COST SAVINGS FROM ENHANCED NOISE REDUCTION BASED BOILER BLOWDOWN CONTROL FOR STATE PHARMACEUTICALS MANUFACTURING CORPORATION (SPMC)

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Name of the supervisor: **Dr. Upeka Premaratne**

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ABSTRACT

Boilers are widely used in most of the processing industries like Pharmaceuticals Manufacturing, for the heating applications. State Pharmaceuticals Manufacturing Corporation (SPMC) is the one of the largest Pharmaceuticals Manufacturing Plant in Sri Lanka. In Pharmaceuticals Industries Boiler is mainly used for the steam generation. In an industry normally a 4% of heat energy [1] is wasted through Blowdown.

For every Boiler there is a defined limits allowable TDS in the Boiler Drum. The Boiler feed water has a certain TDS. The maximum allowable TDS in process Boilers is 3500 ppm.

The steam is generated from the Boiler the TDS contained in the Boiler drums starts to increase. Therefore some amount of the high TDS water needs to be removed from the Boiler drum. This removal of high TDS water from the Boiler drum is called blowdown. By doing Boiler blowdown able to maintain the TDS in the Boiler drum to its optimal desired levels.

The process of blowdown is that most of the time the blowdown is done by manually. Therefore that extract amount of blowdown required is never done. Many times excess of blowdown is done and many times sub optimal blowdown is done both these are harmful. Excess amount of blowdown contributes to the blowdown loss.

Automatic blowdown control system sensors the actual TDS level in the Boiler drum and does the blowdown only when it is required to do so.

When the TDS level in the Boiler go beyond desired set point the blowdown valve will opens and brings down the TDS to the desired level.

High TDS level in the Boiler drum not only cause scaling within the Boiler drum and on the Boiler tubes. But these scales particles also get carried away with the steam and formed deposits on the downstream equipment and piping.

High TDS levels in the Boiler drum also results in moisture carryover which means steam coming out of the Boiler has a high moisture contained and this is detrimental

to the equipment downstream of the Boiler. It also results poor heat transfer in the process equipment and cause high steam consumption.

An automatic blow down control can keep the blow down rate uniformly close to the maximum allowable dissolved solids level, while minimizing blow down and reducing energy losses.

The Boiler Blowdown analysis and energy savings analysis has been carried out at SPMC Plant. The objective of this research work is the blowdown analysis in the plant and analyze the annual savings obtained from Automatic Blowdown Control Intervention. The study was revealed that changing from manual blowdown control to automatic blowdown control monitory savings **Rs 202873.11** a boiler's energy use by annually. Purchasing TDS sensor, pneumatic blowdown valve, PLC and related accessories fabrication cost can be a 3 year payback period on the investment.

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