Can Ultrasonic Flare Gas Flow Meters be used to optimize boiler operations and reduce operating costs ?

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Steam is one of the main feed stock and expensive utility supplies for several processes. Optimizing the cost of generating steam is one of the key targets for any operations team to optimize the overall operation cost. How can ultrasonic flare gas flow meters help to optimize boiler operations and reduce operating costs? In boiler applications, the molecular weight of fuel gas is typically estimated. A single, constant value is applied to all fuel gas fed to the boiler. Since the fuel gas is typically supplied by multiple processes, such as the catalytic cracker (CAT), the alkylation unit (ALKY) and the coker, the molecular weight can widely vary, resulting in wasted energy and increased costs.

Ultrasonic flare gas flow meters are capable of measuring the molecular weight and mass flow rate of the flare gas emitted from stacks for emissions control. Measuring the molecular weight and the flow rate is also valuable in optimizing boiler operations. The molecular weight of the fuel gas conveys the heating value of the fuel. The higher the molecular weight, the greater the heating value. To maximize efficiency, the boiler must have the correct mixture of air and fuel. Without it, energy is wasted. By Using ultrasonic flare gas flow meter, the operator can feed a "live" molecular weight and flow rate values into their controller (PAC or PLC). In turn, the controller can make the necessary adjustments to optimize combustion efficiency, to minimize waste and to maximize savings. By controlling the amount of fuel gas sent to the boilers based on the ultrasonic flare gas flow meters' mass flow measurement that is derived from molecular weight, the correct mixture of air and fuel for boiler efficiency optimization can be determined.

How can ultrasonic flare gas flow meters help to optimize boiler operations and reduce operating costs?

Many operators in the past were making flow measurements using an orifice plate meter or a vortex-shedding meter. In both instances, the customer was dissatisfied with the limited rangeability of these technologies because they can only operate within a limited flow velocity range. Accuracy is lost at the lower and higher ranges. Neither technology is able to indicate molecular weight. Currently many operators have switched to new technologies such as ultrasonics due to its ability to measure both mass flow rate and the molecular weight of the fuel gas. Ultrasonic flare flow meters also presented the solution to the rangeability problem since it can measure velocities from 0.1 to 275 ft/s (0.03 to 85 m/s) bidirectionally.

In my role as a Flow Meter Product Specialist at GE O&G, I am currently working with my colleagues in GE on several flow measurement solutions to overcome flow measurement challenges in O&G Applications.

You can find more details about GE flow measurement solutions & products here:
https://www.gemeasurement.com/flow-meter

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