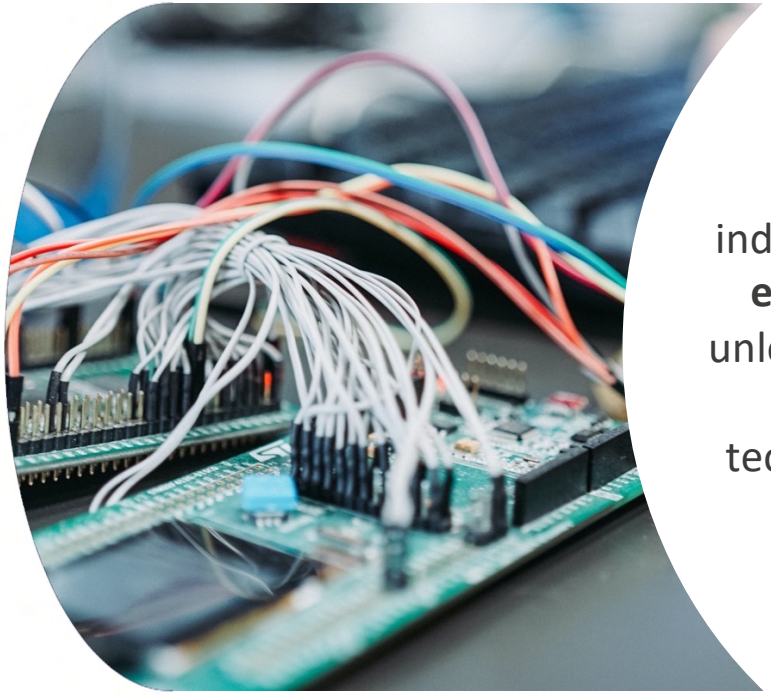
aloxy
APPLICATIONS
aloxy

ALOXY UNLOCKS INDUSTRIAL DATA AND ENABLES ACTIONABLE INSIGHTS

LOW-POWER WIRELESS SENSORING



Our vision is to make all industrial operations **safer**, **more efficient**, and **sustainable**, by unlocking data from unconnected assets leveraging digital technologies such as Internet of Things and data analytics.

CHEMICAL, ENERGY AND UTILITIES

aloxy

OUR IMPACT

Safety: Reduce incidents and accidents due to manual errors * (e.g., wrong valve manipulations); Send less people in the (hazardous) field

Economic: Employ more high-skilled people to analyze data and reduce expensive manual inspections; Assist operators (e.g., line-ups); Optimize process operations (increase yield) and reduce waste in the process

Environmental: Eliminate wasted chemicals due to contamination in tank storage; Reduce spills due to wrong manual operations (e.g., drain valves)

Climate: Reduce hydrocarbon release by monitoring safety valves in real-time; Reduce emission of transportation for manual inspection **; Monitor fugitive emissions (WIP)

* 90% of accidents are due to manual errors

** 100.000 miles per week at O&G company in North Dakota just for manual valve inspections

aloxy

ALOXY'S CURRENT IOT APPLICATIONS

MANUAL VALVE MONITORING

Monitor the open – closed position of manually operated valves

EMERGENCY SHOWER MONITORING

Monitor the activation of emergency showers and eye washes

LINE BLINDS MONITORING

Monitor the status of isolations during inspections and maintenance activities

MANY VALVES ARE OPERATED MANUALLY WHICH CAUSES SAFETY, OPERATIONAL AND ENVIRONMENTAL RISKS

The challenge

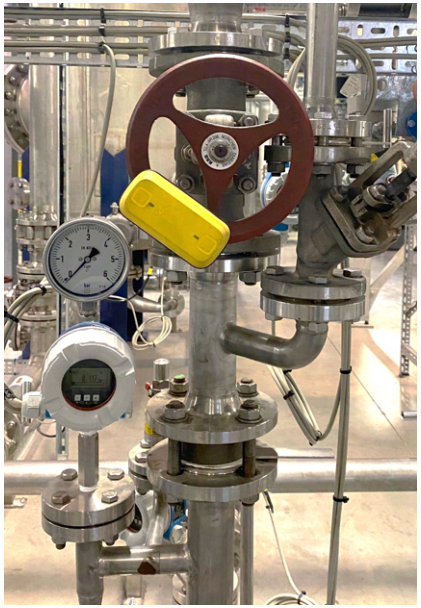
- Travel
- Spills
- Accidents
- Downtime

Wired solutions at high costs

Checking valve in the field

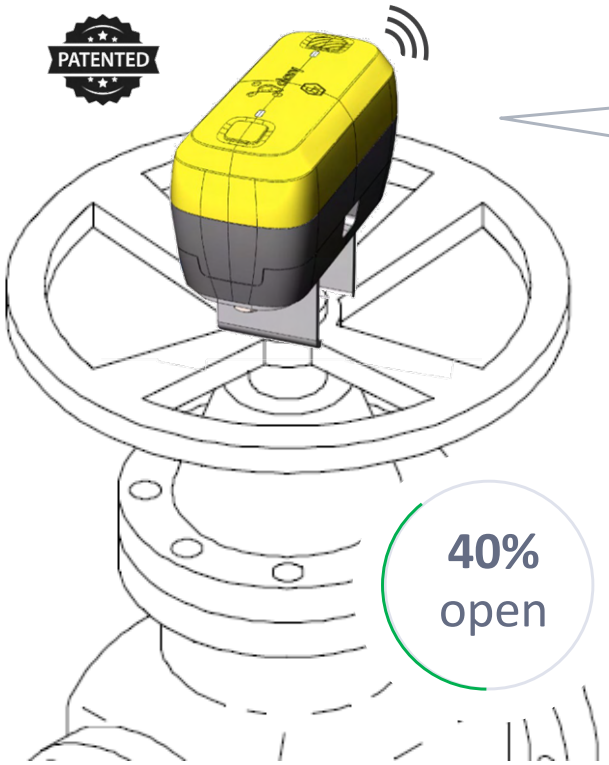
The solution

Aloxy Valve sensor

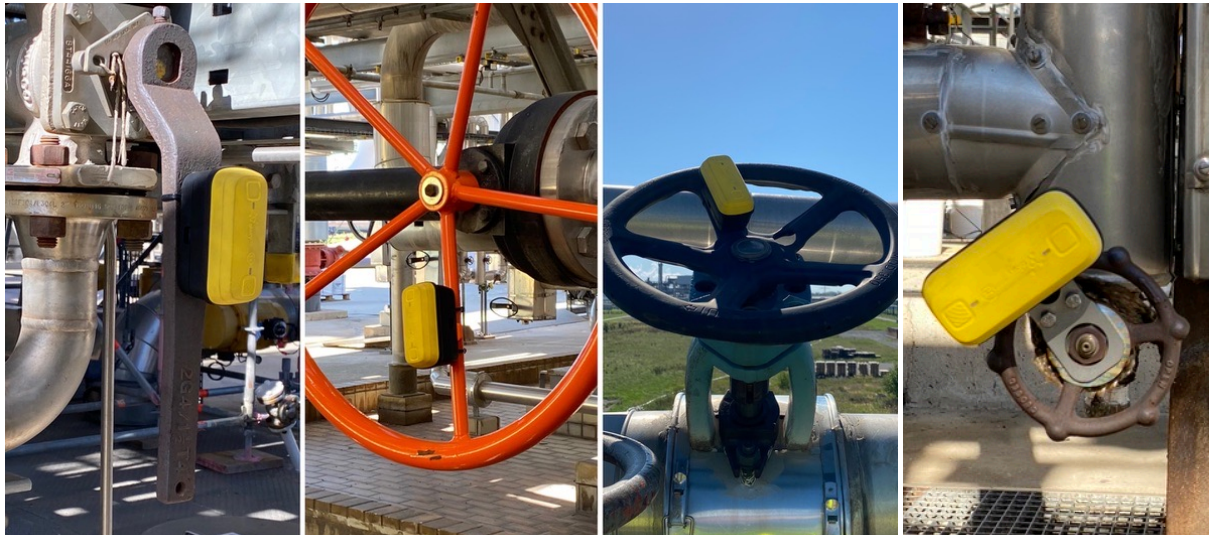


aloxy

ALOXY MONITORS ANY TYPE OF MANUAL VALVE IN REAL-TIME



- ✓ **Fits any type** of manual valve
- ✓ Easy and **universal mounting**
- ✓ **Installation in minutes**
- ✓ Calibration with **buttons or app**
- ✓ **Accurate valve positions**
- ✓ **Open/close** and **incremental** (%)
- ✓ **5+ years** battery autonomy
- ✓ Secure data **end-to-end encryption**



Ball valve | Gear box | Gate valve | Drain valve

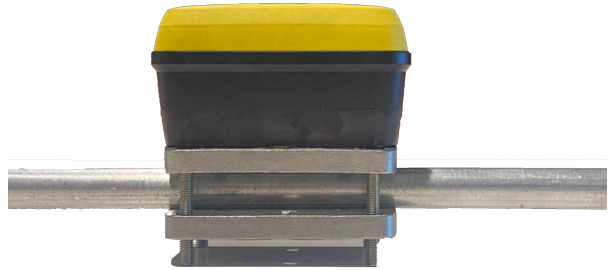
IECEx FM APPROVED IP69K ISO 9001:2015

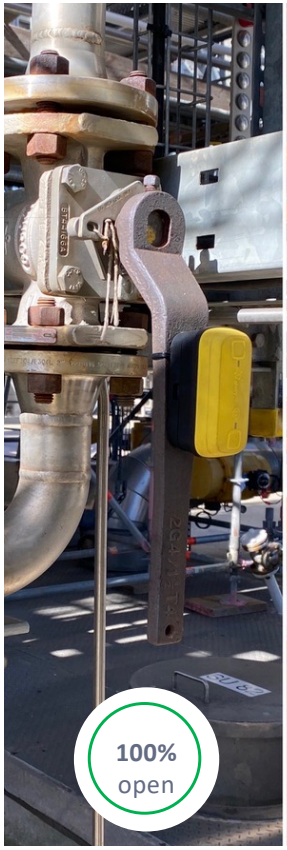
aloxy

ONE FITS ALL

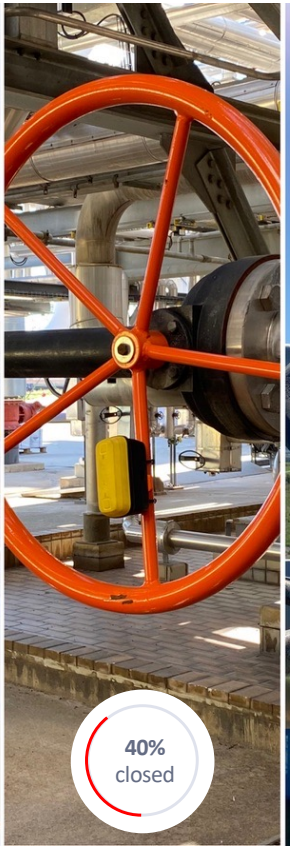
The Aloxy.Valve sensor is installed in minutes without customized brackets.

On any type or size of valve





Ball valve



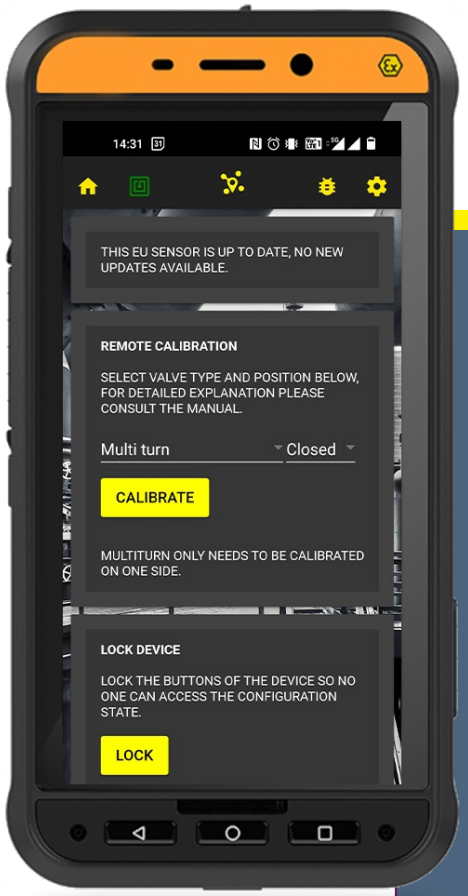
Gearbox

Gate valve

aloxy

CALIBRATION

Using buttons or by smartphone



- ❑ Suitable for **Atex phones** (Android app)
- ❑ Firmware **updates** over NFC.
- ❑ **Calibration** of device over NFC.
- ❑ Identification of **device ID**
- ❑ **Lock** devices.

ALOXY ENABLES NUMEROUS USE-CASES

Process Safety I

Raise alert when process valves are **not operated in correct sequence**

- Ensure **process continuity** and **safety**
- **Prevent incidents** caused by misaligned valves, e.g., tank blanketing, pump startup, process optimization, etc.

Process Safety II

Monitor that valves are in the correct position **when the process is started up**.

- Ensure **correct startup and shut down** of processes
- **Prevent incidents** caused by misaligned valves, e.g., batch process, steam system, decoking, etc.

Isolations

Ensure that block valves and blinds are **safely isolated and released** during maintenance

- **Reduce incidents and accidents** by correctly isolating valves and blinds before maintenance
- **Ensure a smooth and safe startup** of the system after maintenance
- **Prevent spills** (e.g., ammonia) in case drain valves are not closed

Line-ups

Ensure that valves are **correctly lined-up** in tank farms to prevent cross-contamination or spills

- **Prevent cross-contamination** of products in case of wrong valve sequences
- **Reduces chemical waste**
- **Eliminates supply chain down-time**

ALOXY ENABLES NUMEROUS MANUAL VALVE USE-CASES

Wellheads

Continuous **monitoring of choke valves** during and after operational activities

- Get real-time position data (% open) to reduce down-time and **optimize production yield**
- **Reduce labor costs** and truck **emissions** for manual inspection*

* ”100.000+ miles per week in a single US state” – Energy company

Alert

Ensure that **valves maintain in the safe position for longer periods**

- **Reduce incidents, accidents, damage and process down-time** by monitoring critical valves that need to remain in one position for longer periods e.g., Block valve on PSV, Ammonia drain valves, flare line valve, etc.

Water supply

Ensure that **water supply is guaranteed** across the plant

- Raise real-time alert when **emergency shower** is activated
- Produce automated **incident & inspection reports**
- Ensure all **hydrants** are aligned properly and operational when a calamity occurs

Valve operation analytics

Additional analytics on big data to **increase efficiency** of existing operations or maintenance

- Track **valve usage** (number of manipulations, time to fully open)
- Detect **wear and tear** of valves (overturn due to old packing / seal, broken spindle, etc.)
- Use **machine learning** to detect abnormal manipulation flows

ALOXY'S CURRENT IOT APPLICATIONS

MANUAL VALVE MONITORING

Monitor the open – closed position of manually operated valves

EMERGENCY SHOWER MONITORING

Monitor the activation of emergency showers and eye washes

LINE BLINDS MONITORING

Monitor the status of isolations during inspections and maintenance activities

EMERGENCY SHOWER MONITORING

Industry challenge

- Emergency showers and eye washes are **safety critical** and **widespread over a plant**
- In many cases these are **mechanical constructions** without any electronic components or feedback
- When activated, emergency respond teams must **react quickly**
- According to ANSI regulation the showers need to be **activated weekly** (to validate their correct operation and prevent legionella pneumophila)

Aloxy IIoT solution

- Real-time alert when shower is activated
- Automated incident reporting
- Automated inspection reporting

ALOXY'S CURRENT IOT APPLICATIONS

MANUAL VALVE MONITORING

Monitor the open – closed position of manually operated valves

EMERGENCY SHOWER MONITORING

Monitor the activation of emergency showers and eye washes

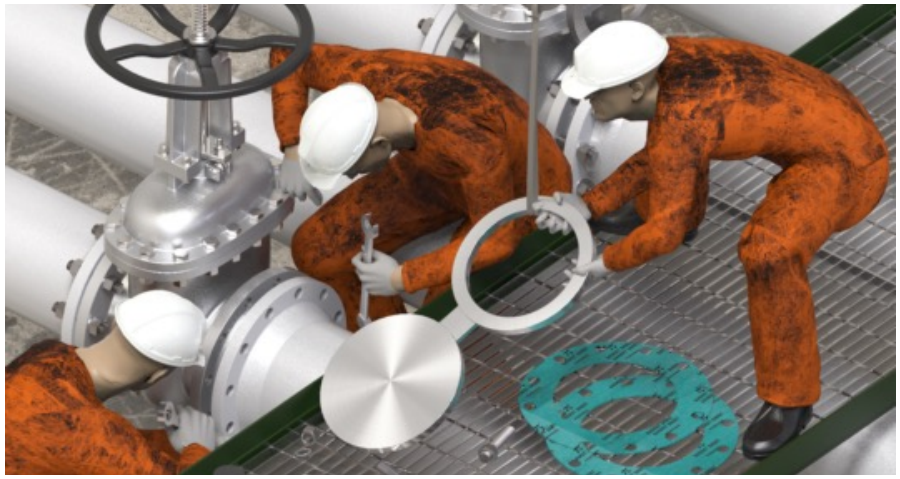
LINE BLINDS MONITORING

Monitor the status of isolations during inspections and maintenance activities

LINE BLINDS MONITORING

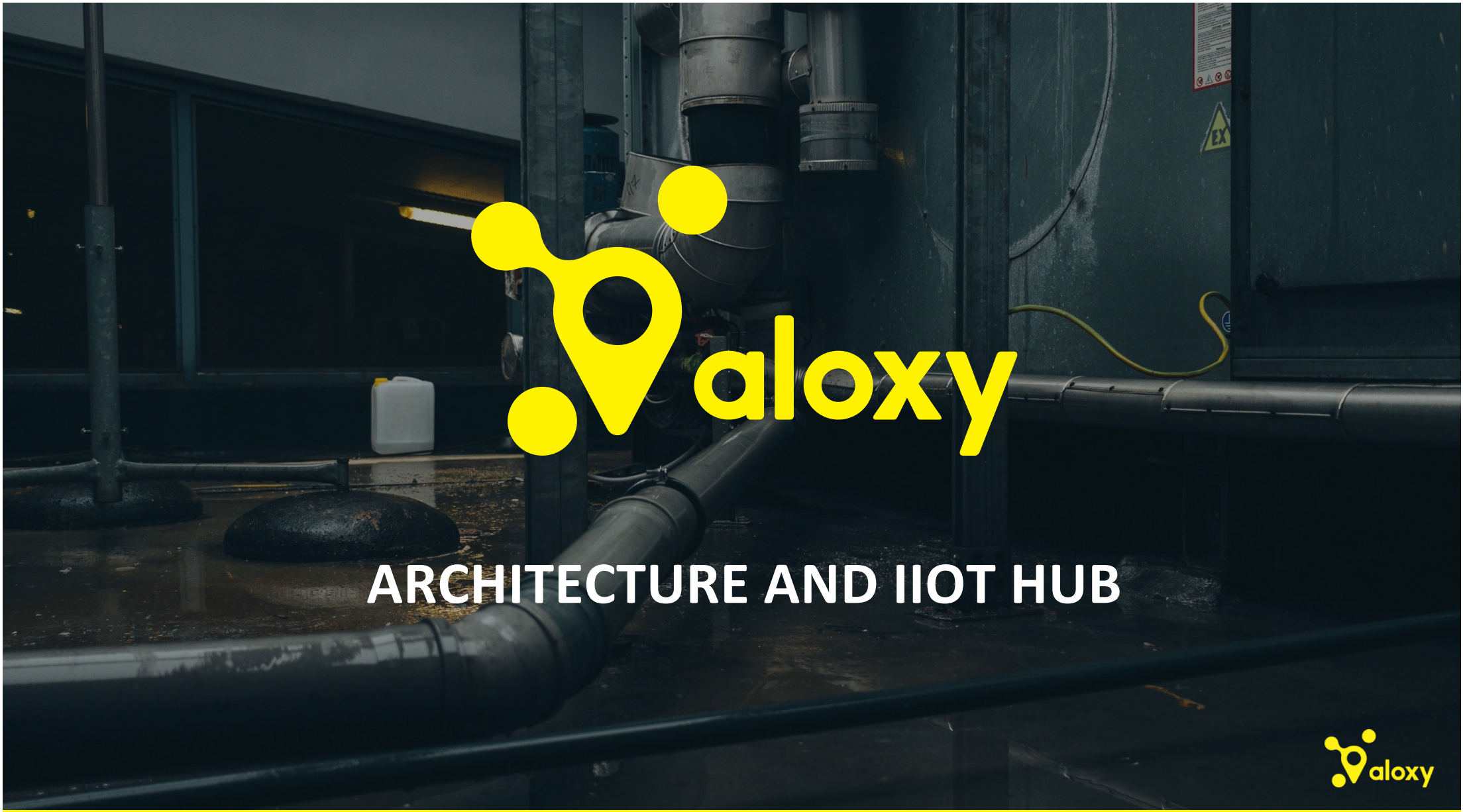
Industry challenge

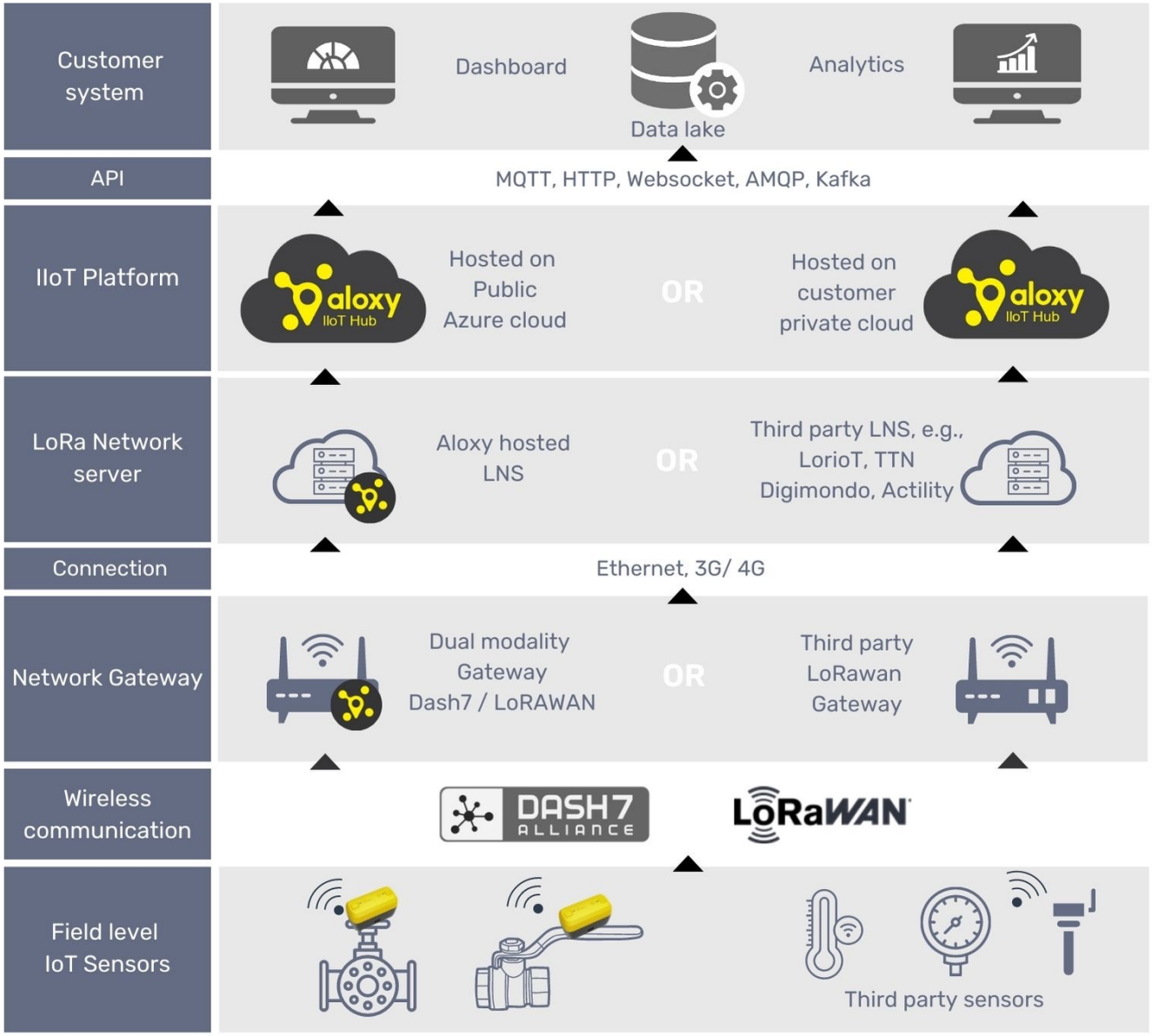
- During maintenance and shutdowns, pipelines are being isolated by means of **line blinds between the flanges**
- This is a **manual activity** with **high safety and operational risks** in case an installed line blind is forgotten or removed too early



Aloxy IIoT solution

- Real-time alert when a blind is being removed
- Real-time overview of all still installed blinds
- Automated report of maintenance progress


aloxy
ARCHITECTURE AND IIOT HUB
aloxy



IIOT ARCHITECTURE

Aloxy delivers an end-to-end solution

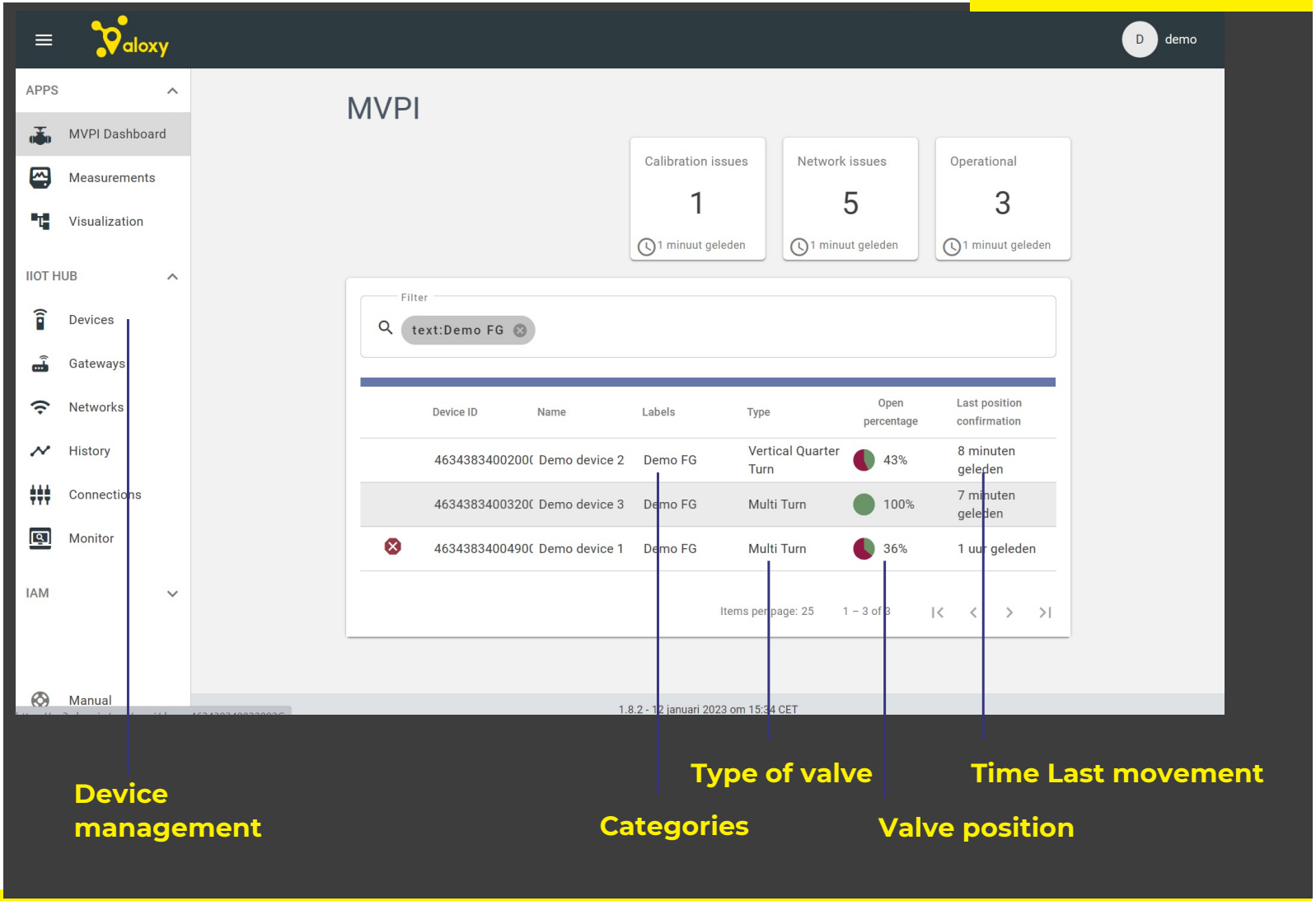
Or

integrates with existing LoRaWAN infrastructure

ALOXY IIOT HUB DASHBOARD

Device Management

- ❑ Valve position in real time.
- ❑ Battery level.
- ❑ Network quality.
- ❑ Configure devices.
- ❑ Categorising of devices.
- ❑ History of events



NEW DEVELOPMENTS.

Aloxy.connect

Product Launch in **Q4 – 2023**

Atex box to connect any type of instrument which generates a 4…20mA signal. Pressure, temperature, level, … Transmit this signal over existing LoRaWan Network.

- Converts 4-20MA and PT100
- ATEX/Class1Div2 Approved
- All SI units supported in IoT Hub

ALOXY.CONNECT

aloxy
ENABLING THE INDUSTRIAL INTERNET
OF THINGS