

valveuser Magazine

Annual Review Inside

10th
Anniversary
Edition



Goodwin - Going Axial

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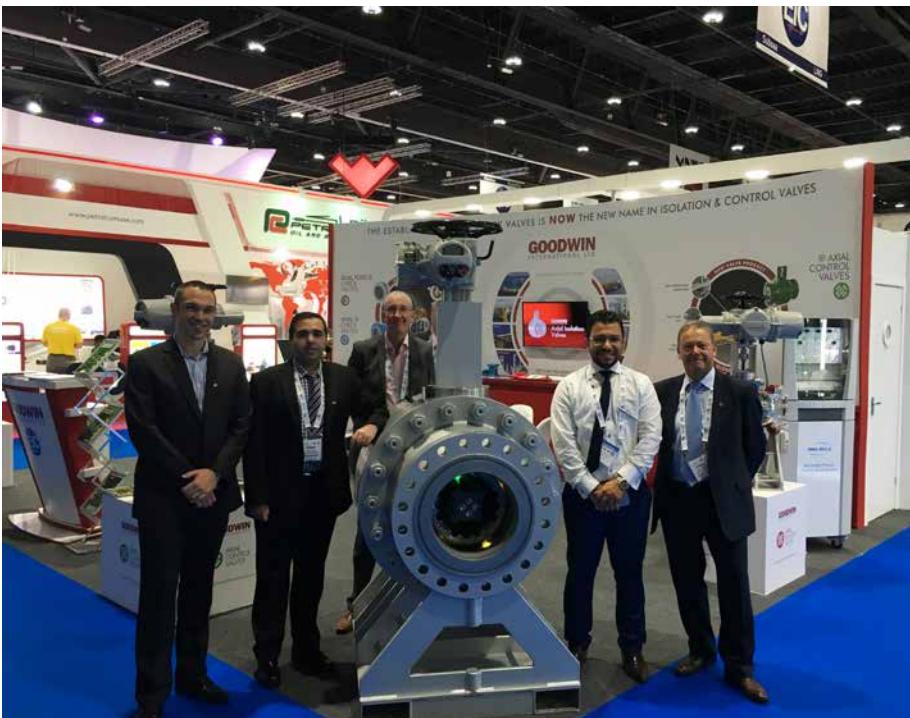
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Goodwin International announces successful product launch



Goodwin International Ltd, world renowned as a manufacturer of check valves, is pleased to announce the highly successful launch of their new range of Axial Isolation and Axial Control valves in the last quarter of 2016.

During an extended period of a low oil price and a downturn in business, Goodwin used this as a window of opportunity to introduce a new range of products to the hydrocarbon industry. These products bring a much needed level of credible competition to what is at present somewhat of a monopolised niche market for this type of product. Our market research and engagement with global IOCs, NOCs and EPC contractors during the conceptual design phase yielded very positive feedback, encouragement and some very interesting ideas as to what they would like to see, thoughts and possible weaknesses / areas of concern in current designs.

An extensive and detailed design phase combined with engineering from first principle methodology has enabled us to bring products to market that incorporate novel and innovative features that we

believe to have significant advantages over existing designs whilst maintaining the highest quality, performance and reliability that is demanded by the industry. The following is a summary of the unique features for which global patents have been applied for. The design brief was to make both platforms as close as possible between the isolation and control valve without compromising performance. As such these innovative features are present in both designs.

3-piece body design

The most common style of axial flow Isolation and Control valve body design incorporates a single piece body design which, due to its very complex geometry, can only be produced from a casting making it inaccessible to both conventional machining methods and 100% Non destructive testing (NDE) methods. Both of which can be cause for concern in

verification of critical casting quality. The Goodwin design incorporates a novel 3 piece split body design which is widely accepted across the industry for other valve types. A precision engineered bolted body joint combined with advanced primary and secondary sealing system complies easily with stringent fugitive emissions standards and the added body stiffness achieved through the bolted joint allows for much tighter internal tolerances on the piston rod running mechanism which, under high pressures, is not available on one piece designs. The latter requiring much larger clearance tolerances on the running system under high pressure.

Manufacturing a 3 piece body design is a much simpler casting process therefore significantly reducing casting defect rates. There is also 100% access to all parts for NDE thus the ability to fully verify casting quality. The 3 piece design can also be produced from forgings where required and has the flexibility to have different sized inlet or outlet flanges which is particularly advantageous in compressible fluid applications.

Rack-Pinion-Rack gear train mechanism

Almost all axial flow Isolation and Control valves use linear actuation to position

the piston. The most common and widely adopted linear mechanism makes use of a 45° 1:1 sliding rack to convert vertical linear motion to horizontal linear motion in order to position, open or close the valve. This design is subject to high frictional forces when moving under load resulting in higher actuation forces to reliably operate the valve. This design is inherently susceptible to galling and seizure after a period of cycling under load, especially where there is limited lubrication. The friction and wear of the gear teeth and sliding bearing areas will degrade over time abrading away any hardened surface treatments.

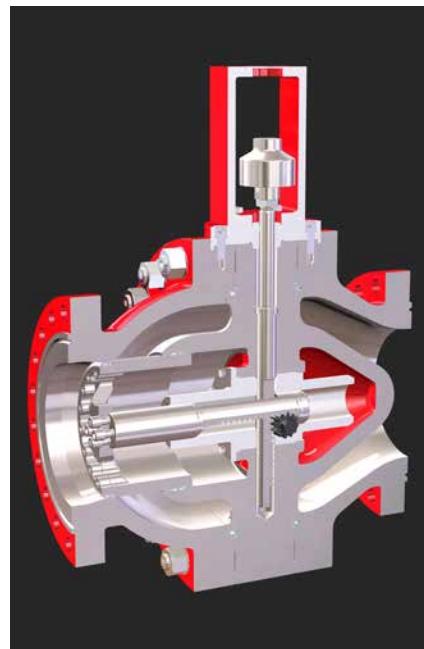
The Goodwin rack-pinion-rack mechanism address the issues associated with the sliding rack mechanism. It is almost impossible for this galling or gear train seizure failure mode to occur. A rolling gear mechanism has high efficiency and therefore, low frictional losses, reducing the actuation forces necessary to operate the valve. The lower the forces to position the valve the less the strain and wear on the actuator promoting longevity. The failure mode with the rack-pinion-rack mechanism is graceful where an increase in backlash would become evident over several million cycles. The degradation is easily measured without having to dismantle the valve.

Fully pressure balanced design

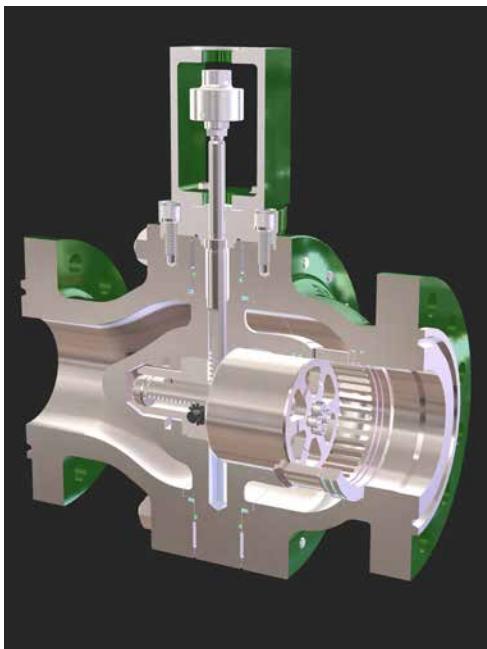
The Goodwin design is a truly fully pressurised design enabling the use of compact and cost effective actuation compared to other valve types. Pressure balancing is equally effective in both forward and reverse pressure conditions. The valve can be opened against full differential pressure. Breakout forces are minimal as only the seal and mechanical frictional forces are to be overcome, thus negating the need for a bypass or pilot valve to equalise the pressure to open the valve. Isolation valve closure time is less than 2 seconds irrespective of valve size.

Axial flow has a low turbulence streamlined annular flow path resulting in very low fixed pressure drops, high capacity and low noise design.

Goodwin has conducted in house testing of its sealing and gearing mechanism using a bespoke manufactured hydraulic endurance test rig which yielded very positive results. In addition, for our control valve we have designed and installed a blow down test facility with an acoustic chamber to enable us to validate capacity, flow characteristic and acoustic performance. We have further developed our own bespoke control valve sizing software program in compliance with the requirements of IEC 60534. This combined with our blow down test facility allow us to firstly validate our



Goodwin axial isolation valve



Goodwin axial control valve

software but secondly to experiment and optimise cage trim designs quickly and efficiently with the surety that what we provide to our customers is correct.

Current scope of Axial Isolation and Control valve manufacture

- 2"-48" Valve Size range
- ASME 150-2500lb, API 3000 – 15,000 Pressure class range
- Carbon, Low temperature Carbon, Stainless, Duplex, Super Duplex, Low-High Alloy, Nickel Alloy and Titanium steels.
- Isolation Valve Fire tested design to API 6FA – ISO 10497 verified by Lloyds register
- Hydro tested to API 598, FCI 70-2, ASME B16.37 (Tight shut off to FCI 70-2 Class VI)
- Control Valve Sizing in compliance with IEC 60534
- Face to Face dimensions generally in accordance with ASME B16.10, interchangeable with Ball and Globe valves. (Customers specific F-F available upon request)
- Control valve single and multi stage trims designed for compressible and incompressible fluids, Anti-Cavitation, Noise Attenuation and high pressure drop.
- Linear, Equal Percentage and Fast Opening control valve cage trim characteristics available.

Both of the new products have been showcased at premier events in the valve calendar including Rio Oil & Gas, ADIPEC 2016 and Valve World 2016.

All exhibition events were very well attended with a significant level of interest and excitement generated amongst both existing and potential Goodwin customers.

Highlights for 2016 include:

- 120 visitors attending the Goodwin new product launch reception at Valve World.
- These visitors comprised end-users, EPC personnel, as well as other specifiers and buyers of valve products
- Consulate General of Great Britain to Germany, Mrs Susan Spellor, visited the Goodwin International Valve World exhibition stand
- Several significant enquiries generated at each exhibition for both Isolation and Control valve applications
- Editorials on both valves printed in a number of high profile technical journals and magazines.

With further new products in the development pipeline, plus several more showcase events selected for attendance in 2017/18, Goodwin looks forward to continued success in the valve industry.

GOODWIN
INTERNATIONAL LTD

Tel: +44(0)1782 220 000
Email: flowcontrol@goodwingroup.com
Web: www.goodwinflowcontrol.com