



CASE STUDY

INDUSTRY: CHEMICALS



CUSTOMER: Infineum

LOCATION: Linden, New Jersey, USA



BACKGROUND: Infineum is a world leader in the formulation, manufacturing, and marketing of petroleum additives for lubricants and fuels. Established in January 1999, Infineum is a joint venture of two of the most respected names in lubricants and fuels, ExxonMobil and Shell.

Infineum's Linden Business and Technology Center (LBTC) located in Linden, NJ provides technology, sales, marketing, supply and procurement. Formerly part of a large Exxon R&D campus, LBTC is supplied low pressure (140 psig) steam from a nearby refinery through a 16" (410 mm) diameter steam line that runs underneath a major roadway. Steam is used at LBTC for Cogen plant operation, space heating, and light process use.

SCOPE OF WORK: After years of being supplied steam on a flat contract, LBTC was notified that the agreement terms were being modified and LBTC was to be billed for actual usage. Preliminary analysis showed that this new arrangement was going to result in several hundred thousand dollars of additional charges if nothing was done to improve the accuracy of steam flow metering and reduce steam consumption. Flow metering is a key component in knowing and reducing costs and also helps meter the appropriate custody transfer.

LBTC had a 16" (410 mm) orifice plate meter measuring the steam flow into the Infineum campus that was being supplied by the local refinery. The orifice plate at a 4:1 turndown was only getting a 10-20% rate of accuracy. The issue was the inability to read accurate flows during the lower load season of summer. Also, they only had a local display outside mounted roughly 100 yards away from their nearest building making it impossible to trend or observe the steam usage the campus was using and being billed for by the refinery.

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SCOPE OF WORK, CONT.: LBTC turned to Armstrong International for assistance. Over the past several years, LBTC had worked with Armstrong to reduce the wetness and improve the quality of the steam coming from the refinery. LBTC needed a solution to measure flows during the lower load season of summer and make sure they were getting billed appropriately and not over billed.

In this case, Armstrong proposed a solution to accurately measure the steam flow and reduce steam consumption on the Infineum campus while also further improving steam quality to maintain reliable Cogen operation.

SOLUTION: Armstrong designed and supplied the components for a new steam conditioning and metering station. The steam conditioning and metering station included a full line size 16" (410 mm) steam separator to remove entrained water particulates and a 12" (305 mm) VERIS Accelabar® steam flow meter to replace a 16" (410 mm) orifice plate. The VERIS Accelabar® is a unique toroidal nozzle design incorporating a Verabar® averaging pitot that produces an accuracy of up to $\pm 0.50\%$. It is the ONLY flow meter on the market that requires NO straight pipe run.

The VERIS Accelabar® was chosen because of its excellent turndown of the meter. With the VERIS Accelabar®, the total turndown for this application was 45:1 at a $\pm 0.5\%$ rate of accuracy. By using the VERIS Accelabar®, the customer could accurately measure the low flows during the lower load season of summer while still being able to measure the high load season that winter brings. This enabled the customer to read approximately 20% more of their flow rates throughout the year while reducing their cost and consumption of steam.

Armstrong supplied a KEP Supertrol II Mass Flow Computer for remote display in their office that not only showed rate and total, but also was able to output to their building management system (BMS) via a MODBUS output of all their flow variables of the steam line. This included mass rate and total, temperature, and pressure of the steam line for real time usage.



Steam Conditioning Station



VERIS Accelabar® Installation



BENEFITS: Significant Results

The system has been in operation since summer of 2017. Results achieved thus far indicate a 5-7% steam consumption reduction from improving the quality and up to 15-20% steam bill savings from more accurate metering.

LTBC was so satisfied with performance of the VERIS Accelabar® technology on steam service that they stated the meter is working “flawlessly” and they asked Armstrong to redesign their nitrogen supply station. This included the use of a new internally piloted pressure reducing valve and 2” (50 mm) VERIS Accelabar® to accurately meter N₂ use.



N₂ Metering Station