

Sugar Leak Detection Using Online Conductivity Monitoring



There have been many incidents of sugar contamination in boilers since the sugar industry began to use steam. Most of the experiences of this phenomenon have not been catastrophic, and the boilers have survived with little or no permanent damage. But there is a constant threat on how far you can push the situation thus increasing the risk of failures and losses.

This is usually caused by sugar leaking into the condensate. The caramel like smell emanating from the steam drains is an early indicator of entrainment of sugar. This causes the pH levels to drop. Caustic soda needs to be slug dosed into the boiler to control falling pH levels and prevent corrosion.

It the pH levels are brought under control, the boilers can be kept online provided there is an adequate supply of uncontaminated water and regular blowdown is taken.

However, slug dosing may not always give the desired results. A reliable online conductivity monitoring system gives a clearer picture of the exact status and an indication of changes that could lead to such corrosion and leakage.

The suitability of such a monitoring system is also dependant on the presence of other impurities in the form of various salts which always accompany the sugar. The relationship between sucrose content and conductivity is highly variable because it depends on the nature and quantity of these salts.

This in turn depends on the source of the contamination and on the constituents of the cane, which can vary throughout the season. The figure below is a typical representation of this relationship.



Process and Energy Efficiency | Environment



FM Aqua4trans



Application

As explained, online conductivity monitoring can serve as an early and quick warning system for probable leaks of sugar in the condensate water.

Typical point of monitoring: Steam return line of crystalliser outlet

Measurement liquid	Steam drain line monitoring
Operating range	0-250 µS/cm
Alarm point	*50-80 µS/cm
Process temperature	80-115°C

*Note; depending on process conditions

An online 2 wire or 4 wire transmitter with a conductivity probe can be offered for this measurement. Choice of materials for the probe are SS316L or titanium for better material strengths and resistance against corrosion.

Single or dual channel transmitter

pH, Conductivity, TDS measurement

Temperature measurement and compensation; -20 to 200 Deg C

Inbuilt Pt100 to compensate and give analog output

Dual analog output and relay contacts for alarms

Backlit display, mains powered transmitter with IP66 protection

FORBES MARSHALL

Forbes Marshall Krohne Marshall Forbes Marshall Arca Codel International Forbes Vyncke Forbes Marshall Steam Systems Opp. 106th Milestone, CTS No. 2220, Mumbai-Pune Road, Kasarwadi, Pune – 411034 INDIA Tel : +91(0)20-68138555 Fax : +91(0)20-68138402

Email : mvyas@forbesmarshall.com, ccmidc@forbesmarshall.com

www.forbesmarshall.com

CIN No.: U28996PN1985PTC037806

© All rights reserved. Any reproduction or distribution in part or as a whole without written permission of Forbes Marshall Pvt Ltd, its associate companies or its subsidiaries ("FM Group") is prohibited.

Information, designs or specifications in this document are subject to change without notice. Responsibility for suitability, selection, installation, use, operation or maintenance of the product(s) rests solely with the purchaser and/or user. The contents of this document are presented for informational purposes only. FM Group disclaims liabilities or losses that may be incurred as a consequence of the use of this information.