



Case Study:

African desert camp relies on UV Pure systems for disinfection and reuse of treated wastewater effluent



System design specifications:

- **Application:** Mobile wastewater treatment and reuse
- **Location:** Hassi Messaoud, Algeria, Africa
- **Commissioned:** March 2017
- **System design/installer:** Island Water Technologies
- **System:** 3 x Upstream 15-50 (2 x duty, 1 x redundant)
- **Capacity:** 30 gpm (114 L/min)
- **Minimum UV dose:** 30 mJ/cm²
- **Minimum UVT:** 50%
- **Turbidity:** < 4 NTU
- **Hardness:** < 800 ppm
- **Target fecal coliform limit:** < 200 CFU/100mL



For years, a remote camp in the Algerian Desert had been trucking wastewater, at great expense, to a municipal treatment facility—unable to implement a chemical-free, decentralized treatment system that would provide the ease-of-use, performance and energy efficiency it needed.

But in March 2017, UV Pure Upstream systems were installed at RedMed Group Headquarters as part of a mobile wastewater treatment plant, built by Island Water Technologies (IWT). The combination of technologies is enabling the camp to finally begin treating wastewater onsite, which is making wastewater handling more efficient and cost effective, while also producing high quality effluent that can be safely reused in the arid desert for landscape irrigation.

Upstream's space-saving design and simple operation are key for mobile system

"UV Pure systems provide our plug-and-play Regen 40+ mobile treatment plant with a low-complexity, low-maintenance disinfection solution that operators can quickly learn how to use and support," says Patrick Kiely, CEO of Island Water Technologies. "Upstream capabilities, such as the automatic cleaning system, are extremely beneficial since they prevent accumulation of scale and biofouling inside the quartz sleeve. This dramatically reduces maintenance requirements, avoids the need to drain the system for manual cleaning and minimizes operator exposure to wastewater effluent."

According to Kiely, RedMed specified that the mobile process should operate with little to no chemicals due to the cost and difficulty of importing, transporting and storing chemicals in the Algerian desert.

UV Pure Upstream systems not only remove the need for chlorine disinfection, but also virtually eliminate the need to use chemicals for manual system cleaning.

“UV Pure worked closely with us to validate the UV dose rates and ensure the Upstream systems would meet disinfection requirements, even when UVT is as low as 50%. Other UV systems that we evaluated were not able to offer this UVT performance.”

Upstream excels in low UVT performance

Three space-saving UV Pure Upstream 15 systems are mounted vertically in the compact control room of the IWT Regen 40+ and are integrated directly to the mobile treatment plant’s programmable logic controller equipment to enable automated operation and remote monitoring.

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requirements, even when UVT is as low as 50%,” says Kiely. “By achieving disinfection at low UVT, the Regen unit provides greater operational flexibility and we can avoid adding UV pretreatment equipment, which further minimizes the complexity, cost and maintenance requirements for Regen. Other UV systems that we evaluated were not able to offer this UVT performance.”

Virtually maintenance-free operation

The Upstream systems were also selected for their Crossfire® technology, a unique design where UV lamps are mounted vertically in air, rather than inside a quartz sleeve. This vertical, in-air arrangement means that lamp changes can be done more quickly and in far less space than conventional light-in-a-pipe systems and without the need to drain and disassemble the quartz sleeve. Crossfire technology incorporates elliptical reflectors that reuse light energy to deliver a high UV dose and target pathogens from 360 degrees.



Patrick Kiely, CEO, Island Water Technologies and the Upstream systems mounted in the control room of the Regen 40+.

“Overall, UV Pure was a great equipment partner for our first Regen system in a challenging desert environment,” Kiely says. “Despite our remote location, the UV Pure support team in Canada was extremely accessible and responsive to help us overcome minor commissioning challenges and successfully deliver this project.”



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