Increase in energy efficiency of plant heating system

Indorama Ventures achieves noninvasive flow measurement of thermal oil

Entrance of the Indorama Ventures site

The Indorama Ventures unit in Recife, Brazil, aimed to increase the energy efficiency of their PET production plant's heating system by measuring the volumetric flow of thermal oil (260 °C/500 °F) returning to the heater. The main challenge was having to stop the process in order to implement this improvement. The noninvasive high-temperature sensors for Proline Prosonic Flow P 500 from Endress+Hauser overcame all these challenges.

The customer requirement

The volume of thermal oil returning to the heater has a direct impact on the energy costs of the unit's heating system. Until now, the volumetric flow was calculated using valve opening and closing values. However, since this is a critical point in terms of energy efficiency, having a direct flow measurement would be extremely advantageous. Indorama Ventures encountered two challenges: Firstly, stopping plant processes to implement the improvement would be difficult, as the plant runs constantly with only short breaks for maintenance. Installing and commissioning an inline flowmeter takes more time and effort. Thus, it would have been expensive. And secondly, the measuring point itself is challenging as the thermal oil operates at high temperatures – around 260 °C (500 °F). Finding a device that measures reliably in spite of this temperature range was very difficult.

Our solution

With the high-temperature sensors for Proline Prosonic Flow P 500, Endress+Hauser offers a perfect solution for the challenges described above: There is no need to stop the process to install and commission the equipment as it is a noninvasive ultrasonic clamp-on flowmeter. Additionally, installation costs are minimal since no modifications to the piping are required. Regarding the challenge of high temperatures, the device can be used to measure fluids with temperatures up to 550 °C (1022 °F). Its robust mounting

INDORAMA VENTURES

Indorama Ventures is a world-class sustainable chemical company with a global, integrated lead in PET and fibers, serving major customers in diversified end-user markets.
It is one of the world's leading petrochemicals producers with a presence in more than 30 countries – developing innovative products for customer needs.

"During the project, the installation of the instrument was very simple from the plant's perspective, as we usually need to request process shutdowns to implement improvements. However, it was possible to install the high-temperature version of Prosonic Flow P 500 while the plant was in operation.
Another important point was the easy commissioning of the equipment – it was quick and completed in a single day. Now we have stable and reliable measurements and are able to reduce costs in energy for heating the oil based on the total volume of oil returning to the heater."

Tiago Melo
Project Engineer,
Indorama Ventures, Brazil

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and coupling methods have been developed to achieve optimum attachment. With this innovative solution, accurate and reliable measuring results can be achieved.
Another important point: once installed, the flowmeter can be completely thermally insulated – an important feature for this kind of application so as to avoid thermal bridges.

The result

The installation and commissioning of Prosonic Flow P 500 at Indorama Ventures were completed in a single day. Shortly afterwards, it was possible to start measurements that have remained stable and reliable.

- Increase in energy efficiency of the plant's heating system and thus cost reduction
- No process interruption for installation thanks to non-invasive measurement
- No energy loss due to completely insulated equipment after commissioning
- Intuitive and practical configuration of the flowmeter via web server

More about the high-temperature version of Prosonic Flow P 500

1 External high-temperature sensors
2 Transmitter with WLAN access
3 Thermal insulation after commissioning

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