



Treatment of effluent generated by cleaning the condenser at a nuclear power plant

Steam condensers in nuclear power plants are made up of several smaller condensers, which themselves comprise approximately 21,000 metal tubes circulating cooling water. Due to the hardness of water drawn from the natural environment, the cooling tubes are subject to regular and significant scaling and need to be cleaned using ultra-high-pressure water jets (UHP).

The condensers in question were made up of brass tubes (an alloy of copper and zinc) partially scoured by the high pressure of the water used for cleaning, resulting in a residual concentration of copper and zinc in the cleaning effluent. CTP environnement was commissioned to treat 1000 m³ (1308 yd³) of cleaning effluent discharged into the rainwater network.



The following treatment process was put in place:

- Installation of a 100 m³ (131 yd³) buffer tank
- Physico-chemical and settling treatment using a **Clearflow**[®] mobile unit
- Continuous analysis and discharge of treated water
- Sludge dewatering using a geotextile membrane

Two treatment campaigns produced the following results:

- Metals reduced by a factor of 500.
- 990 m³ (1295 yd³) of treated water discharged with metals of < 1ppm
- 10 m³ (13 yd³) of dewatered sludge (DM = 50%)



Treatment using a physico-chemical **Clearflow**[®] mobile unit, consisting of insolubilisation, coagulation, flocculation and clarification, demonstrated its effectiveness throughout the process, by guaranteeing the consistent quality of discharges right across the site. The volume of waste was also dramatically reduced, with no additional technological waste (filters for example).