



QUADBEAM TECHNOLOGIES

~ Specialists in process suspended solids & turbidity ~

Turbidity Measurements in Cooling Water and Steam Condensate Returns

Heat exchangers are common in many industries for heating and cooling process liquids. The two most common types are “shell and tube” and multi-plate heat exchangers.

There is always a possibility of leaks between the tube and shell sides of the heat exchanger. When the pressure in the tube side exceeds that of the shell side then process liquid will end up in the steam condensate. Steam condensate is valuable and is not often allowed to go to waste. Most plants collect the steam condensate and pipe it back to the boiler. However if the condensate is contaminated with process liquid then it has to be diverted to waste otherwise boiler damage will result. A Quadbeam T30 sensor installed in the condensate line will detect any contamination and the MSSD53 transmitter will operate a diversion valve to remove the contaminated condensate to waste. A Quadbeam T30 sensor can also be installed in condensate lines from multi-effect evaporators for similar reasons.

In the food industry multi-plate heat exchangers with several flow paths are common as product is often pasteurised and then cooled in the same heat exchanger. Heat recovery circuits are common.

Plate heat exchangers consist of many specially pressed sections of stainless steel called plates. Each plate is separated by a thin rubber gasket. With so many plates and gaskets in a heat exchanger, gasket failure is a common problem that causes either contamination of the product with water or product loss into the cooling water. When this happens the contaminated cooling water can no longer be returned to the cooling water circuit and should be sent to waste. The solution to this problem is to install a Quadbeam T30 sensor into the cooling water pipe leaving the heat exchanger. The MSSD53 transmitter can be programmed to activate a divert valve if product is detected and also raise an alarm in the control room for the operator to take remedial action.

With plate heat exchangers it is also common for product to end up on the process floor where it ends up in the drains. This is usually detected by a Quadbeam S20 sensor installed in the drain, (see application note AN01 Product Loss Monitoring in Dairy Factories).