

2. Rathlin Island - pioneering MiEX ion exchange technology



Situation

A water compliance issue on Rathlin Island in 2019 resulted in a Drinking Water Inspectorate placing a CPEO on NI Water for the reduction of trihalomethanes (THMs) and Bromoforms. This provided an opportunity for NI Water to put to use years of investigative work on Ion Exchange technology as a cost-effective and sustainable solution to reduce THMs in the water supply. This pioneering work was recognised when it secured second place in this year's Institute of Water's NI Innovations.

Action

Through extensive research and working with IXOM Ltd, world leader in water treatment processes, NI Water developed a unique Magnetic Ion Exchange (MIEX) 'Mini MICo' system.

While Ion Exchange systems are not in themselves unique, the solution developed for Rathlin is the first of its kind in Europe and the UK, where it combines multiple resins to target specific parameters ensuring the effective reduction of THMs. Furthermore, no chemical waste is produced.

Results

When installed at Rathlin, this robust solution instantly reduced the THM levels to well within compliance limits, demonstrating the economic, environmental and operational benefits of Ion Exchange technology.

From a health and safety perspective, the MIEX system is fully automated, can be operated remotely and requires less maintenance. In the event of any issues, the alarm system has the capability to dial out and issues can be investigated without the need for the operator to attend site. This is a massive benefit as often the weather can be hazardous on the Island and getting there from the mainland at times is impossible.

MIEX system has less impact on the environment than traditional treatment processes as there is no chemical waste. The effluent from the treatment process can be discharged straight to the sea and there is a 60% reduction in Sodium Hypochlorite dosing. MIEX is an organic polymer which does not generate micro-plastics as some other applications do.



MiEX Plant at Rathlin Island – DfI Ministerial visit 2021