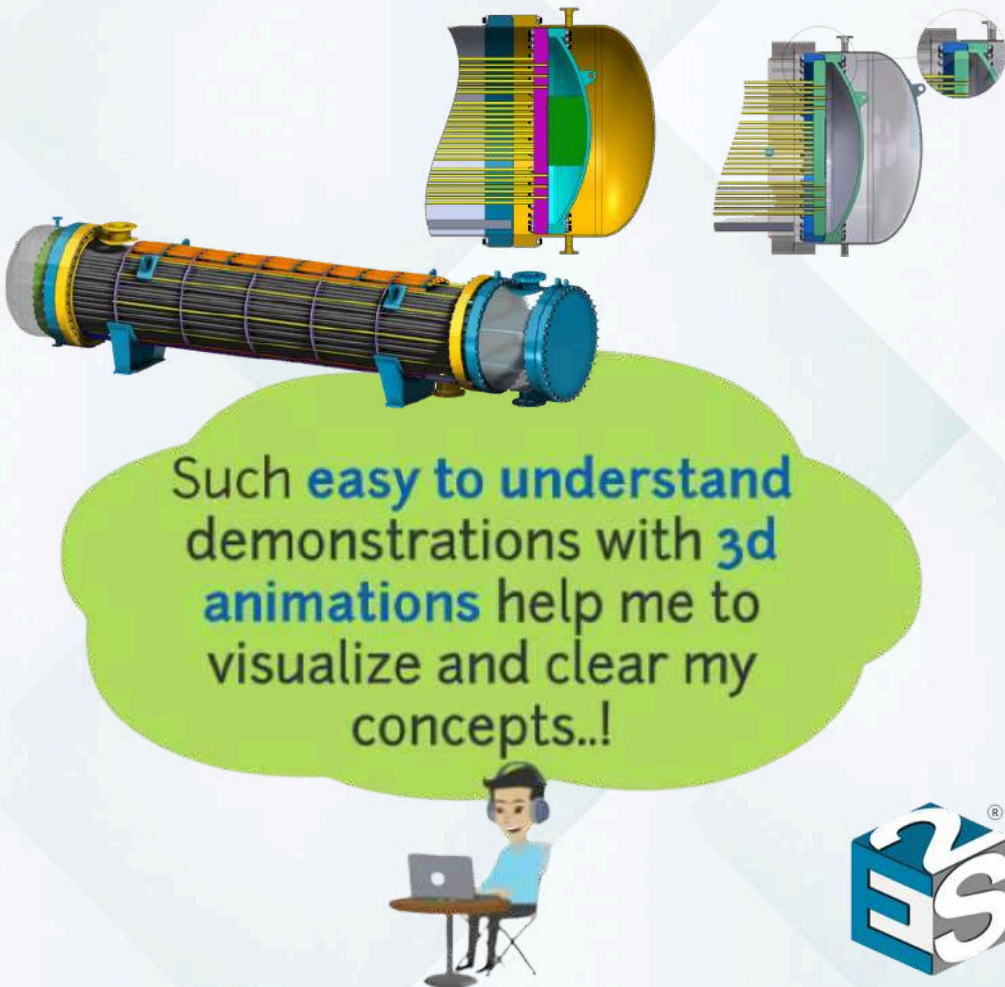
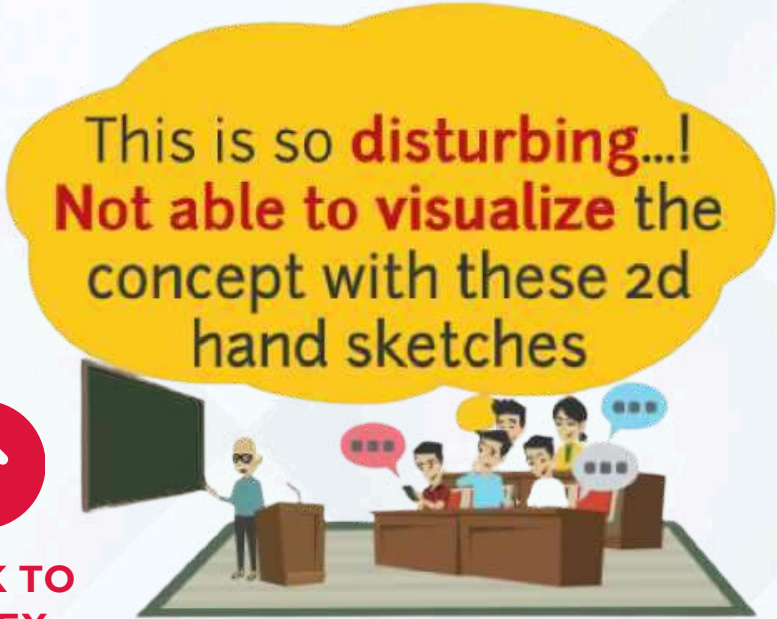
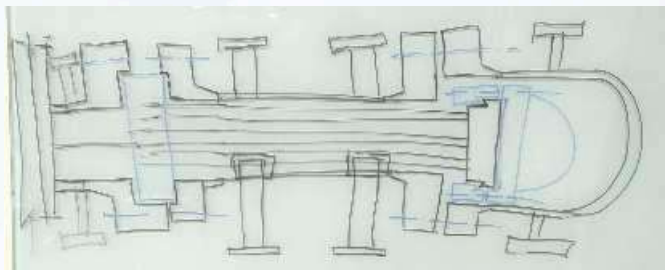
### Never Miss Out On Any Lectures



### Learn At Your Own Pace



### No Disturbances | Video Lectures | Animations



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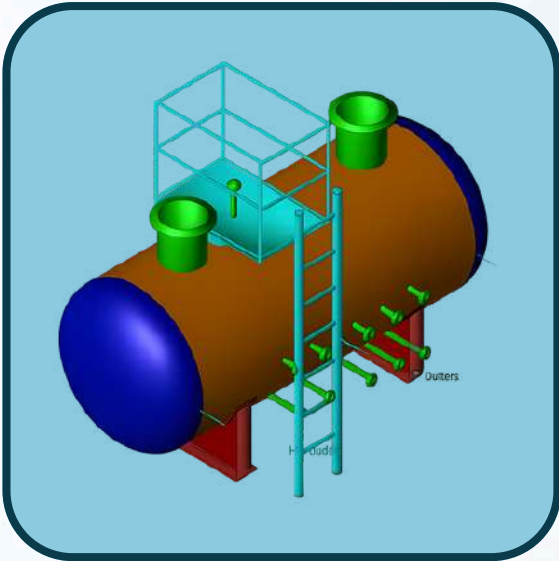




# Our Other Courses



## STATIC EQUIPMENT DESIGN



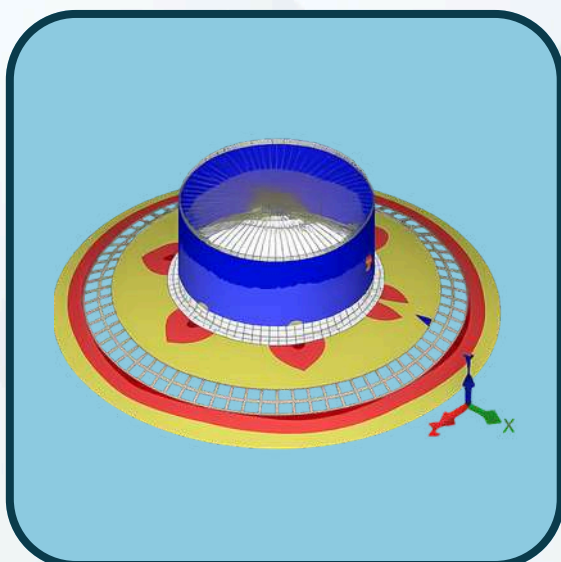
PRESSURE VESSEL  
DESIGN (DIV 1) 



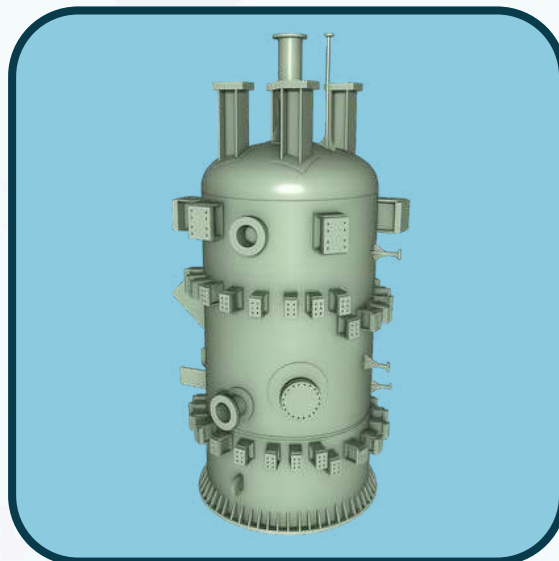
PRESSURE VESSEL  
DESIGN (DIV 2) 



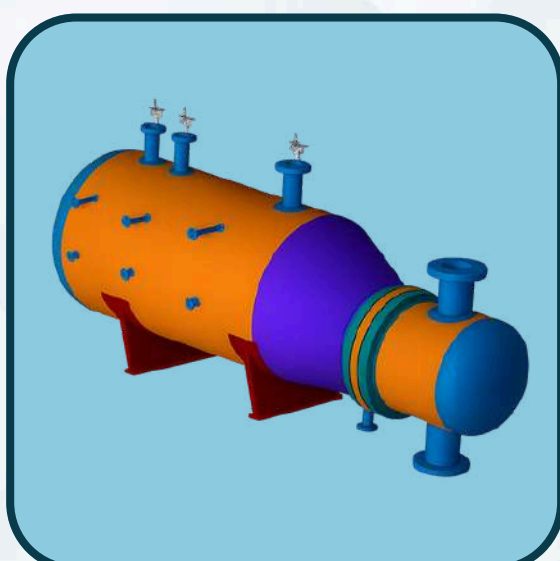
PREMIUM COMBO 



NOZZLE PRO FEA 



DIV 1 & DIV 2  
COMBO 



PV ELITE  
SOFTWARE 



ASME PD442 



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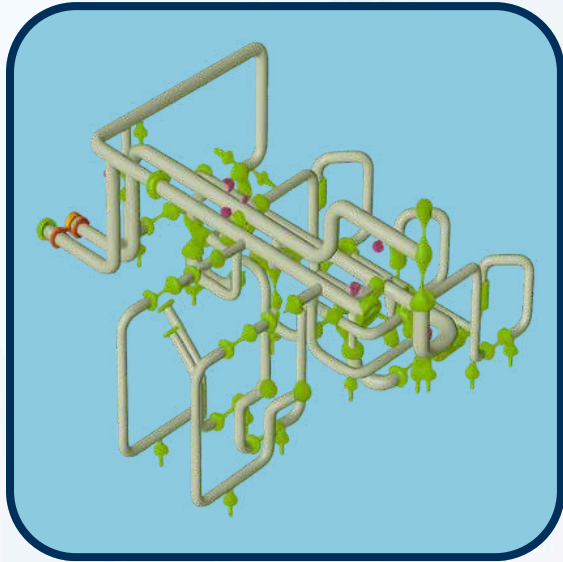
# Our Other Courses



## PIPE STRESS ANALYSIS



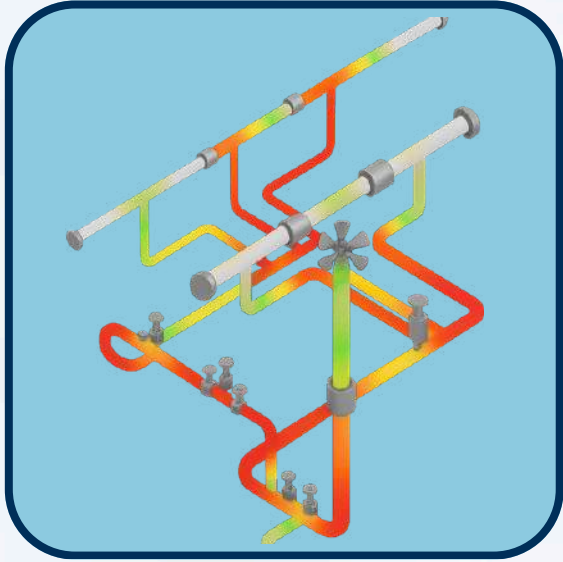
**BASIC PIPE  
STRESS  
ANALYSIS** 



**ADVANCE PIPE  
STRESS  
ANALYSIS** 



**BURIED  
PIPELINE STRESS  
ANALYSIS** 



**COMBO PIPING &  
PIPELINE STRESS  
ANALYSIS** 



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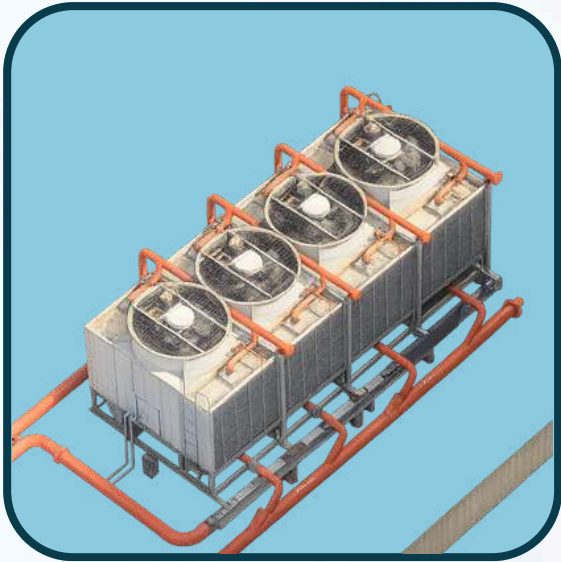




# Our Other Courses



## THERMAL DESIGN



**AIR-COOLED  
HEAT EXCHANGER  
(ACHE)** 



**SHELL & TUBE  
HEAT EXCHANGER  
(STHE)** 



**THERMAL DESIGN  
COMBO  
(STHE & ACHE)** 



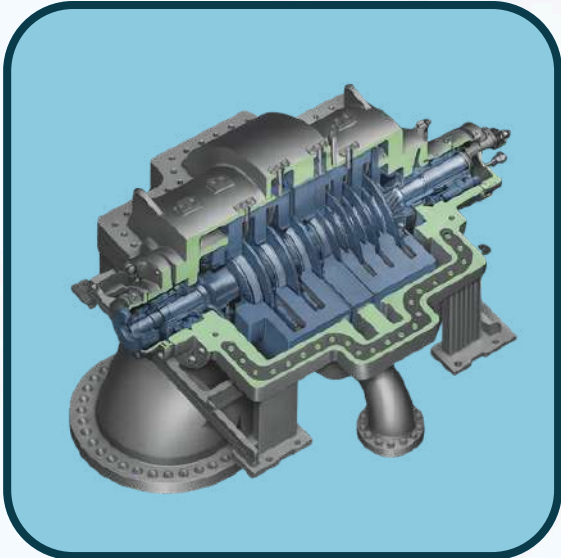
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# Our Other Courses



## ROTARY EQUIPMENT DESIGN



CENTRIFUGAL  
COMPRESSOR 



CENTRIFUGAL PUMPS  
IN OIL & GAS  
INDUSTRY 



ROTARY EQUIPMENT DESIGN  
COMBO 



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# Our Other Courses



## OTHER COURSES



MS EXCEL 



POWER BI 



GD&T (BASIC) 



GD&T (ADVANCE) 



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**PUNE**

Sargam Tower, 1<sup>st</sup> & 2<sup>nd</sup> Floor,  
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Hotel, DP Road, Near Rajaram  
Bridge, Karvenagar, Pune - 411 052



**SURAT**

348, Green Palladia, Opposite Raj World,  
Near Gaurav Path Road, Palanpore,  
Surat, Gujarat - 395009



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