Condensing economiser

SUMUL DAIRY, Surat

Boiler Operating Parameters

- Boiler Details - SM-160DH (16 TPH f&a 100)
- Boiler Pressure – 17.5 kg/cm2(g)
- Existing heat recovery Unit - APH
- Flue gas temp After APH – 140 to 160^{o}C
- Existing Efficiency – 90 to 92 %

Heat Recovery Opportunities

THERMAX

- Combustion of Natural Gas :

$$CH_4 + 2O_2 + 7.5\ N_2 \rightarrow CO_2 + 2H_2O + 7.5\ N_2$$

- For every 1 Molecule of CH_4 burned = 2 Molecule of H_2O is generated
- **Condensing Economizer** can be used for recovering further heat from flue gases.
- It is designed to increase the efficiency by reducing flue gas temp. below dew point temp. (Sulphuric acid, Sulphurous acid, Water) & increasing rate of condensation
- It maximises benefit of sensible heat recovery & recover a good quantity of latent heat to increase the efficiency beyond 100%

Design Considerations

- 3 way damper – for diverting flue gases to condensing economizer / chimney
- ID fan – To take of pressure drop & helps in maintaining draft of existing system
- Material selection for CE -Anti-corrosive , Non sticky & Higher thermal conductivity

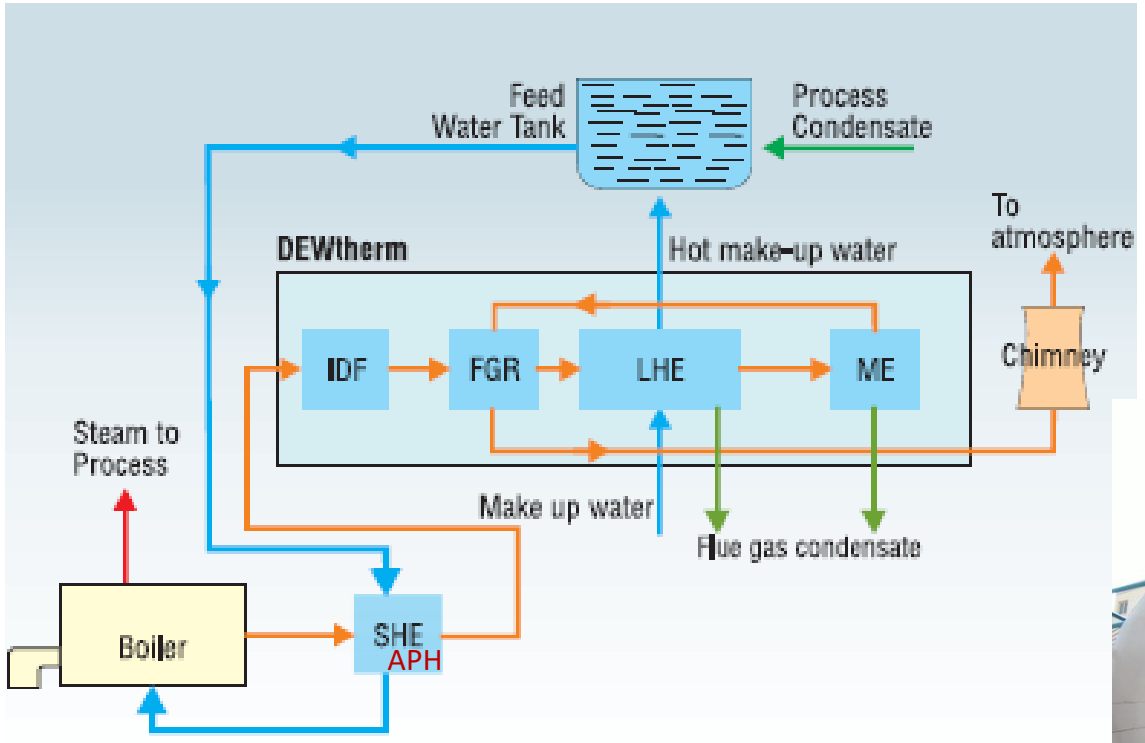
  MOC of Tubes & casing – SS304
- FRP Chimney - is proposed to take care of corrosion.

Savings

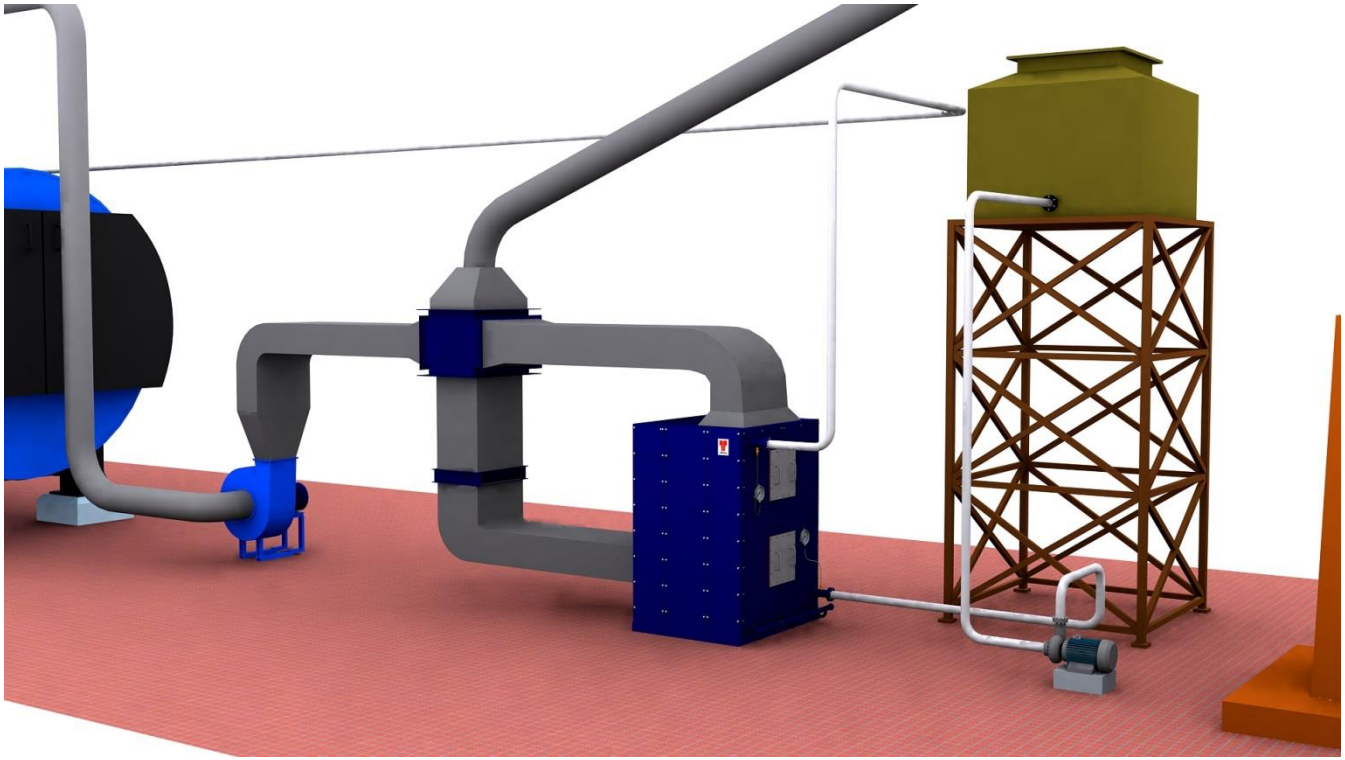
CONDENSING ECONOMISER - NG SAVINGS		
Water Flow	kg/hr	13000
Water intlet Temp.	°C	30.00
Water Outlet Temp.	°C	75
Heat Gain in CE	Kcal / hr	585000.0
Fuel NCV	Kcal / sm3	8250.0
Fuel Savings	Sm3/hr	70.9
Fuel Price	Rs/Sm3	₹ 32.0
Savings	Rs/hr	₹ 2,269.1
Savings(**)	Rs /year	₹ 16,337,454.5

(**)- Considering 24 hrs running for 300 days.

Condensing Eco- Schematic



3D - MODEL



Reference List

- Coromandel International, Ankleshwar
- Areej Veg, Oman
- Meghmani Organics, Ankleshwar

شركه اريج للزيوت النباتيه ومشتقاتها ش.م.ع.ع
AREEJ VEGETABLE OILS & DERIVATIVES S.A.O.G.

Date 07/02/2017

TO WHOMSOEVER IT MAY CONCERN

This is to certify that we are using Thermax Ltd. DEWtherm Condensate Economizer with our 15TPH gas fired boiler for flue gas heat recovery.

The results are really satisfied to our requirements with some saving of steam due to heat recovery from flue gas. The services offered by Thermax Ltd. during commissioning are really appreciable.

We hope these good relationships will continue & increases in future.

Our best wishes are always be with Mr. Vaibhav Deshmukh, Mr. Rahul Khandelwal.

Mr. Milind Bhalerao.

MANAGER - PROJECT & UTILITY

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