AVOIDING UNPLANNED NUCLEAR POWER PLANT OUTAGES IN THE FACE OF SUPPLY CHAIN DISRUPTIONS

CASE STUDY I Power I Mobile Water Services

| The client's needs

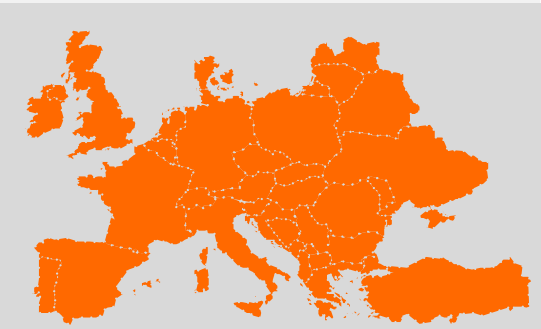
The winter of 2023-2024 presented one of the most critical challenges to Europe's power grid, with widespread concerns of potential blackouts stemming from supply chain disruptions. Among these, caustic supply shortages posed a direct threat to a major European electricity producer, which operates multiple nuclear reactors across numerous facilities. The risk of unplanned reactor outages became a significant concern.

At particular risk, was a critical nuclear power facility which contributes significantly to a large country's total electricity production. Unplanned disruptions at this facility would have far-reaching implications, potentially leading to higher energy prices, safety risks, and increased environmental impact due to reliance on fossil fuel alternatives. The overall risks threatened not only the operator's business continuity but also the stability of the European energy grid.

An additional and critical technical challenge at this site, during this period, was the need to temporarily replace the two lines of the softening system that were down for maintenance. This added a layer of complexity when trying to ensure that the plant's operations continued smoothly and safely.

| The solution

The operator turned to Veolia's Mobile Water Services, for the rapid deployment of containerised ultrafiltration and reverse osmosis systems, along with around the clock monitoring.



| The client

Europe -- A major nuclear power plant, serving a large population and generating high volumes of clean energy.

The plant relies heavily on water drawn from a major river for reactor cooling in a closed-loop system, ensuring compliance with stringent environmental regulations.

Key Figures

24/7
operation over three months

1500 m^3/day
of process water

Veolia's Mobile Water Services team activated an emergency water plan for the site. This pre-prepared, site-specific contingency plan enabled the rapid deployment of containerised ultrafiltration and reverse osmosis systems to address the urgent need for high-quality process water for the reactor cooling and operation.

Key highlights of Veolia's solution included:

- Rapid Deployment: Mobile water treatment units were delivered to the affected facilities in record time.
- Production Capacity: The units ensured a continuous supply of 1,500 m³/day of process water.
- 24/7 Operations: The systems were operational over a three-month period, including the Christmas and New Year holidays, with round-the-clock monitoring and expert on-call support.
- EHS Compliance: Units were deployed after a comprehensive site safety review.
- Innovative Surface Water Treatment: Veolia was able to directly treat surface water thanks to its cutting-edge technology and design.

| Results

Veolia's intervention achieved exceptional results. The nuclear power plant operator avoided unplanned outages and maintained steady electricity production, averting the risk of affect to the stability of the European power grid. Water was delivered precisely to specification and supported the rigorous demands of nuclear reactor operations.

> ***This is an excellent example of the crucial role mobile water services and a specialist partner can play in keeping critical and complex industrial sites and essential infrastructure working as they need to.***
>
> ***Francois Pietri**, Mobile Water Services Sales Manager - France, Veolia*

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