Oxford Flow Technology overview

March 2024

Oxford Flow – Origins



• Oxford Flow was formed in 2015 to take the valve technology to market.









Oxford Flow's Design Philosophy

Oxford Flow have identified the main failure point for regulators and control valves, and **removed it entirely.**



Simplicity

No mechanical drivetrain, stem or diaphragm



Reliability

No large shearing forces, longer service intervals minimal mechanical wear, lower cost of ownership



Resilience

Optimised flow, debris tolerant, 100% usable range



Performance

Higher accuracy, more precise, stable, faster response, no fugitive emissions, **size & weight** advantages.



IM (gas) & IP (liquid) pressure regulators



ES actuated isolation and control valves



Product Overview

ES Series Axial control and isolation valves

IM Series Gas regulators

> IP Series Liquid regulators











Auxiliary products & variants

Single-acting, double-acting, multistage trims, anti-cavitation, noise limiting trim, metal/soft seated, emergency sealant injection

Filters, Silencers, pilot regulators, actuated and intelligent systems, portable solutions

Filters, pilot regulators, actuated and intelligent systems, **portable solutions**, application specific

Customers & References





REIMAGINING VALVE TECHNOLOGY

ES Series Isolation & Control Valve

Technology Overview

Oxford Flow's Award-winning ES Control and Isolation valve

- Zero Emissions
- Stemless
- Hydrogen ready
- 2"-24", #150-1500





Award winning technology



ADNOC - Oxford Flow has been awarded a commendation by the judges of the <u>ADNOC Group</u> <u>Decarbonization Technology Challenge</u> at <u>COP28</u> UAE for producing control and isolation valves that eliminate fugitive emissions.



ASME - The American Society of Mechanical Engineers (ASME) has also awarded the <u>ES</u> <u>Stemless Valve the Best Mechanical Engineering</u> <u>Achievement Award</u>.





Oxford Flow ES Axial Flow Valve Eliminates:

- Mechanical Drive Train
- Stem Packing
- Fugitive Emissions

Reduces:

- Size and weight
- Mechanical wear
- Installation & maintenance cost





Size & Weight

- Actuator does not scale with valve diameter
 - Minimal footprint
 - Zero emission
 - Flexible installation





ES – Operating Principle

- Hydraulically operated
 - Internal cavities fill / empty to actuate piston
- Position sensing
 - ATEX / IECEX / CSA certified magnetic position sensor
- Rapid response
 - Full stroke time ~ 30s (12" #1500) fast response(<1s) available on request





Trim options

- Plug
- Equal %
- Linear
- Custom
 - 3D printed
 - To application





Value Proposition

Environmentally Friendly

- Majority of fugitive emissions come from traditional valves (>50%)
- ES valve eliminates the root cause, the dynamic stem-seal interface
- 100x less emissions than current leaders
- ISO 15848 Certified (AH CO3)

Cost Benefits

- Combined offering, valve and actuator no longer bought separately
- Reduced total cost of ownership
- Savings grow as valve increases in size and pressure rating



Game changing hydraulically operated valve that eliminates the traditional mechanical drivetrain and actuator

Enhanced Reliability

- Minimises downtime due to unplanned maintenance
- Drivetrain related failure modes are eliminated.
- Less routine maintenance (no stem repacking)

Size/Weight Savings

- Dramatic reduction in size and weight (30-50%)
- Hydraulic power pack can be mounted remotely
- Ideal for space/weight constrained applications (e.g. Offshore Oil & Gas)



REIMAGINING VALVE TECHNOLOGY

IM Series

Operating principle

Pressure reducing operation



Features

- No Diaphragm
- ONE moving part
 - Piston operation
 - Ultra reliable
 - Zero failures (>5x10⁷ hours so far)
- Off the Shelf soft components



IM Series – Range details

- Size range: IM-S: DN050, 080, 100, 150, 200 (2" 8", larger sizes on Request) IM-C: 2"-8"
- Flange classes: ANSI #150-600, PN10-100
- **Temperature range:** -20°C to 60°C (extended range on request)
- **Compatible media:** Any clean, dry gas (NG, Hydrogen, Air...)
- Body Materials: SS316 (forged bar stock), WCB/WCC, Super Duplex, CF8M...
- Seals: NBR (standard), EPDM, FKM, any material on request
- **Compliance**: **BS EN 334** type approved (IMS Only, IMC pending)
- Service interval: 10 years







Hydrogen Milestones

- Oxford Flow are supplying ALL pressure reduction equipment for the UK's largest Hydrogen trials
 - SGN LTS Futures Repurposing High pressure Natural gas pipelines for up to 100% H2
 - Live trial: 40-26 bar, 26-13 bar, 13-1 bar, up to 12,000 SCMH 100% H2; Flow and pressure control
 - Offsite testing: 120-19 bar, 19-7 bar, 75,000 SCMH 100% H2;
 - Agreed commissioning December 2024
 - H100 Fife World's first 100% Green Hydrogen to homes trial
 - 1 station: 3-33 bar inlet, 75mbar outlet, up to 3,000 SCMH 100% Green H2
 - Agreed commissioning December 2024

Home > H100 Fife

H100 Fife

A world-first green hydrogen-to-homes heating network on the Fife coast.

Central heating is responsible for up to a third of the UK's greenhouse gas output: a challenge that must be solved if we are to meet the legally-binding net zero targets set by the UK Government and Scottish Government. Switching carbon-emitting natural gas for hydrogen, which doesn't produce carbon when it burns, is one of the ways that we can keep homes and businesses warm and safe while making ground in the fight against the climate emergency.



- SGN selects Oxford Flow to provide its innovative hydrogenready IM-S gas regulators for LTS Futures project
- Decommissioned pipeline to be tested with 100% hydrogen at facility in Cumbria
- LTS Futures is a crucial project to demonstrate how gas networks can decarbonise



Flow Direction

a Valve Water

elf acting piston (pilot controller





UK Gas Distribution



Removal of existing conventional 4" Donkin valves using a crane jig due to weight



Installing a 4" Oxford Flow IM valve by hand due to the lighter weight and length.





4x IM100 regulators installed in Active-monitor, twin stream configuration – continuous, faultless service since 2019.



Further installations



OPEX Costs over 50 yr lifetime (DN100 regulator) Competitor pilot-operated vs. IM Series vs. Competitor direct-acting 60,000 50,000 40,000 **OPEX (GBP)** 30'000 20,000 10,000 0 10 15 20 25 30 35 40 50 45 5 0 Years in Service -Axial type OPEX —IM100 -globe type OPEX





IP Series range of Liquid regulators



IP Series - Liquid Pressure Regulators

Innovative piston based design for accurate and reliable set point control

- Variants Wafer, flanged and portable options available
- **IP-W range:** DN050-300 (2-12"), up to 100 bar
- **IP-X range**: DN150-600 (6-24"), up to 100 bar*
- **IP-K range**: DN060-150 (3-6"), up to 16 bar <20kg weight
- Applications:
 - Pressure reducing
 - Pressure sustaining / relief
 - Altitude / tank control
 - Portable bypass regulators





Contact us

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