

TECHTORQUE NEWS

**Volume 5
Issue 3**

Welcome to the third issue of Techtorque for 2008. Your feedback about our newsletters as well as your suggestions for any particular products or applications that you would like to read about is always welcome. With your input, we will do our best to provide you with informative and relevant reading matter. Please email your comments and requests to our Sales and Marketing Manager, Chris Hoare, at choare@acrodyne.com.au.

YTC Fail Freeze Positioner

Acrodyne is proud to announce the addition of a new model within the YTC range. In recent times the request for a "Fail Freeze" electro-pneumatic positioner is becoming more common. In the past, often the only way to perform this function was to create a "Christmas Tree" using lockup valves creating additional complexity to the installation. YTC have refined this technology and have incorporated this function within the same housing. The unit is designed to freeze last position in the event of a 4-20Ma signal failure or if air input fails below 1.4 Bar. Housed in a diecast enclosure it offers an easy to read LCD display. It incorporates auto calibration as standard making commissioning quick and simple. The unit can be optioned to suit either rotary or linear applications. The unit can also be optioned with HART protocol and 4-20Ma output.



New to Acrodyne - Enolgas

Acrodyne are once again stocking brass ball valves with ISO mounting pads. Suitable for PN10 applications and available from 1/2" up to 3" BSP these valves exceptionally low torque requirements making them perfect to couple with our range of GT actuators for a very economical actuated package.

Distributor enquiries welcome

MASTERGEAR^{UK}
stainless steel

**Designed for the world's
most extreme environments**



- IECex approved EExd and EExia
- Namur mount, remote, sub-base or manifold mount valves in 3/2, 5/2, or 5/3 configurations in sizes of 1/8" to 1"



Capable of operating within the strictly controlled environmental and safety conditions of the Oil & Gas industry.

CHARACTER FIRST AVAILABILITY

Making changes to meet the needs of others
... Help others.
... Look for ways to assist.
... Build positive, productive relationships.



5 Keys to Building Availability:

- "Be Productive" – manage your time to allow for flexibility.
- "Develop Useful Skills" – consider ways you can improve.
- "Find a Way to Help" – discern what a person needs, consider how to best respond.
- "Communicate with Others" – let people know when you are unavailable.
- "Provide a Genuine Service" – wholeheartedly tackle problems.

Why is Availability important?

Availability sharpens our ability to respond effectively to daily challenges and the needs of others.

For more information regarding Character First contact Philip Greenwood at People and Culture on (03) 9018 7971 or 0411 131 449
www.peopleandculture.com.au

Employee Profile - Ian Charles

Ian Charles joined us in May as our new External and Internal Service Technician and all round nice guy. Ian is 47 years of age is married to Sandra, has 2 children Mitchell and Ruby and resides in Heathmont. Ian's background in electrical railway signalling where he completed his apprenticeship. In between spending time with his family Ian likes fishing, renovating and restoring electronic games systems.



PS Automation Selection criteria for control valves

TECHTORQUE ARTICLE

Selection & sizing of Actuators for Control Valve application



Control Valves are important components in the control loops of various process automation applications. It consists of a valve connected to an actuator that is capable of changing the position of a closure member in the valve, in response to a signal from the controlling system, in order to achieve the set point of the process variable.

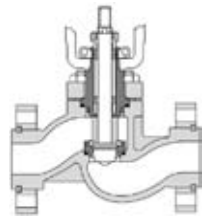
Selection of a suitable valve actuator is critical as control accuracy and reliability depend to a large extent on the weakest link in the control loop viz. a poorly sized actuator that can cause failure of the entire process.

The specification and selection of a suitable actuator requires many parameters to be taken into account. For a start, not only static, but dynamic forces need to be considered. Optimum functionality of the actuator assumes a deep knowledge of the process as well as environmental conditions.

Among the many parameters required, the actuator force / torque at valve open / closed position is very critical for actuator sizing.

This article focuses on Actuator forces required to compensate Static Valve forces. A linear Actuator for a single seated Globe valves with "flow direction to open" is considered.

The total Actuator force **F_a** required is the sum of the following component forces.



Closing Force F_v is the force required to oppose the force due to the differential pressure acting on the seat area, which tries to open the valve. Determining parameters are inlet & outlet pressures p₁ & p₂ & seat & stem area A_s & A_{st} respectively.

$$F_v = 10(A_s \cdot (p_1 - p_2) + 10(A_{st} \cdot p_2)) \quad \text{---1}$$

Contact Pressure Force F_s In addition to overcoming the force due to the internal pressure, a minimum contact pressure is required to achieve a tight shut off or low leakage rates. Leakage classes II to VI are defined in IEC 534-4. This force is proportional to the seat dia D_s.

$$F_s = K \cdot D_s \quad \text{---2}$$

(where K is the constant of proportionality & is equal to 16 to 20 for leakage class IV and 24 to 30 for leakage class VI.)

Packing Friction Force F_p. The compression of the packing must be as high as the internal pressure to avoid leak via the stem through the gland packing. This force is proportional to the stem dia d_{st} & inlet pressure.

$$F_p = K_r \cdot d_{st} \cdot p_1 \quad \text{---3}$$

(where K_r is the constant of proportionality for different packing material and is equal to 0.25 for PTFE & 0.8 for graphite.)

The total force F_a = equation 1 + 2 + 3

$$F_a = F_v + F_s + F_p$$

For more information on PS Automation or any of Acrodyne's other products please call (03) 8727 7800

