

Water reuse technologies

From the standpoint of cost and technical efficiency, biological treatment has proven to be an excellent treatment technology for reuse applications around the world and is now being considered for many new water reuse treatment facilities in Saudi Arabia. Severn Trent Services has been designing and placing its [TETRA® biofiltration systems](#) in advanced wastewater tertiary plants worldwide for more than 20 years. TETRA wastewater filters represent over 10 percent of the world's capacity for wastewater reuse systems. In excess of 40 percent of the wastewater reclamation plants in Florida, USA, alone use TETRA technology to successfully deliver safe, reused water sources for municipal, industrial and wetlands recharge applications.

The key to the success of a wastewater reuse program is tertiary filtration capable of consistently producing a high quality effluent while enhancing the disinfection process - both chlorination and UV - and improving water quality. Good tertiary filters offer the benefit of lowering total suspended solids (TSS), turbidity and biological oxygen demand to meet the required discharge permits.

[TETRA DeepBed™ technology](#) is used to produce high quality industrial and municipal wastewater effluents for discharge and reuse applications. DeepBed filters meet or exceed reuse standards of 2 NTU or less. The filter effluent is typically 0.4 NTU for a TSS removal filter and 0.7 for a denitrification filter. Backwash water is typically only two to four percent of forward flow. Lower backwash consumption and recycling cut plant operating costs and increase plant capacity. Also, the DeepBed filter has the flexibility to be converted to a denitrification filter with minor modifications. This allows for simultaneous TSS and NO₃-N removal.

As the largest producer of desalinated water in the world, Saudi Arabia is constantly evaluating best practices in membrane filtration treatment. A critically important aspect affecting the performance of desalination plants is the design of pre-treatment filters in removing suspended solids. While a number of different rapid gravity filter floor technologies have been employed in the

pre-treatment of desalinated water, the [TETRA LP Block™](#) dual parallel underdrain filters offer technical advantages including a reduction in installation costs and providing a long maintenance-free life.

The TETRA LP Block underdrain filters form the floors of the rapid gravity sand filters that will treat the seawater feeding the plant prior to main cartridge filter and RO membranes. The LP Block floor supports the sand media during filter operation and provides excellent distribution of air and water during backwashing to enhance the cleaning of the gravity filter and extend the run times. The filters are of a lightweight construction and made of corrosion-resistant materials. The absence of moving parts reduces maintenance and wear. TETRA LP Block filters are popular with plant owners for their low headloss, their easy assembly and their exceptional installation strength and integrity either as a retrofit or for new filter underdrain applications.

The underdrain filters also feature the GroutGrip™ design, which helps to alleviate the buoyancy inherent to other plastic underdrain designs and installations. Additionally, the wide, low-profile design of the LP Block requires that fewer blocks be installed to cover a filter floor. Therefore, fewer joints and less grout are needed.

The Middle East is at the epicenter of global concerns about water shortages and water and wastewater treatment capacity. As countries such as Saudi Arabia work to expand their wastewater treatment infrastructure and increase reuse capacity, a variety of technologies – from biological filtration processes to electrochlorination disinfection systems to desalination – have been proven effective as treatment solutions for a variety of applications.

Reference : www.severntrentservices.com