GF Piping Systems

NeoFlow PRV

Kevin Waugh, Manufacturer Representative
Utility Solutions, Inc.

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Leaking water mains are a fact of life?

What do you think are normal amounts of Non-Revenue Water?

- 10 – 30% loss
- 30 – 50% loss
- 50 – 75% loss

Would you be shocked if there are current systems in Indiana and Ohio that have upwards of 65% water loss?

If you can control water line leaks by mitigating issues through the 4 pillars of leak management, do you think it would positively affect your system?

The 4 pillars of leakage management

Acoustic detection, acoustic correlation, pre-location, tracer gas detection, in-pipe inspection

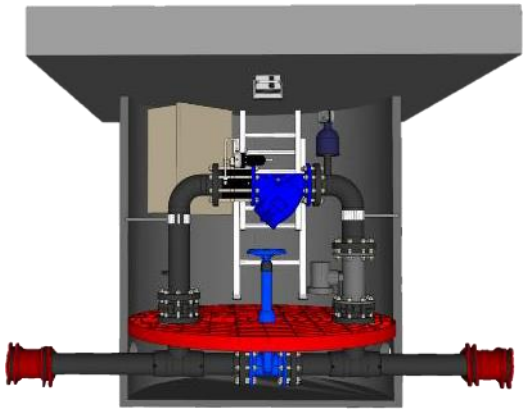
Active leak detection

Pressure management

Minimize water losses

Speed and quality of repairs

Network renewal



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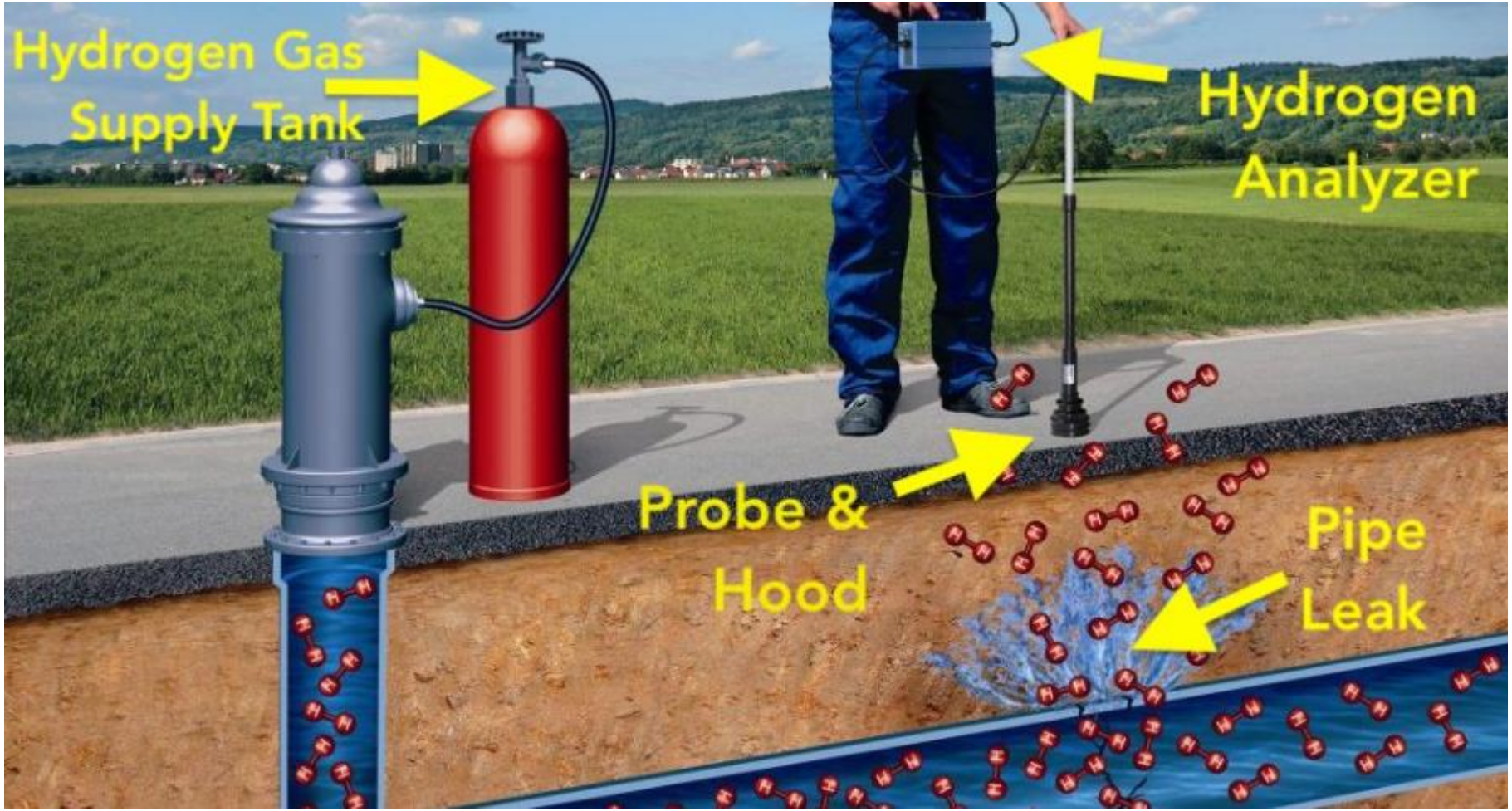
Pillar 1 – Leak Detection

- Ground Penetrating Radar (GPR) – May only show anomalies or voids that could be caused by water leaks
- Thermal Imagining - ground water may be same temp as ground
- Light Detection and Ranging - LiDAR – Topographical images may only show damaged areas due to water flow
- Drone Imaging – like LiDAR – only able to look for variations in topography that could be from water leaks
- Gas Analyzer – Leak needs to be on top of line and carrier pipe may need to be void of water
- Sound Analyzer – Some pipe types do not make normal leak sounds
- Video Pipe Inspection – Better for Sewer applications (maybe some pressure pipe applications)
- Dosing Rods – false positives and when trying to replicate in blind tests was no better than any other attempt

Active Leak Detection (cont.)

Gas Analyzer

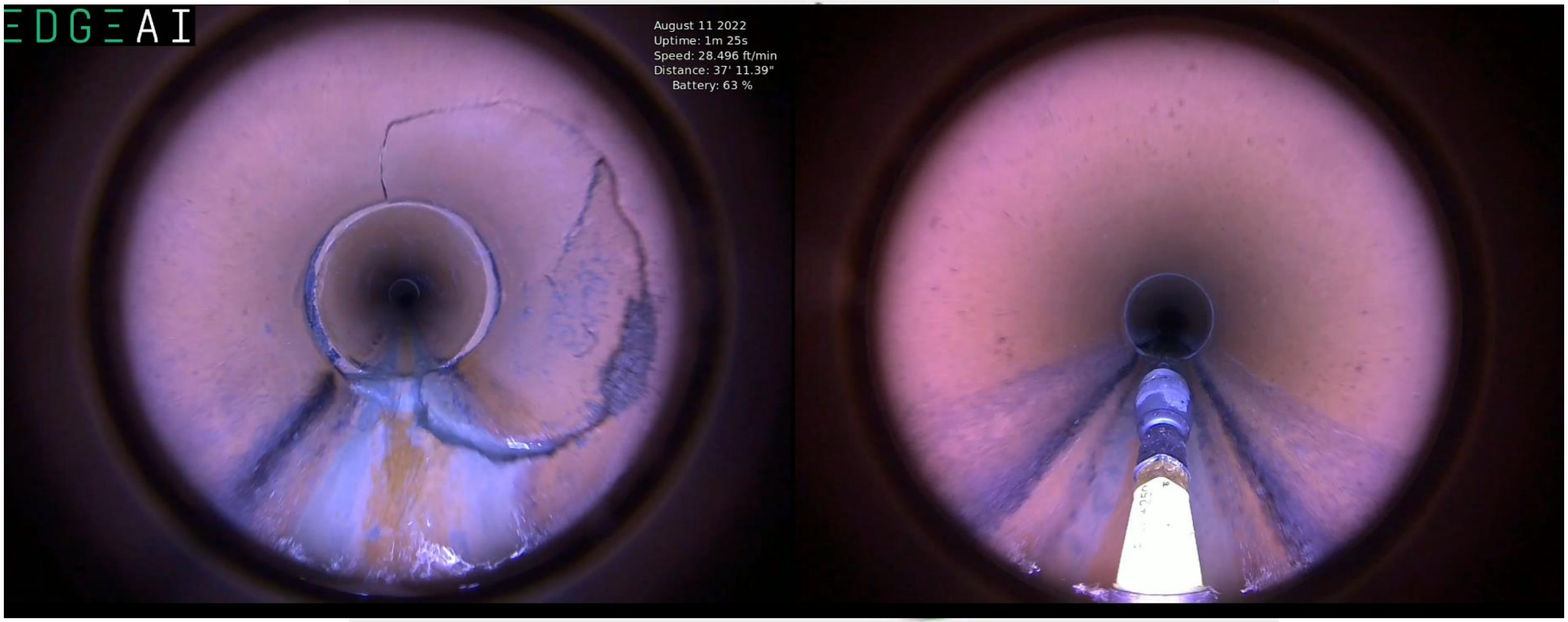
- 95/5
- Non-Flammable
- Non-Toxic



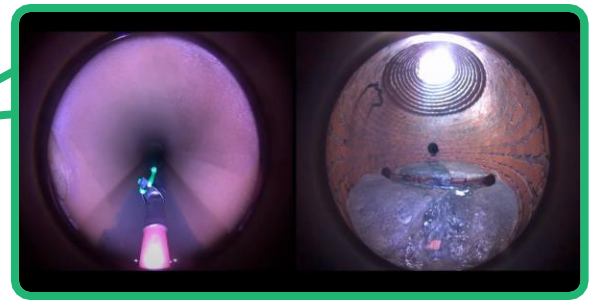
Active Leak Detection (cont.)

Sound Analyzer

Active Leak Detection (cont.)

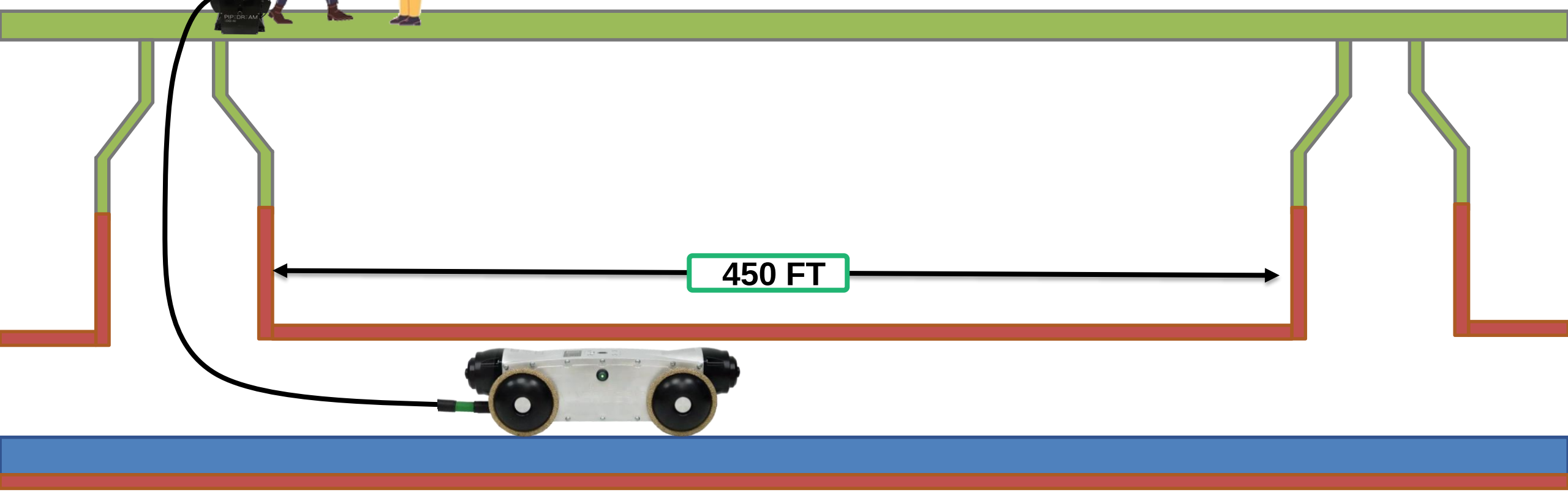


Jobsite Deliverable



Fully Portable

- CCTV View Only
- End to End Inspection
- Down Loadable Video Footage
- Both PACP and MACP Coded Inspections
- Ability to run 3K'-4K' single day



Pipe Dream Value Proposition

- Maintenance free leasing model: $2000/mo 1 year lease Data package includes 5K’ of PACP coded footage or 20K’ of video footage (6 on – 6 off – 6 on option)
- Smallest deployable footprint in the industry.
  - Robot weighs 12 lbs and 500’ Tether weighs 25 lbs
- Ability to inspect: 6”, 8”, 10”, 12” up to 24” mainline sewer pipe
- Completely Green: Robot and Tether are battery operated.
  - NO Power needed or RUNNING VAN/TRUCKS
  - Robot has 7 hours of “continuous runtime”
- Dual front and rear 4K cameras with no moving parts, full 360 degree view, digital PTZ features.
- Multiple use cases: View only inspections, Full PACP/MACP coding, cloud based secure client portals and report generation.

Pillar 2 – Spot Repairs

Once you find a leak you can determine best method of permanent repair at that location: Couple, Clamp or Encapsulate.

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Pillar 2 – Spot Repairs (cont.)

Typical Spot repair is between $5000 – 9000 in cost

- Labor and Equipment
- Roadway materials
- Repair product (Coupling, Clamp or Encapsulation) ~ 2% of cost but most important aspect

$3.5 Billion Annual Cost in North America

- 850 breaks a day
- 310,000 / year

What about the leaks that relate to our Non-Revenue Water

- 264 gal/hr for 3 months = 578,160 gal

- 1 single drip per minute equates to 104 gal per year

Types of leakage

264 gal/hr for 3 months = 578,160 gal

1,320 gal/hr for 3 years = 34,713,360 gal

Types of leakage

5,283 gal/hr for 3 hours = 15,849 gal

10,566 gal/hr for 6 hours = 63,396 gal

52,834 gal/hr for 3 hours = 158,502 gal

Pillar 3 – Network Update

Current Estimates

1 Mile of Water Main Replacement

$2.0 Million

Water Treatment Plant

$40 – 60 Million

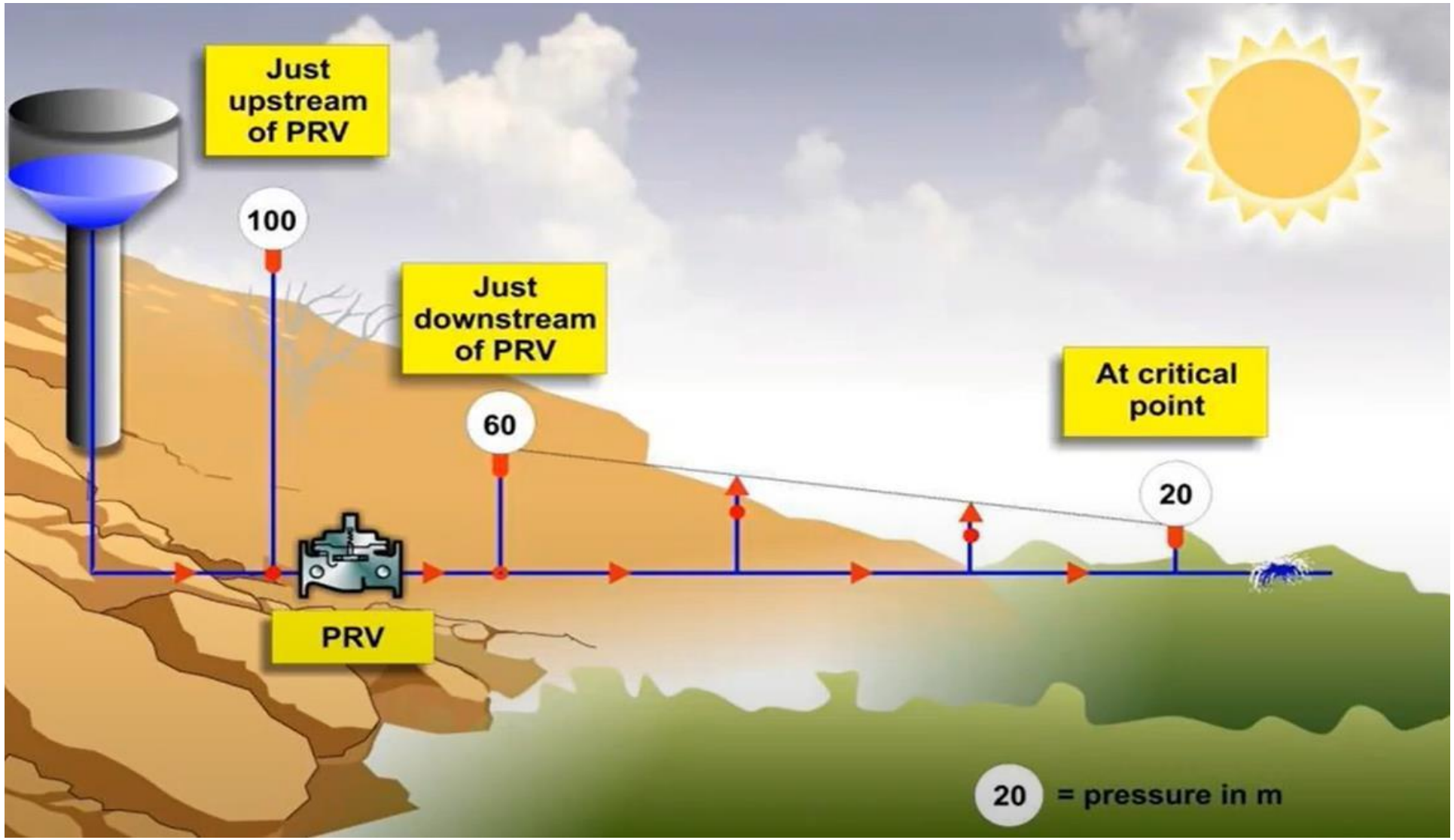
This may be long term goal – In the meantime Pillars 2 and 4 may be best option to mitigate Water loss

Pillar 4 – Pressure Management

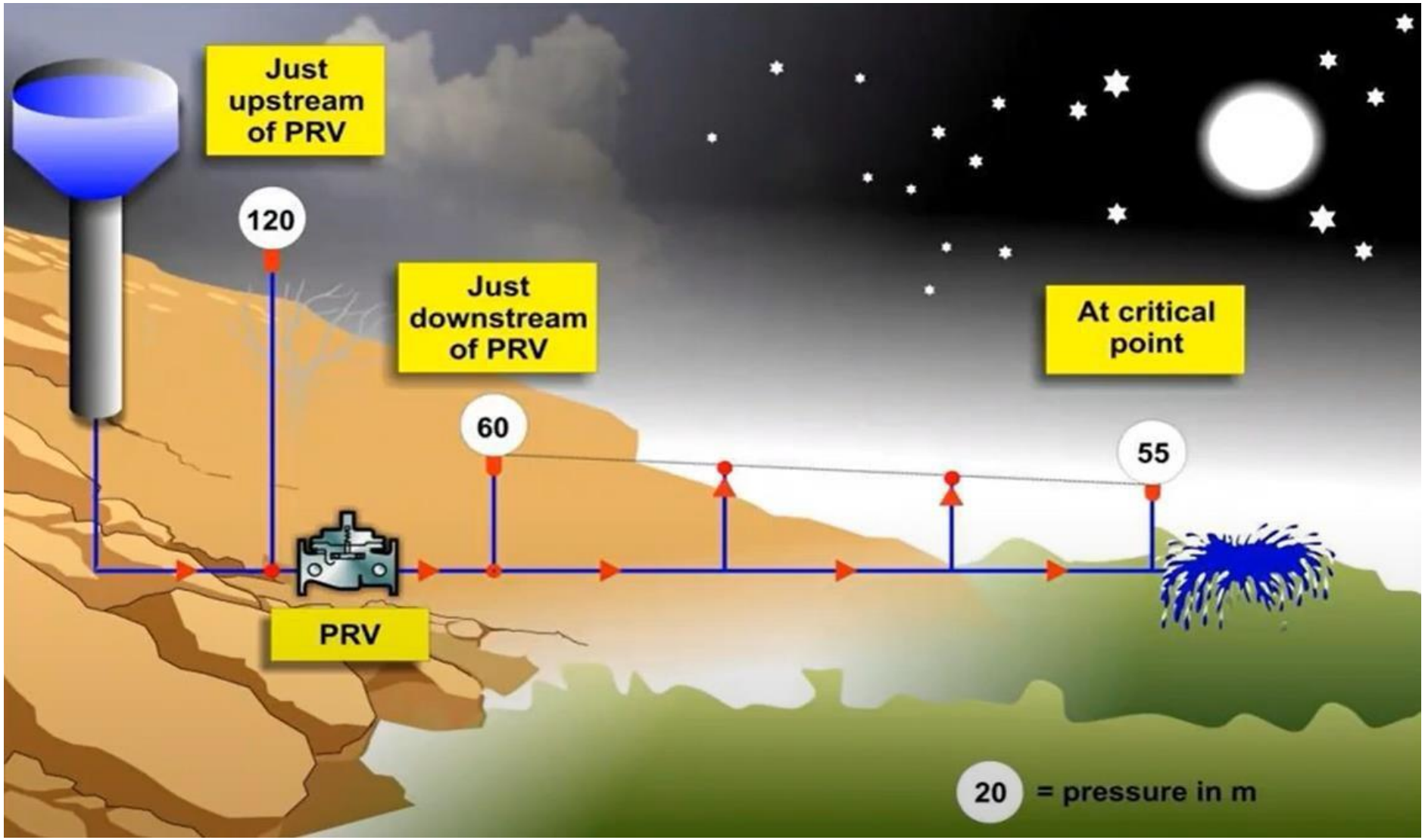
CONCEPT:

Control your losses by reducing and/or regulating your pressure during off peak hours

Water network during the day



Water network during the night



Our technology is about delivering sufficient pressure (no more, no less) at any point in the network, at any time during the day

The unique benefits of pressure management

Water conservation	Cost reduction		Optimised renewal
Reduce existing leakage flow	Reduce OPEX	Reduce maintenance and repair costs	Extend water network lifetime
			

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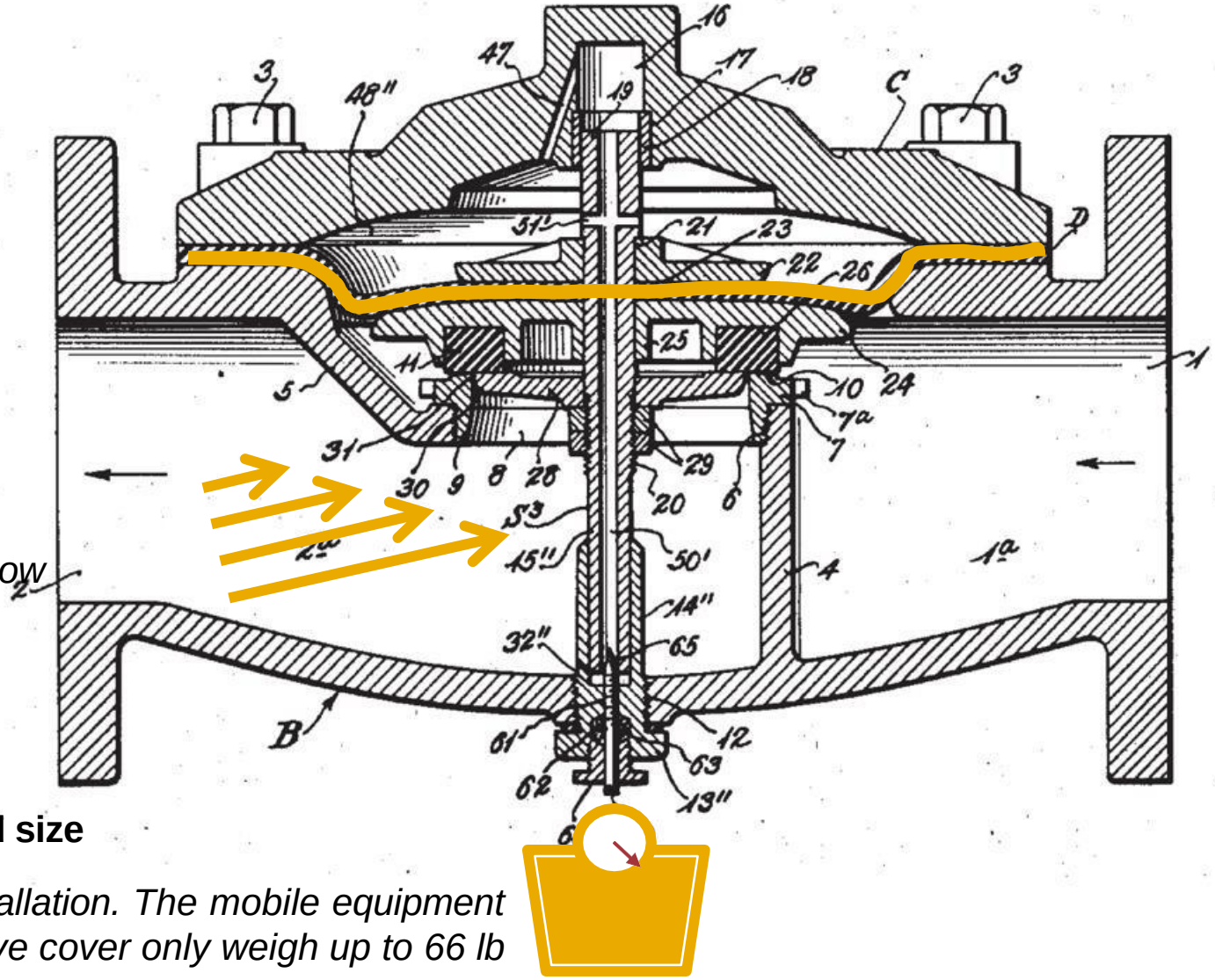
Existing technology limitation



Membrane technology
requires regular heavy maintenance tasks

Asymetrical hydraulics

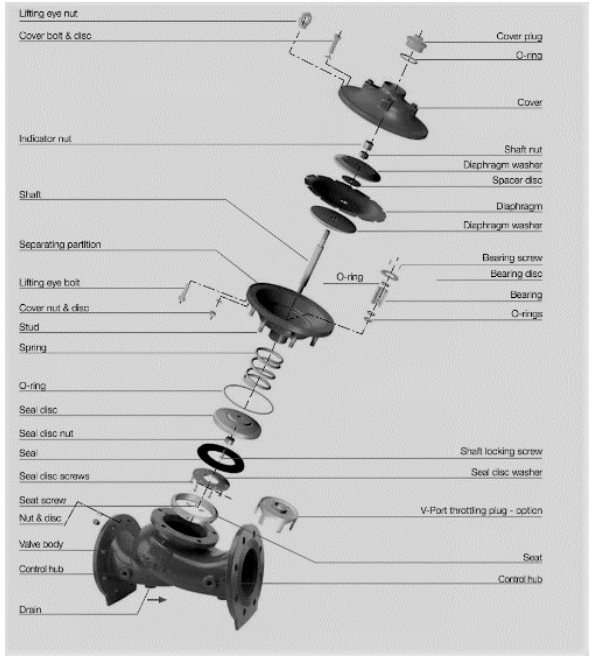
Limited capabilities a low flow and high velocity

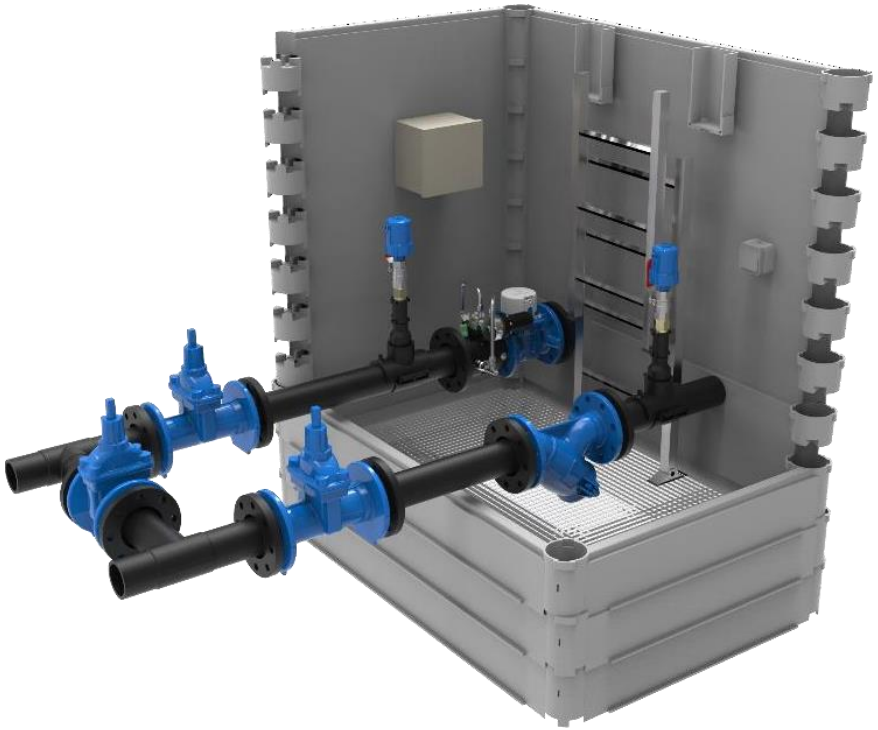
Weight and size

Cost of installation. The mobile equipment and the valve cover only weigh up to 66 lb on a 6" valve

What is a quick win?

The innovative Pressure management



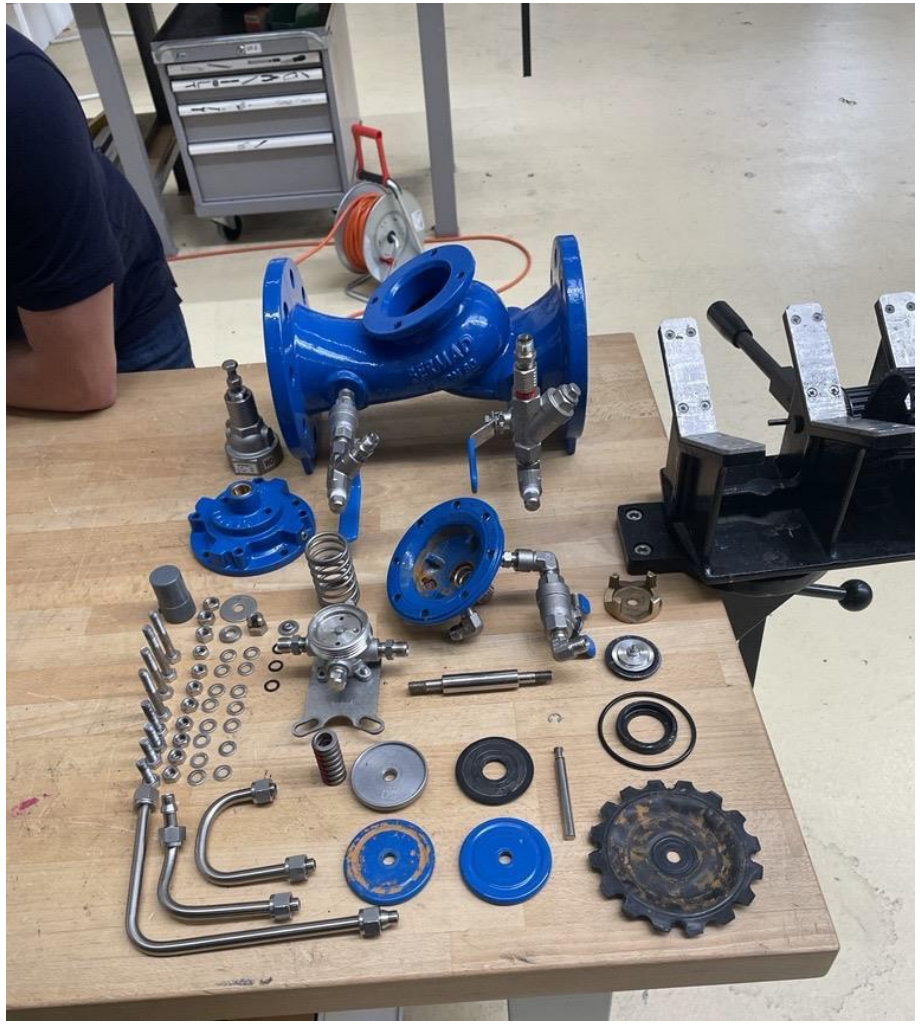


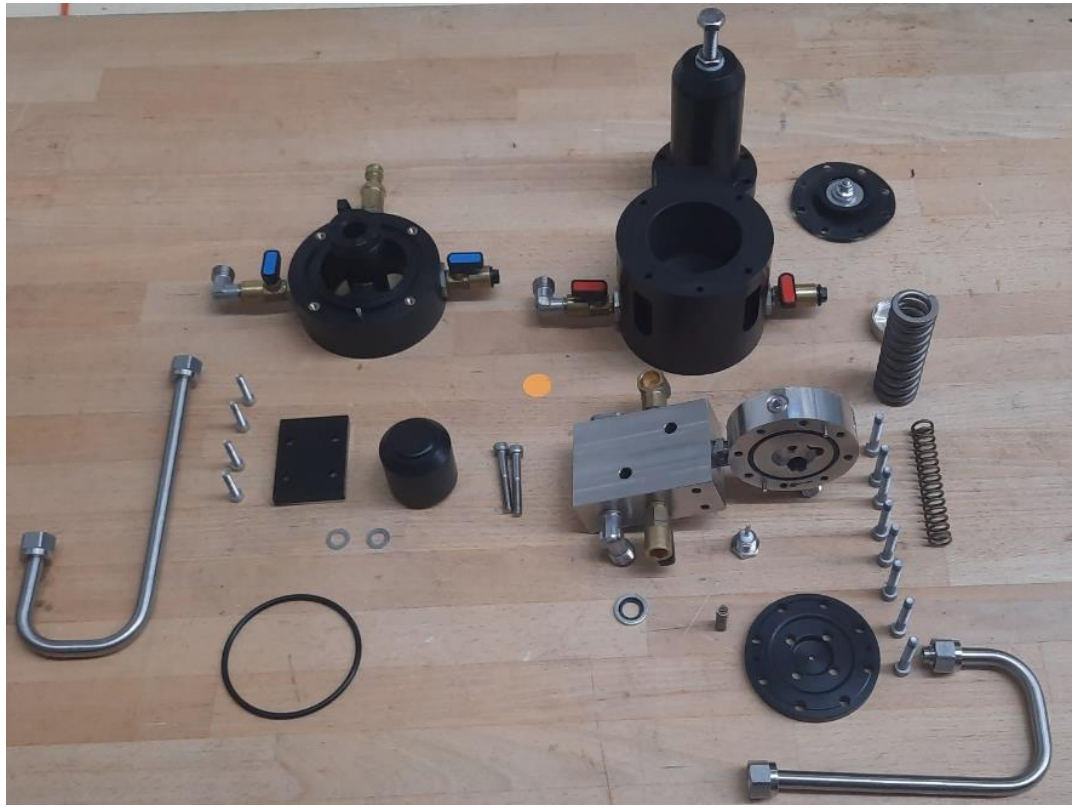
Precision: more accurate and stable, even with low flow and challenging pressure differential

Simplicity: No diaphragm. Corrosion and incrustation resistant materials minimize failure and maintenance requirements

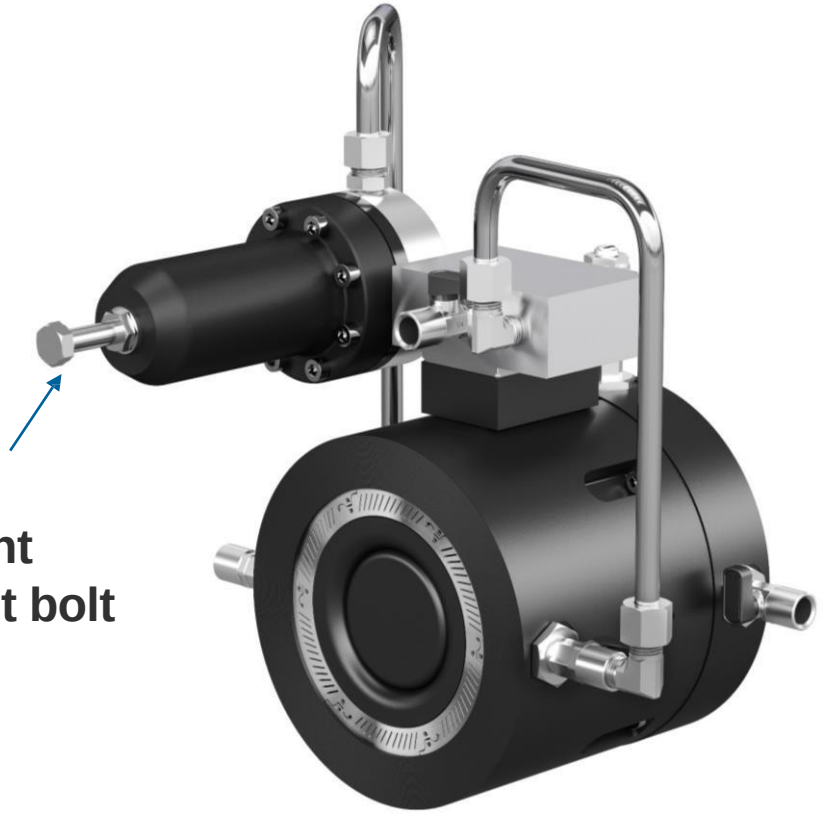
Easy integration: weight reduced by up to 90% and length by 60%. Possible 30% savings on installation costs.

Simplified maintenance
10x less components

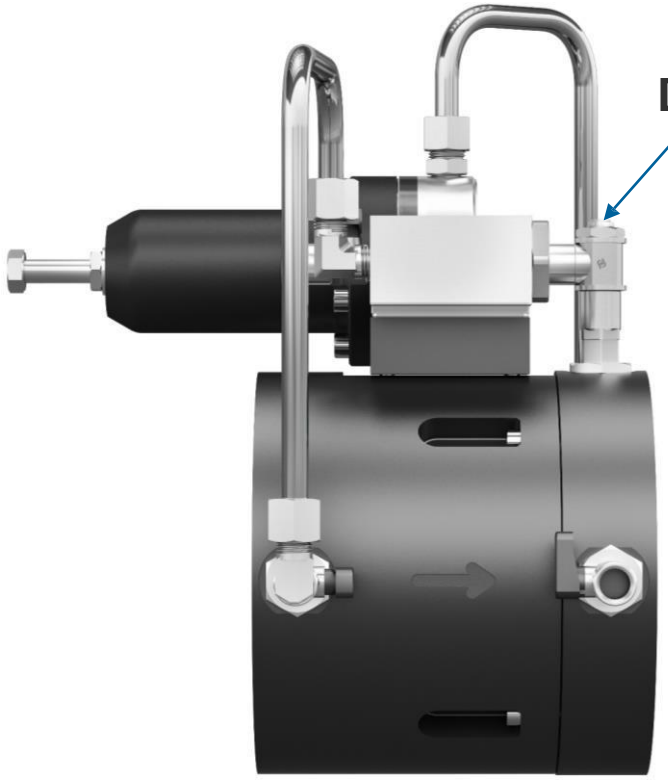




Easy to comission
Less waste of water and time



Setpoint adjustment bolt



Damping valve

Safer operation, better teamwork

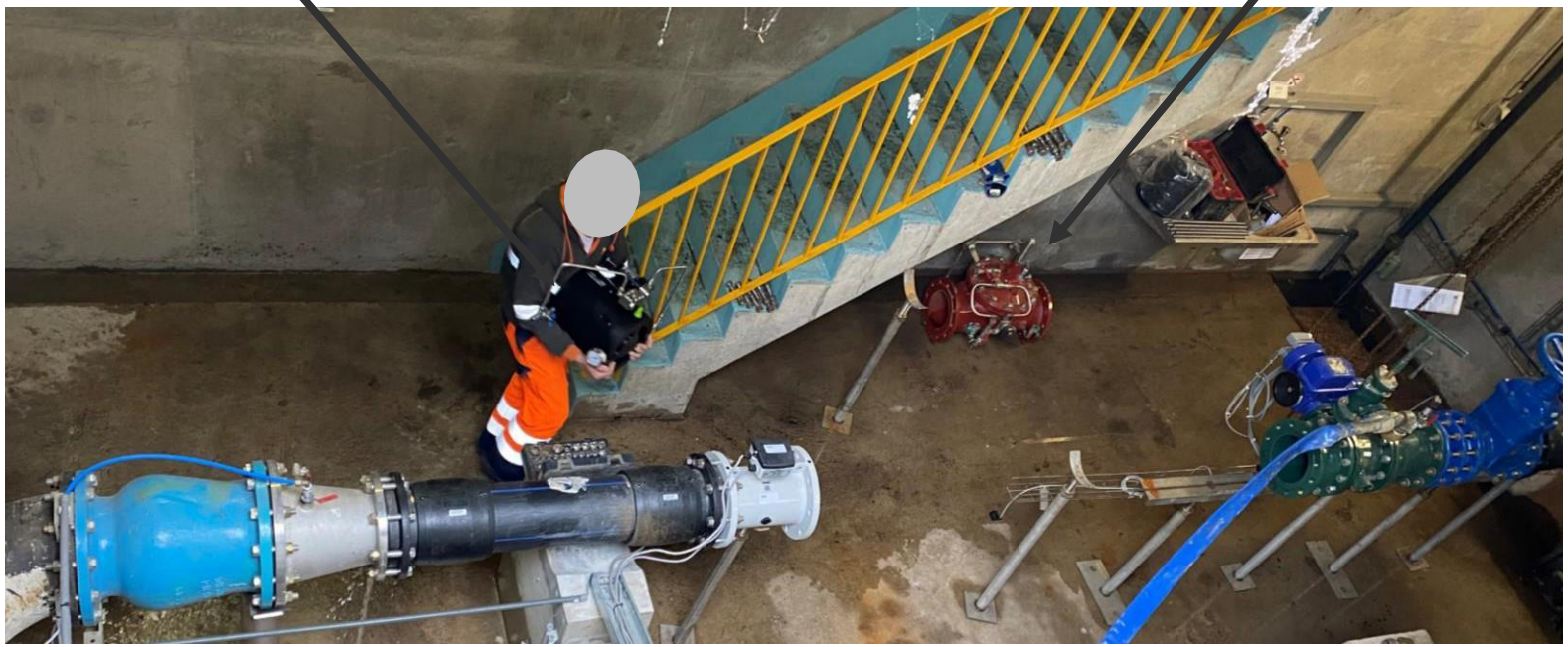
242 lb

24 lb

Safer operation, better teamwork

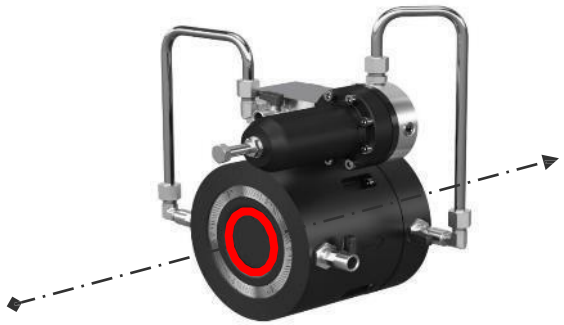
48 lb

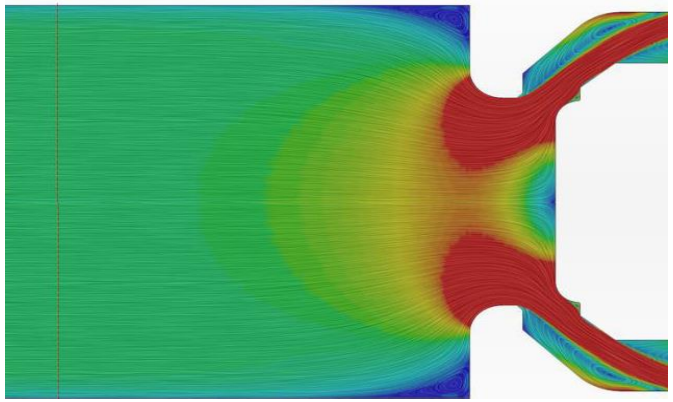
485 lb



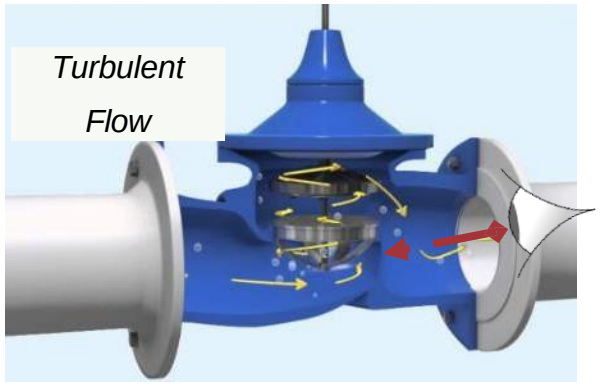
Not exceeding recommended weights of International standard (up to 8")

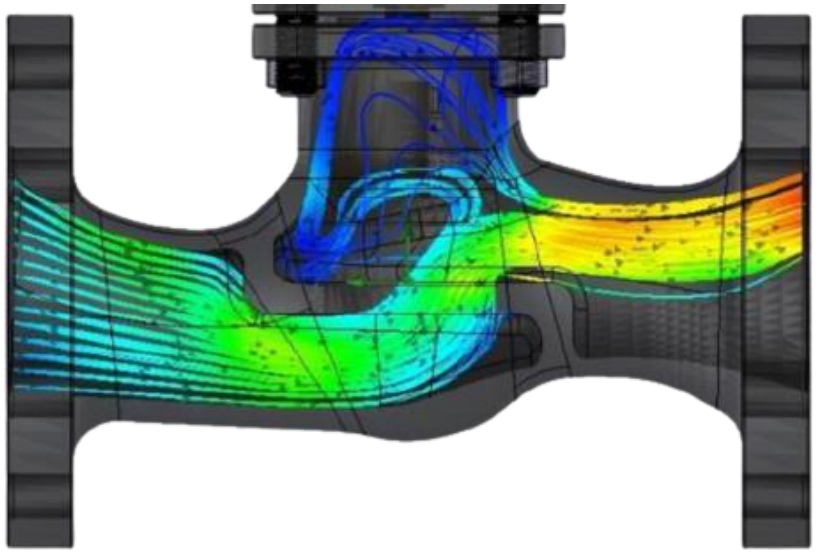
More stability and reliability





- Symmetrical velocity profile around the piston
- Install a flowmeter directly upstream
- Less impact of cavitation phenomenon



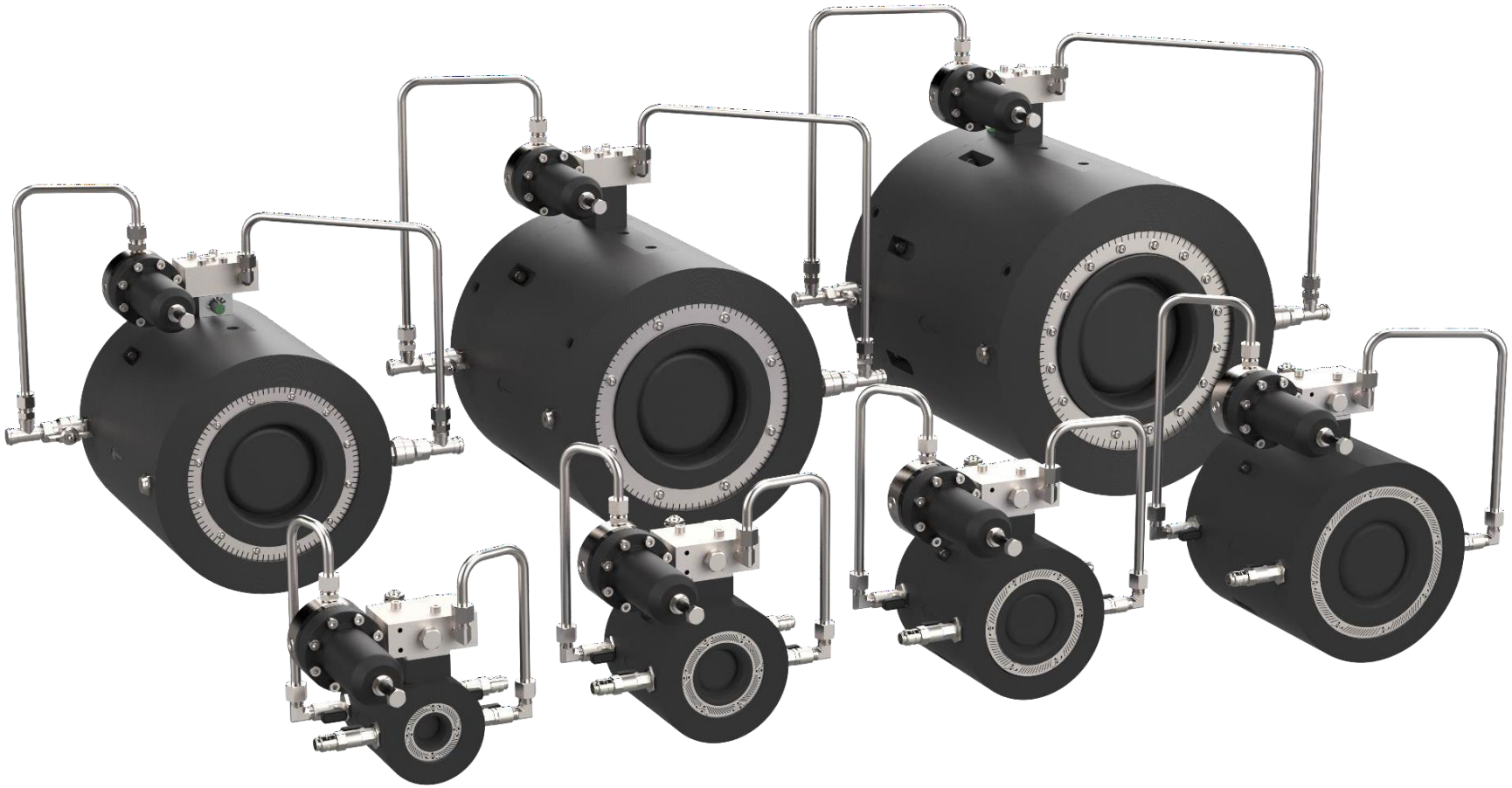


Optimized installation

Optimized installation Italy

Programmable valves and automation

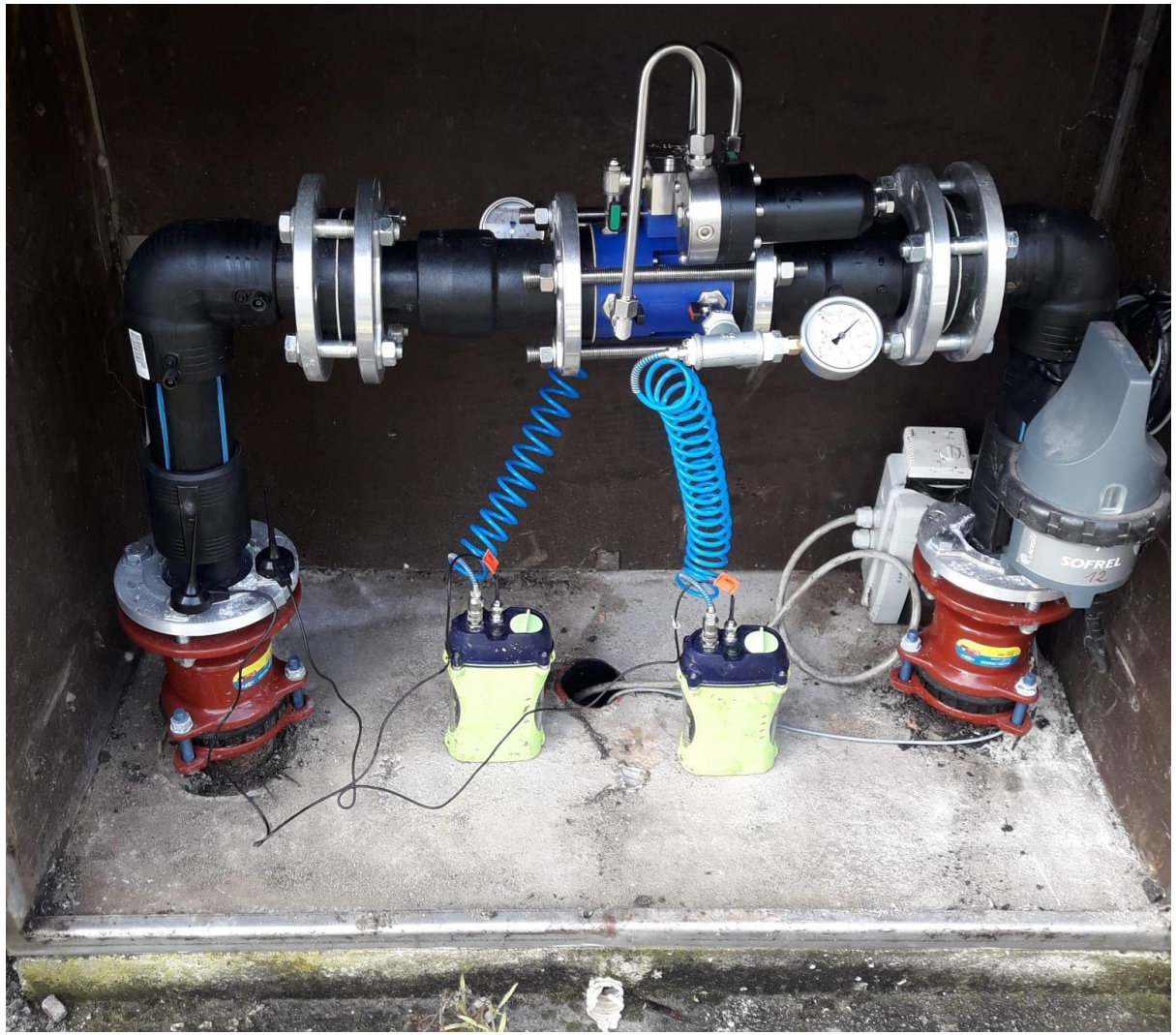
From 2" to 12" / PS 232



Reference cases

Italy – July 2020
As by-pass of oversized valve

Italy – June 2020
Benchmark transient events



Italy – June 2020
Benchmark transient events

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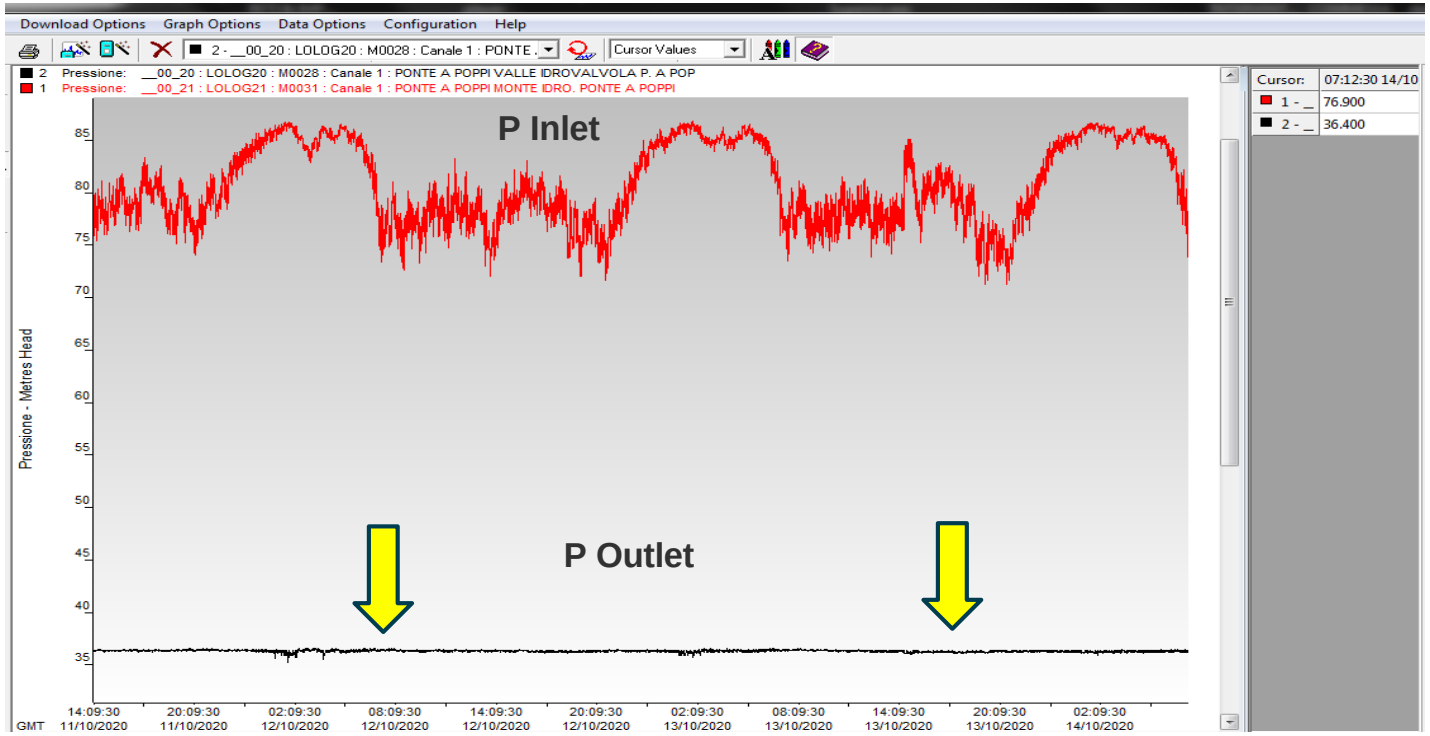
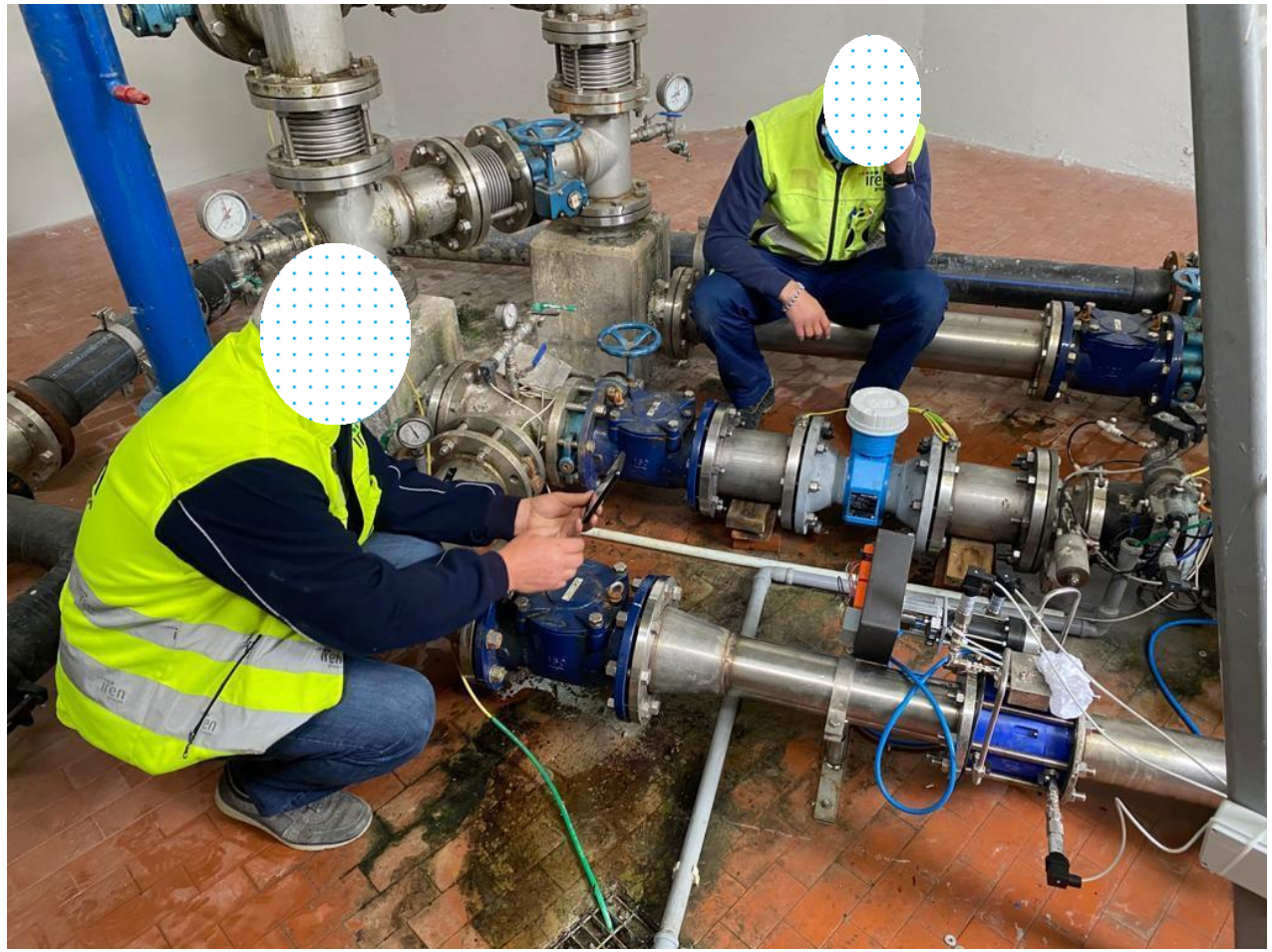
Italy – June 2020
Benchmark transient events



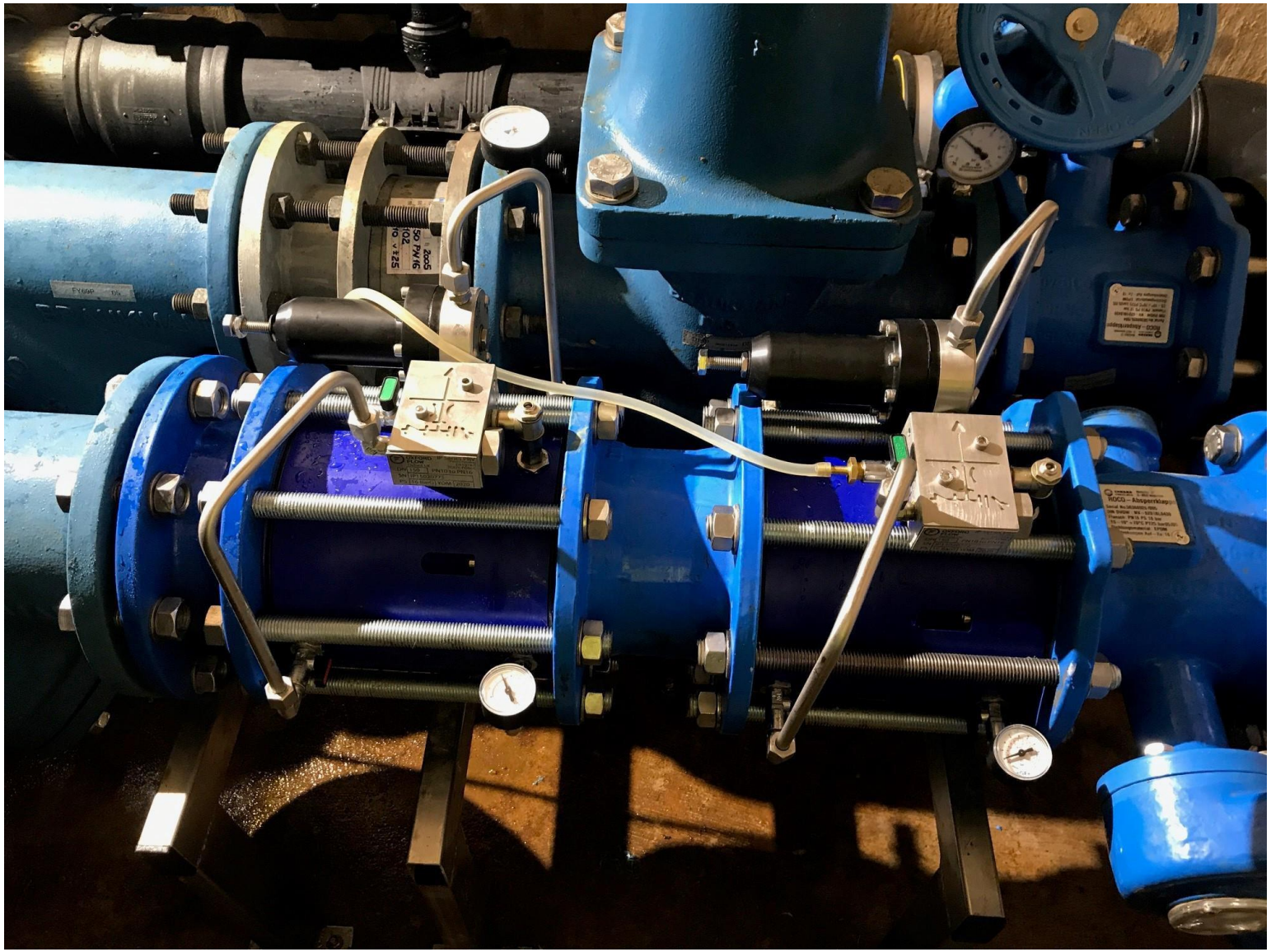
Italy – April 2020



Installation with in-house controller

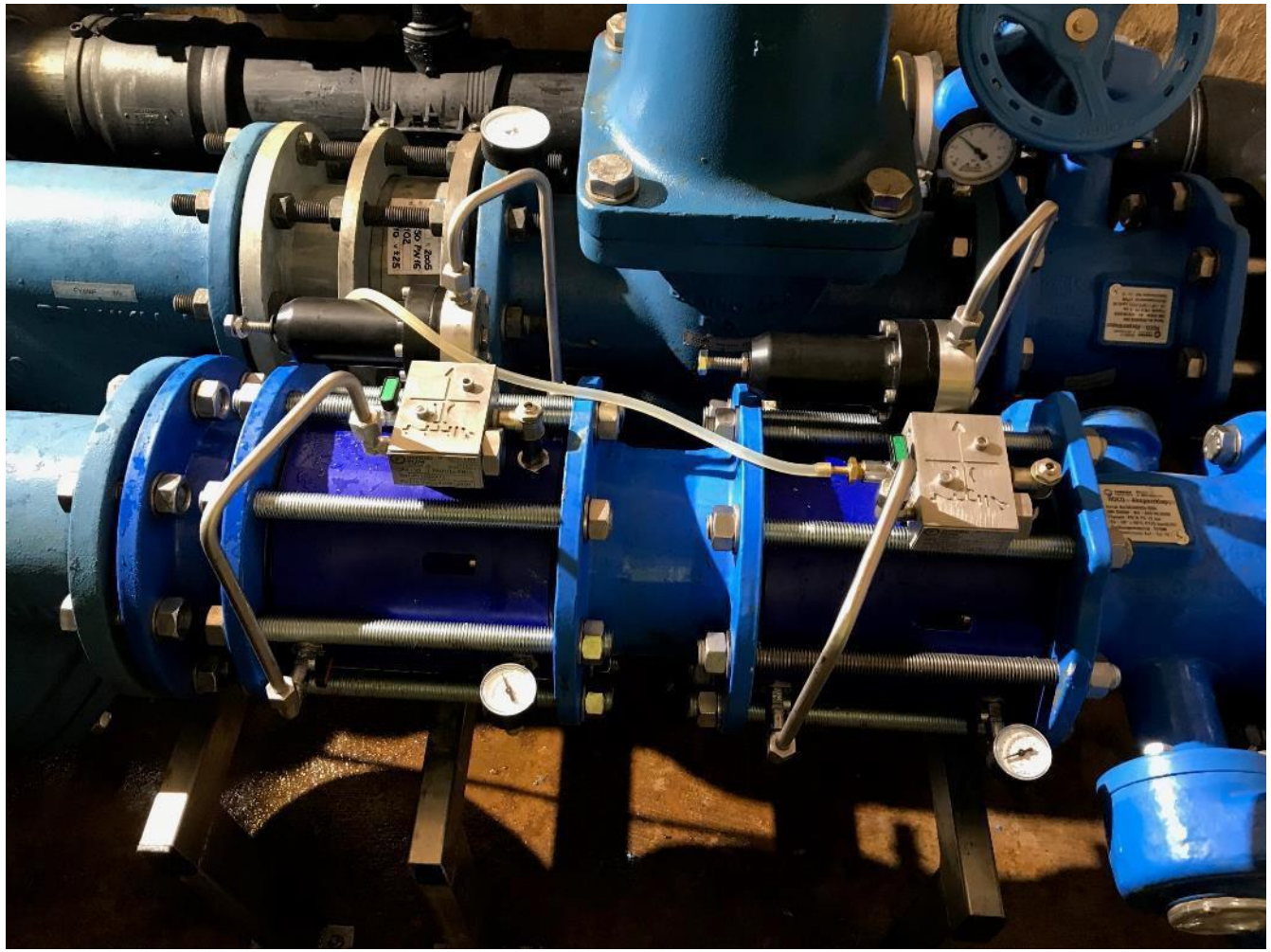
Installation in vertical position

Germany – November 2020

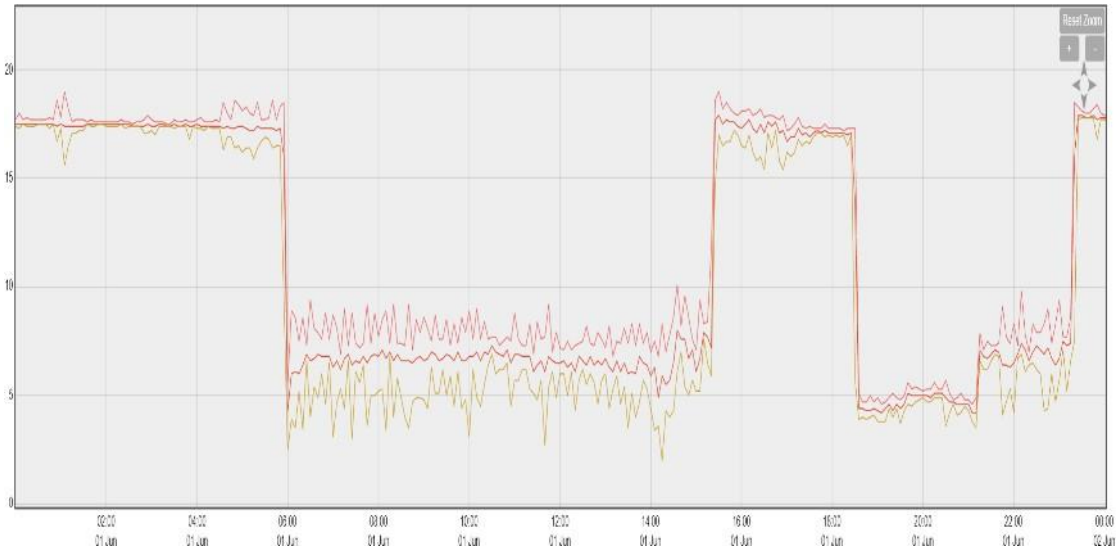


159 psi to 20 psi

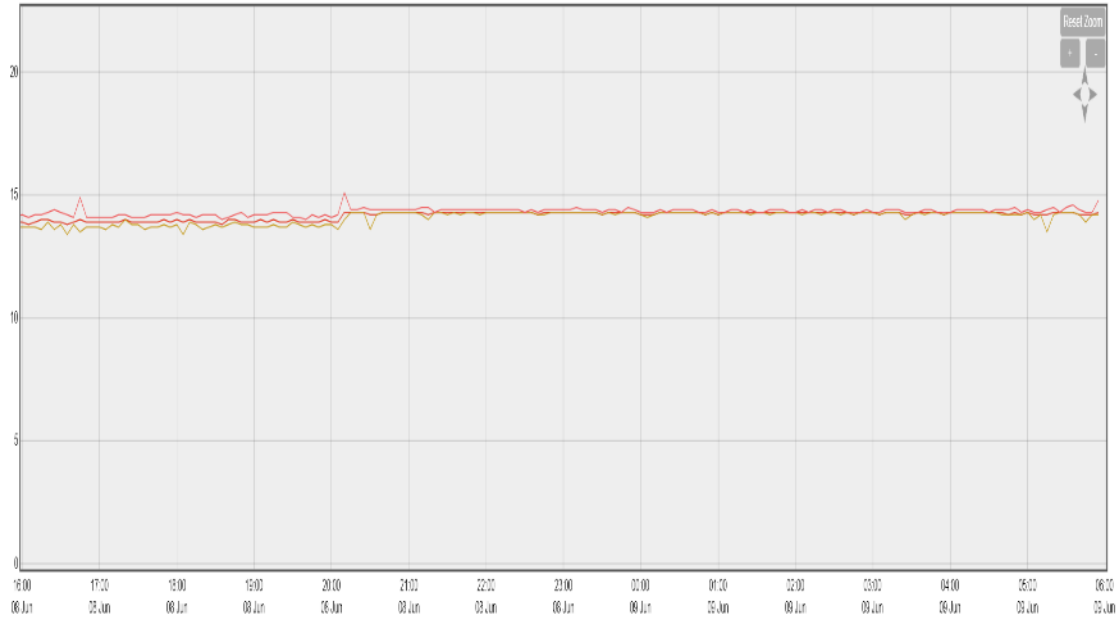
Germany – November 2020



Previous Installation



With NeoFlow Installation



Reference video Cochem

Pressure regulation - July 2021 – 4"

UAE - 2020

SEWA : replacement of a 8", raw water application

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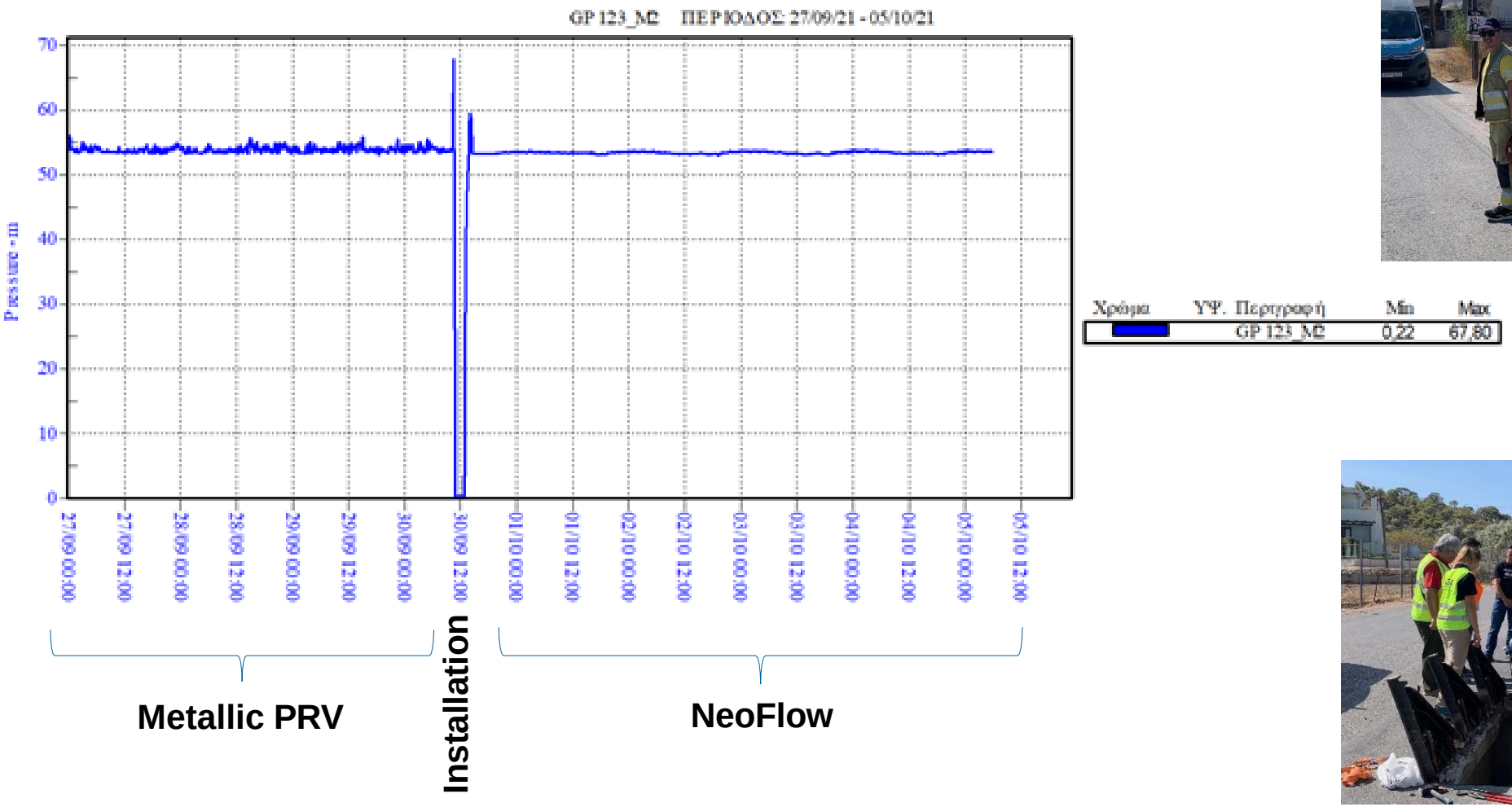
Stable pressure- September 2021 – 6"



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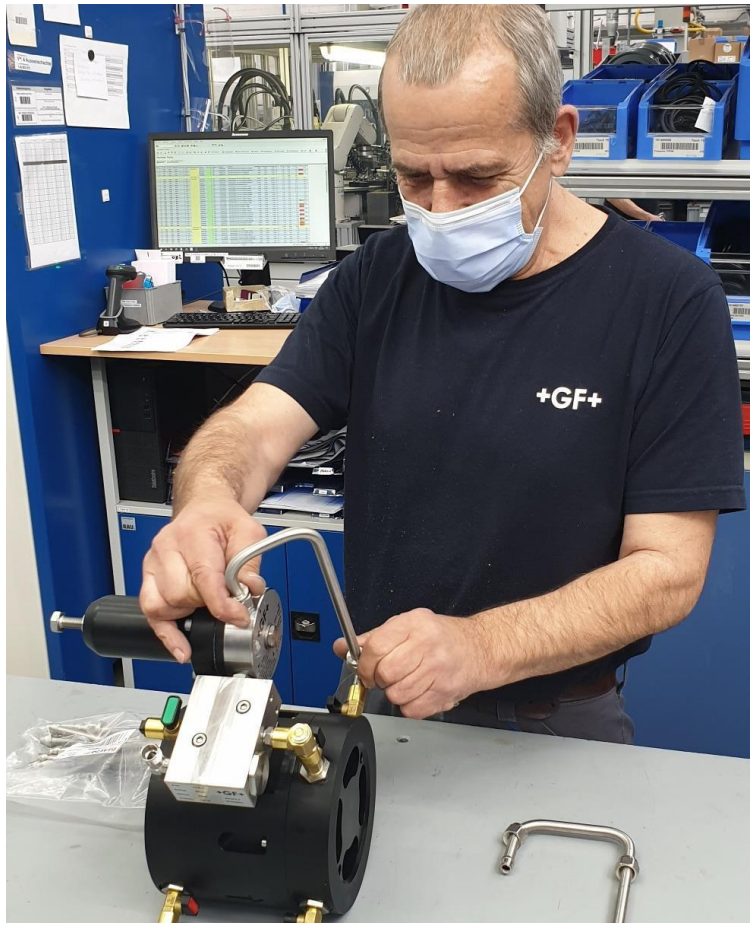
Manufacturing setup

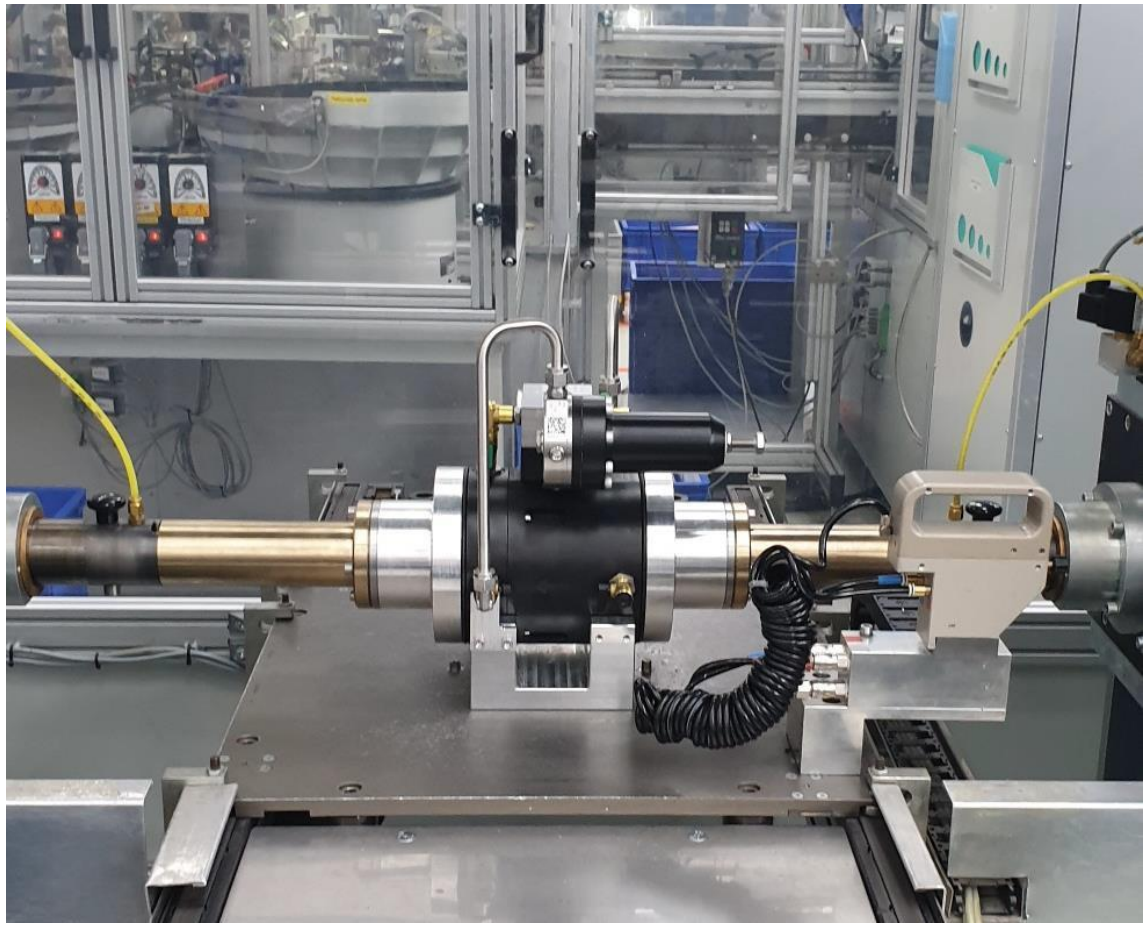
Manufacturing site: Seewis - Switzerland

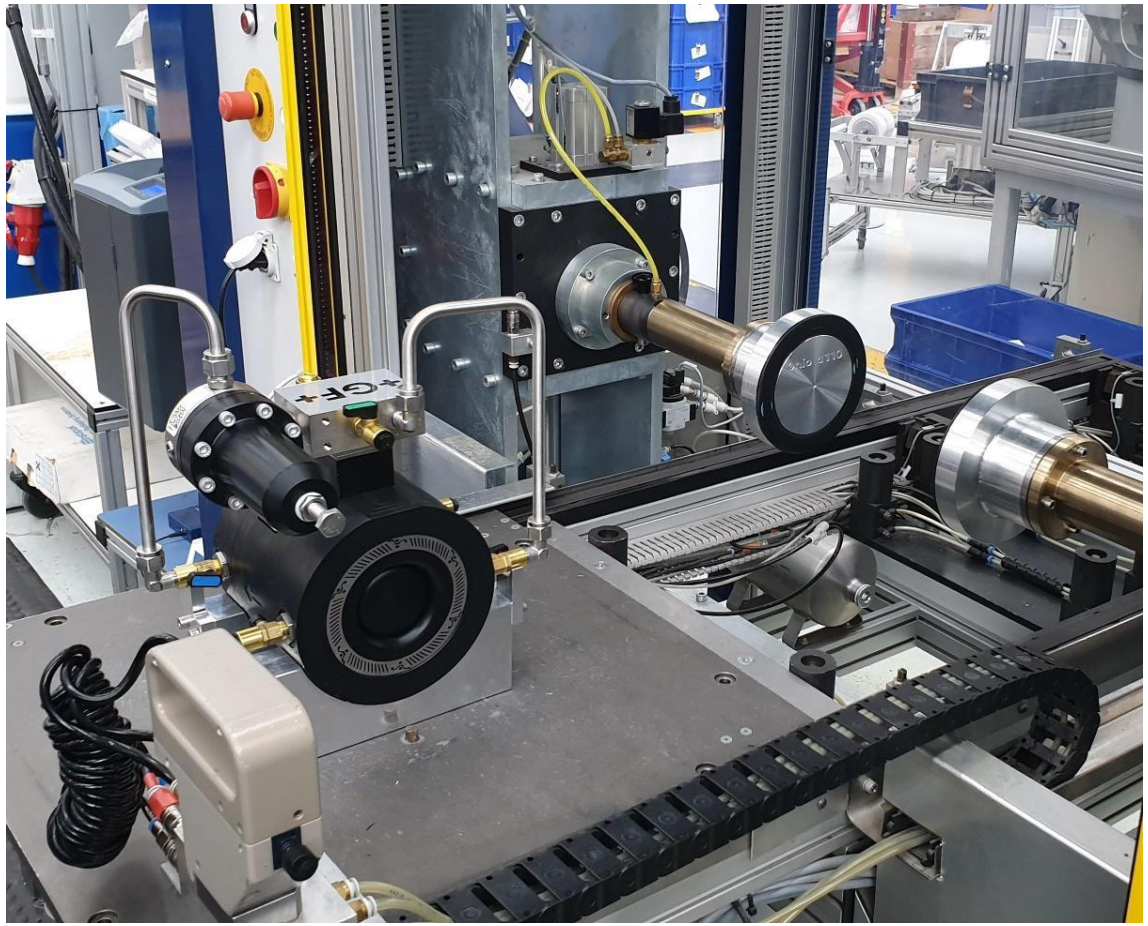
Georg Fischer Piping Systems Headquarters - Schaffhausen

Assembling steps



Pressure testing





Thank you for you participation