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BOF Converters and Relevance of Efficient and Reliable Evaporative Cooling Technology

I. Background:

BOF converter installations can be seen as three distinct areas ' viz.,

- Ψ **Converter pot** and its accessories including sub-lance systems,
- Ψ **Gas cooling stacks** commencing from the lip of the converter to the entry point of the gas cleaning plant, and
- Ψ **Gas cleaning plant.**

Globally there are only a few firms that offer services in technology, engineering and installation services for both 'green-field' BOF converter installations and existing BOF converter installations.

The current stringent environmental norms as well as the need to reduce the specific energy consumption has emphasised on the importance of introducing concepts to both conserve scarce resources as well as to reduce the specific energy consumption in the process.

This document deals with the gas cooling stacks and the state of the art technology that reduces specific energy consumption. Globally water is used to cool the waste gases which has also sensible heat and has a rich calorific value as fuel for down- stream use.

II. Evaporative Cooling Systems (ECS) as an option :

Presently in India, water is used for cooling, in a closed loop system to economise on the consumption. This process was further improved in efficiency by using de-mineralised water and to use steam as cooling medium to use the latent heat of steam to improve efficiency.

This process using steam has been pioneered by OSCHATZ GmbH, a few decades back in Germany and most of the European installations have adopted Evaporative Cooling System using the specialised expertise , invariably directly. The steam thus produced is a co product to the steel producer.

In India ECS, is still in its infancy. There is still no operating BOF converter in India with installation of ECS. At best, the waste gas cooling of stacks has been done on the basis of closed loop water system which conserves the usage of water. The estimated no of BOF's operating in India is over 35. India therefore has to make all out efforts to modify existing waste gas cooling systems in all BOF installations .

This objective can be taken up in two distinct situations

- Ψ New green field BOF installations should ensure in its project specifications that ECS is a must .
- Ψ 'Brown field' installations of BOF also lend themselves to installation of ECS. ECS Systems can be installed, when there is a planned capital shut down and dove tailing of BF shut down takes place.

III. Why Oschatz ?

This can be best achieved with due diligence and calls for initiation of dialogue with the leading technology leader in the field of ECS- which is OSCHATZ. The advantages of the OSCHATZ- specific construction are:

- ▲ Greater resistance to high gas-side overpressure
- ▲ Reduced tendency towards accretions
- ▲ More uniform heat transfer
- ▲ More favourable flow conditions

IV. The suggested approach:

Oschatz, by its virtue of its expertise can offer the most efficient cooling plants for waste gases . It is possible to offer the same as a standalone auxiliary plant encompassing the skirt at the mouth of the BOF converter, lower stack, as well as the downcomer inclusive of associated pipings, pumps and water cooling circuits engineered to fit into the plant layout with ease in a responsible manner.

In India BOF installations are established by awarding a total contract for the converter proper with all associated material handling systems and accessories , waste gas cooling stacks and a gas cleaning plant down stream. The weakest link in the contract is the waste gas cooling stack which somehow gets a limited attention mainly due to non availability of experienced personnel in the finalisation of such installations.

OSCHATZ fills this weak link effectively world over specially if one reviews the extent of modifications carried out on existing BOF installations to incorporate ECS, well proven for efficiency and reliability.

Unfortunately till recently OSCHATZ was not represented in India and thus there existed a gap in availability of superior technology for Indian users. This gap is now filled in by TechSearch.

TechSearch can coordinate with OSCHATZ to enable them to offer best support services to Indian market for incorporation of ECS in existing installations as well as in green field BOF installations.