

THE HINDU

New technology for scale prevention

Scale build-up on boiler tubes is a problem for the boiler engineer. Hard scale insulates heat transfer surfaces and this causes increased specific fuel consumption. While a 1/16 inch deposit can lead to 12 per cent more specific fuel consumption, a 1/2 inch deposit can increase fuel consumption by 65 per cent.

Conventionally, minimising hard scale deposition is achieved by chemically treating the raw water to soften and demineralise it before it is fed into the boiler. This is expensive. The other alternative is to regularly bring the boiler down for descaling, which is tedious since the deposits are very hard. Bringing the boiler down also affects production.

A Hyderabad based firm, Scalemaster Adlam Pvt. Ltd., has introduced an effective and cheap technique for water treatment to prevent scaling in process steam boiler. Develop-

ed in the mid-Seventies in the U.S., this system employs an electrostatic field to render the water incapable of precipitating solids which form scale.

The Scalemaster system comprises two parts — the treatment unit and the control unit. The treatment unit is essentially a hollow vertical cylinder with a central teflon fabric coated aluminium shaft which forms the positive electrode. The stainless steel outer casing of the cylinder is the negatively charged (grounded) electrode.

The raw water flows through the annular space between the central shaft and the outer barrel. A high voltage (22 kV)/DC potential is applied to the central electrode from the control unit. The raw water is let in at the bottom of the cylinder and treated water flows out from

the top outlet. It is virtually a no-maintenance mechanism since there are no moving parts and the central electrode is self-cleaning by applying ultrasonics. Manual cleaning is needed only once a year.

The system is suitable only for process steam boilers of working pressures upto 750 psig (max). It works on a 230 V AC power supply but because of B voltage fluctuations in the electricity supply network a simple voltage stabiliser is recommended. The power consumption is only 40 watts.

The unit can work easily with raw water having total dissolved solids upto 1200 parts per million, which means ground water of high hardness can be tolerated.

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