



Case Study:

Colombian community responds to stronger water regulations with UV Pure systems



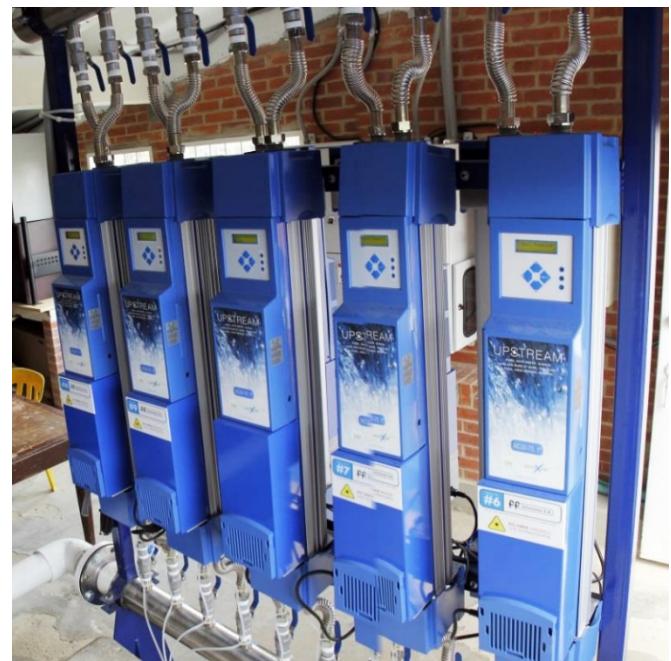
System design specifications:

- **Application:** Municipal potable water treatment
- **Location:** Bogota, Colombia
- **Operator:** Progresar E.S.P.
- **Commissioned:** December, 2015
- **Source:** Teusacá River
- **System:** 10 x Upstream™ 30-75
- **Flow:** 300 gpm (1,136 L/min)
- **Minimum UV dose:** 40 mJ/cm²
- **Minimum UVT:** 75%

Regulators in Colombia are strengthening the standards and enforcement of treatment processes aimed at protecting public health from chlorine-resistant pathogens such as Giardia and Cryptosporidium. A leader in adopting the regulations is Progresar E.S.P., a water services company that recently added UV Pure disinfection to a potable water treatment plant serving about 5,000 residents in a suburb of Bogota.

This project marks the first installation of UV Pure systems for potable water disinfection in Colombia.

"UV Pure systems bring the ideal combination of performance, ease of use and design flexibility to upgrade the water treatment processes for this community," said J. Enrique Baena Botero, General Manager, Progresar E.S.P. "We are very proud to be the first in Colombia to adopt this technology and lead the way in supporting stronger regulations to protect public health from waterborne pathogens."



UV Pure Upstream systems are installed in a modular manifold assembly, which provides redundancy and helps conserve energy, extend system life and simplify maintenance.

High UV dose—even under tough conditions

UV Pure Upstream systems, with Crossfire™ technology, are an ideal choice for this challenging application providing a minimum UV dose of 40mJ/cm², even when UVT is as low as 75%. Pilot testing prior to selecting the systems showed that UV Pure systems can provide consistent disinfection for the river water, which never experienced UVT below 80% during the study.

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Source water from the Teusacá River is negatively impacted by agricultural operations and by treated effluent discharged from upriver wastewater plants.

The plant operates with an average flow of about 12L/sec (190 gpm) and draws water from the nearby Teusacá River, where water quality is negatively impacted by agricultural operations and treated effluent discharged from upriver wastewater facilities. Ten UV Pure Upstream 30-75 systems are now part of the disinfection process, working to inactivate pathogenic organisms such as Giardia, Cryptosporidium, bacteria and most viruses, before chlorine is added to protect the water from recontamination in the distribution system.

Parameter	Raw Water	Pretreatment	After UV	Objective
Total coliforms*	12,000	430	0	0
E. coli*	7,000	247	0	0
P. aeruginosa*		288	0	0
Turbidity (NTU)	10.4	1.4		
Water Quality Risk Index			0	

*CFU/100 ml (average)

Treated Water Characteristics

The UV Pure systems enable the plant to consistently meet treatment requirements and achieve a score of zero percent for the Water Quality Risk Index.

“Our UV systems are performing very well and are enabling the plant to consistently meet the treatment requirements and achieve a score of zero percent for the Water Quality Risk Index,” Baena says.

This method of risk analysis was established in 2007 by the Colombian government to assess risk to human health from potable water. It is calculated using several parameters including the physical, chemical and microbial characteristics of the water. A score of zero indicates the highest quality water and the least risk to public health.

Modular system saves energy and simplifies expansion

The Upstream units are installed in a modular manifold system, which provides significant operational flexibility and system reliability. During peak demand, the units can work together to achieve treatment requirements, but during low demand individual units can be shut down. This flexibility is ideal for conserving energy, extending system life and simplifying maintenance, since the entire process does not have to be decommissioned.

The modular design is ideal for accommodating community growth, which is expected to surge to more than 12,000 residents in the coming years. Increased treatment capacity can be achieved by simply adding more Upstream systems and connecting sensors, alarms and monitoring functions to the plant’s control room.

The facility will also benefit from the robust automatic cleaning system that prevents fouling of the quartz sleeve. This simple process helps to make UV Pure systems virtually maintenance free, since it prevents the need to shut down systems and manually clean the quartz sleeve with dangerous acid. In many cases, systems have operated for several years and have required only scheduled UV lamp changes.

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