PROCESS INSTRUMENT SOLUTIONS

CASE STUDY



EAST MIDLANDS AIRPORT IMPROVES FLOW MONITORING ACCURACY ACROSS SURFACE WATER PONDS

BACKGROUND

East Midlands Airport operates several surface water attenuation ponds that require accurate monitoring of discharge flows to ensure compliance with environmental and operational requirements.

At the airport's Western Pond, an Area Velocity (AV) flowmeter had been installed to monitor discharge rates. However, airport operators had long suspected that the meter was not capturing the true peak flows experienced during high rainfall events.

TELEDYNE ISCO

CHALLENGE

Operational knowledge and historical observations suggested that flows could reach approximately 350 L/s during peak conditions. Despite this, the installed flowmeter consistently reported significantly lower values.

Velocity readings rarely exceeded 2.5 m/s, which meant the system was under-reporting peak discharge events. The manufacturer of the installed flowmeter attributed the discrepancy to poor flow hydraulics within the channel, suggesting turbulence or installation conditions were limiting measurement performance.

However, these explanations did not align with the airport's operational understanding of the drainage system.

SOLUTION

To investigate the issue, specialists from Teledyne ISCO conducted a site review of the monitoring location. The inspection did not identify any hydraulic conditions that would justify the low velocity measurements being recorded.

To validate the findings, Teledyne ISCO offered a trial using a comparable submersible area velocity sensor.

During the short-term trial, velocities exceeding 3 m/s were recorded, confirming that the drainage channel was capable of producing the expected flows. The measurements validated that peak flows of over 350 L/s were indeed occurring, demonstrating that the limitation lay with the incumbent sensor rather than the application itself.

Unit 6/7, Parkway, Elm Farm Park,
Thurston, Bury St Edmunds,
Suffolk IP31 3TB

Tel: 01449 674986
Fax: 01449 833 007
Email: solutions@pi-team.co.uk

Connect with us
www.processinstrumentsolutions.co.uk

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RESULT

The project delivered accurate and reliable flow monitoring across the airport's drainage infrastructure. Following the successful evaluation, East Midlands Airport deployed the system at three monitoring locations, including:

- Replacement of the existing unit at the Western Pond
- New installations at the Central Pond
- New installations at the Eastern Pond

With the upgraded monitoring solution in place, the airport now benefits from:

- Verified measurement of high-velocity flows exceeding 3 m/s
- Accurate confirmation of peak discharge rates above 350 L/s
- Improved confidence in environmental compliance reporting
- Reliable monitoring across multiple drainage assets

The implementation has provided East Midlands Airport with a robust, field-proven flow monitoring solution capable of accurately measuring high flow conditions within their drainage network.

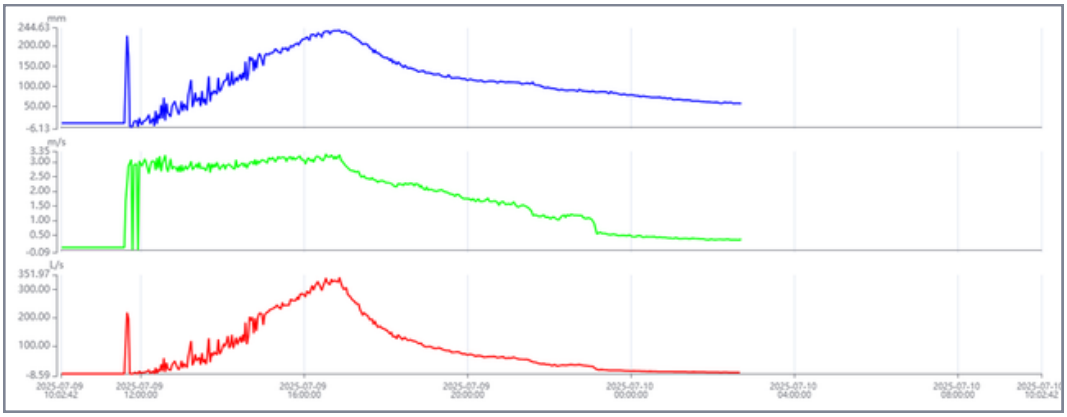
EQUIPMENT SUPPLIED

Following the successful trial, East Midlands Airport selected a permanent solution consisting of:

- Signature Flowmeter
- TIENet 350EX Area Velocity Sensor

The instrumentation was supplied by Process Instrument Solutions via Teledyne ISCO for the airport project. Installation and commissioning were carried out by the Process Instrument Solutions Services Team.

Andy Hazlewood
Sales Director



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