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## CHX – TECHNOLOGY

### 1. Is this Technology feasible to implement in India?

**The CHX – TEFLON covering heat exchanger Technology can be implemented in India, especially for boilers and process heat recovery applications.**

- a. This technology is more suitable for pre-heating of Boiler feed water. The boiler efficiency improvement of 3-5 % can be realized. The overall energy savings potential in different cases may vary from 10 –16%. In practice a minimum of 10% energy savings may be easily achievable.
- b. What I feel is, that this technology can be successfully used for Oil / Natural Gas fired boiler applications, than Coal fired boilers. The coal fired boilers may impose the problem of dust laden flue gas, which may choke the heat exchanger.
- c. In coal-fired boilers, the flue gas pass through the economizer pre-heating the boiler feed water first, then through air preheater pre-heating the combustion air, followed by ESP then to chimney. The flue gas temperature after ESP normally in the range of 130-140°C. If we want to recover heat further, the sufficient space for the CHX heat exchanger should be there between ESP & Chimney. The pressure drop in the flue gas path will have an additional load on the ID Fan. For calculating savings, the power cost should be deducted.
- d. For a 210 MW power plant, if the flue gas temperature is reduced from 140°C to 70°C then the recoverable heat could be 17.5 M.Kcal/hr. The equivalent coal savings at 80% boiler efficiency & 4000 Kcal/kg would be about 5.5 Tons/hr. The equivalent cost savings at Rs.800/ton (pit head) would be Rs. 3.45 Crores/annum/boiler at 90 % availability. Next the question is the cost of implementation! The cost of CHX exchanger definitely could be of the order of Rs. 20 Crores (2 no's CHX each of Rs 10 Crores). The payback period could be about more than 5 to 6 years.
- e. For combined cycle Gas power plant application with natural gas fired Gas Turbine with HRSG, the exit flue gas temp. will be about 110°C. The worked out case indicates savings of 10.29% worth Rs. 2.77 Crores (\$603,127) per annum. This looks very attractive, but again we have to see the investment. Problem with the Gas turbine based closed cycle will be, there is no ID fan to evacuate the flue gases. So pressure drops are more crucial in this case.
- f. Since already there are so many Gas based power plants available and some of the Fertilizer and other process industries utilizing Natural Gas can install this CHX technology. Further having National Gas Grid and the availability of imported LNG, the Natural Gas users are going to increase in the future.

The Govt. should insist incorporation of this CHX technology at the design stage itself.

- g. Cost is the major criteria, BEE should think of sponsoring demonstration projects using CHX Technology. BEE should recommend to govt. for some of the sops like: Import duty concessions, & 100% depreciation etc.

**2. Do you already know about this technology and have some practical experience on this?**

Through the internet we have come across about this technology, but real working model yet to be seen in India.