



Case Study

Thinking big to create a small footprint -
how Aquestia customized a valve to limited dimensions

Background

The North Bypass Road of Shanghai is the largest underground urban road project in China, spanning approximately 19.1 km. With a single tube and two layers accommodating six bidirectional lanes, the tunnel officially opened to traffic in October 2024. This massive infrastructure project required cutting-edge fire protection solutions capable of meeting strict space constraints, while ensuring maximum reliability and safety.

Challenge A tight fit

The fire protection system of the eastern length of the tunnel required 730 deluge valve sets to be installed across a section 8.2 km long. However, the limited dimensions of the deluge valve cabinet - especially their strict requirements for a limited footprint - posed a major challenge. Standard valve widths and trim dimensions could not fit the confined spaces within the tunnel walls. The solution needed to be both highly reliable and compact, without compromising on the performance standards required for fire protection in such a critical infrastructure.

Solution Made to measure

Through its OCV deluge valve series, Aquestia designed a customized narrow-body valve and alarm trim configuration specifically for this project. Adjustments were made to the standard trim configuration to meet the tight skid dimensions. In total, 730 units of 4" size model OCV DE\EL (CN) deluge valves were installed, each fully integrated with other fire protection components, into cabinets that were embedded directly into the tunnel wall. Aquestia's engineering team provided on-site technical support during installation and commissioning, ensuring a smooth and efficient setup.



Valve adaptation to limited dimensions of the cabinet

Results

Aquestia's technical expertise and customized design ensured that all fire protection requirements were met without compromise. Now operational, the system has proven to be both reliable and efficient, with seamless integration into the tunnel's fire safety network.



Customer Perspective

"During the installation and commissioning process, Aquestia's technical personnel demonstrated a high level of professionalism and responsibility. The products have performed reliably during use, and after-sales service has been exemplary."
Shanghai Tunnel Engineering Co., Ltd