

Diehl Metering

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Diehl Metering: 30 years of perfecting ultrasonic precision

The year 2021 marks three decades since Diehl Metering began developing its high-precision ultrasonic measuring technology. Since then, the company has launched several generations of ultrasonic meter, continually improving the technology thanks to close collaboration with its customers.

In the early 1990s, the German company Hydrometer, which would later become Diehl Metering, was one of the pioneers of ultrasonic measuring technology. At the time, the standard equipment for measuring consumption in distribution networks presented a number of shortcomings, especially for the thermal energy market.

The main challenge was that water in heating systems was often poor quality, regularly containing traces of metal oxide. Measuring inserts in the traditional meters used at the time relied on magnetic technology, and the magnet had the undesired effect of extracting metal particles from the water, causing a partial blockage. This made meter measurements unreliable.

In 1991, Hydrometer, a manufacturer of water and heat meters, saw an opportunity to make a lasting impact in the heating market. By developing an alternative to static technology, it could address the challenges of heat utilities and win over a new customer segment. It began work on its ultrasonic technology.

SHARKY: durability, reliability, and long-term measuring stability

The main advantage of ultrasonic technology is that it can measure flow rates without interfering with the flow stream, while also being less susceptible to rust and general wear. For the customer, the benefits are greater long-term accuracy, increased durability and a better resistance to poor water quality.

In 1998, after years of development, Hydrometer launched SHARKY, its first ultrasonic flow sensor for the heating market. It then followed up with the SHARKY compact heat meter in 1999. Over the next few years, the company continued to improve its ultrasonic technology, unveiling the second generation of SHARKY in 2003. A year later, the third-generation ultrasonic compact energy meter SHARKY 773 integrated flow sensors with new transducers and electronics. It remains the basis for today's ultrasonic meters from Diehl Metering.

HYDRUS: the first ultrasonic water meter

In 2008, Hydrometer was the first company to market an ultrasonic water meter. The starting point for developing the HYDRUS meter was a customer experience in the Emirates.

Hydrometer had been working in the Middle East since 2005, when cities such as Dubai and Abu Dhabi began expanding rapidly. With water being such a limited resource in the region, high-quality meters were an essential tool for ensuring water was managed efficiently. However, the standard water meters of the time struggled to cope with the ever-present desert sand, which worked its way into the pipes, causing blockages and often permanently damaging the meters within just 2 or 3 years.

To overcome this challenge, some of Hydrometer's customers in the Emirates had installed ultrasonic energy meters in their water distribution networks. But energy meters are much bigger than water meters and are not designed to cope with humid conditions. Hydrometer therefore set about developing the industry's first ultrasonic water meter.

Named HYDRUS, a combination of Hydrometer and US, the abbreviation for Ultrasonic, the meter was a direct response to difficult desert conditions. It was designed to resist high temperatures and high humidity, as well as withstand sand and air in the pipes. With such a robust design, the HYDRUS meter was capable of long-term performance anywhere in the world.

New features, new benefits

Since SHARKY and HYDRUS were first launched, Diehl Metering has continued to listen to its customers and adapt its technology to their needs. The battery life has been extended to up to 16 years, and both ranges of ultrasonic meter are now available in all common nominal sizes. HYDRUS was also recently launched in an ultrasonic Bulk version.

New functionalities, including electronic displays that make information immediately available, have transformed SHARKY and HYDRUS into smart meters capable of gathering multiple metrics about water and energy consumption, flow and temperature.

In 2005, as Diehl Metering developed its presence in the Middle East and North Africa, a cooling function was introduced to answer the needs of local customers.

From 2010, Diehl Metering integrated its IZAR radio technology into all its ultrasonic meters, replacing the previous plug-in system. With meters now IZAR-ready, utilities can immediately benefit from remote readings and automatic data transmission in a fixed network, as well as the potential of the Internet of Things.

In 2019, the SHARKY 775 smart ultrasonic energy meter was awarded 5 stars out of 5 for measurement stability and measurement accuracy by AGFW, an independent and neutral energy efficiency association for heating, cooling and combined heat and power. This was the fifth time in a row the meter earned the highest rating, a sign of the quality Diehl Metering prides itself on.

Ultrasonic future

Thirty years after Hydrometer began developing its ultrasonic meters, the technology has become a cornerstone of Diehl Metering's smart metering solutions. Today, there are 5.2 million SHARKY meters and 4 million HYDRUS meters operating around the world.

The industry has also embraced ultrasonic, with 99% of heating and cooling meters now based on the technology. In the water metering market, the trend towards ultrasonic continues to grow thanks to the technology's combination of stability, durability and connectivity.

Look ahead, Diehl Metering plans to continue improving its portfolio of ultrasonic meters. The last three decades of success have been founded on close collaboration with its customers, and the next innovation will almost certainly be a response to its customer's emerging needs or ambitions.

About Diehl Metering

Diehl Metering is a worldwide leader in the design, manufacture and supply of smart metering solutions. With over 150 years of experience, we empower utilities, municipalities and industries to take control of their infrastructures, bringing new efficiencies to the way they manage water and energy.

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Our extensive range of services and solutions includes data-driven insights, IoT connectivity, fully-flexible software, and seamless intelligent metering. We also utilise artificial intelligence to boost performance and deliver cost savings for our customers.

Headquartered in Germany, we are a family-owned business with an international reach. We are proud to maintain our founding principles of quality, reliability and customer proximity while proactively shaping a better future for our customers and the communities they serve. Our approach is to think global and act local. By anticipating trends and remaining agile, we adapt and develop our strategy with our customers and for them.

In supporting their long-term growth, we also contribute to the sustainability of the planet, crafting innovations that enable our customers to make ever better use of the natural resources we all rely on.