PIONEERING ELECTRODEIONIZATION MOBILE SYSTEM DELIVERS COST, SAFETY AND SUSTAINABILITY BENEFITS FOR REFINERY

CASE STUDY I Oil & gas I Mobile water services

| The client's needs

As part of the wider works on site, the refinery was undergoing modernisation of its high-pressure boilers, and refurbishment of its demineralisation plant. As such, it required a temporary, reliable and continuous supply of demineralised water during this period – and a solution that did not require CAPEX investment and was cost effective.

External DI water supply sources were not available as an option. The water quality had to meet precise specifications as it was being used for steam generation – a process that is critical for the site's operations.

In addition, space was limited on site therefore a solution with a relatively compact footprint was needed. With site personnel also in limited supply, the solution had to be easy to install and operate – requiring minimum maintenance, a durable life-time and redundancies.

The business was also looking for a partner that would match it's strong commitments to high levels of safety and sustainability.

| The solution

Veolia offered a pioneering mobile water treatment solution – that would guarantee the required water quantity and quality, while offering environmental benefits and minimum manpower.

The innovative solution implemented mobile Reverse Osmosis (RO) and Electrodeionization (EDI) technology at scale – as an alternative to traditional Ion Exchange (IX) or RO and IX mixed bed systems.

The EDI based solution eliminated the need for trailers to be moved for regeneration of resins as the EDI technology is continuously regenerating and could therefore remain on site as long as required.

This flexibility also proved valuable when the duration of project was extended beyond its initial scope – with no fixed identifiable end date. This was to allow for the substantial works taking place with the boiler and demineralisation plant refurbishments.

The system guaranteed the required quality and quantity of treated water and also offered agility in its capability to handle varying flows.

***Compared to a mobile ion exchange solution**

| The client

Europe – A leading global oil & gas business operates a large refinery. As is the case with many similar sites in Europe, this refinery is undergoing a major transformation programme to futureproof its operations in line with an evolving energy market. However, the site also has infrastructure that is ageing and as such, required immediate investments to tackle complex maintenance demands.

Key Figures

€1.2 million+
total cost savings since project implementation*

125 tons
of CO_2 emissions avoided per year*

44
annual trailer movements eliminated*

Chemical savings of 14 t HCl and 26.3 t NaOH per year*

> ***The client had strict criteria that had to be met for this project and they were looking for an innovative, medium-term temporary solution that would be cost effective yet offer safety and environmental benefits. Our skilled engineers offered a unique solution in our mobile EDI technology which was able to meet all of the client's needs while achieving significant cost savings over more traditional solutions.***
>
> ***Markus Klüppel**, Key Account Executive*

| Outcomes

- **Improved safety: reduced chemical handling and vehicle movements.**
- **Compact footprint of the containerised water treatment system helped onsite space constraints.**
- **Simplified operations: with no off site regeneration needed.**
- **Cost savings of over €468,500 per year compared to a mobile ion exchange system used during this length of project.**

| Process benefits

Traditional ion exchange systems use resins that require periodic chemical-based regeneration – using hydrochloric acid and sodium hydroxide. With the EDI system, electric current was used for dissolved solids removal.

This reduced chemical costs for the client while simplifying the environmental, health and safety aspects associated with chemical use.

An additional environmental benefit of EDI technology is the elimination of waste water streams that are typically generated by as a byproduct, from resin regeneration and rinsing.

Veolia Water Technologies
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