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DETECTION OF LEAKAGE IN A BOILER SYSTEM

ABSTRACT

Leakage of water from a boiler water system wherein steam is generated in a boiler from feedwater fed to the boiler, and the concentration of impurities in the boiler water within the boiler is reduced by withdrawing fractions thereof as blowdown while admitting additional feedwater as boiler-water makeup, is determined. The boiler has a concentration cycle value, the concentration cycle value being the average value of the concentration of an inert component in the blowdown at steady state (C_F) divided by the concentration of the inert component in the feedwater (C_I). The concentration of the inert component in the boiler at steady state varies from a high concentration C_H, having a value that is higher than C_F, to a low concentration C_L, having a value between the (C_I) and the (C_F), within a time period. The method comprises:

employing as the inert component an inert tracer;

sensing a characteristic of the inert tracer in the boiler at steady state equivalent to its concentration in the boiler water;

converting the sensed characteristic to a value equivalent to the concentration of the inert tracer in the boiler water; and

activation of a signal when a variance in the cyclic concentration fluctuation of said inert tracer occurs that is consistent with a leakage of boiler water.

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