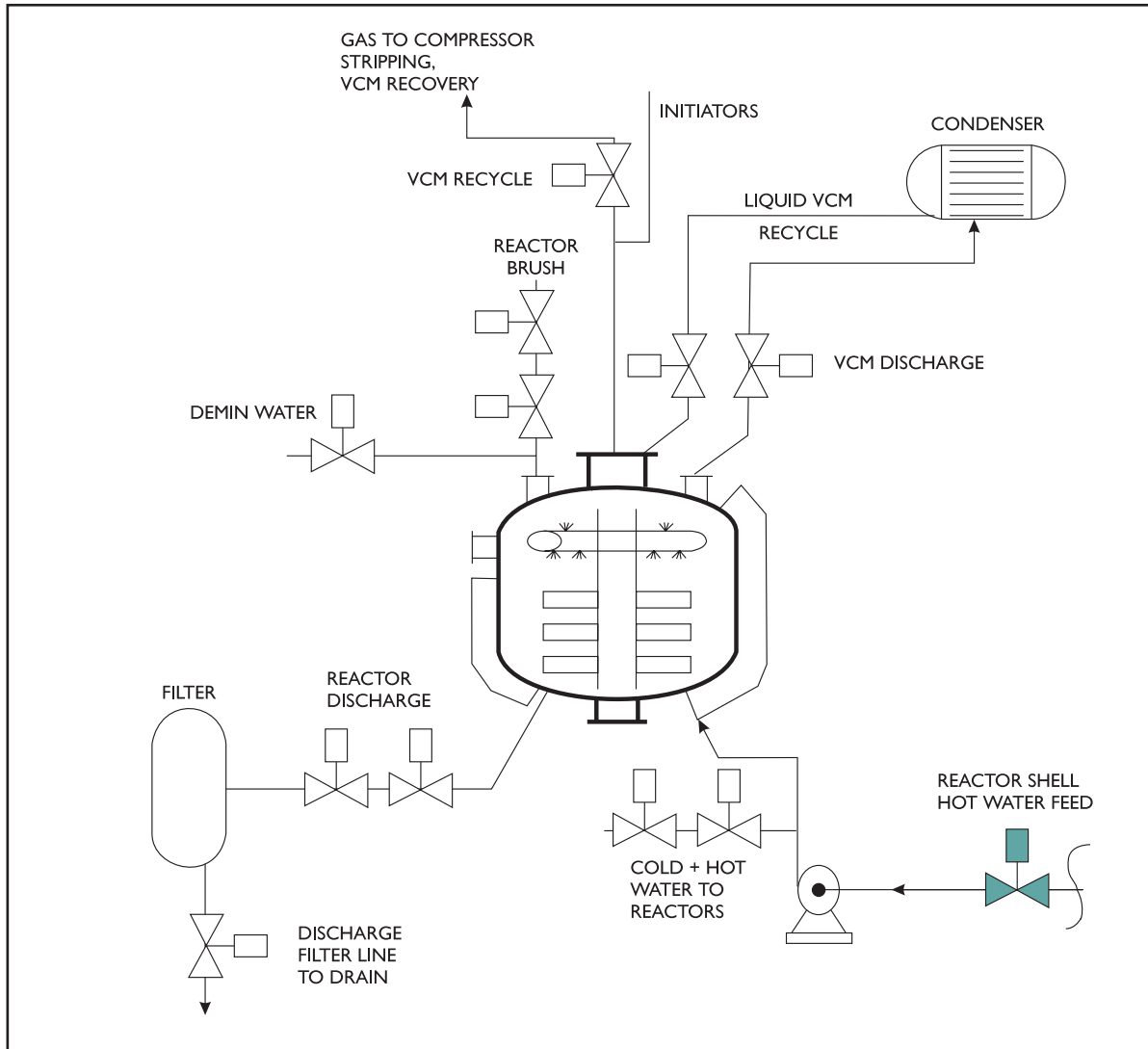


PVC Reactor cleaning



Introduction

After the PVC reaction has taken place, the PVC product is discharged and the reactor is prepared for the next cycle. Before the new cycle can begin, the PVC reactor must be washed out. This is done with demineralized water and a large brush, to loosen any PVC stuck to the sides of the reactor. This bulletin describes the cleaning brush application, its requirements, and Metso Automation's solution.

The Process

The reactor wash is an important element of the cycle, to prepare the reactor for the next charge of product. The cleaning brush used to wipe out the reactor internals comes into contact with PVC and unreacted VCM. The brush must be isolated after cleaning, to avoid having the waste drop back into the reactor, and to isolate the carcinogenic VCM.

Application demands

The reactor cleaning needs are:

- cleaning time as short as possible, for maximum production
- no leakage out of reactor
- no leakage into reactor
- isolation of cleaning brush

Some of difficulties encountered include:

- Opening to reactor causes PVC to enter into valve body
- Brush tends to deposit PVC in valve body
- Accumulation of PVC can block valve function

Valve selection

For this application a full ported ball valve with metal and soft seat was installed.

Features and benefits

The benefits are:

- Full flow provides maximum capacity for rapid cleaning
- Bubble tight shutoff assures integrity of reactor process conditions
- VCM leakage out of reactor is eliminated with bi-directional shutoff
- PVC accumulation on sphere removed by metal seat
- Refrigeration jacket stops polymerization of PVC in valve body, thus eliminating valve blockage

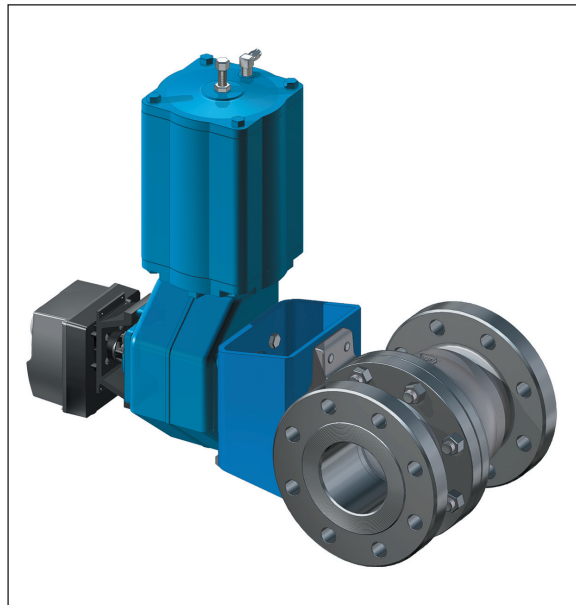
Valve selected

Type: X-MBV

- Trunnion mounted, full bore ball valve
- Metal seat on reactor side
- Soft seat on brush side
- Body and trim in stainless steel
- Optional helium testing for tightness
- Refrigeration jacket (5 °C)
- Metso Automation piston actuator

Alternative solution

The type C2D valve installed in 1987 has provided excellent service. The most economical solution currently would be the type X-MBV ball valve introduced 1990's. It provides the same benefits and characteristics as the type C2D.



Metso Automation X-MBV ball valve

The information provided in this bulletin is advisory in nature, and is intended as a guideline only. For specific circumstances and more detailed information, please consult with your local automation expert at Metso.

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