

TROJAN UV™

CASE STUDIES

Municipal Drinking Water



Trojan UV Solutions:
Disinfecting with UV
in Drinking Water

UV Disinfection – TEDA Water Supply General Company, TIANJIN, China

PROJECT BACKGROUND

Tianjin is a metropolis located in North-East China. It is the sixth largest city in China with a total population of over 12 million people. Increasingly stringent drinking water regulations in China are requiring more frequent water quality tests and inspections for a greater number of pathogens and molecular contaminants.

In China, the use of ultraviolet (UV) light is an established method for the disinfection of treated wastewater before it is discharged back into lakes, rivers and streams. TrojanUV alone has supplied UV equipment to hundreds of wastewater treatment plants throughout the country. Highly favorable reviews of UV technology in wastewater applications

influenced the organization, Tianjin Economic Development Area (TEDA) Water Supply General Company, to investigate the potential of using UV for drinking water applications at one of its Tianjin water treatment plants.

THE TROJAN SOLUTION

The TEDA-owned water treatment plant in Tianjin is a large facility with a design flow rate of 220,000 m³/day (~58 MGD) per day. Raw water is obtained from a number of sources including two groundwater wells and surface water from the Luan River.

With no previous UV installations for drinking water disinfection in the country, one of the criteria when selecting a UV manufacturer was experience. With over 35 years of experience

and thousands of installations globally for drinking water, wastewater and industrial applications, TrojanUV was selected as the supplier of UV equipment for the Tianjin facility.

Trojan supplied four TrojanUVSwift™ 6L30 reactors (three for normal operation and one for backup) to Tianjin in order to deliver the required 40 mJ/cm² UV dose. The system was installed in the spring of 2009 and was the first UV installation for the treatment of drinking water in China.

SYSTEM PERFORMANCE

Since its commissioning, the TrojanUVSwift has performed above expectations and the plant is in full compliance with the new drinking water regulations.

CASE STUDIES

In addition, TrojanUV's experience and commitment to sustainability helped the Tianjin installation optimize its energy demand and as a result, minimize annual operational costs of the facility. This was done by incorporating a dose-monitoring system. This system allowed for active monitoring of water quality. The system's programmable logic controller (PLC) receives this information and in turn controls UV output from the lamps so that the required 40 mJ/cm² dose is maintained using minimum energy.

Another requirement of the Tianjin facility was low maintenance and easy operation of the UV equipment. While the previously-mentioned dose monitoring system minimizes energy and operator involvement, ActiClean™, TrojanUV's automatic chemical-mechanical sleeve wiping system, maintains maximum sleeve transmittance. ActiClean virtually eliminates the need for shutdowns to manually clean sleeves, minimizes energy demand of the system, and lowers operational costs by maximizing the amount of light that enters the water.



THE FUTURE OF UV IN CHINA

With the introduction of new drinking water regulations in July of 2012, finding alternatives for standard chemical disinfection of drinking water is becoming a subject of research in China and alternatives such as UV disinfection are generating significant interest. The positive performance of UV at the Tianjin TEDA Water Plant has since led to the development of a second Tianjin UV drinking water installation (175,000 m³/day) that is currently upgrading its treatment capacity. This second system was installed in the summer of 2011. TrojanUV's energy efficient and low maintenance UV solutions will continue to make an impact on the growing drinking water treatment market in China.

FULL SCALE SYSTEM

SYSTEM DESIGN PARAMETERS

- **DESIGN FLOW CAPACITY:** 220,000 m³/day (58 MGD)
- **DISINFECTION REQUIREMENT:** Minimum Dose of 40 mJ/cm²
- **UV SYSTEM INSTALLED:** TrojanUVSwift™6L30
- **NUMBER OF REACTORS:** Four (3 Operational + 1 Redundant)

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