WHY OLD-FASHIONED LINE MAINTENANCE ISN'T WORKING FOR MODERN COMMUNITIES

A White Paper by Hydra-Stop

When a valve needs to be replaced or a new one added to the system, it is a major ordeal for water utilities. Buried lines must be dug up and isolated, creating service interruptions and dozens of man-hours spent cutting, removing, and recoupling pipes. Insertion valves have been around for several decades as an alternative to traditional cutting and replacing of old valves.

MODERN SOLUTION REQUIRED

While insertion valve technology has advanced significantly since their invention, the perception or understanding of them is often stuck in the past. The modern challenges faced by today's water utilities require modern solutions, and insertion valves have evolved into an ideal solution for a range of problems.

CUT-IN COSTS

Although familiar and routine for many water utilities, the traditional process of cutting into pipes is fraught with complications. The number of workers required, the need for heavy machinery, pumps, and saws; additional PPE; and the sheer amount of time that residences and critical infrastructure, such as schools, hospitals, manufacturing facilities, and fire protection, are out of service are just the beginning. If the work is done in a public area, particularly in the middle of a roadway, it can cause traffic jams and often mandates a police presence. Then there's the health and environmental impact, as chlorinated water must be flushed out of the system. Cutting pipes often leads to boil-water notices. Finally, there's the optics, as customers (and commuters) fume over lost service, traffic, and other inconveniences.

THE TRUTH ABOUT INSERTION VALVES

Insertion valves bypass nearly all of this, requiring less time and manpower (Figure 1). They can be installed under full flow and pressure, which means the system does not need to be shut down to put the valve in service. This avoids service disruption notification, flushing, re-pressurizing, and re-chlorinating and eliminates the need for boil orders.

Figure 1. *Many valve repair or installation projects can see significant savings by using an insertion valve rather than a traditional valve. A two-man team in the image above was to install a 4" Insta-Valve 250 in Central Illinois in about an hour.*

One reason many water utilities continue to use the traditional cut-in process in applications where insertion valves would be ideal stems from misconceptions regarding the latter. In truth, many advanced, high-quality insertion valves have been engineered for longevity, durability, and reliability. As such, they:

Can be a permanent installation. While they may sometimes be used for temporary applications, many modern insertion valves are designed to meet the long-term needs of a pipeline. The choice between temporary and permanent largely depends on the application's specific requirements. Many insertion valves are designed to give extended or another lifetime of service to the existing infrastructure.

Cost less than traditional valves. While an insertion valve will cost more than a traditional valve, the former is almost always more cost-effective in the long run. As mentioned, traditional pipe cutting and recoupling involves labor-intensive processes, extended downtimes, and other costs. By eliminating 100% of the costs associated with shutdown and reducing the need for these time-consuming activities, insertion valves can result in substantial savings for a utility—an average of 40%—in terms of labor, equipment, and overall project costs.

Perform as well as traditional valves. Advanced engineering allows many insertion valves to meet or exceed the performance standards of traditional valves. When installed

correctly, they provide reliable and efficient flow control comparable to traditional valves. The key is selecting the right type of insertion valve for the specific application and ensuring proper installation by trained professionals.

Do not impact pipe integrity. High-quality insertion valves are designed to reinforce the pipe beam strength in the area where it has been cut away to make room for the valve. For common pipe sizes (4-16 inches), the best insertion valves do not require mechanical restraints before the valves can be operated. In other words, during an emergency, workers do not have to wait hours for the concrete to dry or backfill the excavation to turn off service for repairs.

Can be used for more than just emergencies. While insertion valves are frequently used in emergency situations, they are not limited to such scenarios. They are versatile tools that can be employed for routine maintenance, modifications, or expansions. Insertion valves provide a proactive and efficient means of accessing pipelines without having to shut down service in large parts of the system.

Are simple to install. Proper installation procedures still need to be followed, of course, but are easy to learn for trained professionals. Compared to the intricate and time-consuming process of cutting in a traditional valve, the installation of insertion valves is faster and is always less disruptive, leading to reduced overall project timelines.

CONTINUOUS INNOVATION

Insertion valves evolved from traditional line stops but have come a long way. Some manufacturers continue to innovate using stronger, more corrosion-resistant materials, improved designs and installation procedures, and more. Many are now rated for 250 psi working pressure.

While insertion valve technology has evolved tremendously over the past decade, they are not all created equal. Knowing how to choose an insertion valve for your specific requirements is essential. With the right choice, water utilities will have a viable, cost-effective alternative to traditional cut-in valve replacement and other repair and maintenance applications.

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