Replacement of Basis Weight Valve with Basis Weight Solution

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Fisher V150 valve with 2052 actuator and DVC6200 digital valve controller

Management of Change

Management of Change (MOC) is a procedure used to proactively manage changes that have the potential to impact safety or the process within a plant. Evaluating new techniques for improving MOC approval procedures can have an impact on plant efficiency. Historically, upgrading obsolete products or replacing existing process control equipment had been delayed or abandoned due to the extensive paperwork involved in completing a complex MOC approval sheet.

Background

The basis weight valve is considered one of the most critical valves in a paper mill. The basis weight valve determines the basic physical property of the paper which correlates to the quality of the paper. Poor paper quality leads to improper drying, cutting, and discoloration. Up to this point, the basis weight of paper was controlled by a rotary valve with an electric actuator and stepper motor. This assembly was often victim to flow and basis weight alterations that led to functionality issues, increased maintenance time and expense, and ultimately, unexpected downtime.

Due to the extreme requirements of this application, Emerson proposes a new basis weight control solution. This solution incorporates two standard Fisher™ V150 valves with flow rings that run in parallel, actuated by Fisher 2052 spring-and-diaphragm actuators, and paired with a FIELDVUE™ DVC6200 digital valve controller. The two-valve solution contains one large Vee-Ball™ valve that coarse controls the main line, while the smaller Vee-Ball valve in parallel is responsible for fine control.

This document contains relevant questions and answers, an overview of how the two-valve strategy works, as well as sizing information.

Question & Answer Checklist

1 **Q:** Does the proposed modification cause any changes to the piping and instrumentation diagram (P&ID)?

A: Yes. There will be two valves running in parallel.

2 **Q:** Does the proposed modification change process chemistry, technology, or operating and control philosophies?

A: Yes. The process will be controlled by two valves: one larger valve for coarse control and one smaller valve for fine control instead of the traditional electric actuator and stepper motor.

3 **Q:** Does the proposed modification change how the existing plant is operated?

A: No.

4 **Q:** Does the proposed modification change process flows?

A: No.

5 **Q:** Does the proposed modification change existing pressure relief cases?

A: No.

6 **Q:** Does the proposed modification change the process description?

A: No.

7 **Q:** Have the codes and standards to which the new equipment was designed changed?

A: No.

8 **Q:** Does the proposed modification change the materials of construction, such as a change in material form (cast, forged, or alloy)?

A: No.

9 **Q:** Does the proposed modification introduce new equipment items that require periodic predictive maintenance?

A: Yes. With the dual-valve solution, the basis weight application will offer more predictable maintenance and down time.

10 **Q:** Does the proposed modification change existing operator training requirements?

A: No.

11 **Q:** Does the proposed modification introduce new equipment items that require spare parts, training manuals, maintenance procedures or training to teach the maintenance department how to maintain them?

A: No.

12 **Q:** Does the proposed modification introduce new equipment items that require spares or obsolete spares for existing equipment?

A: No. The valve assembly includes two standard Fisher V150 valves with flow rings, two 2052 actuators, and an optional FIELDVUE digital valve controller.

13 **Q:** Does the proposed modification permanently remove the spares for existing pieces of equipment?

A: Yes, the two-valve solution will replace the existing valves.

14 **Q:** Does the proposed modification change the inspection scope or inspection interval?

A: No.

15 **Q:** Does the proposed modification require welding work to be performed?

A: Yes, there will be piping modifications.

Sizing Information

The basis weight control solution contains two valves: one for coarse control and one for fine control. The coarse control valve controls the main stock line and adjusts when control is outside of the range of the fine control valve. The fine control valve controls the variability of the basis weight.

	Valve Type	Size (inches)
Fine Control	V150 with flow ring	NPS 3-6
Coarse Control	V150 with flow ring	NPS 6-12

Table 1. Fine and Coarse Control Comparison

A concern with this solution is the area requirements. This solution requires suitable space for piping modifications, two valves, and two actuators.

For dimensional information, see the V150 Product Bulletin or the 2052 Product Bulletin.

Materials

The basis weight solution suggests the use of CG8M body with a flow ring and chrome-plated SST ball. All materials selections are based off the requests of the customer and can be ordered to their specification.

Conclusion

The basis weight control solution uses the same V150 valve that is already used in many mills. There is no extra training required for this solution. Running the standard valves in parallel will reduce variability and friction resulting in tighter

control. In combination with proper maintenance practices and implementation, this solution can reduce the cost of maintenance and repairs. The diagnostics in the assembly will reduce the time it takes to make gradient changes and troubleshoot issues with the control.

To find the right combination of Fisher products to meet your basis weight application needs, please contact your local Emerson sales office.

Additional Resources

Fisher V150 Valve Webpage

Fisher 2052 Actuator Webpage

FIELDVUE DVC6200 Instrument Webpage

http://www.Facebook.com/FisherValves

http://www.YouTube.com/user/FisherControlValve

http://www.Twitter.com/FisherValves

http://www.LinkedIn.com/groups/Fisher-3941826

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