

Power Plant in the Outback Solves Scarcity Issue with GE Mobile Water System

Challenge

During the commissioning of a coal fired Power-Station in the Australian outback, a drought produced a shortage in water supply. This meant that the steam blows could not go as planned. The commissioning Company was forced to tanker in demineralized water but this proved extremely expensive and the quantity that could be tankered in was insufficient for a proper steam blow.

The commissioning company, having worked with GE Water & Process Technologies in various sites around the globe, gave a call to our Melbourne office to see if we could come up with a solution to provide demineralized water using tertiary treated effluent (TTE) as a source for the duration of the steam blow. The TTE came from a city sewage system, through a reservoir and it was then clarified, the product would be water with conductivity and a total organic carbon (TOC) concentration in the thousands. But the product required for the steam blow should be: < 0.1µS; < 200 ppb TOC at a flow rate of 11,400 gpm (45m³/hr).

Solution

The solution was to dose the raw water with poly-aluminum chloride (PAC) and sodium hypochlorite before being sent to a MultiFlow* filter container. The product would be dosed with hydrochloric acid (HCL) and sent onto a mobile reverse osmosis (MobileRO*) unit loaded with cellulose acetate (CA) membranes, running at 90% rejection and 70% recovery.

It would then be degassed and fed into regeneration in place (RIP) system of cation and anion skids. The product would then be polished through a 500 skid filled with mixed bed resin.

Inlet Conductivity	1,900 µS/cm
Outlet Conductivity:	0.06 µS/cm
Inlet TOC:	15 ppm
Outlet TOC:	< 200 to < 50 ppb

The RIP system was duplicated so that one unit could run while the other one was being regenerated; the Mixed Bed resin would just be exchanged so as to ensure the highest quality of demineralized water and no reduction of production.

The temporary plant was running within a week of the equipment arriving on site. The commissioning and the 24-hour cover of the site was ensured by GE field service representatives (FSR), specially trained degreed engineers, who would then liaise regularly with the customer and the technical staff to ensure that the customer was provided with the right amount of water, at the right quality whenever needed.

Half way through the run, the customer decided it needed to lower the demineralized water TOC levels to < 50 ppb, so thanks to the flexible nature of the system, a second RO, loaded with PA membranes was put in series after the CA RO. Another problem arose as the temporary water treatment site was sitting on where a road was being built, so all the kit was moved during a weekend, allowing tarmac to be laid. Production resumed on the next day.

Results

The customer got a complete water treatment to provide its much needed demineralised water which helped it keep its schedule and save money compared to the tanking in of water it was forced to do with. The extra water capacity provided for a cleaner steam blow, as higher pressures were now attainable. GE produced water for nearly 5 months



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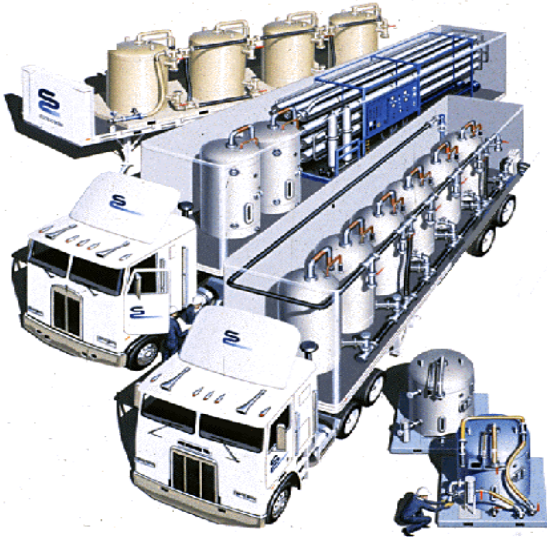
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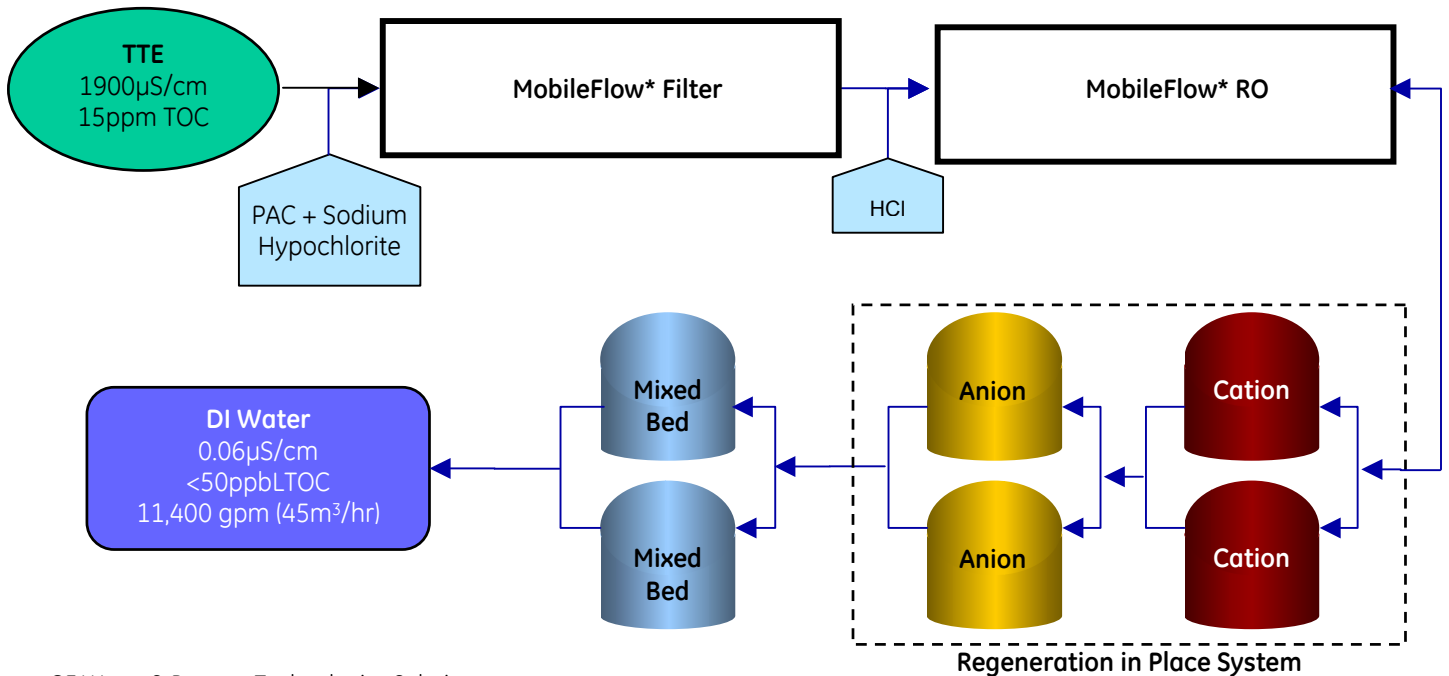
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with a week for commissioning and 3 days for de-commissioning, during all this time the customer never once had to utilize its own manpower for the production of water.

The contract manager and the site chemists were extremely happy with the service and the expertise provided by GE as they were always sure of being provided with the best water possible as well as different options to ensure the commissioning would be right on target.



GE Water & Process Technologies Patented Mobile Systems



GE Water & Process Technologies Solution