

Water & Waste Water

Instrumentation Solutions



1 C2C Services and ABB Electromagnetic Flowmeters

Electromagnetic flowmeters from ABB are playing a key role in cutting water leakage across a large swathe of the Ministry of Defence estate in the UK with reductions of up to 60% achieved at some sites. Leakage has already dropped by approximately 2 million m³/year across more than 1,500 MoD sites where water and waste utility assets are managed by C2C Services.

C2C Services is a consortium of Severn Trent Services and Costain. C2C is responsible for providing water services to MoD sites in the North, East and South East of England, known as 'Package C'. The 25-year £1 billion contract is part of Project Aquatrine, which transferred responsibility for MoD's water services to three different contractors.

C2C's water resources manager, Mark Amor, says that the AquaMaster meters from ABB have been central to the success of C2C's leak reduction programme. "We've used a targeted approach and it's all based on the availability of high quality data."

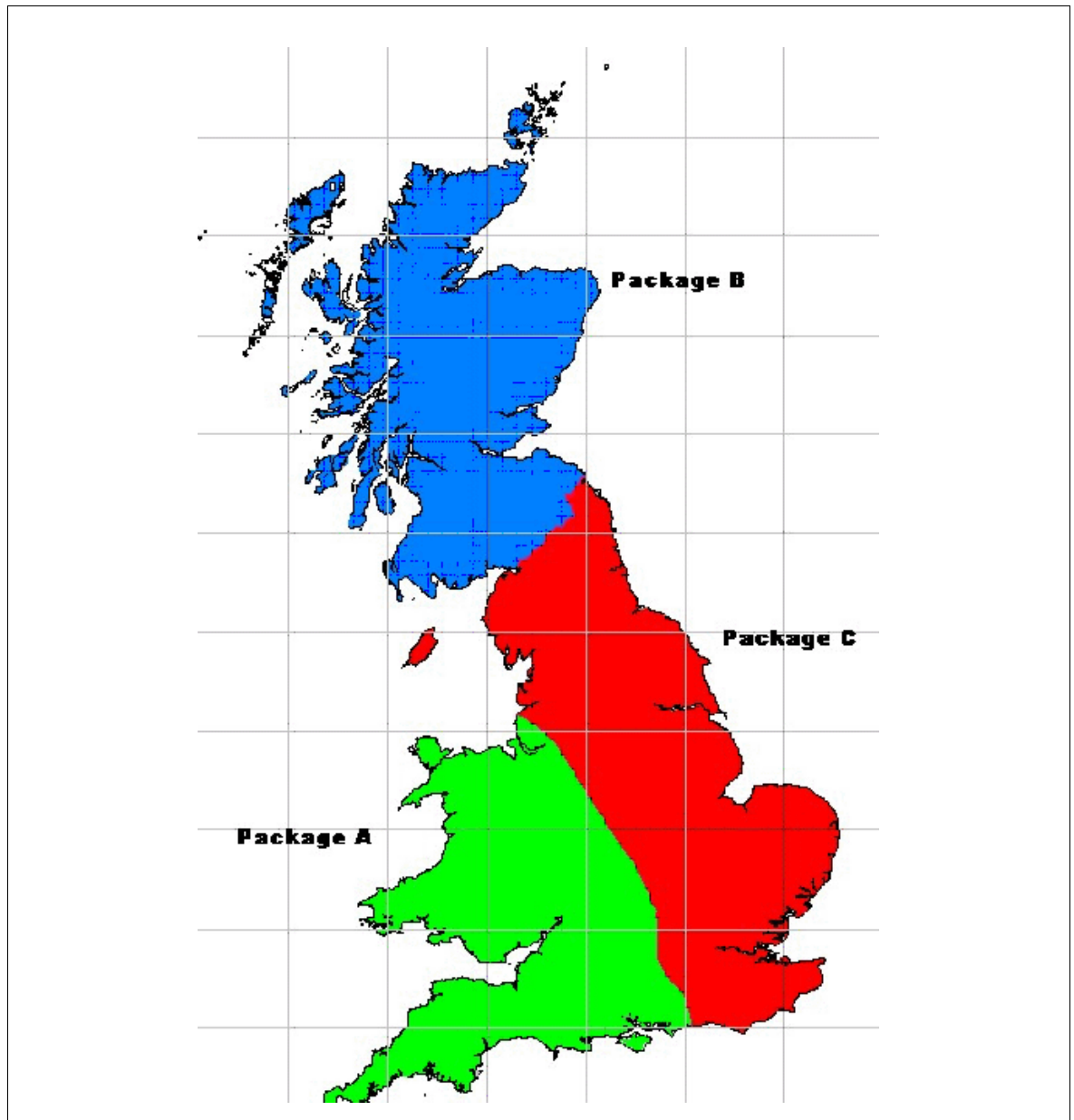


Fig. 1-1: The MoD's Project Aquatrine has transferred responsibility for water services to three different contractors – C2C Services operates the 'Package C' area

2 ABB AquaMasters

Around 900 AquaMasters have already been installed, with more meters planned where additional flow data is required. With a measuring range of 1000:1, AquaMaster flowmeters are accurate across a very wide range of flows, making them ideal for this project. 'Gross Meters' are used to measure the consumption on each site by monitoring the gross incoming water supply. These are also used to continuously validate Statutory Undertaker (SU) revenue meters which are used by local Water Companies to generate bills.

'Night line meters' provide a critical indication of leakage levels during periods when legitimate consumption is at its lowest.



Fig. 2-1: ABB's AquaMaster electromagnetic flow meters offer greatly improved accuracy over conventional mechanical meters, making them ideal for this project

2.1 Data Logging

A key feature of the AquaMasters supplied is the convergence of flow measurement, data logging and GSM-SMS technology into one unit. Using this technology, C2C can remotely set the integral data logger to either high resolution 1 minute logging for in-depth investigation of night lines, or a standard 15 minute frequency for normal operation. Once a day, all the readings are uploaded to a central server using text messages sent via the AquaMaster's built-in GSM facilities.

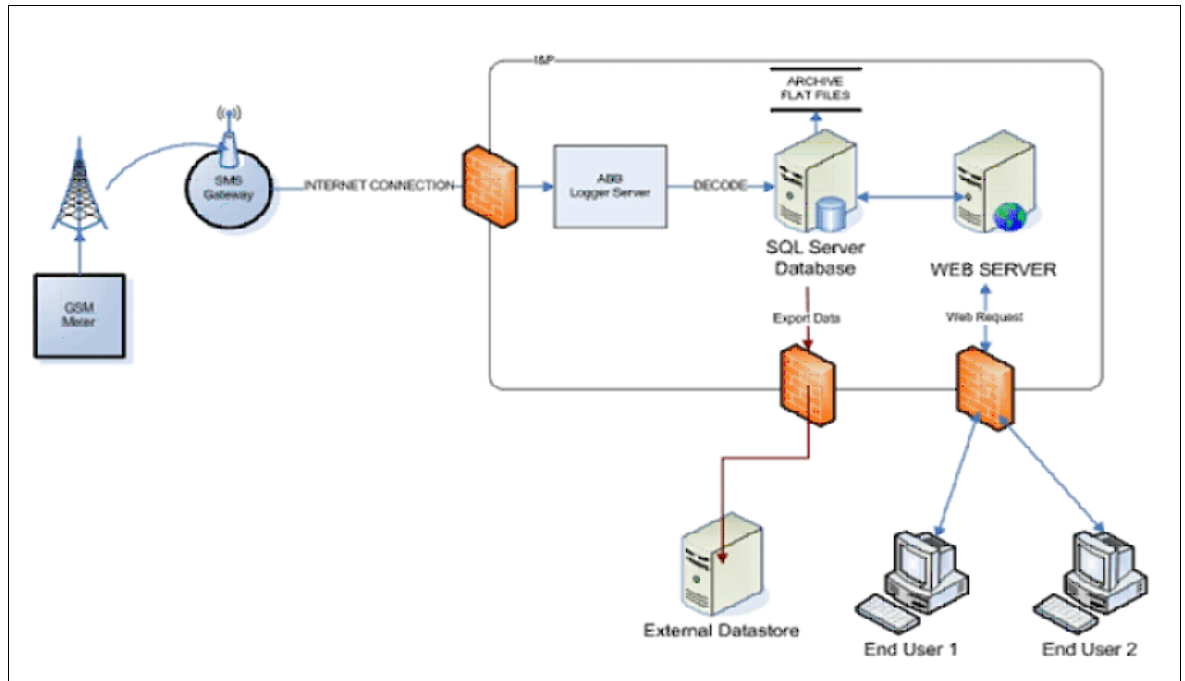


Fig. 2-2: The integration of flow measurement, data logging and GSM/SMS technology into a single unit enables C2C to obtain current data from its installed AquaMaster flow meters, enabling it to accurately monitor the performance of the water networks across its allocated MoD sites

2.2 AutoChart

Once on the server, the data is managed using AutoChart software from Information and Performance Services (I+P). AutoChart's Windows-based interface lists all the meters and their readings graphically or numerically. It also shows the status of each meter using a traffic light alarm system. The C2C project is one of the first major deployments of ABB's AquaMaster meters in conjunction with AutoChart.

When stored on the secure server, the data can be read and manipulated over the internet from anywhere in the world. "This approach means that C2C doesn't need to have sophisticated software loaded onto all of its PCs," says I+P Managing Director, Ashley Roe. "It's all on the server."

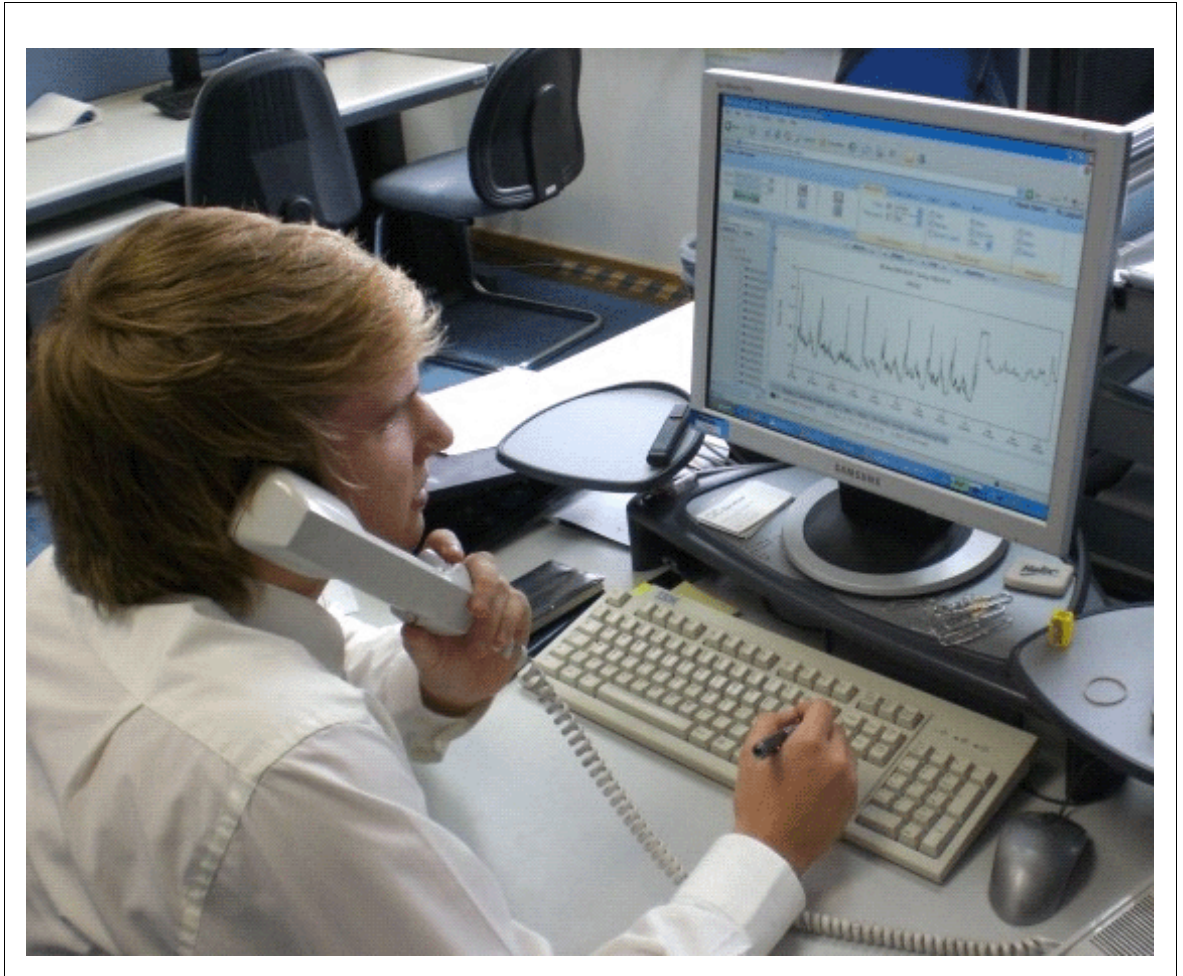


Fig. 2-3: Data from ABB's AquaMaster flow meters is remotely collected by C2C, which can now monitor the water supply across its region to a high standard of accuracy

The combination of the AquaMasters and AutoChart means that the system registers actual meter readings, which gives it an advantage over other systems according to Roe. "Many other systems use inferred readings from pulses sent by the meters to separate loggers, but our system reads the meter itself. This makes it more accurate by eliminating the errors normally associated with signal conversion to pulsed outputs necessary for transfer to loggers."

To meet its contractual and business needs, C2C monitors the water supply across its region to a high standard of accuracy. The information is used for leakage cost reduction and billing. "Electromagnetic meters are really the only way to achieve that accuracy," says Amor.

2.3 CalMaster2

C2C also needs to be able to verify that the meters continue to provide accurate readings throughout their lives. "We're required to demonstrate that we're within compliance and provide an audit trail, so verification is very important," says Amor. All the AquaMaster meters have been electronically fingerprinted, so any deviation from the original factory electromagnetic performance and calibration can be detected using ABB's CalMaster2 verification system.



Fig. 2-4: C2C uses ABB's CalMaster2 in-situ verification system to ensure the continued accuracy of its installed AquaMaster flow meter

For each managed site, C2C has identified a point at which further leakage reduction will be uneconomical and the aim is to reach that level in each case. "Once we have reached the economic point of leakage repair, continued monitoring will enable us to spot any new leaks as they occur," says Robin Phillips, Deputy General Manager for C2C. "As for all organisations with private distribution systems, our economic point of repair is significantly lower than a typical water utility's because our cost of leakage is based on the price paid for water as opposed to the much lower cost of water production. With the ABB technology, our technicians can reduce costs by identifying and repairing leaks very quickly."

"Any reduction in leakage as seen in this application not only saves water for C2C and MoD, but also saves energy used to pump and produce water," says Tim Door, ABB's Global Product Manager, Electromagnetic Flow, ABB Stonehouse Factory, UK. "This also has a positive environmental impact, enabling C2C's clients to significantly reduce their carbon footprint and minimize utility costs."



Fig. 2-5: Around 900 AquaMasters have already been installed throughout C2C's operating area, with more meters planned where additional flow data is required

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