

# Driving precision and sustainability in agri-tech

## Engineering the future of precision farming – faster, smarter, cleaner.

### Context

In today's fast-moving agri-tech sector, precision and efficiency are essential to sustainable food production. Farmers are turning to smart technology to boost yields, reduce waste, and cut maintenance costs.

We partnered with a leading agricultural equipment manufacturer to develop two next-generation flow meters that deliver precise, calibration-free control of fertiliser and pesticide application –improving yield while reducing waste.



### Challenge

Working alongside the R&D team of the equipment manufacturer, we combined our 25+ years of experience in solid-state flow measurement with their deep understanding of the market's needs. Sentec needed to design flow meters that delivered industry leading accuracy across a broad range of flow rates – without calibration. This would allow farmers to use a single meter

“Our experience meant we didn't have to do proof of concept – we went straight to functional prototyping. That speed made all the difference.”

Ben Davey, Principal Physicist, Sentec

for herbicides, pesticides, and fertilisers, with different flow characteristics. Time added pressure. Missing the agricultural spring sales window would mean losing a full year of revenue, making speed to market critical. Sentec also needed to transfer knowledge so the client could build and maintain the products long-term.

### Solution

Sentec assembled a cross-functional team of mechanical, electrical, physics, and software experts. Their combined expertise – and a culture of close collaboration – delivered advanced, cost-effective solutions within an accelerated timeline.

Leveraging proprietary electromagnetic design tools, the team ran design and prototyping phases in parallel, cutting months from development. An innovative magnetic design taking inspiration from particle accelerators enabled millisecond-level flow measurement, ensuring exceptional accuracy across a wide range of dispensing conditions.

Prototyping used 3D printing and lab testing before moving to field trials. The result: flow meters that require no calibration, working instantly and accurately after installation. For farmers, that means faster setup, less downtime, and fewer maintenance cycles. Regular joint reviews kept Sentec and the client closely aligned, allowing rapid decision-making and smooth transfer to manufacture.

“We combined design and technical expertise to create market-leading products,” says Ben Davey, Principal Physicist, Sentec. “The collaboration with our customer was key – their industry knowledge paired with our technical insight drove the project forward.”

**Zero**  
Calibration required

## Outcome

The first flow meter was developed in 18 months, the second in just 12 – up to 50% faster than industry norms. This speed gave the client a major commercial advantage, ensuring the first product reached the market in time for the critical spring sales season.

Performance exceeded expectations. The new meters achieved sub-second flow measurement with exceptional accuracy and reliability. “Customer feedback on the first product has been excellent,” Ben says. “It’s already won an innovation award – a strong endorsement for both the client and our team.”

Beyond performance, the design drives real environmental impact – reducing waste, safeguarding ecosystems, and promoting sustainable growth.

## Conclusion

By combining deep technical expertise with agile delivery, Sentec helped its agri-tech client bring two high-performance flow meters from concept to market in record time. These no-calibration, high-accuracy meters are redefining agricultural efficiency – helping farmers cut waste, lower costs, and grow more sustainably.

“We turn complex challenges into working prototypes – faster than anyone expects.”

Ben Davey, Principal Physicist, Sentec

