A station as compact as a sensor.

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Empowering decisions of tomorrow

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A quiet revolution is reshaping hydrological monitoring.

There is a quiet transformation underway in environmental monitoring. Across industries such as air quality and agriculture, devices have become smaller, smarter, and increasingly autonomous. **What once required racks of equipment now fits in the palm of a hand.**

Hydrology, however, has largely remained behind.

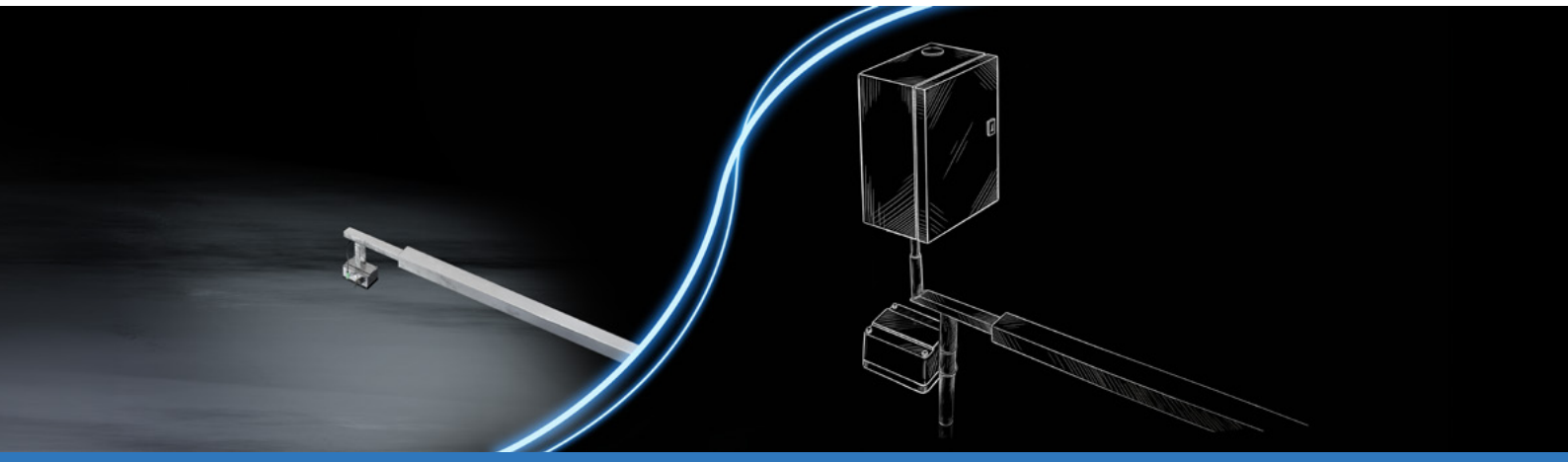
This is not due to a lack of innovation. Measurement accuracy and data modelling have advanced significantly. But the hardware delivering this intelligence from the field has changed far more slowly.

The weight of legacy systems.

A typical river monitoring station still reflects a decades-old architecture: a sensor, a separate data logger, a modem, and the wiring and enclosure to connect them all. **While each component has improved, the system as a whole remains complex.**

The consequences are clear. Many stations do not operate continuously. Remote areas often remain under-monitored, not because the data lacks value, but because deployment and maintenance are too costly and complex.

Meanwhile, the wider sensing industry has moved on. Devices today process data at the edge, adapt to conditions, and manage energy intelligently. Hydrology has been slower to follow – not by choice, but by design.



When complexity limits capability.

Traditionally, hydrological sensors have focused solely on measurement. Logging, storage, and communication were handled elsewhere. Over time, this separation created a structural limitation.

Each new requirement meant more hardware, more integration effort, and more potential points of failure.

Nowhere is this more evident than in multi-parameter monitoring, where complexity often limits scalability and deployment.

> **"As monitoring needs grow, systems have become harder, not easier- to scale."**

Rethinking the station.

What field teams consistently called for was not incremental improvement, but simplification: systems that are self-contained, adaptive, and easy to deploy.

This requires a fundamental shift from assembling components to designing fully integrated systems. Measurement, processing, and communication must work as one.

By embedding intelligence directly into the device, monitoring stations can respond to changing conditions, optimise energy use, and operate with minimal intervention. At the same time, they become smaller and more flexible, enabling deployment in locations that were previously impractical.

A new baseline.

This is what we set out to build when we developed **KIPTEC** – KISTERS' Intelligence Platform Technology for Embedded Connectivity. **A single integrated system where e.g. radar measurement (including combined level & velocity) data logging, storage, and transmission are designed together from the ground up.**

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Not just replacing the multi-component setup, but going beyond with built-in smart processing, event-adaptive, self-learning behaviour, intelligent power management, and automatic cloud connectivity, all by default.

> **"HyQuant Edge is the first radar sensor-based monitoring station for hydrology built on this architecture. Add a SIM card and power, and go from unboxing to live data in minutes."**

HyQuant Edge is quick to deploy, largely autonomous, and secure by design. They maintain data integrity even with intermittent connectivity and integrate seamlessly into existing data platforms through open standards. Remote configuration and OTA updates via KISTERS datasphere mean the station can be managed without site visits.

> **Most importantly, they reduce the infrastructure burden that has long limited network expansion.**

Expanding what is possible.

For decades, hydrological monitoring networks have been constrained by complexity and cost. There have always been more places worth measuring than systems capable of reaching them. **That is beginning to change.**

As stations become as compact and capable as sensors, monitoring can become more widespread, more responsive, and more accessible. This is more than a technological shift. It is a redefinition of what hydrological monitoring can be.

Dr. Anton Felder