

PHARMAprocess

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Save cost with proportional valve technology for inert gases Installation example in chemical API production

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SG-MCS/Endrijaitis, Lisa

"We are the engineers of productivity"

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Production, logistics, service – in 176 countries world-wide



Close at hand around the world – Festo in Spain





Automation of reactors and vessels - Inertisation



Automation of vessels – inert gas control





Automation of reactors/fermenters/vessels - inert gas control

Flow and Pressure control of the gas phase on top of the reactor

Inertisation
 Complete exchange of gas volume before new filling of the next batch

2. Pressure superimposition

Pressure control e.g. with 40-100 mbar at the tank in operation or at rest (maintain overpressure of sanitized reactor until next filling)

3. Flow regulation of the pressure less reactor

Flow control, the gas volume on top of the media in the reactor in operation is exchanged/vented within a certain time, avoid accumulation of gas which might have negative effect on the product/process and for Ex-protection

- 4. Material transfer from tank to tank Pressure control e.g. at 1 bar transfer pressure
- 5. Slide-ring seal pressurization by gas

Pressure control, keeping a constant differential pressure in the seals at the reactor





Traditional automation with control valve



Integration of functions – Control valve and flow meter



Installation example – New production facility for chemical API



Primary project goals

- Higher flexibility in production
- Fast changeover between batches
- Faster production
- Higher grade of automation



Existing installation - air/gas and mechanical installation (1)



New Inert gas station – function integration of control valve and flow meter





Function I - V – Fully integrated control cabinet for 2 reactors



Chemical API production, plant layout – installation example



Comparison of costs Proportional valve technology – Standard control valve



Saving ~ 3.250,- \in /per reactor \rightarrow Project saving ~ 35.000,- \in



Project targets – Benefits for the customer



Main customer advantages during purchasing and installation

- Reduced purchasing cost for the whole system
- Easier installation, less rigid piping (flexible tubes up to DN 15)
- Less installation space required
- Reduced number of suppliers
- Easier and cheaper automation, less cabling needed by using modern valve terminal technology
- Transfer of the solution also to centrifuges and vacuum drying cabinets

Project targets – Benefits for the customer



Main customer advantages during operation and maintenance

- Higher flexibility for the multipurpose plant, system fully automated
- Flow and pressure control can be done with the same installation
- More diagnostic options, integrated pressure and flow sensor for all functions
- Increased plant safety
- Significantly reduced N₂ consumption
- system installed in non-explosion-hazard zone (outside Zone 2)
 → lower cost and higher safety

Thank you very much for your attention





Contact data



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