

Fisher® Feedwater Startup Solutions



Severe Service



EMERSON
Process Management

Application Discussion

The boiler feedwater startup valve is used in many power plants to provide higher rangeability of the feedwater system, which favorably impacts plant flexibility. However, this valve is used for numerous other functions as well, including:

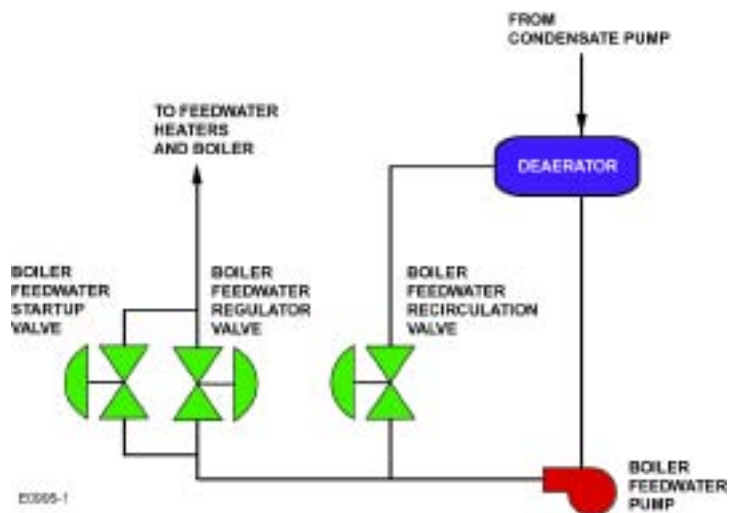
- Filling of the boiler prior to firing
- Maintaining drum level during startup conditions
- Properly transferring drum level control to a variable speed pump or feedwater regulator valve
- Providing availability for high plant turndown

During filling and plant startup, there is the potential for high pressure differentials across the startup valve. This condition continues until downstream pressure rises, at which time drum level control transfers to the variable speed pump or feedwater regulator. Common issues seen with the feedwater regulator valve are:

- Cavitation damage due to high differential pressures across the valve
- Inadequate seat load to maintain tight shutoff, with leakage leading to valve damage
- Potential plugging during plant startup
- Poor controllability can cause excessive drum level swings, potentially tripping the plant during startup

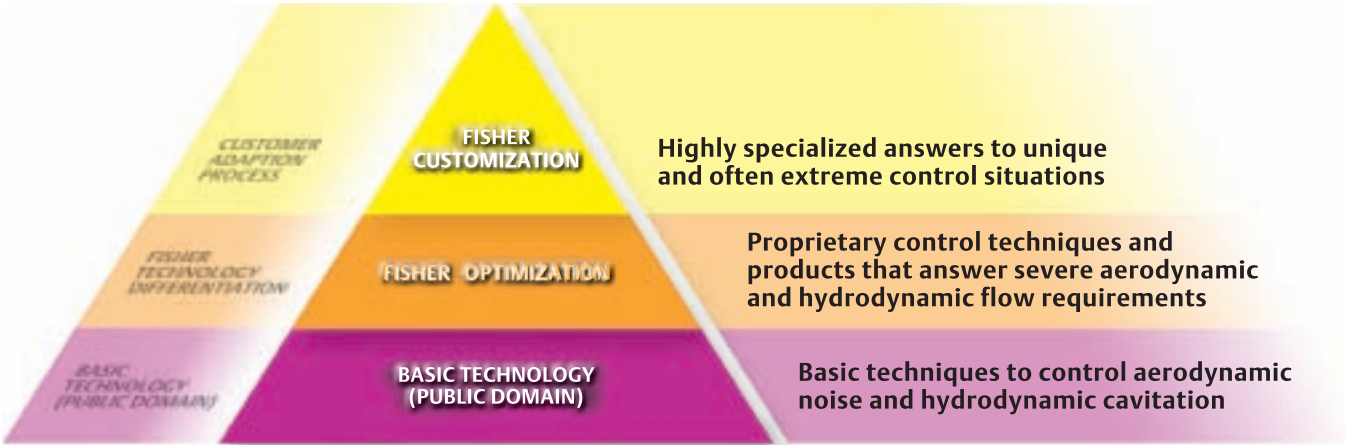
The feedwater startup valve must reduce pressure as high as 6000 psig while eliminating the cavitation potential and providing stable control to maintain drum level. Since this valve is shut during normal plant operation, tight shutoff (ANSI Class V or greater) is critical. Any leakage can make drum level control difficult and can damage valve trim.

The function of the startup valve can be combined with the feedwater regulator into one valve. Combining these valves minimizes piping costs and eases installation and configuration.



Emerson offers the broad line of Fisher solutions to address the tough feedwater conditions of cavitation, erosion, plugging and leakage while providing high rangeability. To ensure proper operation after valve installation, the Fisher FIELDVUE® Digital Valve Controller can be used to monitor valve performance. The FIELDVUE DVC provides diagnostic reviews without interrupting the process in order to identify potential performance issues. This helps to ensure proper operation and tight shutoff over the normal operating life of the valve.

Severe Service Control Hierarchy



Boiler Feedwater Startup – Control Valve Solutions

FISHER CUSTOMIZATION

Corroded boiler components and piping caused repeated plugging of an aging plant's feedwater startup valve. The answer was to install specially-designed Dirty Service Trim, which has the ability to pass large particulate. See [D351068X012](#) at www.Fishersevereservice.com for additional details.

FISHER OPTIMIZATION

DST Trim



- Patented, multi-stage, anti-cavitation control trim
- Combines axial and radial flow patterns that can pass particulate without plugging
- Features protected seat design that helps avoid clearance flow erosion for long-term shutoff integrity

Cavitrol® Trim



- Employs special-shaped orifices and drilled-hole technology in keeping the flowing media above its vapor pressure
- Used in combination with Fisher high-pressure and high-capacity valve bodies to prevent cavitation, achieve tight shutoff and reduce vibration levels

CAV4 Valve with Cavitrol® IV Trim



- Employs special-shaped orifices and drilled-hole technology in keeping the flowing media above its vapor pressure
- Separation of throttling and shutoff locations avoids clearance flow erosion for long-term shutoff integrity
- Patented pressure-staging design avoids cavitation and its resultant damage and noise

NotchFlo® Trim



- Utilizes multi-stage, axial flow process to control pressure drop, prevent cavitation and pass entrained particles
- Features protected seat design that helps avoid clearance flow erosion for long-term shutoff integrity

BASIC TECHNOLOGY



- On-Off, automated block valve or standard trim control valve with restriction orifice
- Restriction orifices downstream to split the total pressure drop; optimum operation is restricted to one service condition
- Valve without the restriction orifice could be used if startup length is short and infrequent
- Hardened trim materials to extend service life
- Tight shutoff construction

Emerson. Your partner in instrument and valve reliability.

The way you manage your key production assets directly affects your plant's performance and profitability. Emerson's Asset Optimization capabilities deliver world-class services and innovative technologies to increase the availability and performance of mechanical equipment, electrical systems, process equipment, instruments and valves for improved bottom-line results. Asset Optimization helps you improve process availability and attain peak performance, which means wherever you are in your plant's life cycle—startup, maximizing operations or life extension—by relying on Emerson's Asset Optimization capabilities, you'll be on the path to realizing the true potential of your plant's instruments and valves.

The Next Step

Contact your local Emerson Process Management sales office or sales representative location for more information or to make a purchase.

For severe service solutions, see us at www.FisherSevereService.com



© Fisher Controls International LLC 2006 All Rights Reserved

Fisher, FIELDVUE and Cavitol are marks owned by one of the companies in the Emerson Process Management business division of Emerson Electric Co. The Emerson logo is a trademark and service mark of Emerson Electric Co. All other marks are the property of their respective owners.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy they are not to be construed as warranties or guarantees, expressed or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available upon request. We reserve the right to modify or improve the designs or specifications of such products at any time without notice. Fisher does not assume responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use and maintenance of any Fisher product remains solely with the purchaser.

NORTH AMERICA

Emerson Process Management
Marshalltown, Iowa 50158 USA
T 1 (641) 754-3011
F 1 (641) 754-2830
www.EmersonProcess.com/Fisher

LATIN AMERICA

Emerson Process Management
Sorocaba, Sao Paulo 18087 Brazil
T +(55)(15)238-3788
F +(55)(15)228-3300
www.EmersonProcess.com/Fisher

EUROPE

Emerson Process Management
Cernay 68700 France
T +(33) (0)3 89 37 64 00
F +(33) (0)3 89 37 65 18
www.EmersonProcess.com/Fisher

MIDDLE EAST & AFRICA

Emerson FZE
Dubai, United Arab Emirates
T +971 4 883 5235
F +971 4 883 5312
www.EmersonProcess.com/Fisher

ASIA PACIFIC

Emerson Process Management
Singapore 128461 Singapore
T +(65) 6777 8211
F +(65) 6777 0947
www.EmersonProcess.com/Fisher



Severe Service



EMERSON
Process Management