

## Boosting customer satisfaction through automatic, interoperable readings

Izmir Jeotermal Case Study

37° C

65° C

17,212 kWh

14,846 kWh







## IZMIR JEOTERMAL

Situated in a region of geothermal activity, Izmir is the third most populous city in Turkey, after Istanbul and Ankara, and the second largest urban agglomeration on the Aegean Sea after Athens, Greece. In 2019, İzmir had a population of almost 3 million, while the İzmir Province totalled 4.4 million residents.

In the west of the city, the Balçova and Narlıdere districts are served by Izmir Jeotermal, which operates the largest geothermal district heating network in the world. The company serves 36,636 residences and has around 23,210 subscribers.

## TURKEY'S VAST POTENTIAL FOR GEOTHERMAL ENERGY



Turkey is among the top seven countries worldwide in terms of geothermal resources thanks to its situation along the Alpine–Himalayan Tectonic Belt. But today just 2% of the country's geothermal potential is being used.

A number of national energy developments are concentrated in the province of Izmir, which benefits from abundant geothermal resources, high potential for solar and wind energy, and enough livestock to provide raw materials for the biomass sector. Currently, geothermal energy in the region is mainly used for residential heating, as well as geothermal greenhouse heating systems – and there remains significant scope for expansion. Just 11% of a potential 212,000 homes are supplied with geothermal-sourced residential heating, while only 3% of greenhouse heating potential has been developed so far.



**N°1**  
**GEOTHERMAL**  
**DISTRICT**  
**HEATING**  
**NETWORK**

The Izmir Jeotermal DH network is the largest in the world.



**MOST EFFICIENT**  
**RENEWABLE**

Whatever the weather, geothermal energy is available 24/7 and has the highest efficiency rating of any renewable – making it essential for the energy transition.



**10**  
**YEARS**  
**TOGETHER**

Izmir Jeotermal and Diehl Metering have been working together for a decade, continually optimizing the utility's network, monitoring and billing.



"Izmir Jeotermal has been very impressed by Diehl Metering's all-in-one solution. They particularly appreciate the robust and long-term reliable measurement performance of the supplied SHARKY 775 heat meters, even under harsh conditions, which is especially important for meters dealing with very demanding geothermal water. The excellent radio performance enables reliable mobile meter reading for accurate and fair billing. A possible upgrade from mobile reading to a fixed network solution would provide Izmir Jeotermal with additional analysis possibilities for more efficiency in its district heating network. Madenerji and Diehl Metering have now been working together successfully for over 10 years and are proud to provide smart metering solutions to the largest geothermal district heating network in the world."

Eren Maden General Manager,  
Madenerji A.Ş.

## THE CHALLENGE: COLLECT READINGS MORE FREQUENTLY AND ENABLE INTEROPERABILITY

Back in 2011, Izmir Jeotermal's network was composed of meters from multiple different brands, and readings were only taken manually for a specific reason. Since each brand used its own radio system with proprietary protocols for collecting meter data, the utility struggled to realize automatic meter reading and display data on a single platform.

Manual-only readouts posed several problems. The process was expensive, time-consuming and labour-intensive. It was also more prone to billing errors. And it made it extremely difficult for Izmir Jeotermal to provide monthly billing – which was a key objective for the company. The lag in collecting and assembling data also made it impossible to perform advanced network analyses such as leak detection, flow optimization, and return temperature optimisation.

An additional challenge was that the geothermal waters were very high in chlorine and sulphur, providing an aggressive environment for the meters. As a result, many of the older meters were less reliable and prone to inaccurate readings, leading to billing errors and customer complaints.

### KEY ISSUES



- > Manual readings made monthly billing difficult
- > Meters of different brands led to data compatibility issues
- > Lack of high-resolution data made advanced analysis impossible
- > The aggressive natural environment was damaging meter reliability



# THE SOLUTION: AUTOMATED WALK-BY READINGS WITH FULL INTEROPERABILITY

In 2011, Diehl Metering teamed up with local partner Madenerji to launch SHARKY 775 heat meters on the Turkish market, as well as metering systems using the cross-manufacturer Open Metering System (OMS) communication standard.

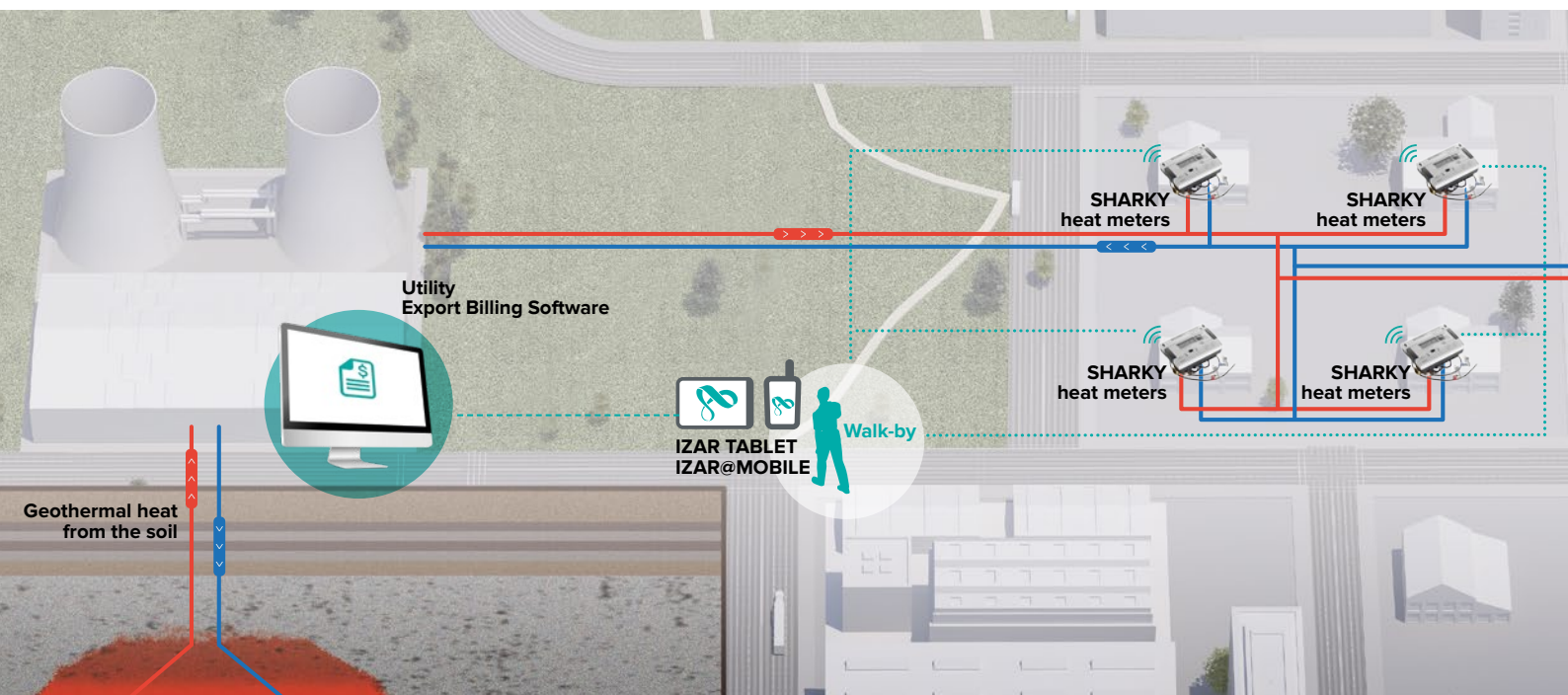
OMS enables interoperability with meters and devices from different brands, making it perfectly suited to Izmir Jeotermal's district heating network.

The utility initially ordered some 2,500 SHARKY heat meters, enabling remote data readings for the first time. Following the success of this initial project, Izmir Jeotermal launched a tender to replace existing meters in its network with OMS meters. Despite competition from other suppliers, Diehl Metering won the tender in cooperation with its local partner thanks to the high quality and long lifetime of the meter. As a result, another 11,000 SHARKY meters were added to the network in 2013.

Meter data is now collected via a Walk-by solution. Using IZAR Receiver BT and IZAR@MOBILE software, Izmir Jeotermal employees simply walk in front of homes to collect multiple readings, including flow and return temperature, flow rate, current output and energy consumption. All the data is then synchronized with the company's meter data management system as well as its billing software to generate monthly bills.



Since 2013, we have helped upgrade Jeotermal's network by supplying 1,000 to 5000 SHARKY heat meters every year. We have now delivered more than 30,000 units and will continue to provide more heat meters every year. In total, the Izmir Jeotermal distribution network has the potential to provide district heating to more than 50,000 households in the future.



## THE BENEFITS: REGULAR READOUTS TO SATISFY CUSTOMERS AND IMPROVE NETWORK EFFICIENCY

Through the Diehl Metering solution, Izmir Jeotermal is able to remotely read all 30,000 SHARKY heat meters in its network.

The Walk-by solution saves the company time and cost – and means consumers no longer need to be inconvenienced when a meter reader needs physical access to the home to collect meter readings. Faulty readings have also been eliminated, resulting in more accurate and fair monthly billing. Unsurprisingly, customer complaints have decreased and Izmir Jeotermal is now perceived as an innovative, customer-friendly company.

Because meters are now easier to read with greater frequency, the more up-to-date data has helped the utility to improve its network efficiency. Through regular monitoring, it is now able to optimize flow rates with proportional valves, analyse flow and return temperatures, and implement leak detection.

The OMS communication standard gave Izmir Jeotermal the flexibility to integrate meters from different brands. Yet, they were so satisfied with the quality and performance of our SHARKY meters that they have decided to stick with our meters. Indeed, SHARKY 775 heat meters are perfectly suited to withstand the aggressive nature of high-chlorine and high-sulphur geothermal water.

Since 2007, SHARKY has consistently been awarded 5 stars out of 5 for measurement stability following stress tests conducted by AGFW, the independent energy efficiency association.

Overall, the solution has been so successful that Izmir Jeotermal is looking to shift from Walk-by data readings to a fixed network. We have already submitted a complete study of the proposed upgrade, and we count on using our experience in Turkey to help other customers worldwide to optimize their geothermal networks.



### INTER-OPERABILITY

The SHARKY heat meter relies on the open OMS communication standard and not on proprietary protocols



### ROBUST & RELIABLE

Capable of withstanding high-chlorine and high-sulphur geothermal water, the SHARKY heat meters are still performing to the highest standards over 10 years after installation.



### NETWORK OPTIMIZATION

Thanks to richer data and regular monitoring, Izmir Jeotermal has managed to optimize flow rates and implement leak detection to boost its network.







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## 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.

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.

