

# TECHNICAL BULLETIN

Prepared By:	<b>Adrian Croft</b>	Issue Date:	<b>4 / 12 / 2006</b>
Reference:	<b>AR-C6-R0</b>	Pages:	<b>1</b>

## Subject: **X-Stream Varistage Trim**

The X-Stream trim has been successfully applied to severe service applications to eliminate cavitation and flow erosion. Recent feedwater applications have been quite challenging due to the need to control cavitation at low valve openings, but yet pass the flow capacity at higher valve openings.

When filling the boiler on a power station there is generally a high pressure at the valve inlet, but a low outlet pressure, often only 1 BAR. This condition would result in severe cavitation if a single stage trim were to be applied. Using the X-Stream trim the pressure drop is staged across cage which prevents the static pressure falling below the vapour pressure, thus eliminating cavitation and protecting the valve and the trim from damage.

When the plant is running, the boiler is charged and the feedwater valve is required to maintain the water flowrate into the boiler. This condition would normally require relatively high pressures, but relatively low pressure drops resulting in high water flow rates.

Historically power stations would be built with two valves working in split range operation, one on boiler fill designed to control cavitation and one for normal operation to control flow. The demand for cost reduction in power station construction now means that engineers are demanding one control valve to fulfil both these applications.

To specifically address this application Blakeborough have developed the X-Stream Varistage trim. This trim has been designed using the patented X-Stream disc stack at the bottom of the trim to control low valve Cv's and eliminate cavitation, but at higher valve openings the valve trim is designed with a more standard multi-flow trim to obtain the flow capacity.

The X-Stream Varistage trim is currently being applied to an existing valve at Keadby Power Station which has suffered from flow erosion. To reduce the costs of the application the trim was designed to fit in the existing valve body meaning that the trim could be fitted during a one day shutdown rather than having to shut down the station for an extended period to cut the existing valve out of the line.

The picture below shows a sectioned view of the X-Stream Varistage. The lower section of the trim is designed with 8 discs stacked together and vacuum welded onto a multi-flow cage.

