

UNFIRED BOILER PRESENTATION



COMPANY OVERVIEW

Established in 2004, with a burning passion to provide *Technological Services* in the field of Steam Industries, Waste Heat Recovery and Special Heat Transfer Equipments.



Urja-Disha Core Values

Creativity and Innovation

Customer satisfaction

Quality first

Enjoy what we do





Urja-Disha Assured Best Services In The Market



Our systems are highly reliable with most optimum Investment & Running cost

We provide Pre order to Post order support with minimum cycle time

Running of plant with best technology with high efficiency for all our products

Technical support under one roof



Urja-Disha Experience

- Designed various types of unfired boilers from range of 7 kg/hr to 400 ton/hr.
- Pressure range from 10 kg/cm² to 110 kg/cm²
- Temp range from - 100⁰C to 540⁰C
- Design as per IBR 1950, ASME Sec.I, BS 1113, TRD etc

Design Mean Concept to Commissioning



Unfired boiler capabilities

Process integrated

- Metallurgical Industry
- Chemical Industry
- Petroleum Refinery
- Petro Chemical Industry
- Power industry

Waste gases

- DG sets/ Gas engines
- Gas Turbines
- Furnaces
- Incinerators



Design considerations

- ❖ Selection of appropriate application for better value
 - Impact of dust presence
 - Pitching, on line cleaning systems, velocities
 - Impact of corrosive nature
 - Low temp, high temp, selection of metallurgy, refractoriness
 - Impact of erosive nature
 - Selection of velocities, protections of venerable parts
 - Check for flow induced vibrations
 - Check for natural freq and relations with vortex, acoustic and buffeting
 - Check for variations in gas flow
 - Check impact of highest and lowest flow for corrosions, clogging etc



Design considerations

- Selection of appropriate extended surfaces-
Fouling, clogging tendency, cleaning
frequency, fin to tube area ratio demand, cost.
- Layout- to accommodate in available space
- Upstream process considerations-
Appropriate back pressure, maintainability,
redundancy, bypass arrangements

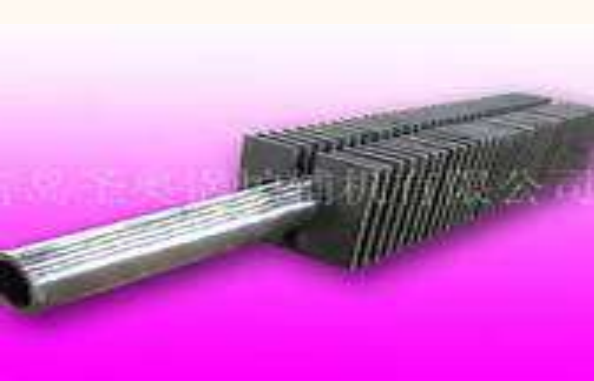


Applications

- Heating of process water, boiler feed water, VAM water.
- Heating of air for combustion, process, drying.
- Generation of low pr steam for process or VAM application.
- Generation of high pr steam for process or power generation.
- Heating of thermic fluids- for process application.
- Drying – direct contact type for wet fuels, coke, ores, products etc.

Various options for extended surfaces

- Studded tubes :- round, elliptical
- Helical fins :- Solid serrated.
- Circular fins :- press fitted.
- Square fins :- single double pipe.
- Cl gilled :- circular, rectangular.





Engine Exhaust

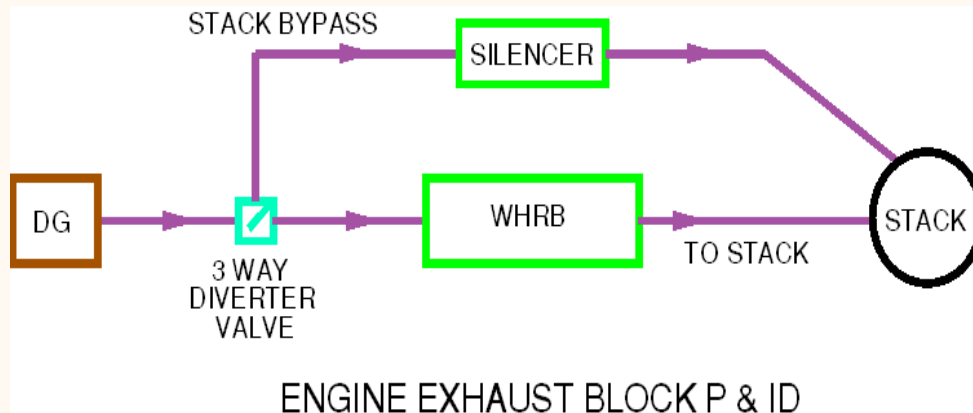
Technical Data :-

DG sets from 1MW - 12 MW

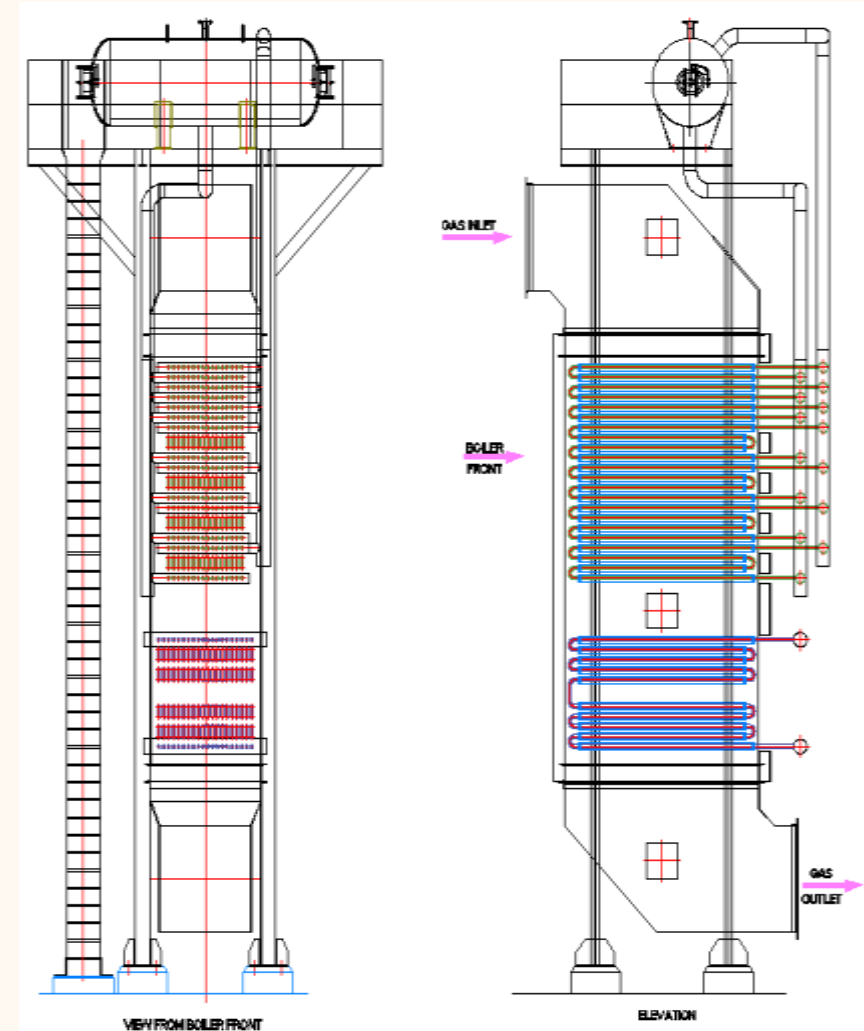
0.5 TPH-10 TPH capacity

Diesel, NG, Biogas, FO

Low pressure - With/without Eco Vibration, Cleaning, back pressure, fluctuations, Land, marine



GA Drawing :





GT HRSG

Technical Data :-

1 TPH to +150 TPH

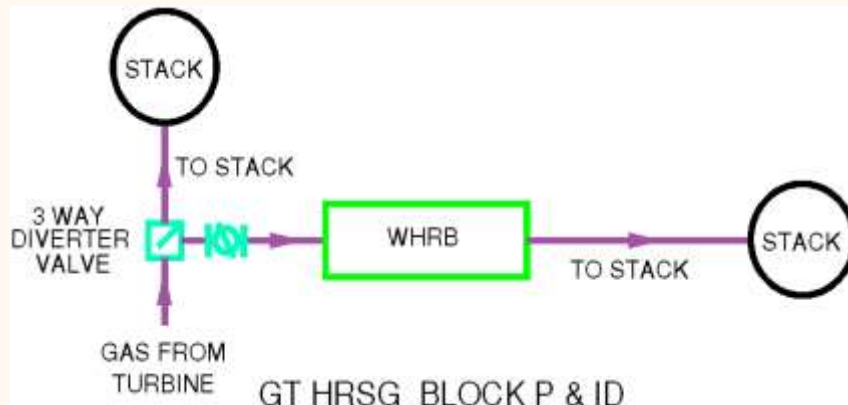
MP and HP streams

With, without duct burner

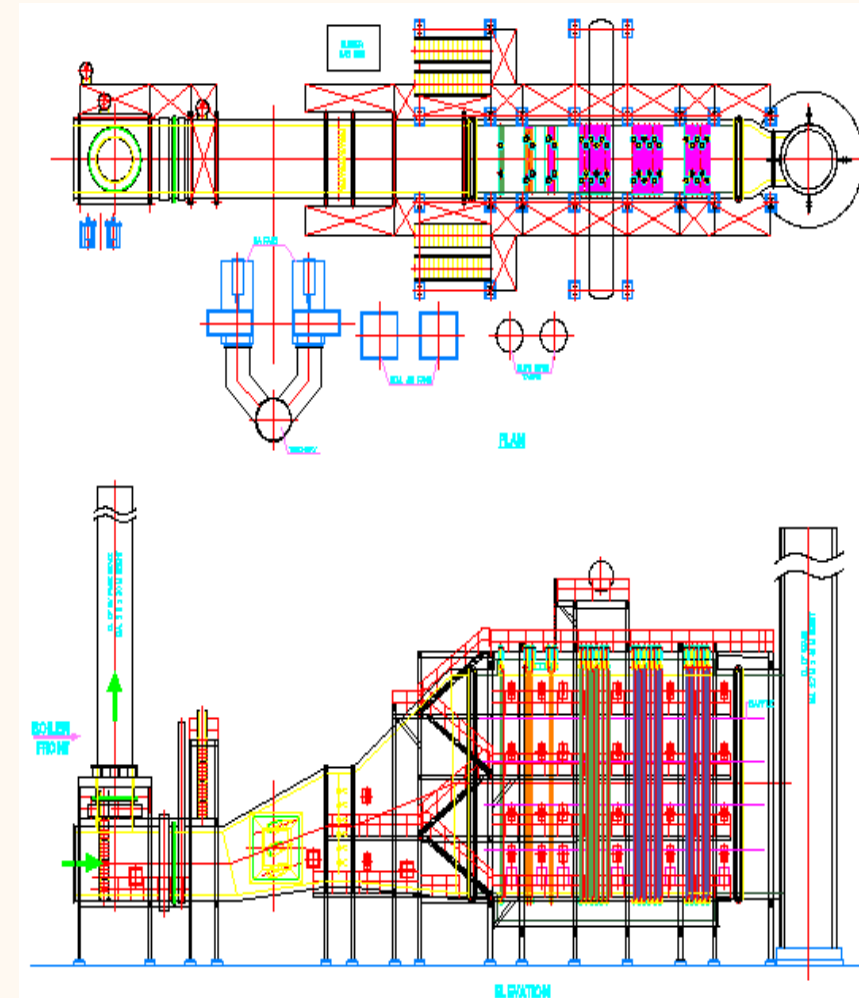
Natural circulation, Force circulation

Vertical, Horizontal construction

On shore, off shore.



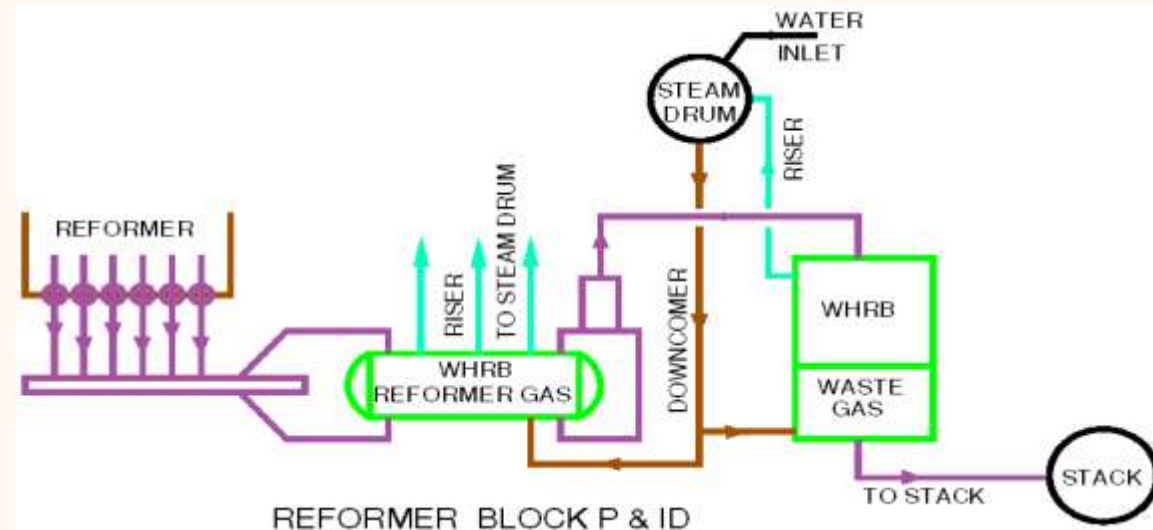
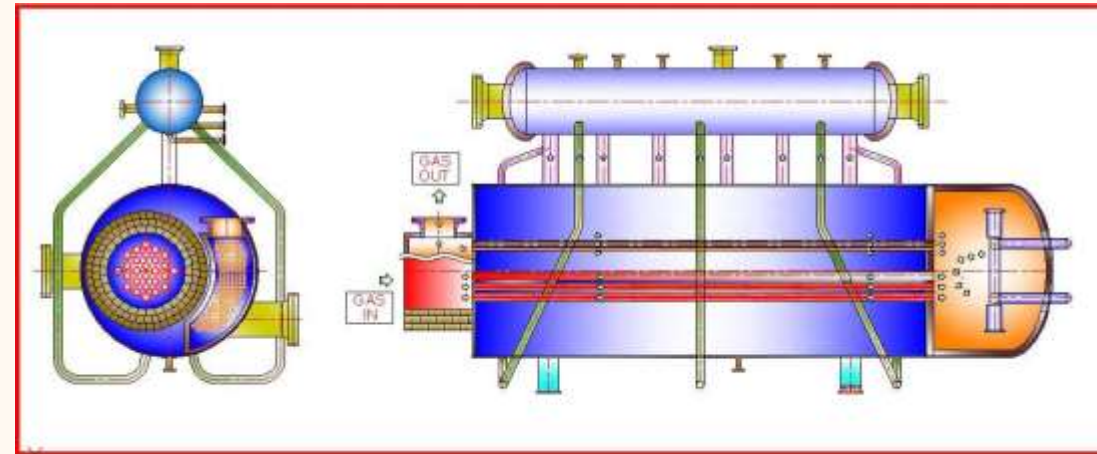
GA Drawing :





WHRB On Reformer Gas GA Drawing :

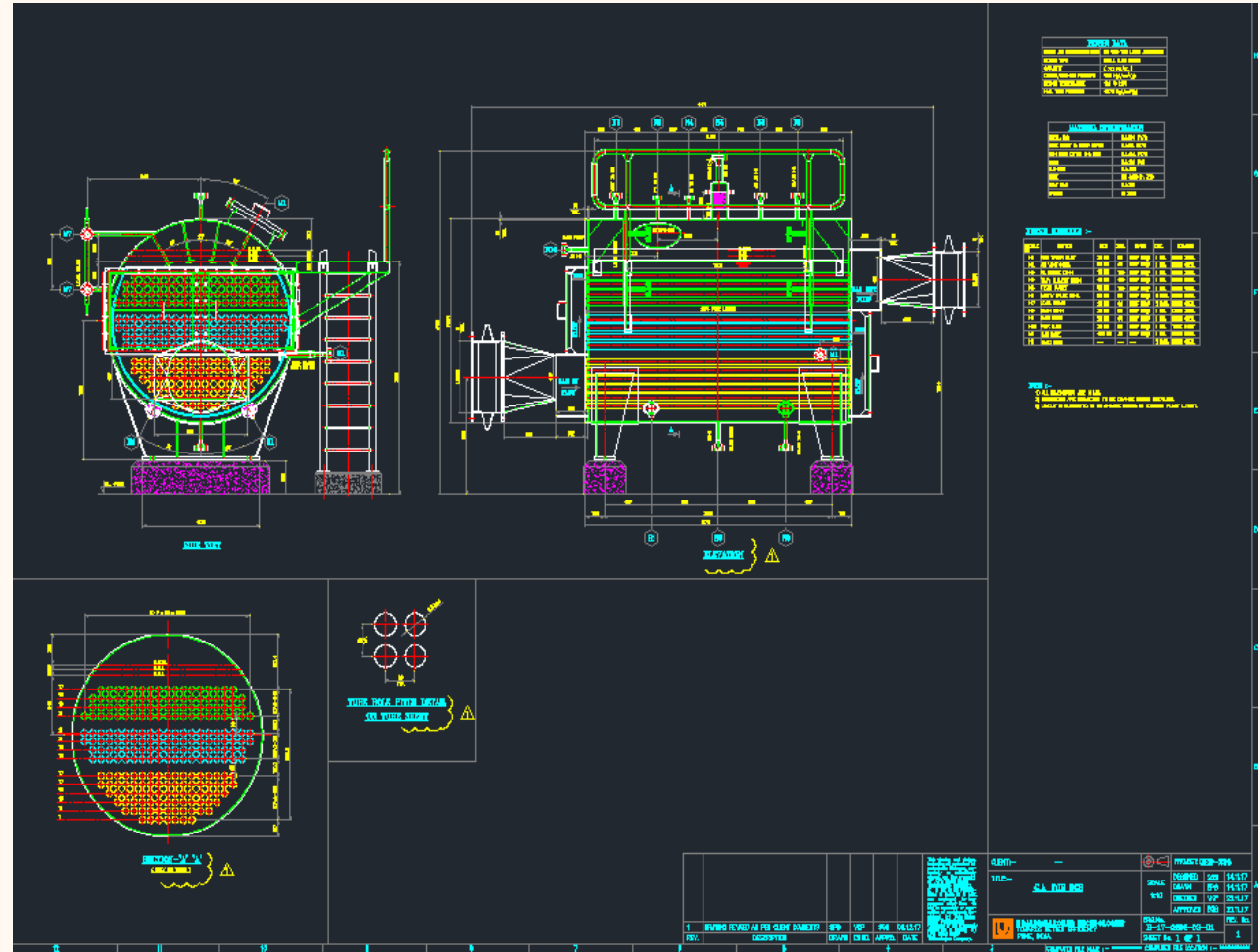
Technical Data :-
 H2 and ammonia reformers.
 Gas side pressure- +50 bar
 Temp- +1000 deg c
 With internal bypass system
 Flexible tube sheets
 Tube to tube sheet joint.
 H2 imbrutement- metallurgy
 Ferrules-
 Steam blanketing





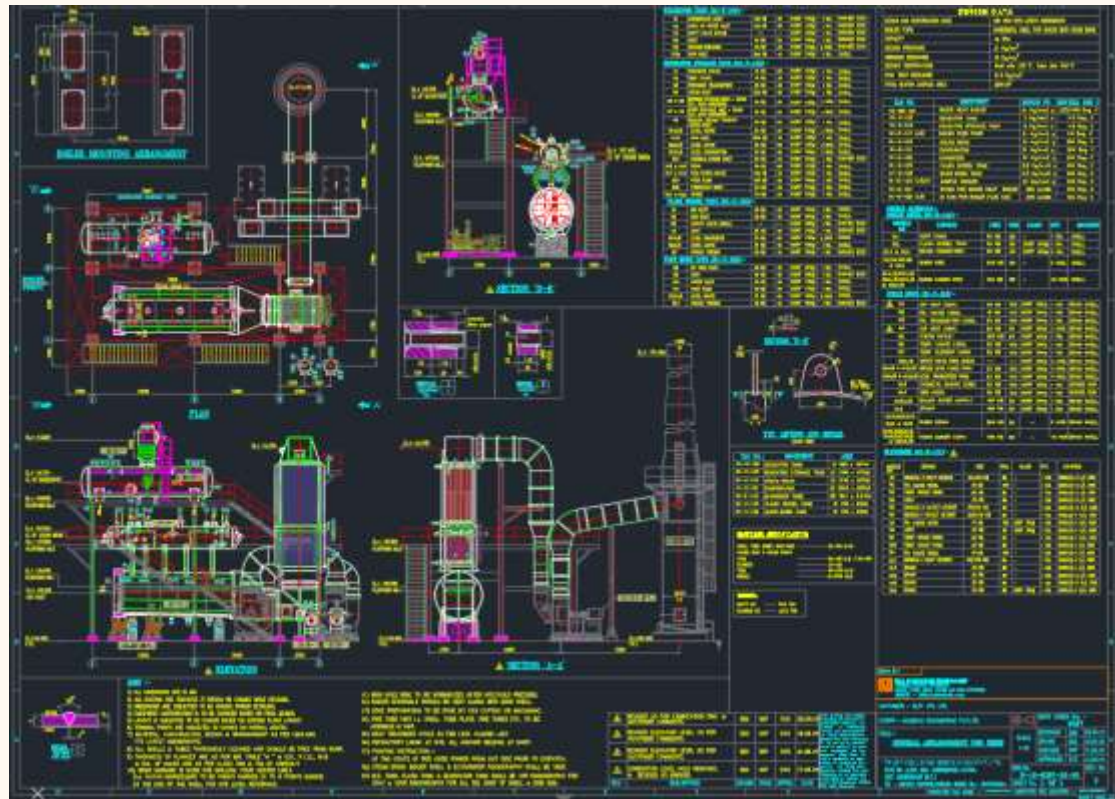
WHRB - Indobazing

GA Drawing :



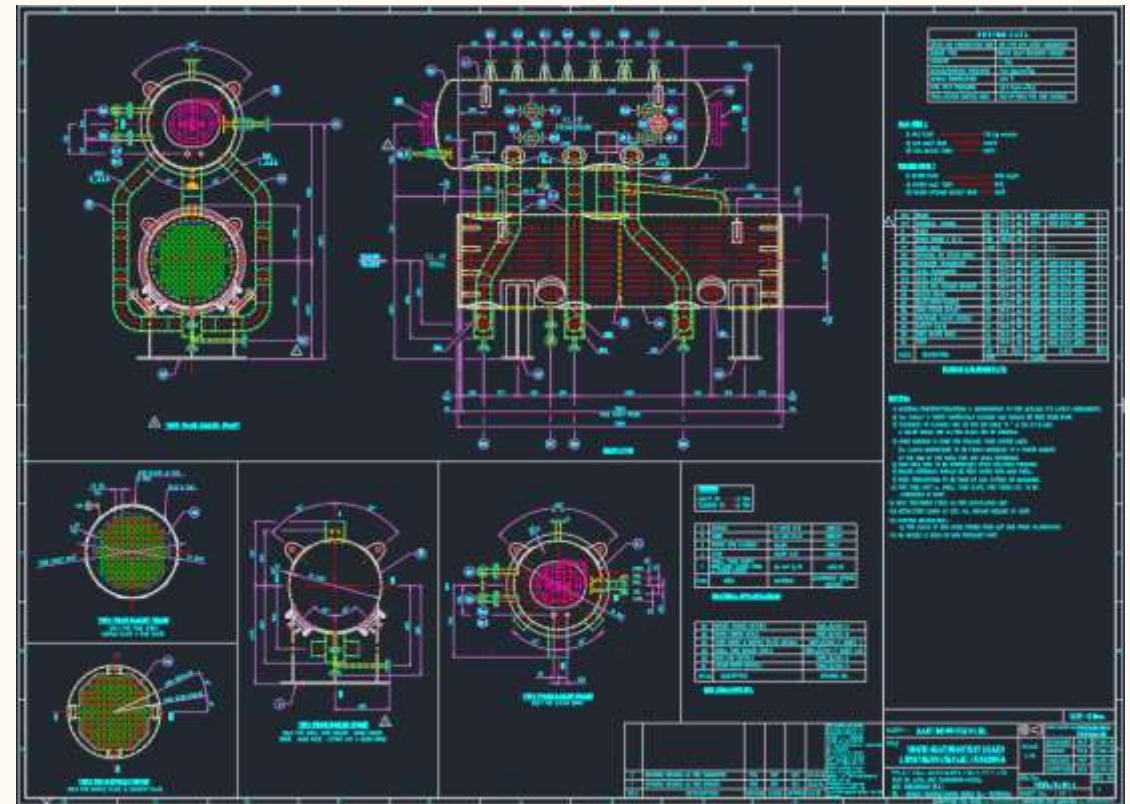


WHRB - Jashubhai



GA Drawing

WHRB - Aarati



GA Drawing



SRU- Process

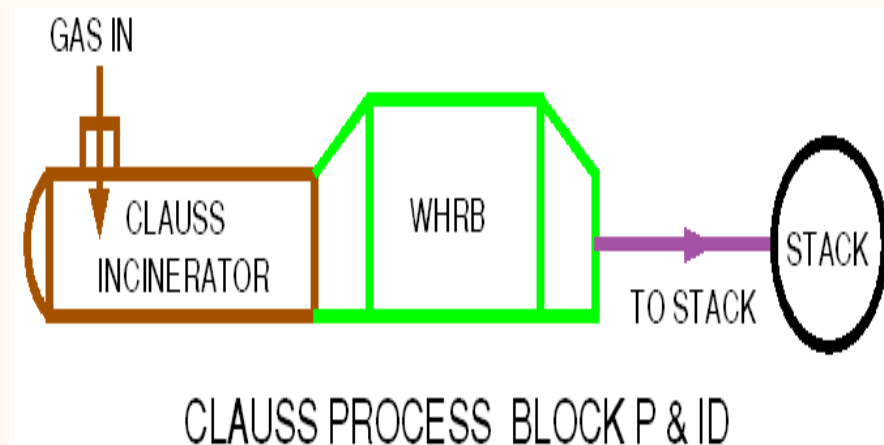
Technical Data :-

Down stream of incinerator

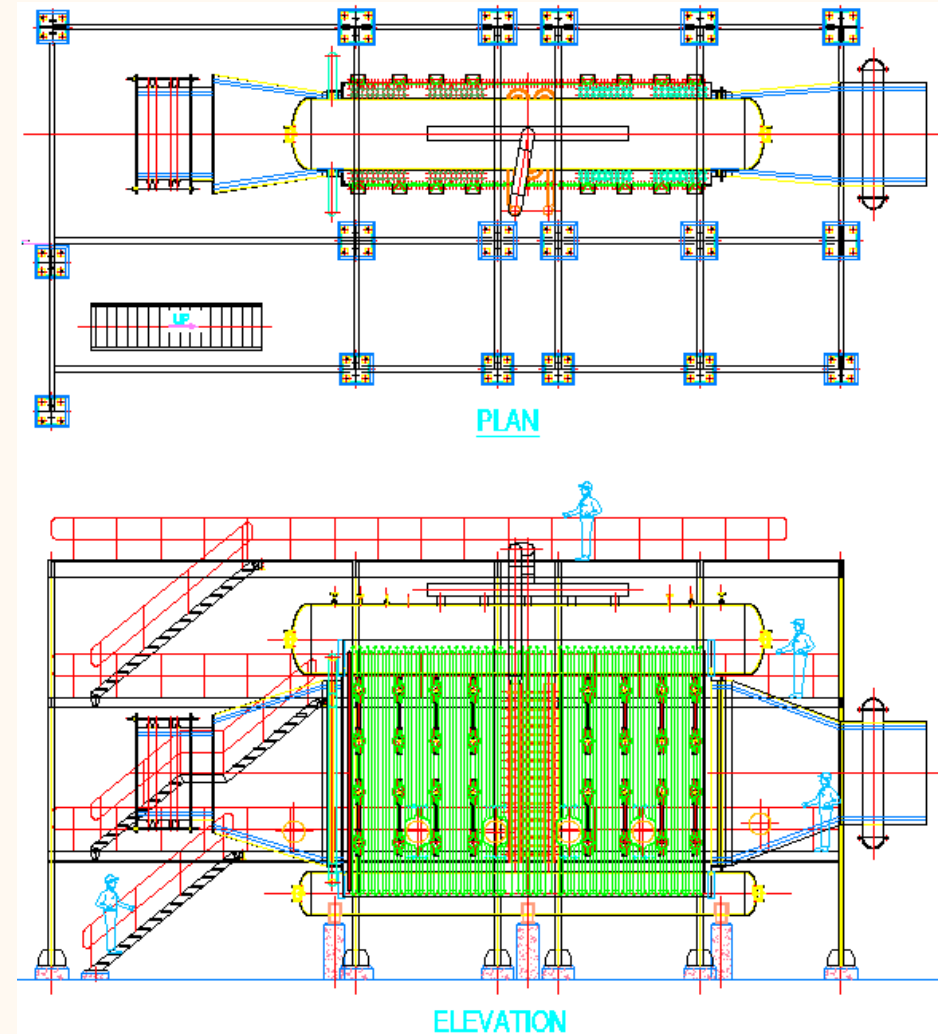
High gas velocities :- flow induced vibrations

Gas side high pressure Metallurgy

+100 TPH steam generation



GA Drawing :



FCCU

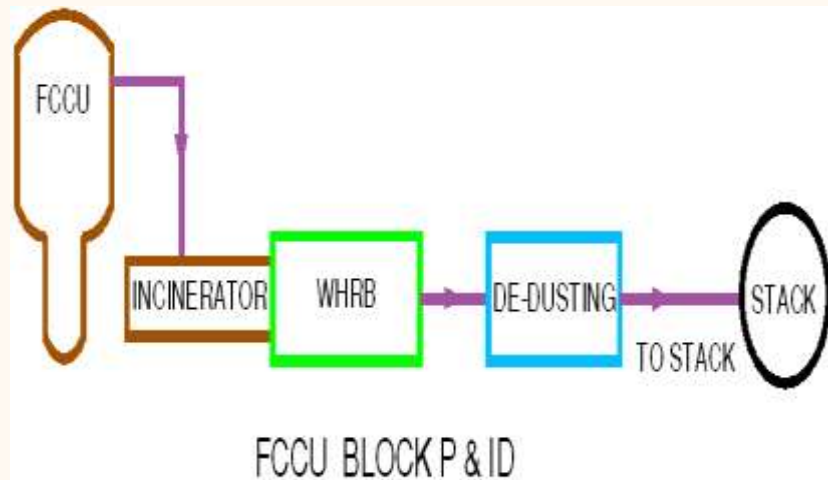
Technical Data :-

Down stream of fluidised catalyst cracker.

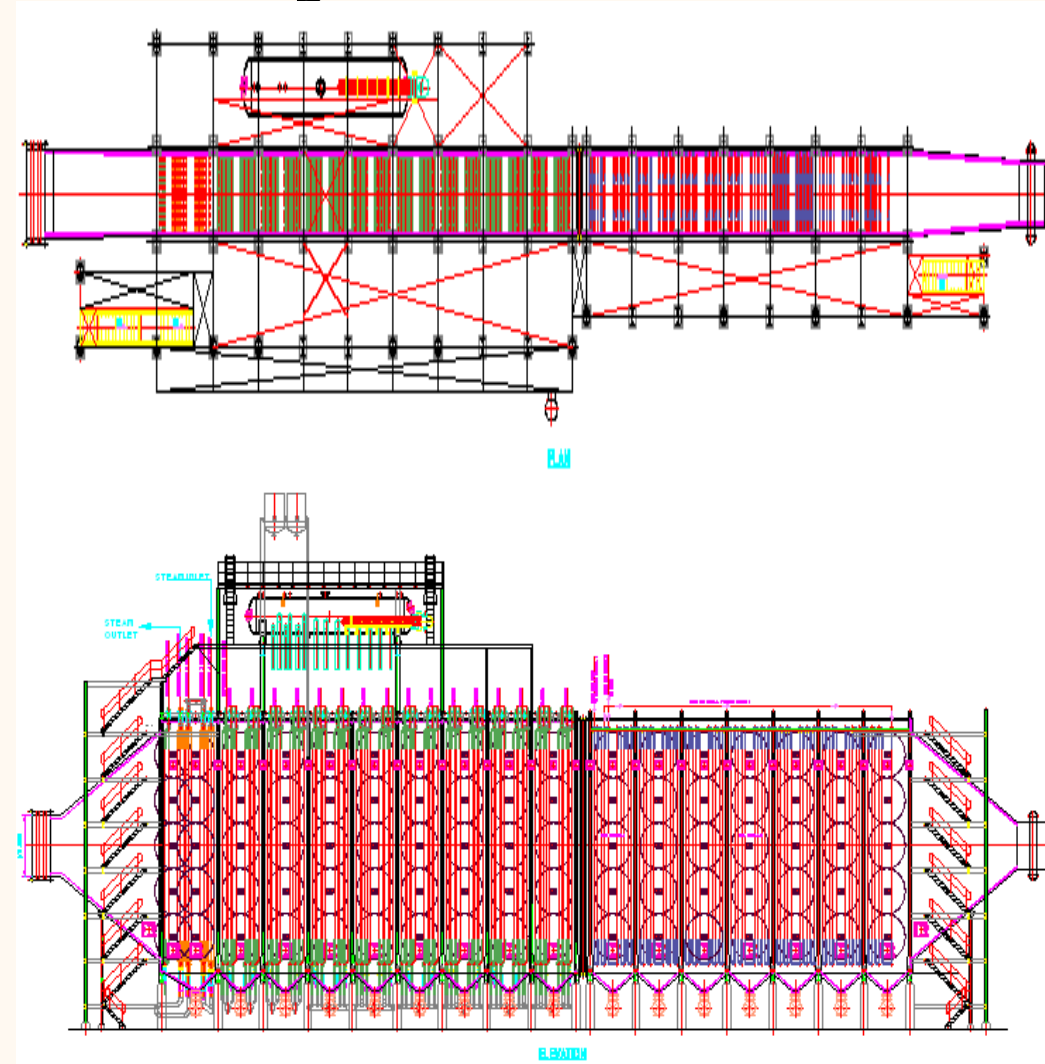
With without incinerator

High gas velocity,

Flow induced vibrations.



GA Drawing :



Wood Gasifier

Technical Data :-

Flue gas is fuel

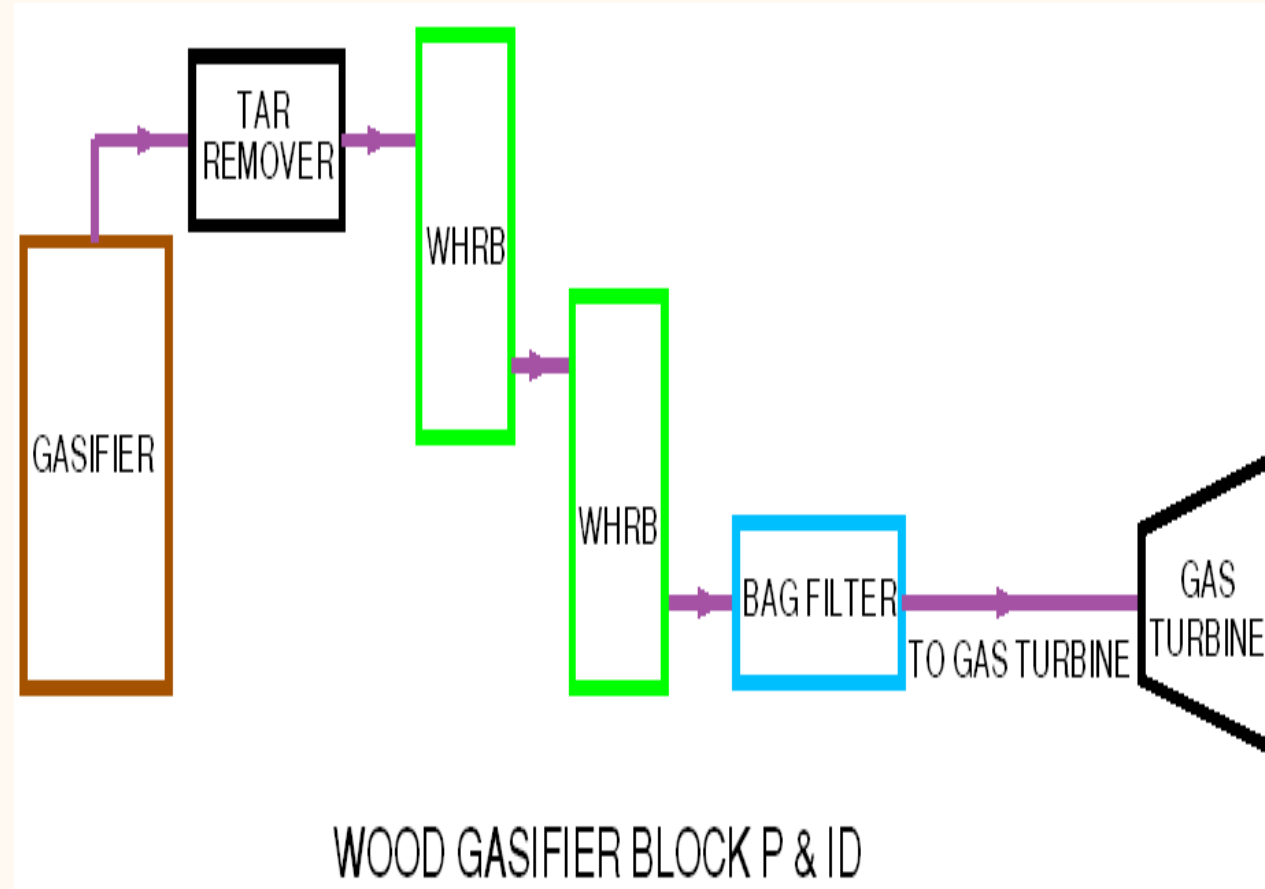
Dust + tar

Reducing and oxidizing

environment

Metallurgy

on line cleaning





Coke Dry Quenching

Technical Data :-

On coke dry quenching system

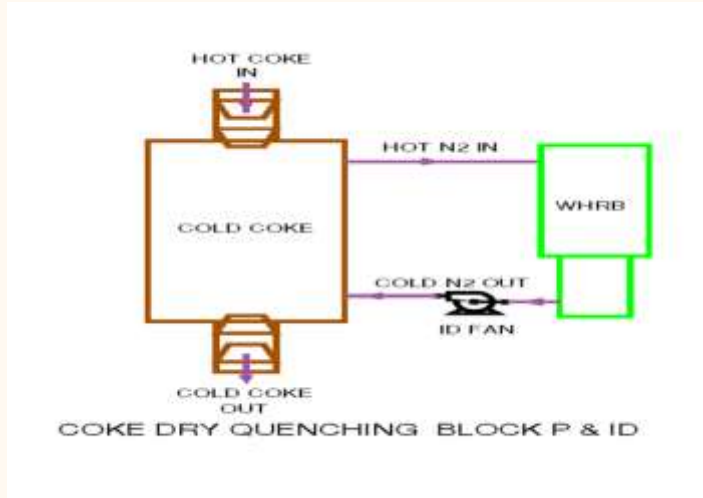
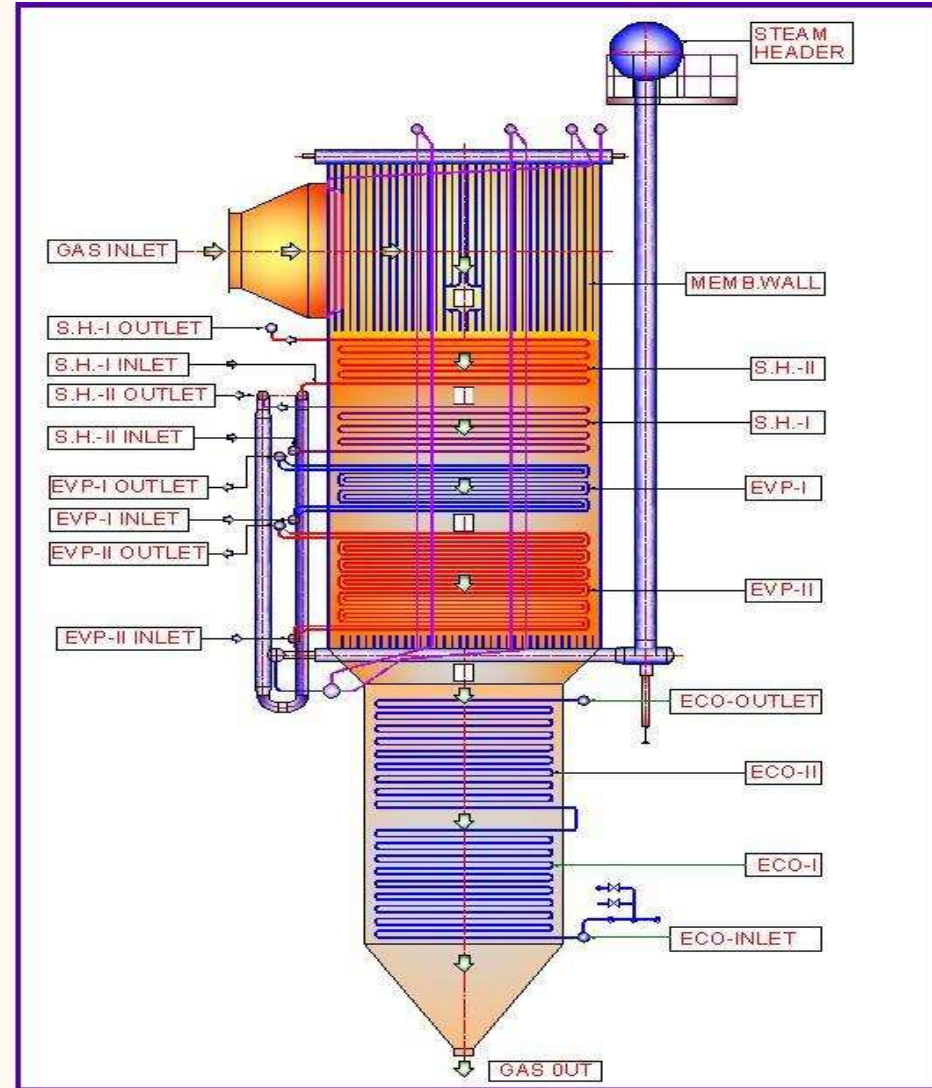
Erosive gas

Chances of explosion

Force/natural circulation

Vertical design-single duct

GA Drawing :





SPONGE

Technical Data :-

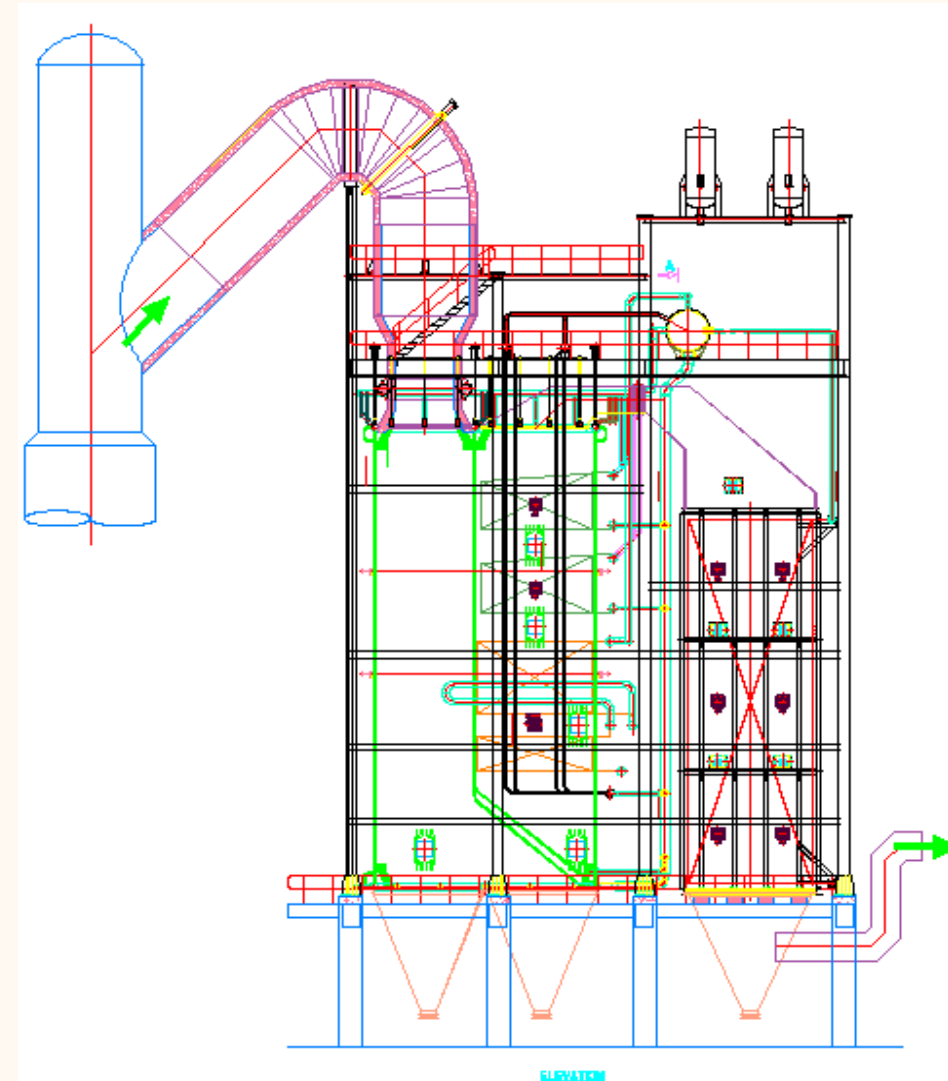
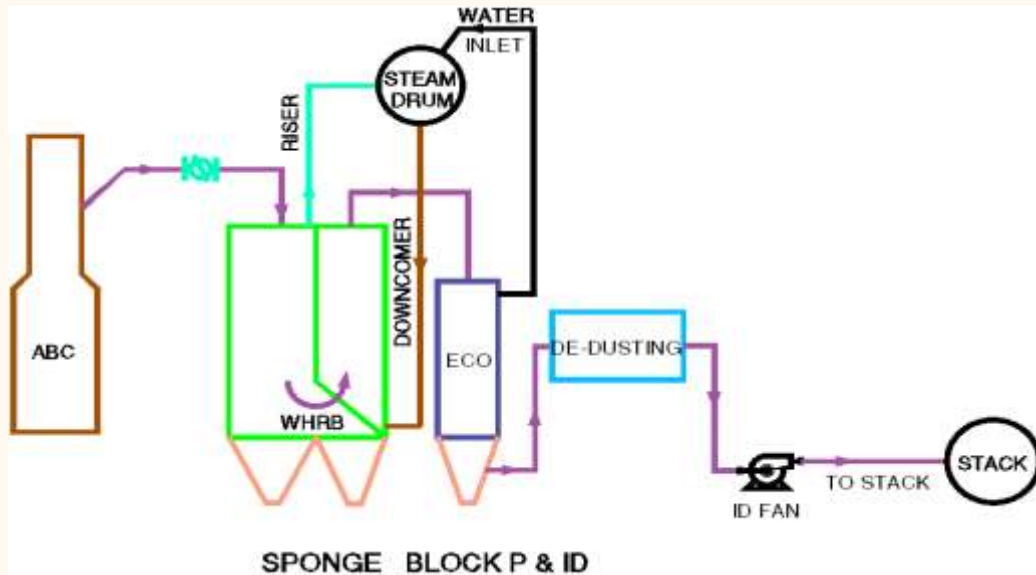
100-300-500 tpd plant

Steam generation up to 60 TPH

3 pass design

Erosive gas

GA Drawing :





Coke Oven Battery

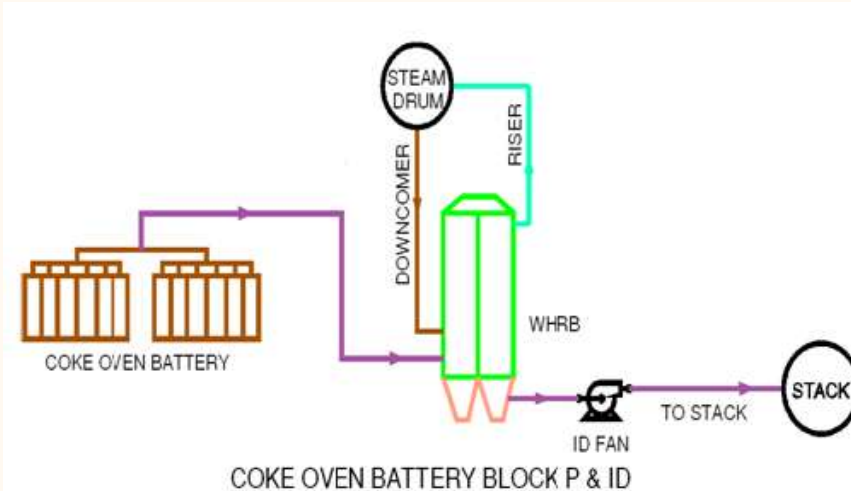
Technical Data :-

Up to 100 TPH steam generation,

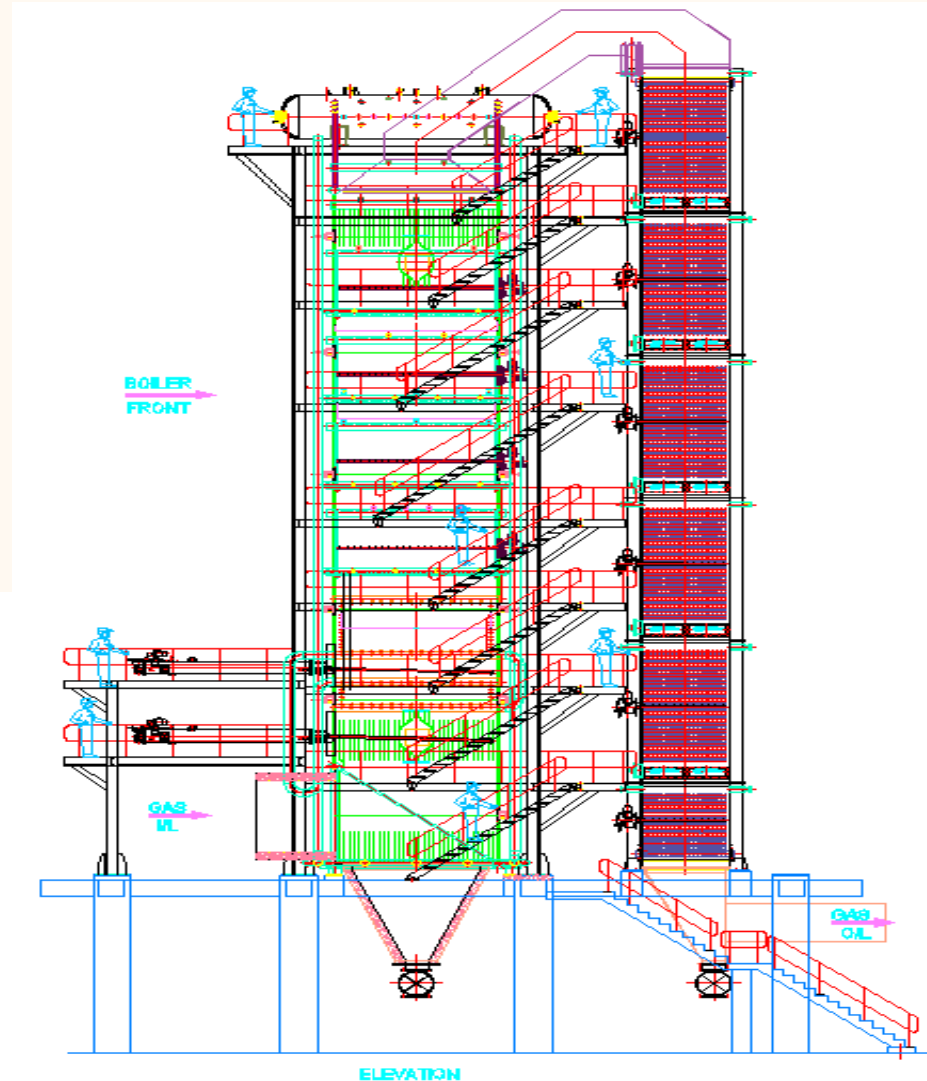
Vertical, horizontal design

Natural circulation.

Dusty gas.



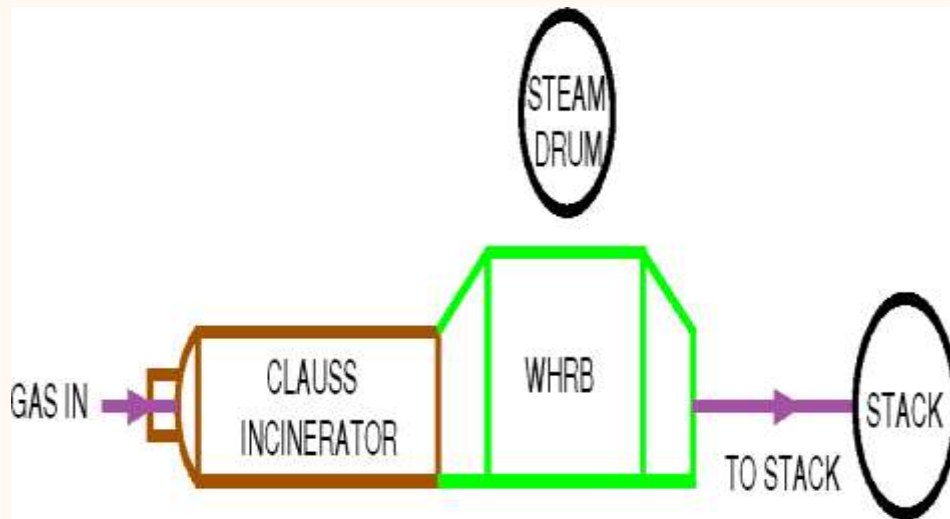
GA Drawing :





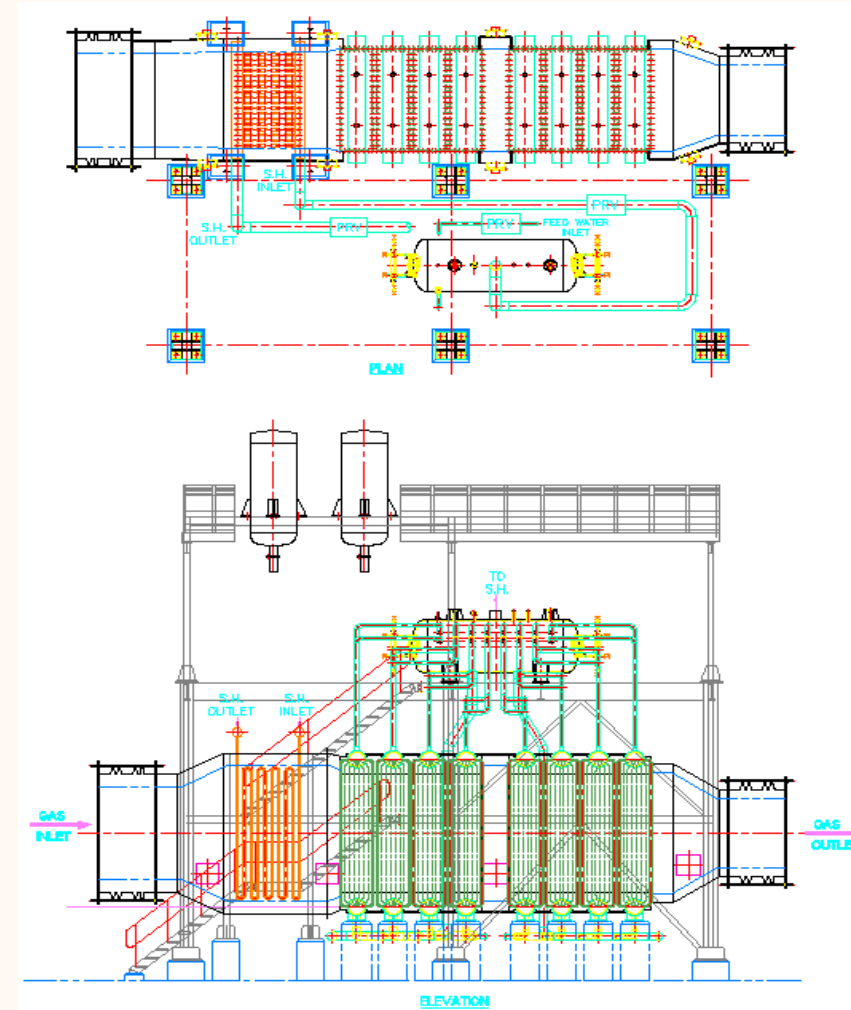
SRU

- Technical Data :-
- Sulphur recovery unit of refinery.
- Corrosion
- High gas velocities.
- Horizontal construction



SRU BLOCK P & ID

GA Drawing :





Dust Collection Systems

Emission Level up to 25 mg/nm^3

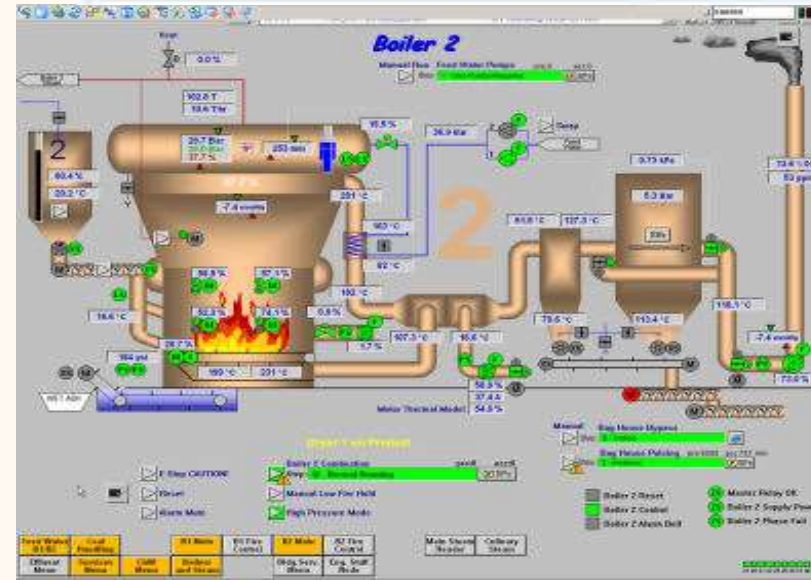
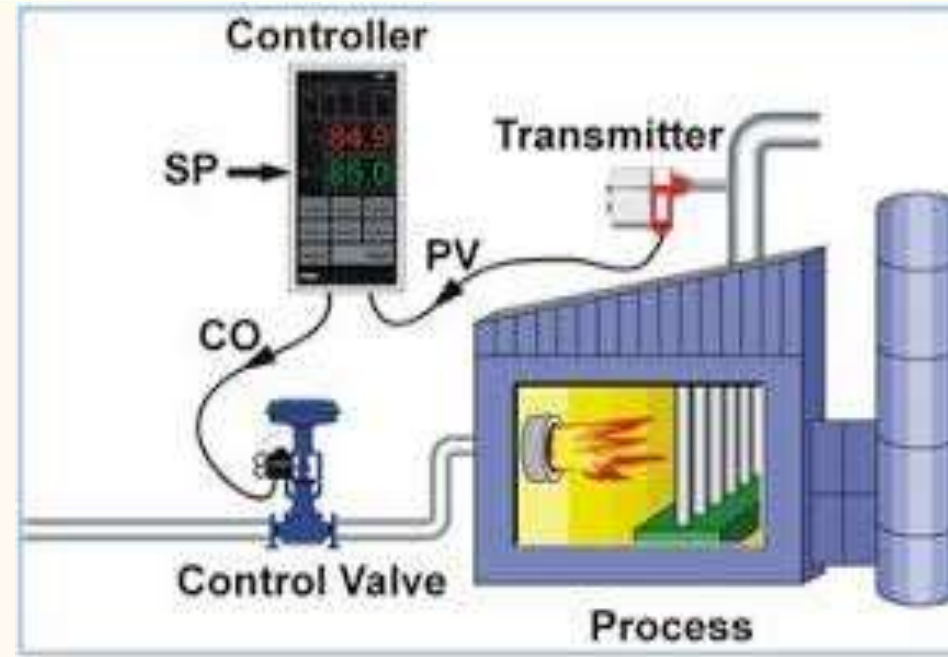
- MDC
- Wet scrubber
- Bag Filter
- ESP
- Cyclone Dust Collector





Control Systems

- PLC
- PID
- DCS



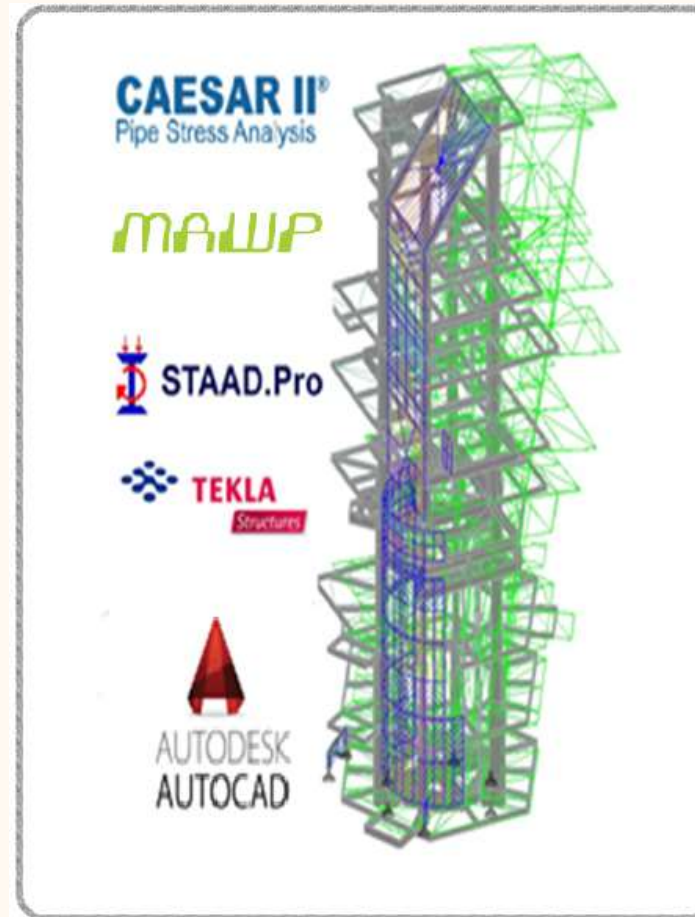
Online Cleaning System

- Soot blowers – conventional steam or air operated
- Sonic soot blowers.
- Air blasters.
- Rapping mechanisms- hammer type, imbalance motor, hydraulic type
- Water lancing.
- Along with sequential control with time and frequency flexibility systems.



Engineering Services

- Piping
- Fired Heaters
- Pressure Vessel
- Flow induced Vibration Analysis



- CAESAR II
- STADD Pro
- TEKLA
- AUTO CAD
- CADWORKS
- MAWP
- ANSYS
- FLUENT (CFD)

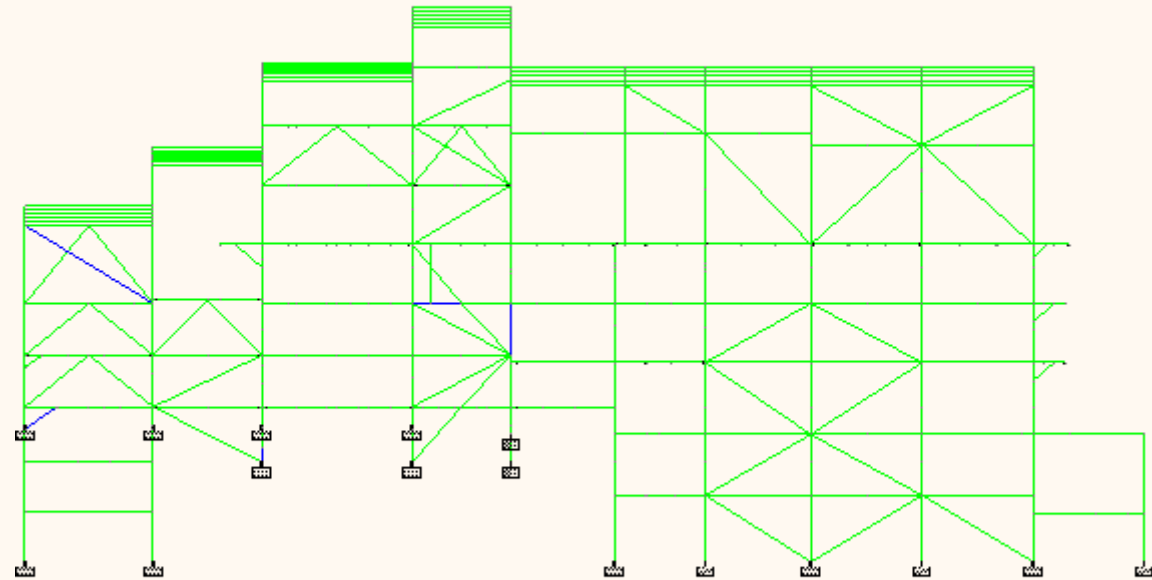


Steel Structure Analysis

```

*****
*                               *
*      STAAD.Pro                *
*      Version 2007   Build 04  *
*      Proprietary Program of   *
*      Research Engineers, Intl.*
*      Date=   FEB 5, 2013      *
*      Time=   8: 0:59         *
*                               *
*      USER ID: s              *
*****
    
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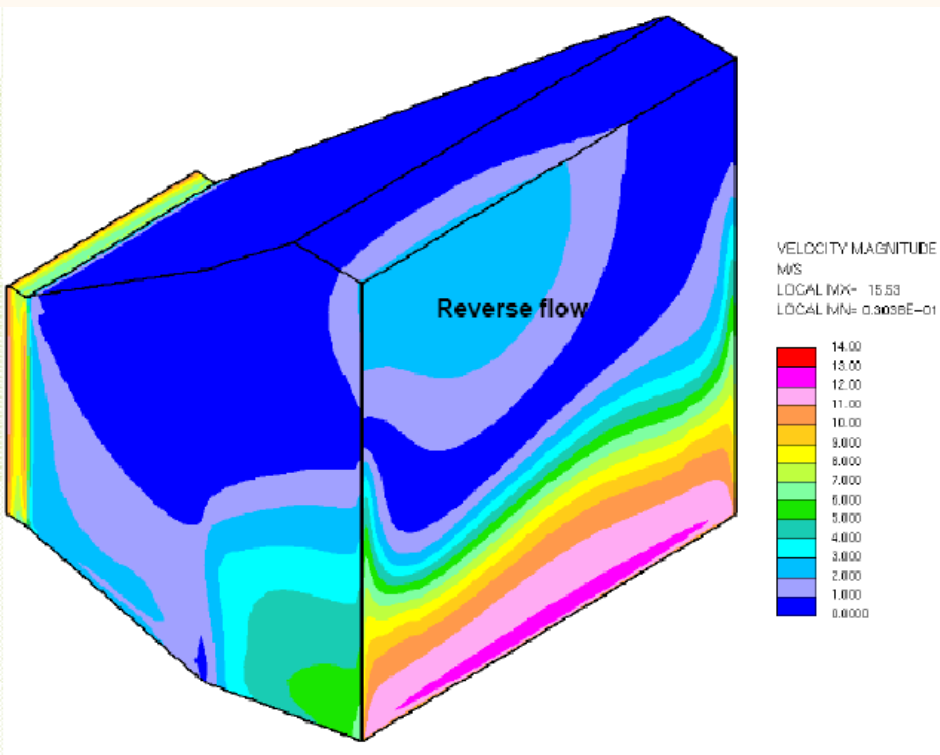
1. STAAD SPACE
- INPUT FILE: 55TPH-indian section with canopy rev 2.STD
2. START JOB INFORMATION
3. ENGINEER DATE 19-DEC-12
4. JOB COMMENT WIND ON CANNOPY ADDED, AFTER GIVING STRUCTURE BOM
5. END JOB INFORMATION
6. INPUT WIDTH 79
7. UNIT METER MTON
8. JOINT COORDINATES
9. 1 0 7.4 0; 2 6 7.4 0; 3 11.1 7.4 0; 4 18.15 7.4 0; 5 22.75 7.4
10. 6 27.62 0 0.8775; 7 31.87 0 0.8775; 8 36.81 0 3.8775; 9 42.01
11. 12 0 5.4 2.5; 17 0 5.4 7.3; 22 0 5.4 12.1; 23 6 7.4 12.1; 26 2
12. 27 27.62 0 3.8775; 28 31.87 0 3.8775; 29 36.81 0 10.7225; 30 4
13. 33 27.62 0 10.7225; 34 31.87 0 10.7225; 36 0 8.4 0; 37 6 8.4 0





CFD modeling for uniform gas flow

1. Without deflectors



2. With deflectors

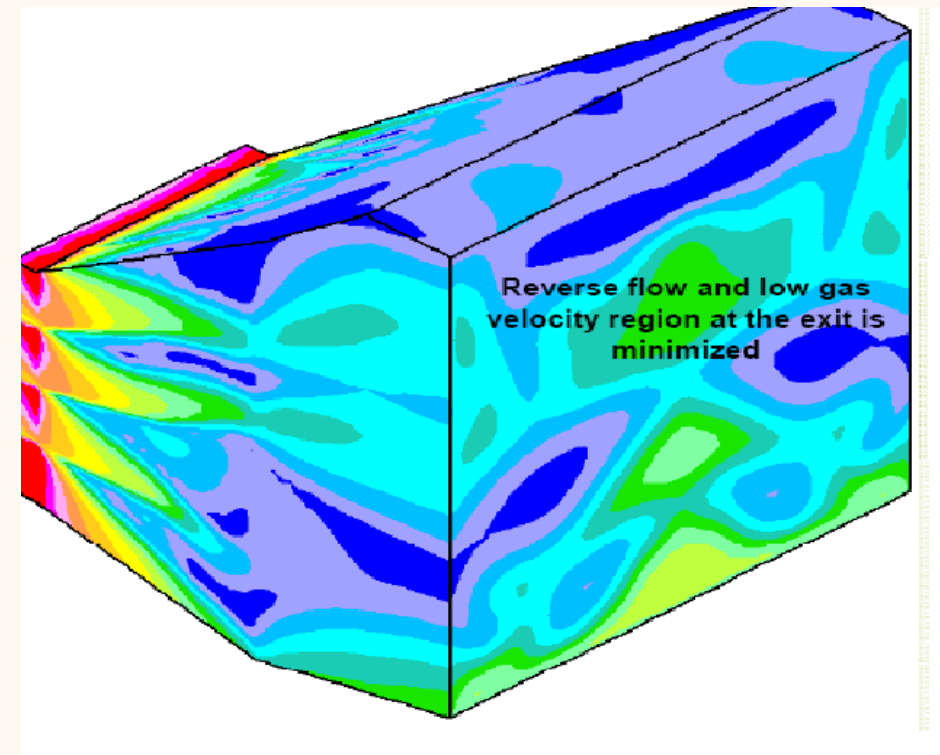


Fig. Velocity at the duct exit



MAWP Design

MAWP Engineering Simplified

Project Input Basic Input Geometry Input Design Output Support Output

Vessel - DEARATOR STORAGE TANK 22-08-2019 11:13:02

No.	Type	Name	No.	Size	Length	FL Code	FL Type	FL Face	Head Pad	Proposed	Remarks
1	WT	WELD ON TOP FLANGE	1	70.0	5.00	100.0	100	width	00	100.0	
1	NOZ	NOZ. IN BRASS FLANG	1	40.0	1.14	100.0	100	width	00	100.0	
2	WT	WELD ON TANK WALL	1	100.0	12.7	100.0	100	width	00	100.0	
4	NOZ	NOZ. FOR WATER OUTLET	1	100.0	0.00	100.0	100	width	00	100.0	
3	NOZ	NOZ. FOR STEAM INLET WITH	1	100.0	0.00	100.0	100	width	00	100.0	
4	NOZ	NOZ. FOR STEAM INLET WITH	1	100.0	0.00	100.0	100	width	00	100.0	
5	NOZ	NOZ. FOR STEAM INLET WITH	1	100.0	0.00	100.0	100	width	00	100.0	
7	WT	WELD ON BRASS FLANG	1	100.0	14.0	100.0	100	width	00	100.0	
4	WT	WELD ON PRESSURE TRANSDUCER	1	10.0	0.00	100.0	100	width	00	100.0	
1	NOZ	NOZ. FOR STEAM INLET WITH	1	100.0	0.00	100.0	100	width	00	100.0	
6	WT	WELD ON PRESSURE TRANSDUCER	1	10.0	0.00	100.0	100	width	00	100.0	
4	WT	WELD ON STEAM INLET WITH	1	100.0	0.00	100.0	100	width	00	100.0	

MAWP Engineering Simplified

Project Input Basic Input Geometry Input Design Output Support Output

Vessel - DEARATOR STORAGE TANK 22-08-2019 11:13:02

3D model of a cylindrical vessel with various nozzles and welds highlighted in purple and yellow.

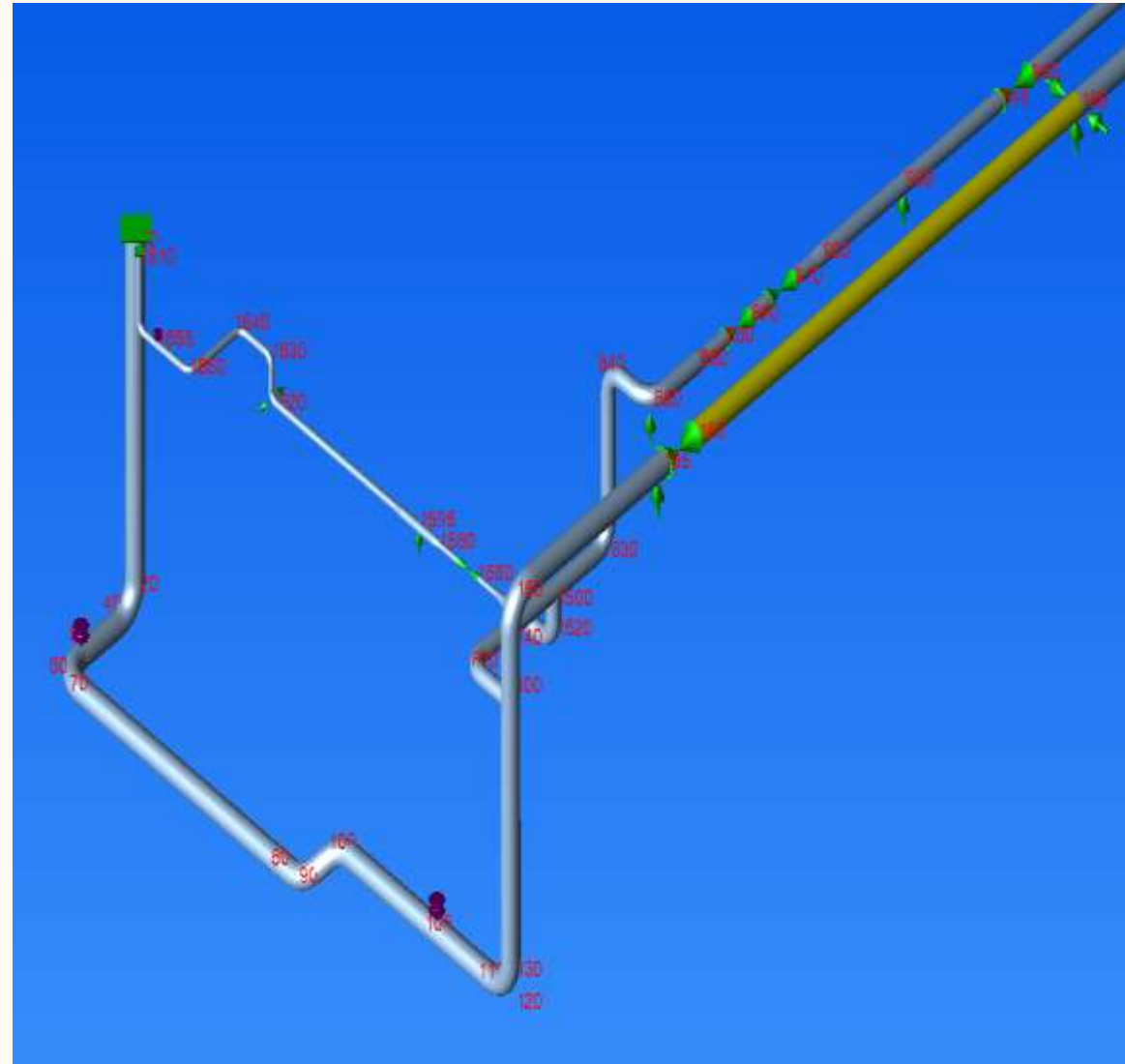


Piping Stress Analysis

CAESAR II Ver.5.10.00, (Build 070917) Date: MAY 10, 2013 Time: 17:50
 Job: F:\MERU INDUSTRIES\PIP...\16.04.13

HANGER REPORT
 (TABLE DATA FROM DESIGN RUNS)

NO.	FIG.	VERTICAL	HOT	THEORETICAL	ACTUAL	SPRING	HORIZONTAL
NODE	REQD	MOVEMENT	LOAD	INSTALLED	INSTALLED	RATE	MOVEMENT
		(mm.)	(N.)	(N.)	(N.)	(N./cm.)	(mm.)
135	1 VS2	16	20.737	27774.	34688.	0.	3334. 107.032
	SARATHI						LOAD VARIATION = 25%
740	1	-64.912	9920.	***** CONSTANT EFFORT SUPPORT *****			
795	1 VS3	6	-57.378	1538.	1186.	0.	61. 97.513
	SARATHI						LOAD VARIATION = 23%
1195	1 VS2	16	16.241	30154.	35569.	0.	3334. 2.751
	SARATHI						LOAD VARIATION = 18%





Our Successful Installations

Since inception

70+

FIRED BOILERS

60+

UNFIRED BOILERS

20+

NON STANDARD BOILERS



Our Global presence



Esteemed Clientle



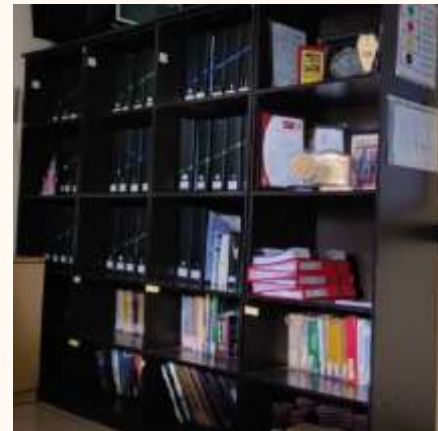


Empowering Talent In Emerging Markets

Unlike traditional outsourcing, we want to provide extraordinary value to our customers by investing our profits into the design talent in India.

Whether it's by educating our employees with our in house academy or by simply providing an incredible work environment with in-house full health care, nutritional food and frequent social activities, we're fully committed to empowering talents in emerging markets.

We're leaders In redefining the traditional approach of outsourcing.



THANK YOU

