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Application note

Heat exchanger for a swimming pool

Using the PT900 gives benefits:

- Reliable and accurate liquid flow measurements
- Fast and easy to install
- Sensor accessible without interruption of flow
- Ability to calculate energy with temperature probes

The 20kW heat exchanger

Summary

A Facilities Management customer in Europe wanted to reduce the cost of operating its swimming pool. The client invested in a new electric (20kW, 3 phase) heat exchanger replacing an outdated natural gas fed heat exchanger which had become very expensive over the years. The heat pump supplier had set high expectations and so the client wanted to ensure the recommended water flow rate through the new heat exchanger could be achieved in order to optimize the pool's efficiency. To do so the client turned to Panametrics.

Application

Energy measurement:

- Medium water
- Water temperature intake: 16-20°C (61-68°F)
- Water set temperature: 28°C (82.4°F)
- Pipe material: PVC
- Diameter: DN50 (2″)
- Wall thickness: 2mm

Solution

Knowing that the average temperature difference (outlet minus inlet) would be smaller with increased water pump capacity, the team expected the heat transfer to increase with higher pump capacity. Using a PT900 Clamp-on Flow Meter with the clamp on Pt1000 temperature probes confirmed this.

The client lowered the maximum water capacity to meet the prescribed velocity limitations of the heat pump. With an electric power input to the heat pump of 4kW the customer was able to harvest almost 19.7kW, well within the supplier's specifications.

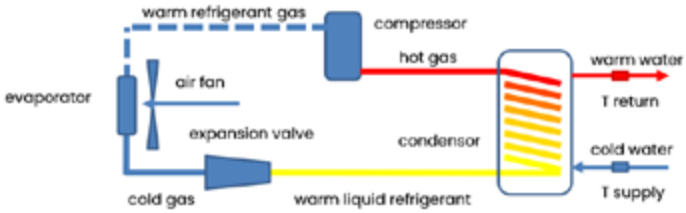
PT1000 elements (on inlet and outlet) and small clamping fixture

Both PT1000 elements insulated

The PT900 programmed for energy measurement

Result

Panametrics' PT900 Clamp-on Flow Meter confirmed the water flow rate and provided the customer with the peace of mind that the investment in an electric heat exchanger was worthwhile. **Switching from gas to a heat pump to warm the pool cuts the customer's energy bill by about 50%.**



This demonstrates the Transport PT900 energy measurement capability that can be promoted for this type of assessments made by facility management companies for their utility customers.

In this specific case we used CF-LP transducers and clamp on temperature probes.

The complete filter installation

Per avere più informazioni
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