Advanced Valve Technologies

# WHY INSERTION VALVE TECHNOLOGY IS THE FUTURE OF INSTALLING DISTRIBUTION SYSTEM CONTROL POINTS

AVT's Jason Taylor

# WHAT WE WILL COVER TODAY

## AVT EZ Valve – an Insertion Valve

Water systems are rarely designed to be future proof. When initially designed, engineers add the number of control points needed at that time, and we are finding more and more that these points are not sufficient for the current demands on the systems. So, what do water system operators do?

Content:

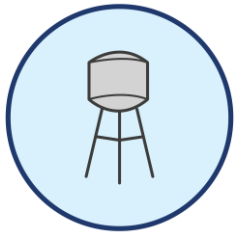
- Identifying locations for Insertion Valves
- What is Insertion Valve Technology?
- Traditional ‘ V’ Insertion Valves

Case studies:

- German Crude Oil Refinery
- UK Hospital

# AVT EZ VALVE™ INSTALLATION PROCESS

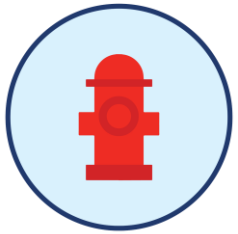
# IDENTIFYING IDEAL LOCATIONS FOR NEW CONTROL POINTS



Control water supplies to communities

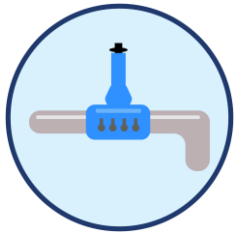
Small valves can create control points within high-rise homes and offices

Isolation of pump stations



Isolate fire hydrant to safeguard local supply

Create new control points within housing developments



Deflections around new construction projects

Isolate internal systems during repairs to ensure patients and water suppliers are not affected

Isolate fire suppression lines ensuring operations can continue

Emergency control points during main breaks

# IDENTIFYING IDEAL LOCATIONS FOR NEW CONTROL POINTS

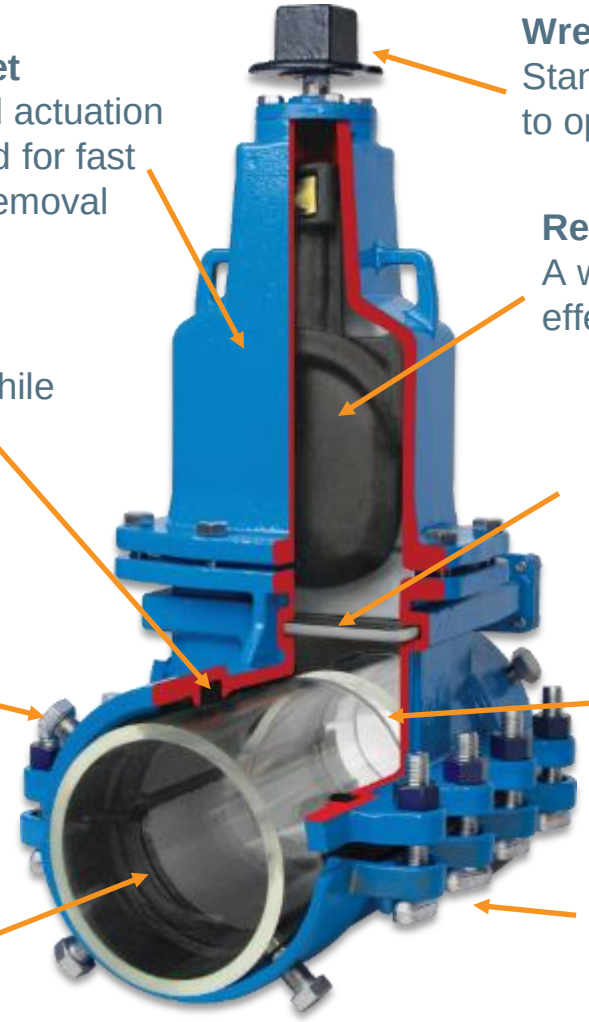
# THE AVT EZ VALVE IN DETAIL

**Removable valve bonnet**
Resilient wedge gate and actuation mechanism are contained for fast and easy installation or removal

**Gasket & channel**
Maintain system pressure while allowing rotation of casting assembly during slot-milling

**Restraining Bolts**
Stainless steel components secure casting assembly and provide final positioning on pipe

**Pipeline compatibility** The EZ Valve design works with most metallic pipes, asbestos concrete and PVC materials



**Wrench Nut**
Standard number of turns to open and close valve

**Resilient Wedge**
A wedge gate over a ductile iron frame that effectively seals even tuberculated host pipe

**Integrated isolation gate**
Provided ‘under pressure’ installation and removal of valve bonnet or blind flange

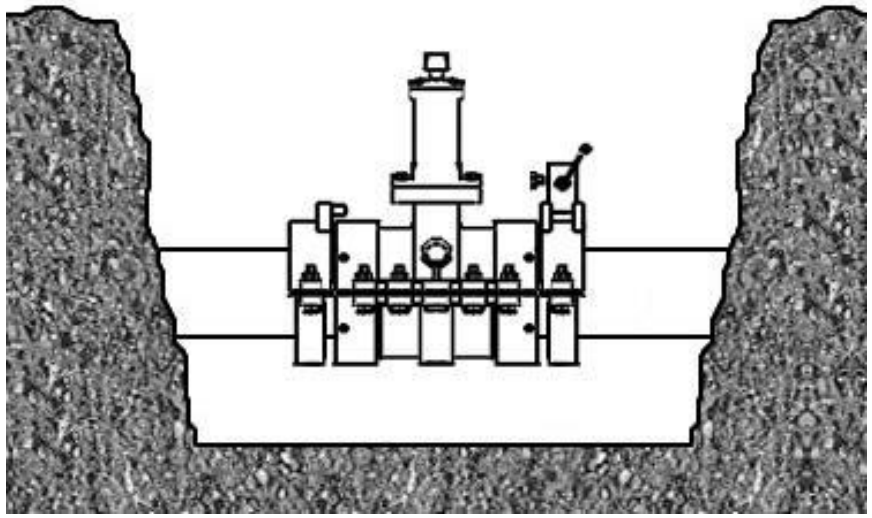
**Insertion slot**
One narrow slot over a 120º path maintains pipe integrity and creates resilient wedge access

**Castings**
Ductile iron castings are precision machines to fit project specifications and pipe materials

# WHAT IS AN INSERTION VALVE

A valve that can be installed on a live water line, with no need to shut off the flow.

- The valve body is placed round the pipe
- A milling machine is attached to the top of the valve body
- A cutter makes an opening in the pipe to hold the valve wedge gate
- The cutting head is retracted, and an isolation gate closed, this prevents water loss while the milling machine is removed
- The valve bonnet which contains the wedge gate is put in place
- The isolation gate is opened
- The gate can be inserted into the water line when the operator wishes



# HOW DOES IT WORK?

The valve body is placed round the pipe

Milling machine fitted

A cutter makes an opening in the pipe to hold the valve wedge gate

The valve bonnet which contains the wedge gate is put in place

# HOW DOES IT WORK

## The installed insertion valve

Closed gate

Partially closed gate

Blind flange in place
No gate

# EVEN IN HEAVILY TUBERCULATED PIPES

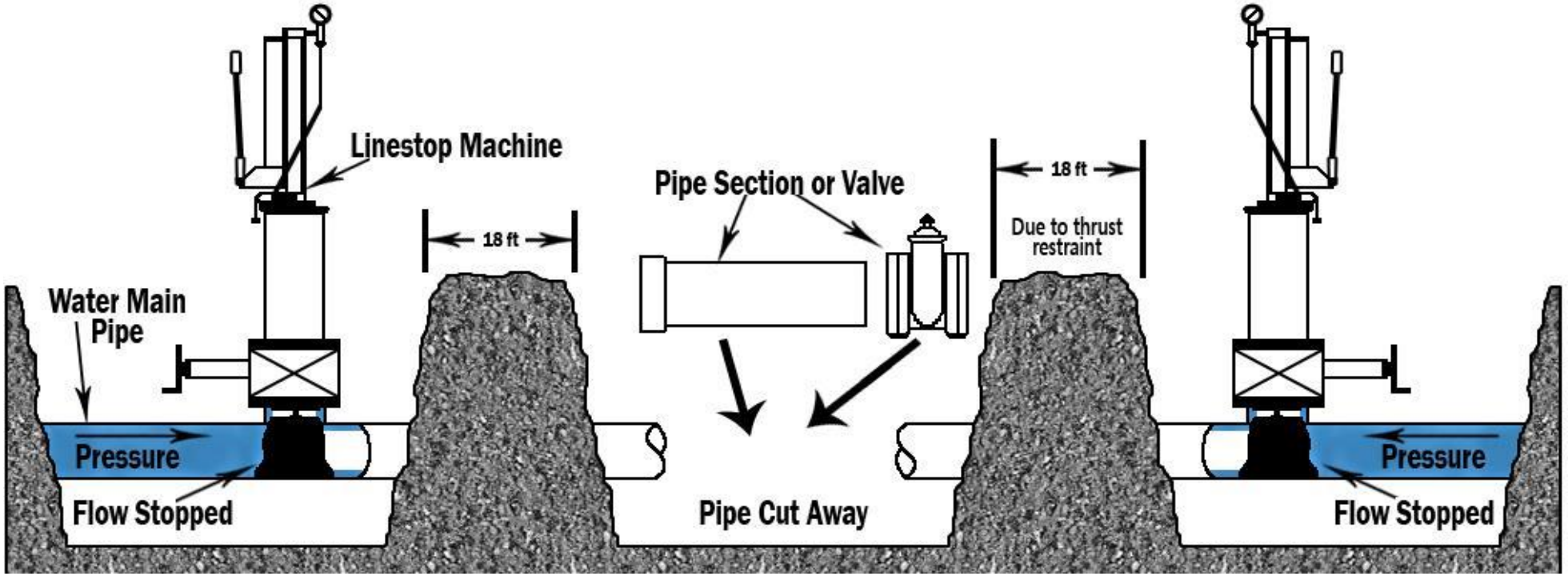
## EZ Valve Resilient Wedge Gate

- With the resilient wedge gate we can produce a bubble tight seal in heavily tuberculated pipes as our gate conforms to the internal diameter of the host pipe.

# TRADITIONAL VALVE INSERTION ‘V’ INSERTION VALVES

Avoid three excavations, two line stops, and valve cut in.

Insertion valves do it faster, safer, greener and at a lower cost.



# EZ VALVE INSTALL KEEPS WORK ON TRACK AT GERMAN CRUDE OIL REFINERY

## Case study

- A heat exchanger located 15 metres off the ground, required repair work.
- To complete the work it had to be isolated from the system.
- Three installers used the installation of an EZ Valve on a 100mm pipe as a training opportunity.
- The installation took just 1.5 hours

# EZ VALVE INSTALL KEEPS WORK ON TRACK AT GERMAN CRUDE OIL REFINERY

## Case study

PCK Raffinerie GmbH is one of the largest refineries in Germany processing 12 million metric tons of crude oil a year

When the refinery operators identified the need for repairs to a heat exchanger, they needed to isolate the equipment and were faced with the added challenge of the cooling water line which fed the exchanger, being 15 meters off the floor.

# EZ VALVE INSTALL KEEPS WORK ON TRACK AT GERMAN CRUDE OIL REFINERY

## Case study

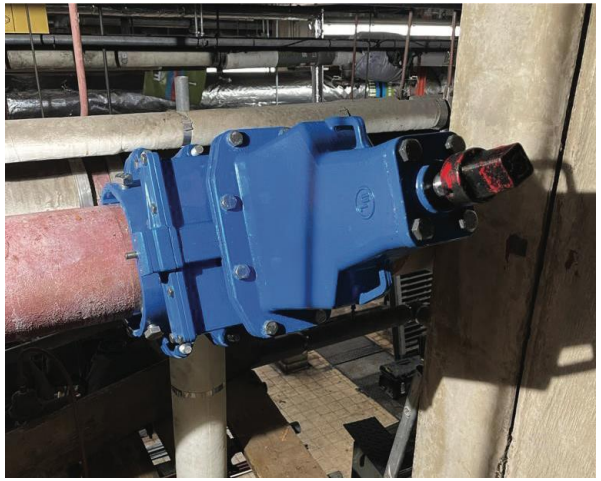
Service partner, the Bardenhagen Group called in their engineering partner MMZ.

MMZ decided to use an AVT EZ Valve to resolve the issue. It was the ideal solution to isolate the exchanger enabling the repair work to take place.

# HOSPITAL OPERATIONS MAINTAINED WITH THE INSTALLATION OF 22 EZ VALVES

## Case study

1. A UK hospital maintained its vital water supply during the installation of 22 AVT EZ Valves by UK installer R2M Site Services with the valves supplied by UK distributor R2M Ltd.
2. The hospital's facilities team had identified 11 locations around the facility that required the installation or replacement valves or the creation of additional control points. These would allow the team to isolate specific areas of their water system should repairs or maintenance be required in the future.
3. AVT EZ Valves are insertion valves that are installed without the need to shut off the water flow. The valves use integrated isolation gates, which when closed after a slot has been milled across the pipe, allows the low-profile EM (end milling) machine to be removed and the bonnet with a resilient wedge to be installed, all while the flow is maintained.
4. The installation team was faced with fitting the 150mm and 200mm valves in several challenging locations including on pipes running close to ceilings, lines in corners and many next to walls meaning the valves were installed in a range of orientations. The AVT EZ Valve is designed to cope with all eventualities and the skilled team took just three weeks working overnight to complete the project.

# APPLICATIONS

## Available from 40mm to 600mm for a range of applications

- Municipal water networks
- Transmission and distribution lines
- Wastewater treatment plants
- Sewer force main
- Refining, petrochemical & nuclear plants
- Offshore applications
- Commercial buildings / isolation
- High-rise buildings
- Industrial process piping
- Ground storage tank isolation
- Commercial plumbing
- Isolating fire hydrants
- Hospitals
- Factories
- HVAC

Hospital boiler room

Creating control point

Nuclear Site

Isolating water storage tank

Fire hydrant ‘T’ line

# STANDARDS & ASSOCIATIONS

## AVT EZ Valve Pedigree

**Standards**

- EZ Valve Components are WRAS Certified
- Complies with AWWA C-509-01/C515-15 standards
- UL Classified to NSF/ANSI Standard 61 Drinking Water System Components - Health Effects

**Membership**

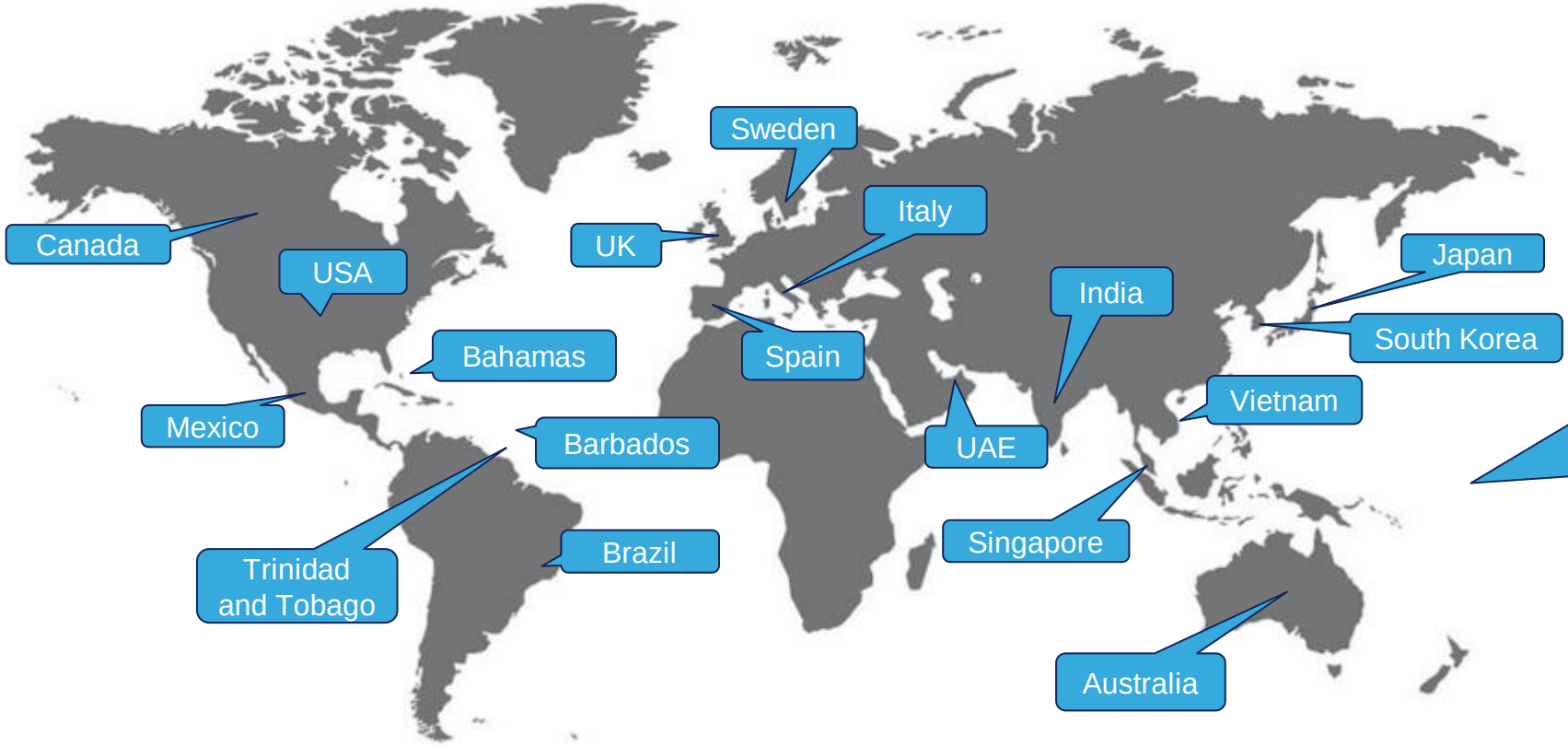
- American Water Works Association (AWWA)
- The Pipeline Industries Guild
- National Association of Water Companies (NAWC)

**Registered Supplier**

- Achilles

# GLOBAL FOOTPRINT

## Our install base stretches across the world




- More than 10,000 AVT EZ Valves have been installed.
- The oldest valve still in operation is more than 25 years old.

# CRITICA™ Infrastructure

## The Group of Companies

- ClockSpringINRI - Pipeline Composite Manufacturing in Houston and Riviera Beach Florida
- FloTex - Manufacturer for engineered fabrics used in CS-NRI solutions
- ATM Machine Shop - Custom Weld and machine shop catering to the heavy industrial leak repair service industry
- Advances Valve Technologies (AVT) - Award winning AVT EZ Valve™
- Milliken Infrastructure Solutions - Adds solutions like GeoSpray™ and Concrete Cloth to our portfolio
- FYFE FRP - Advanced Composites for Structural Strengthening

# SYNTHO-GLASS® UP & NP REPAIR SYSTEM

## NON-ENGINEERED EMERGENCY LEAK REPAIR KITS

| Components | UP | NP |
|---|---|---|
| Step-by-Step Instructions | | |
| Sandpaper | | |
| Solvent Cleaning Wipe | | |
| Protective Gloves | | |
| Syntho-Steel Putty | | |
| Syntho-Glass | | |
| Compression Film | | |
| Butyl Strip | | |
| Pressure Sealing Rubber Tape | | |


NSF61 & BS6920 approved for potable water when Syntho-Steel is used as a primary sealant

# LEAK STOPPER™

## NON-ENGINEERED EMERGENCY LEAK REPAIR KITS

Rapid repair process prevents environmental exposure to chemicals/hydrocarbons within seconds

Teeth designed into the tightening band improve strength, safety, and repair speed

Low-profile repair enables composite overwrap application

Not diameter specific – The band can be used for various pipe diameters

Available in a kit that can be stored on site for emergency application

Additional bands interconnect for pipes larger than 16” diameter

# SYNTHO STEEL™

## NON-ENGINEERED EMERGENCY LEAK REPAIR KITS

### Benefits

Repair leaking water pipes

Seals leaks in oil and water tanks

Plug holes and seals

Fill corrosion voids

Designed for low pressure leaks

Service Temperature: Continuous: 250°F (121°C)
Intermittent: 300°F (149°C)

NSF 61 and BS6920 approved for use with potable water

# CSNRI COMPOSITE WRAPS

## For Water Pipe Applications





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