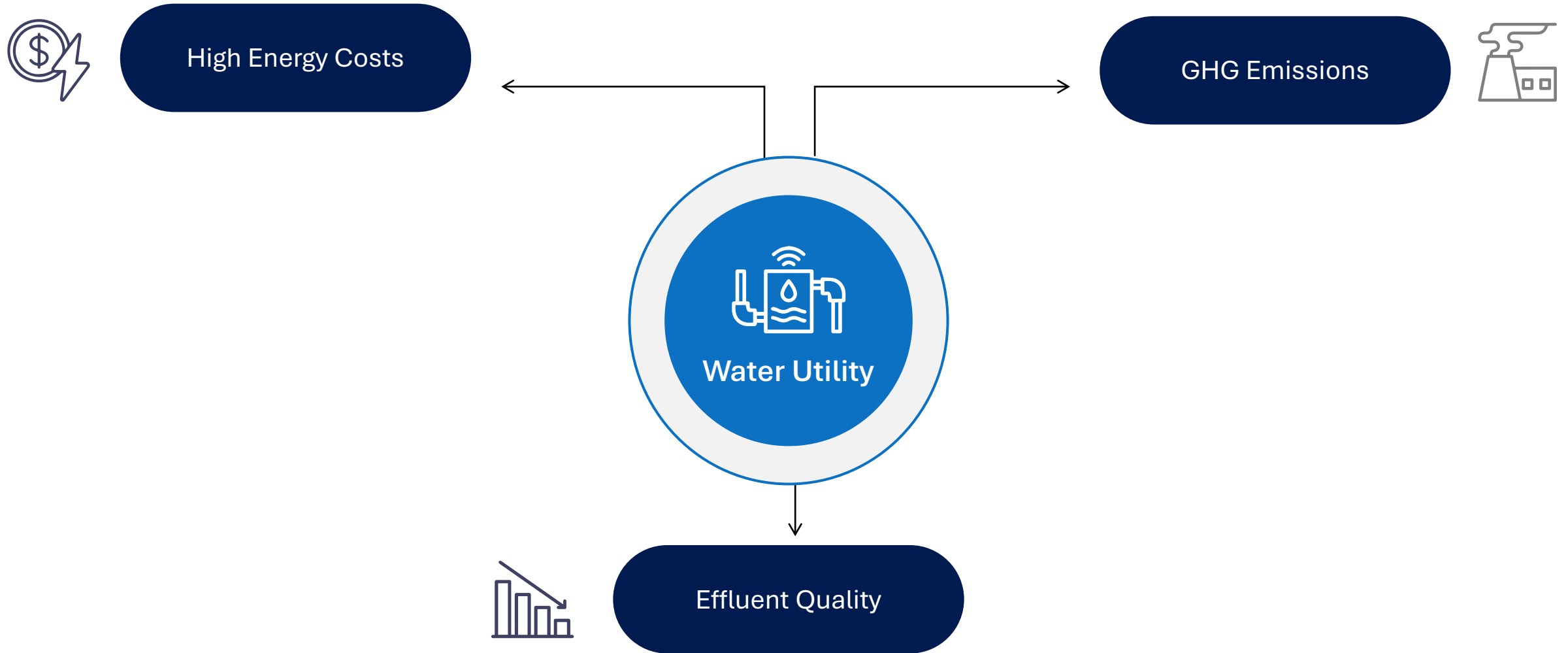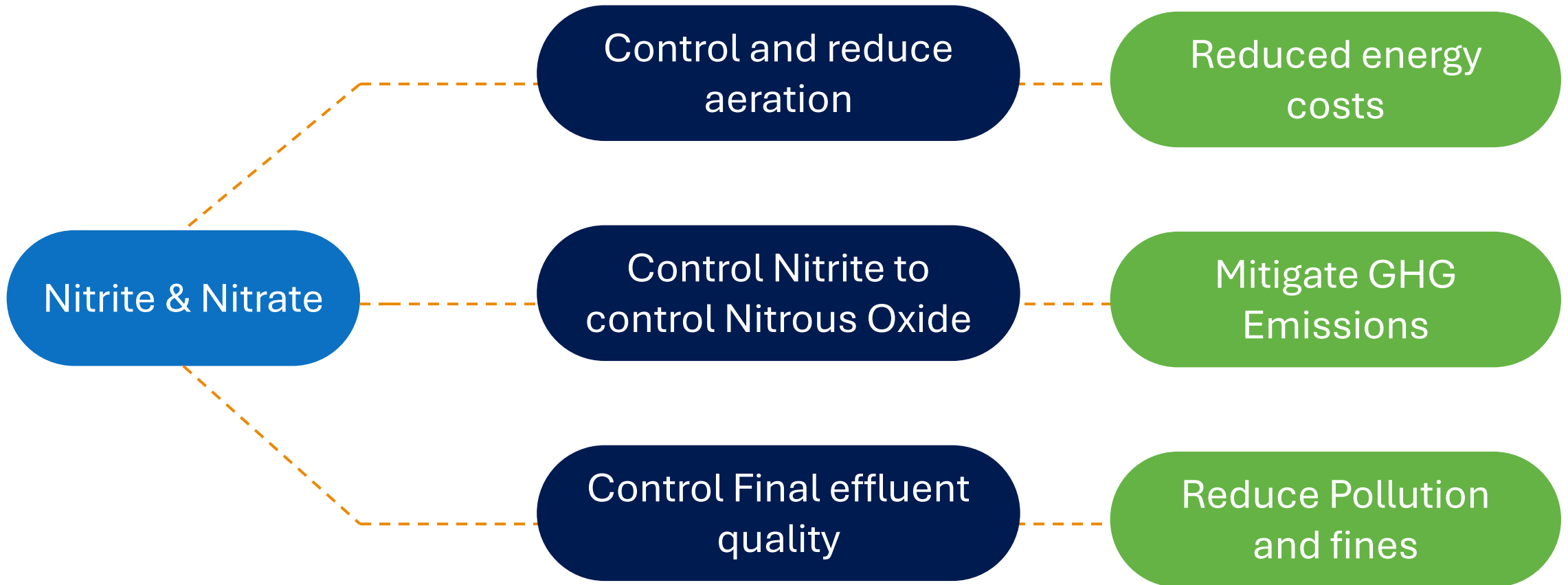# aqua monitrix®

New process control opportunities within wastewater treatment facilities through real-time nitrite and nitrate monitoring
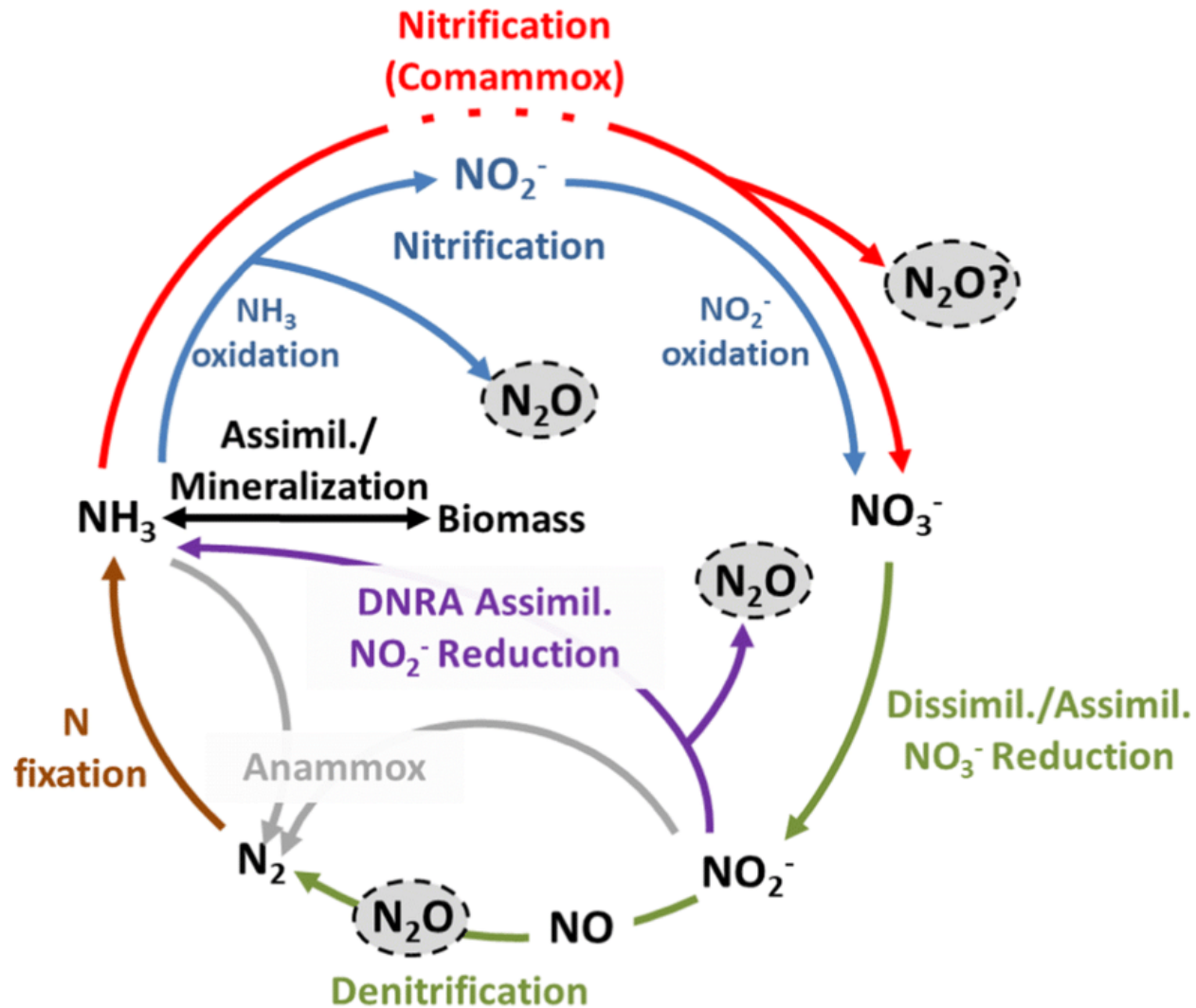
Challenges in treatment and discharge of wastewater. The 3 E's

High Energy Costs

GHG Emissions

Water Utility
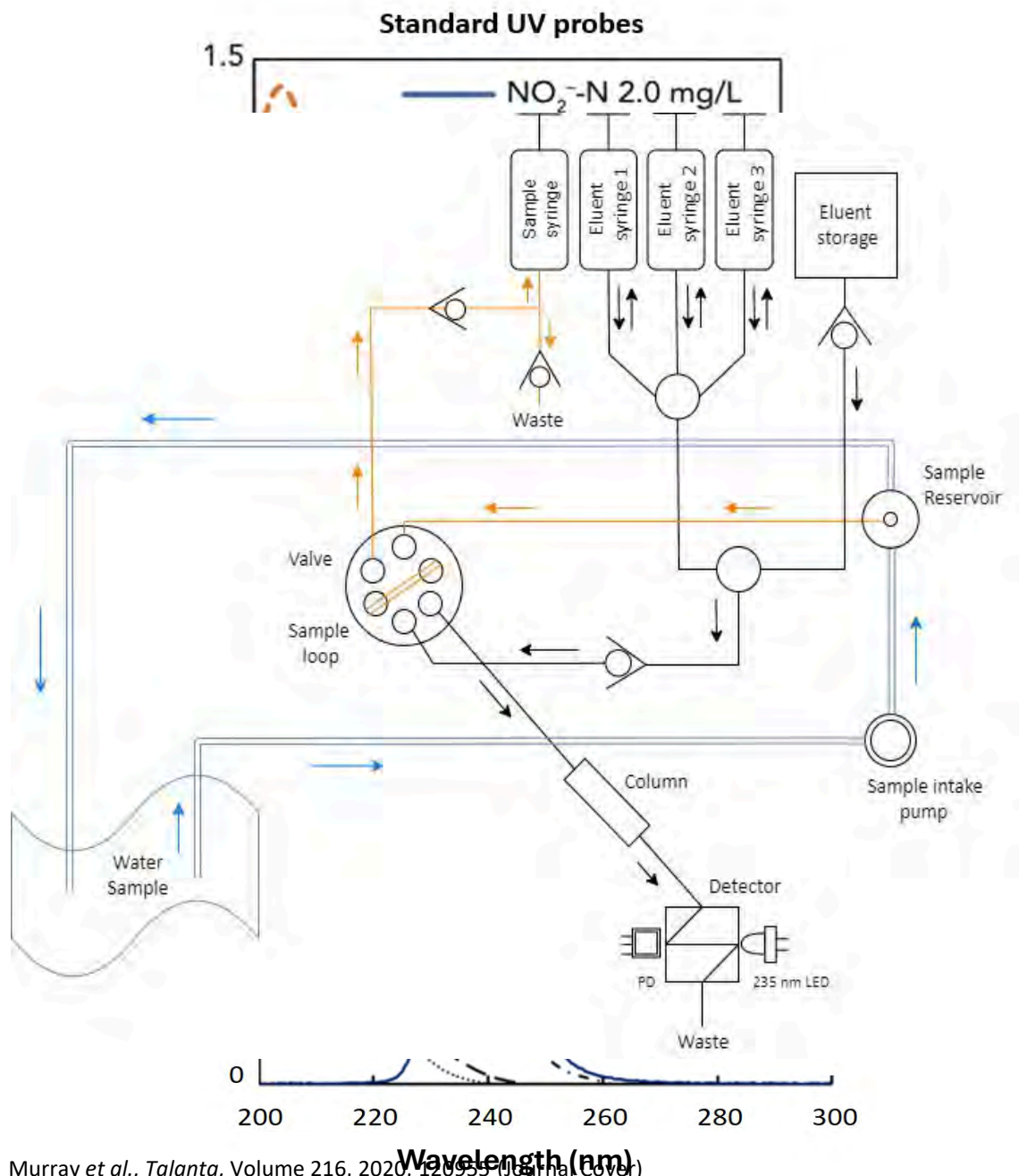
Effluent Quality

Nitrite and Nitrate supporting Utility Management

Measuring NO_2^- and NO_3^- in Nitrification and Denitrification Processes
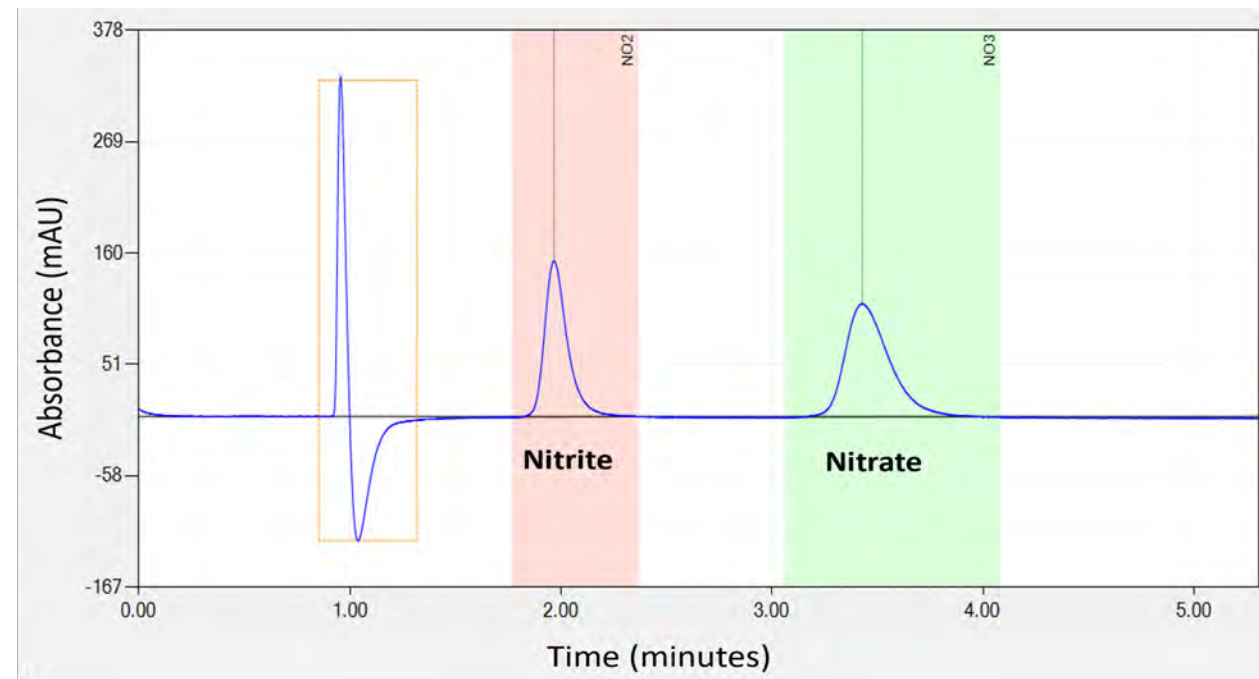
- Rapid ion chromatography with patented UV-LED detection

- Simultaneous, selective detection of **nitrate & nitrite**

- > 95% accuracy *in-situ*

- Accredited ISO 14034 (ETV)

How are we different - Separation is key

Standard UV probes

NO₂⁻-N 2.0 mg/L

Aquamonitrix®
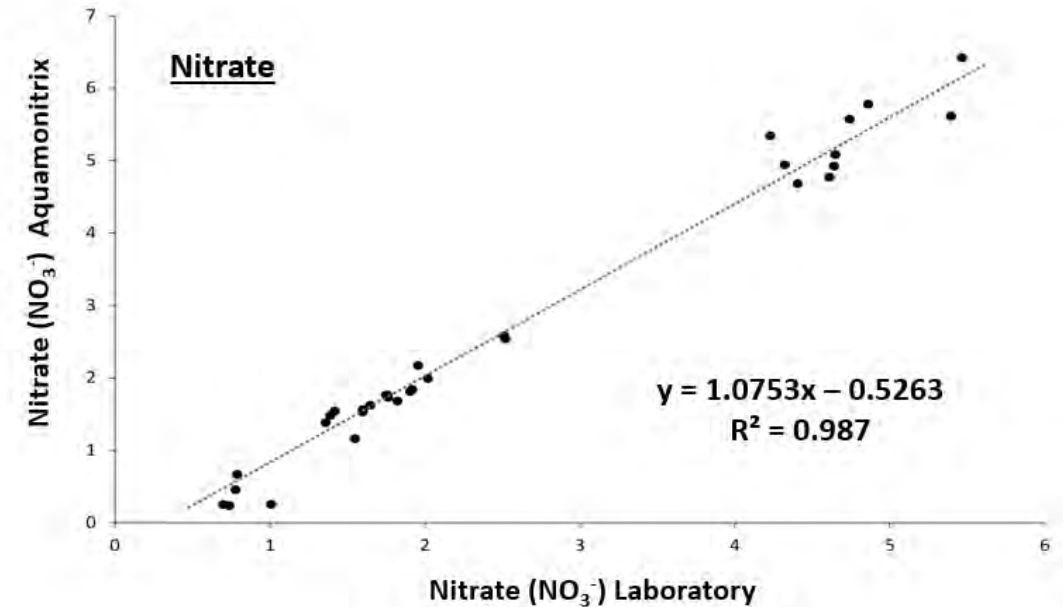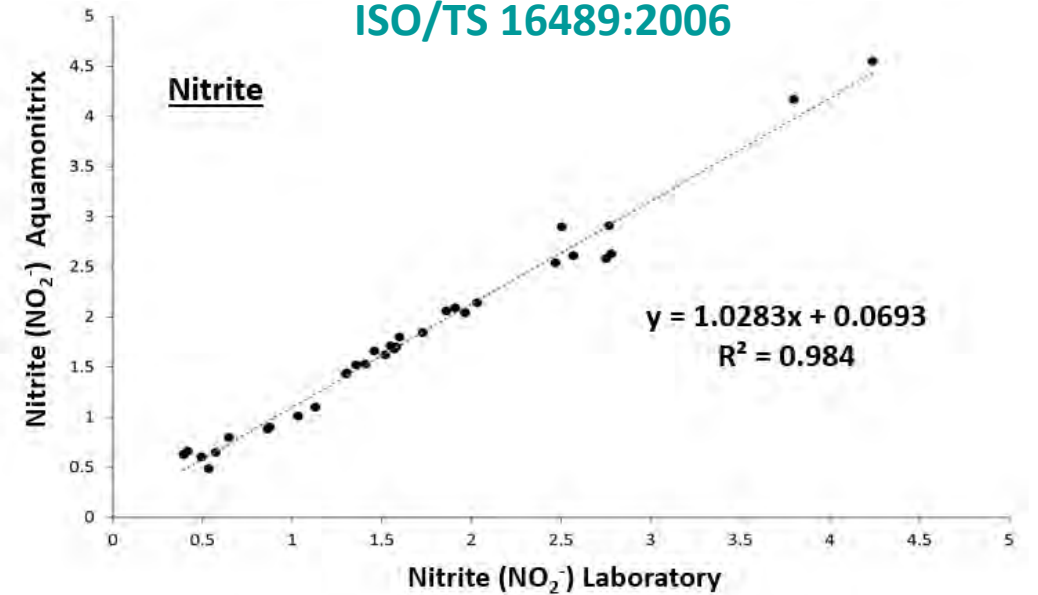
Nitrate: 0.6 - 500 mg/L as NO_3^- | 0.14 to 113 mg/L as N

Nitrite: 0.05 - 100 mg/L as NO_2^- | 0.01 to 23 mg/L as N

Performance Verifications

- Accredited ISO 14034 (ETV) by Sottish Water and USEPA

- \> 95% accuracy *in-situ*

- Highest accuracy and precision on the market for WWT monitoring

Nitrite

$$y = 1.0283x + 0.0693$$
$$R^2 = 0.984$$

Nitrite (NO$_2^-$) Aquamonitrix — Nitrite (NO$_2^-$) Laboratory

Nitrate

$$y = 1.0753x - 0.5263$$
$$R^2 = 0.987$$

Nitrate (NO$_3^-$) Aquamonitrix — Nitrate (NO$_3^-$) Laboratory

Sampling from ASP

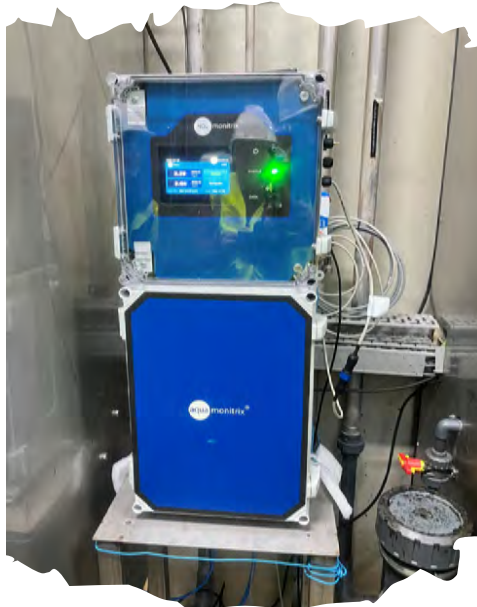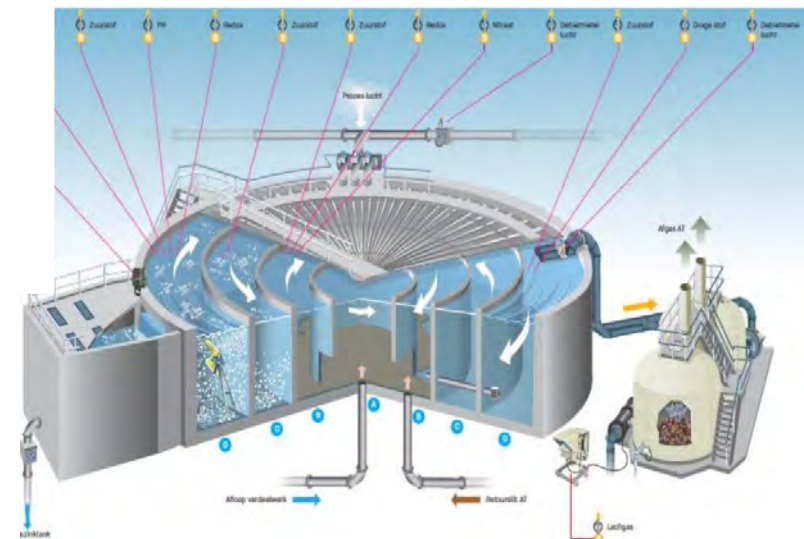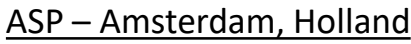Using sludge settlement to produce supernatant for analysis

Installations in France, Holland & UK

aqua monitrix

Continuous Monitoring Post Aeration Tanks Denitrification Process

Nitrite (Aquamonitrix®) and Gaseous Nitrous Oxide

ASP – Amsterdam, Holland

Zandvoort, M. *et al.* (2024)
Symposium Lachgas op RWZI's

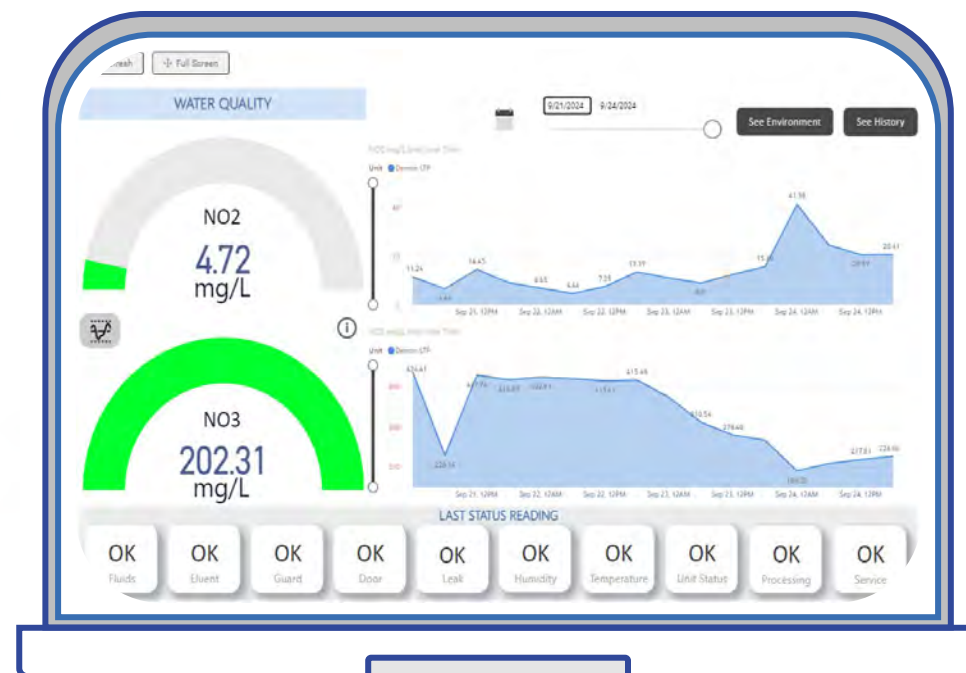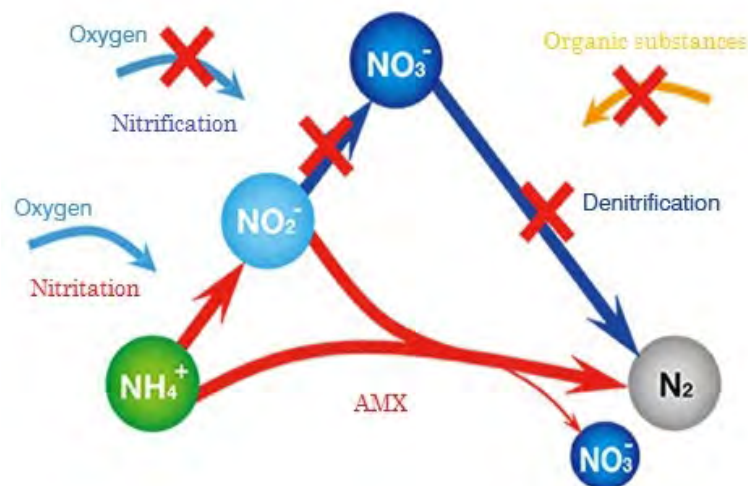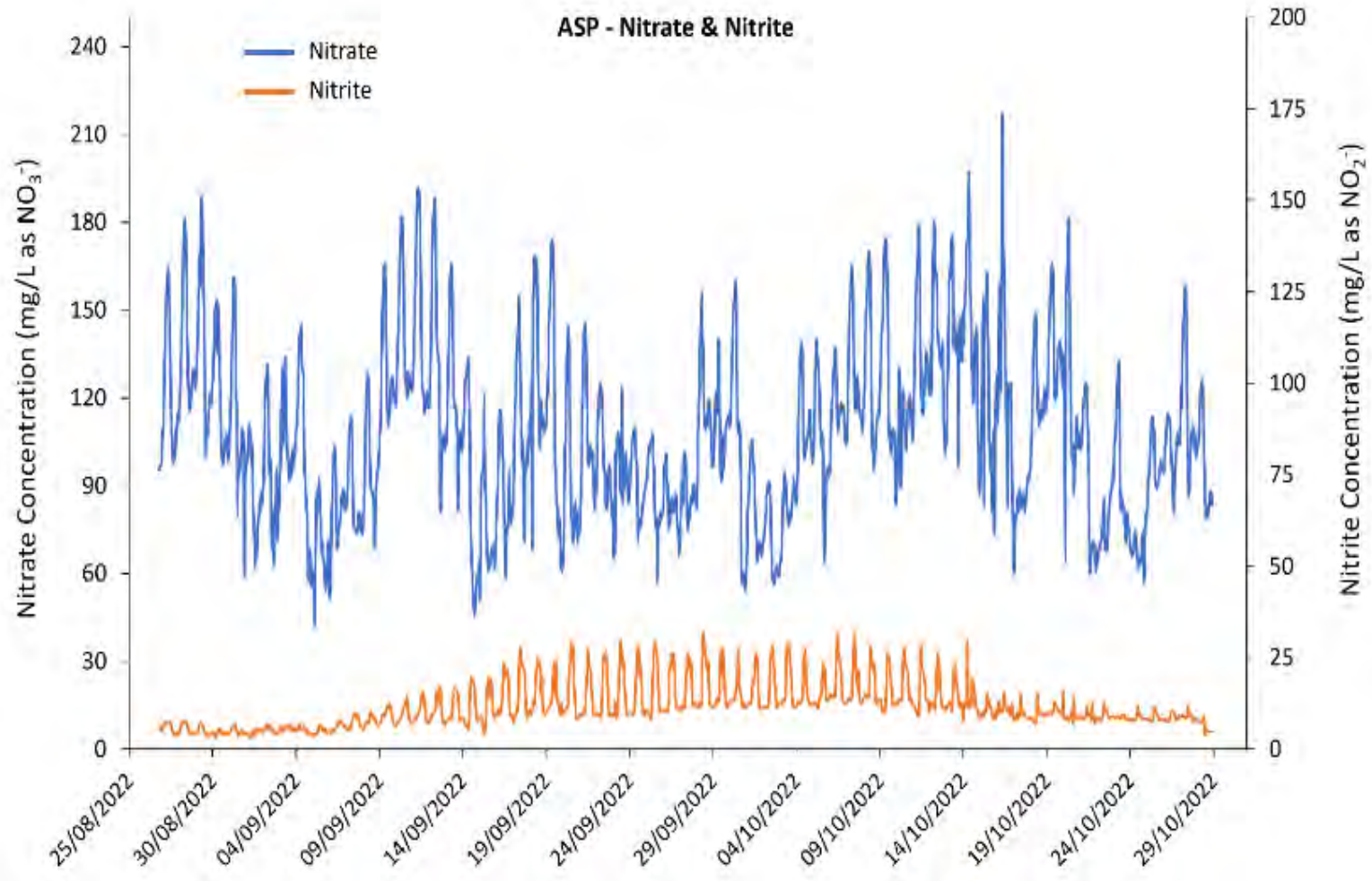# Deammonification System (DEMON®)

- AMX bacteria convert NH_4 and NO_2^- into nitrogen gas.

- Reducing need for full nitrification and denitrification.

- DEMON® system cuts power usage by 60% and minimizes sludge.

- Real-time nitrite and nitrate data improves control and lowers operational costs.

Continuous NO_2^- and NO_3^- monitoring across WWT

Conclusion

Continuous Nitrite & Nitrate monitoring across WWT

Lab-quality analytical performance in the field

Improved understanding of final effluent status

Optimisation and process control through data

Thank You