

CT-121 FGD Process



BWE CT-121 Flue Gas Desulphurization Process

Today, every industrialized nation must face the problem of air pollution, in particular that from sulphur dioxide, which results from the combustion of fuel oil and coal.

This problem can be solved either by using expensive low-sulphur fuels or by installing a flue gas desulphurization plant. The last method is a particularly important one for controlling air pollution, since it is well beyond the development stage and various FGD processes are now commercially available.

The BWE CT-121 is a 2nd generation wet limestone FGD process that combines the client's need of low investment and operational costs with an easy and reliable operation.

Chiyoda Corporation, inventor of the advanced CT-121 FGD process, enjoys a reputation as one of the world's leading engineering and construction contractors specializing in process plants. Burmeister & Wain Energy A/S has acquired the license rights from Chiyoda Corporation for the CT-121 process in Europe.

Jet Bubbling Reactor

The heart of the CT-121 FGD plant is the unique Jet Bubbling Reactor (JBR) that works as absorber, oxidizer and reaction crystallizer and combines these functions in one vessel. The flue gas is introduced into the JBR where it is violently mixed in the scrubbing liquid made up of a limestone/gypsum slurry of 20-30 wt% solids and oxidation air

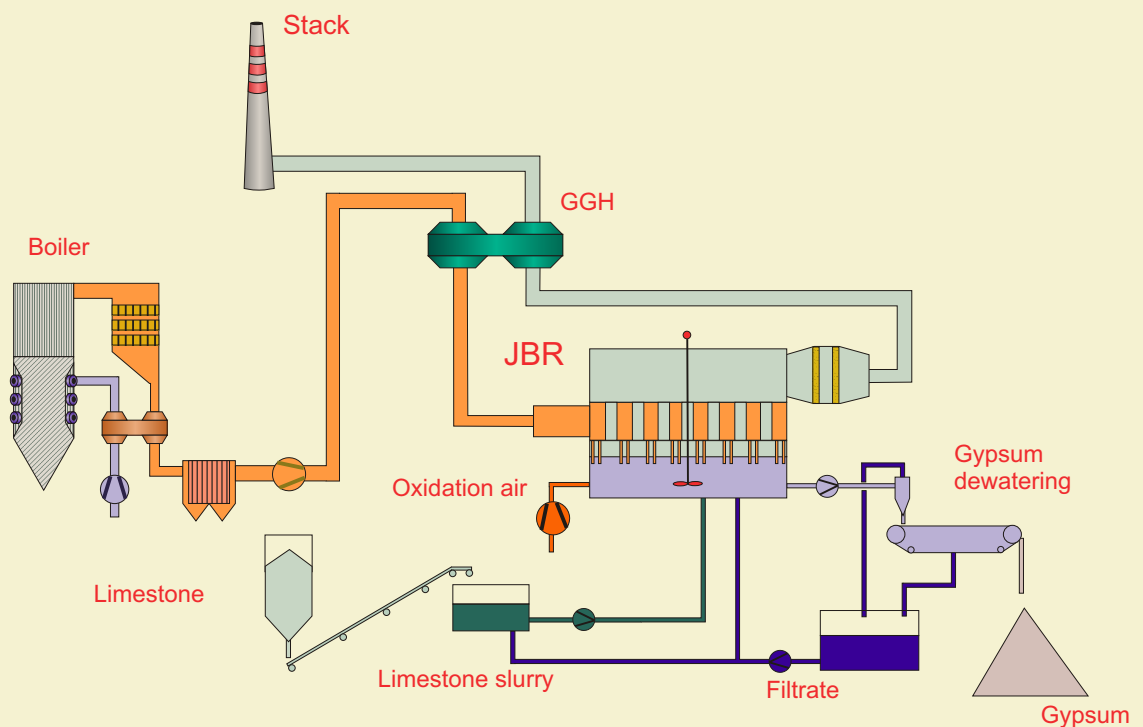
(no other additives are used). The clean gas passes through a mist eliminator and is released to the atmosphere.

Functionally, the bottom part of the reactor is divided into two zones, the bottom reaction zone and the top jet bubbling zone.

Four processes take place in the bottom vessel: the absorption of SO_2 , the oxidation of sulfites to sulfates, the neutralization of acid sulfates to form gypsum, and the growth of gypsum crystals.

CT-121 Process Advantages

Because of the very effective internal fluid circulation in the JBR, by means of gas bubbling



and without the use of circulation pumps, the CT-121 FGD process is energy saving and easy to operate compared to other FGD processes.

The significant advantages of the CT-121 process can be summarized as follows:

Low Construction Costs

- Compact and simple design
- Ideal for plants with limited space availability
- Low height makes CT-121 ideal for indoor application

Low Operation & Maintenance Costs

- Low power consumption
- No large slurry circulation pumps
- Complete oxidation and limestone utilization
- Easy operation with minimal staff requirement

High Reliability

- Average reliability of all existing plants exceeds 98%

Additional Benefits

- High, predictable SO₂ removal efficiency up to 99%+
- High particulate removal performance exceeding 90%
- High quality gypsum byproduct



CT-121 FGD Plant at Stignæs Power Station, Denmark

References

Many installations all over the world prove the superiority of the CT-121 process. Of the recent installations it is worth mentioning the following:

- ▶ Haramachi power station in Japan with one single absorber for a 1,000 MWe station
- ▶ Tusimice power station in Czech Republic where the flue gases from four units burning high sulfur lignite is cleaned
- ▶ Stignæs power station in Denmark where the FGD plant has been installed on an existing plant with very restricted area available for the FGD plant. This plant is operating with a removal efficiency of more than 98%.

World leader in steam power technology

Burmeister & Wain Energy A/S has specialized in the development and design of advanced steam boiler plants for utility power stations.

Furthermore, BWE designs a wide range of auxiliary power station equipment such as the BWE Low-NO_x coal/oil/N-gas burners, Air Preheaters, Gas-Gas Heaters and Flue Gas Desulphurization.

BWE is part of the Italian STF S.p.A. Group.

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