



# Air Cooled Condenser Commissioning with Temporary Condensate Polisher

## Mobile Water Service

Ecolutia Services operates the world's newest and most efficient fleet of mobile water and wastewater treatment systems. Industrial and municipal customers trust our 24-hour, 365 days per year service for emergency, short-term or long-term use.

As your outsourced water treatment partner, we provide a rapid response service that ensures you benefit from the latest technologies and operating techniques. This critical service is available for worldwide deployment, incorporating customised solutions to match your requirements.

## Air Cooled Condenser

Power station designs are increasingly sympathetic to local ecosystems and the use of Air Cooled Condensers (ACC) is one such example. ACCs capture valuable condensate, which otherwise evaporates or is discharged into the local environment. This is notably relevant in arid conditions as well as Zero Liquid Discharge (ZLD) and ISO 14001 certified facilities, where operating procedures are particularly stringent. Furthermore, capturing residual heat in the retained condensate and reducing the requirement for fresh make-up water is financially and operationally beneficial.

As power stations are constructed, a large volume of steam is required to decontaminate and commission the water loop as well as the ACC. However, permanent make-up water plants are sized to meet daily station requirements, rather than irregular volumes required for steam blows or a hot cleaning process.

When used in the ACC the steam becomes contaminated condensate and requires treatment before reinjection into the system. As the ACC operates on a closed loop, condensate polishing is only required during commissioning or maintenance intervals. Therefore, a temporary solution is an effective and efficient way to remove contaminants and minimise water loss.

## Service Solution

The Proteus Series available from Ecolutia Services on an outsourced basis can treat and recover up to 250 m<sup>3</sup>/h (1100 GPM), of condensate. This system is containerised and operable within hours of arrival on site and is easily removable once the project is complete. The easy use of this system makes it suitable for short-term and supplementary projects, as well as standalone production. The condensate recovery occurs by passing it through a number of stages to ensure recovery of the economic value within the condensate and allow its reuse within the project.

To achieve optimal results a number of steps are involved in commissioning the ACC, based on the degree of potential contamination and the product quality desired. Typically, contamination comes in the form of iron oxides and loose particulate from within the ACC.

To prevent damage downstream, the first step of the hot cleaning process removes large solid matter, such as loose welding slag and foreign parts/tools often left behind during construction. The second hot cleaning step is where the temporary polishing plant merges into the process to recover the condensate. However, before this the optimum operating temperature for the condensate in the Proteus System is achieved through a cooling tank. From here, the condensate passes through 100-micron basket filters to eliminate any remaining smaller solid matter.

The final step of the hot cleaning process is the combined removal of both suspended and dissolved matter through a customised mixture of resin loadings, to suit the specifics character of the condensate. This mixture includes a final stage polishing procedure to achieve a higher purity condensate. Particulate and ionic impurity removal protects the ACC and the power station boilers to ensure their maximum operating efficiency. Additionally, treating the condensate up to 50 °C (122 °F) provides a saving to you as less energy is required to reheat the condensate.

Close monitoring of the Proteus System during the treatment steps is undertaken to make certain any pressure drops do not cause inconsistent treatment outcomes or reduce condensate availability. In addition, this proactive monitoring of the treatment prevents deterioration of the resin and allows better management of the process to maximise the working capacity of the Proteus System. This ensures you are better aware of the operating parameters and the performance of each system. Only after all these steps and procedures are completed is safe to re-inject the condensate back into the loop.

## Operation & Maintenance

As your project partner, we take on all operational and maintenance risks, giving you confidence in the production availability of the plant. Our team of university graduate Field Service Engineers (FSEs) operate and maintain our systems. The team are fully trained and skilled in water treatment, plant operation and troubleshooting.

We are committed to the highest standards of customer service to meet your expectations. The FSEs have 24-hour technical back-up support, as well as a 'Project Execution Plan' (PEP), which is prepared to ensure clear definition of project goals, operational continuity and standard operating procedures.

## Typical Capacity of Systems\*

### Proteus Series Media Loadings:

Softening	300 m <sup>3</sup> /h (1320 GPM)
Filtration	150 m <sup>3</sup> /h (660 GPM)
Demineralisation	300 m <sup>3</sup> /h (1320 GPM)
Condensate Polishing	250 m <sup>3</sup> /h (1100 GPM)
De-oxygenation	200 m <sup>3</sup> /h (880 GPM)

Atlas Series Micro-filtration	150 m <sup>3</sup> /h (660 GPM)
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### Triton Series Reverse Osmosis:

Seawater RO	60 m <sup>3</sup> /h (265 GPM)
Brackish Water RO	65 m <sup>3</sup> /h (286 GPM)

Volturnus Series	60 m <sup>3</sup> /h (265 GPM)
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### Electro-deionisation:

*\* Total product water flow is subject to feedwater quality*

## Cleantech Benefits

To combat problems of water stress and water scarcity all our projects incorporate a cleantech ethos. Our philosophy is to act responsibly throughout each project, as we believe water security and water efficiency are mutually achievable objectives.

Our mobile fleet is an industry leading high capacity and high flow solution. Needing less equipment and reduced energy consumption lowers the carbon footprint, while higher recovery RO and multi-media systems reduce the water footprint of each project.

The reduced environmental impact also has financial benefits through reduced fresh water extraction and discharge costs. Additionally, with the need for less equipment for each project means savings through lower transportation costs. An outsourced water treatment solution is an attractive option and includes the following benefits:

- Lower effluent and make-up water requirements
- Fixed cost of service or volume of water
- Guaranteed treated water production output
- Overcome difficulties on low discharge sites
- Multiple technology and project options
- Unrestrictive and flexible solutions

**For a secure treated water supply contact Ecolutia Services**