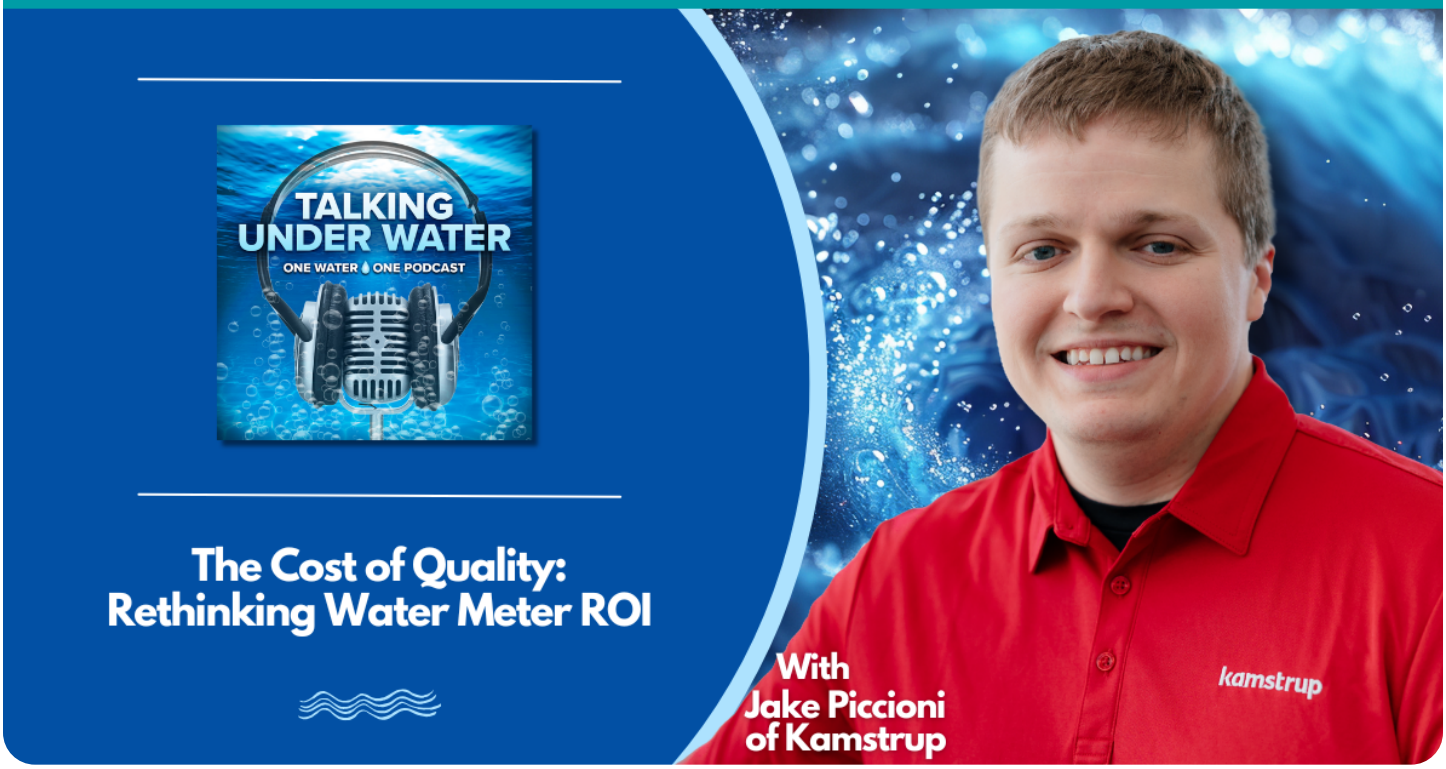
The True Cost of Meter Quality



Rethinking Water Meter ROI

In this conversation, Kamstrup Solution Manager Jake Piccioni discusses how meter quality, design, and manufacturing directly influence long-term system performance and utility return on investment. He explains that while cheaper meters may appear cost-effective upfront, they often introduce issues such as water intrusion, fragile components, and inaccurate data, ultimately driving higher lifetime costs. Piccioni outlines how Kamstrup's fully sealed, non-wetted ultrasonic design, reinforced composite materials, and rigorous in-house manufacturing and testing processes eliminate common failure points and ensure accuracy. He also highlights the crucial role of reliable data for customer trust, billing integrity, and leak detection, illustrated through real utility results such as significant revenue recovery in Streetsboro, Ohio.

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Bob Crossen: Today I'm here with Jake, he's the Kamstrup Solution Manager covering the Northeastern U.S. Jake, thanks so much for chatting with us and talking with us about this.
Jake Piccioni: Yeah, thanks for having me, Bob.

BC: When it comes to water meters, utilities look at accuracy, pressure, and flow for ROI, but the quality and construction are really important. What are some challenges utilities face with lower quality meters?
JP: Unfortunately, I think utilities have come to expect issues with their metering system regardless of manufacturer or type. You really can't blame them, because the meter industry has long been plagued with failures, performance issues, and poor quality. Because of that, utilities might gravitate toward the cheapest option. They might assume "a meter is a meter," that they'll all measure water and all have some level of quality issues, so they go with the cheaper option.

But a lower quality meter brings all kinds of issues: worn internal parts, fragile components breaking, or water intrusion damaging electronics. While upfront costs may be cheaper, we often see cheaper solutions cost more in the long run because the utility has to replace faulty meters or components. Even if it's covered under warranty, the utility still needs to roll a truck and pay employees for their time. So you have these hidden costs. I heard a great quote: "When you buy cheap, you buy twice." Quality is less of a challenge and more of a choice.

BC: Right. And now, talking about this, I know Kamstrup takes a lot of pride in the design of its meters. What about the design sets them apart?
JP: One of the things I mentioned with static meters was water intrusion, which is the most common cause of failure. Kamstrup has eliminated common entry points for moisture. First, we have a completely sealed design, which eliminates the need for potting. Static meters usually rely on potting to protect internals, but potting is inherently permeable. It leads to condensation and eventual failure. With potting, you're not preventing failure; you're delaying it. So we sealed the meter completely. It's IP68 rated and can operate underwater for its full 20-year lifespan.

Another choice is with our transducers. Other ultrasonic meters have transducers that penetrate the flow tube, relying on O-rings to prevent moisture ingress. O-rings might work short term, but eventually moisture gets in. Our transducers do not press-fit into the flow tube. This non-wetted design eliminates that entry point for moisture. And our meters use integrated radios, removing the need for separate wired radio units, which can corrode or be tampered with. If a cable is cut, often it's not covered under warranty, and if the cable is potted internally you end up with a brick that has to be replaced.

A quick side note, we just released a video on LinkedIn where we submerged a Kamstrup meter off the coast of Denmark in cold, salty water for eight weeks, five meters beneath the surface. When we retrieved it, there was no moisture behind the glass, the display was working, and further tests confirmed no water intrusion. It really shows how our meters can withstand extreme conditions.

BC: Yeah, wow. And that connects to the materials side of things. Some utilities think your meters are made of plastic, but that's not really the case. Can you talk about the materials you use?
JP: Back when manufacturers moved to plastic or composite bodies, many chose cheap plastics and nylon-based composites. Unfortunately, a lot of those materials are still used today. They're weak, they crack under stress, and utilities using them often have issues with cross-threading. When utilities see our meter, they sometimes say, "it's cool, but we don't like plastic." But that's a misconception. We use a 40% fiberglass-reinforced PPS composite, a strong polymer used in aerospace systems and automotive components. If you take one of our meters and hit it with something metal, you'll hear the difference — it's more metallic than plastic. I always say: call our existing customers and ask if they've had issues with cross-threading. The answer will be no.

BC: How does your culture of quality translate to manufacturing? What do these meters go through in terms of QA and QC?
JP: Our culture of quality doesn't stop with design. Plenty of industries have shifted to outsourcing, and ours is no

different. Manufacturers might be attracted to lower labor costs, but that means little control over quality. When issues arise, it's almost impossible to trace the root cause.

Kamstrup takes a different approach. We only manufacture in our two facilities — in Georgia and Denmark. We use robotic automation for consistency, with human oversight for critical stages. This gives us full control of manufacturing and full traceability. We keep comprehensive records of each step and implement root cause analysis for failures. Continuous improvement is a big focus.

We also test every single meter that leaves our facility. Most manufacturers spot-check, testing every third or fifth meter at one or two flow ranges. We test every meter at three flow ranges: low, normal, and high. And we have testing certificates for every meter. If a resident questions accuracy or the utility needs documentation for compliance, we provide the full certificate. Combined with our manufacturing practices, that's why we boast the lowest return rate in the industry at a quarter of a percent.

BC: I'd be remiss if we didn't talk about data. What are the dangers of poor or inaccurate data for a utility? And what can utilities realize with good data?

JP: Once the meter is in the field, you need to trust the data. We had a video series where JC Davis from Las Vegas said bad data leads to bad billing, and that can get people fired. If customers can't trust meter data, the office deals with constant disputes and loss of public trust, and sometimes legal action.

Kamstrup prevents this by not allowing manual entry of readings in our head-end system. This eliminates human error. All data flows directly from the meter to the utility through encrypted communication. And because we don't use multiple devices, we avoid synchronization issues. Our meters also store 460 days of daily logs and 100 days of hourly logs. Even drive-by AMR customers can use this data, and logs can be pulled remotely.

A great customer story is Streetsboro, Ohio. Their previous system didn't have hourly or daily data, so when residents had high usage, the utility forgave entire quarters because they couldn't pinpoint leaks. Now, with our data, they notify customers proactively and provide targeted forgiveness. Combined with accuracy and acoustic leak detection, they recovered over $100,000 from Q4 '23 to Q4 '24, and another $80,000 from Q1 '24 to Q1 '25. Their system has shown a tremendous early return on investment.

BC: Well, thanks so much, Jake. For folks interested in learning more, where can they find that?

JP: We just released a white paper called *The Cost of Quality*. It's online, and we have great information on Kamstrup.com and our socials. And I always suggest reaching out to utilities actually using our meters. Don't take my word for it. Call our customers. They've seen it all, and we're confident you'll hear great things.

BC: Great, and we'll include links in the show notes. And Jake, thanks so much for being here.

JP: Thanks again for having me, Bob.