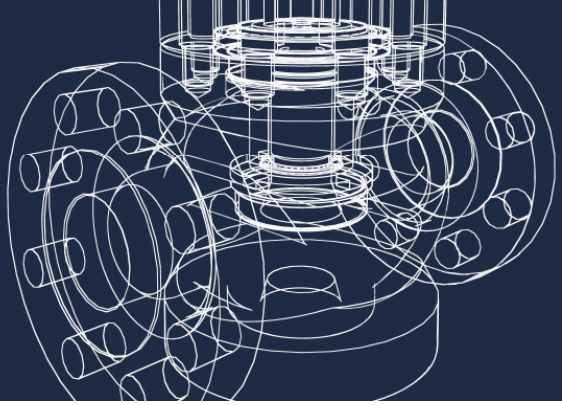
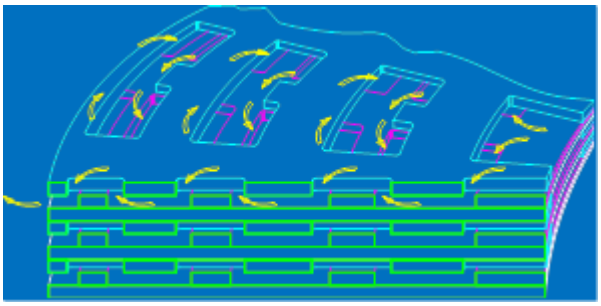


SEVERN
Superior Valve Engineering

CCD Trims for Severe Service Erosive Applications
IM-44

Many Multi-Stage severe service trims utilise vertical turns as part of the pressure let down process, each set of trim elements being isolated from the adjacent ones by a plane separator plate.

Through necessity the separator plates are held to a practical minimum thickness as each one presents a portion of valve travel over which no change in flowrate takes place. Thick separator plates would therefore cause a “steppy” lift to flow characteristic.



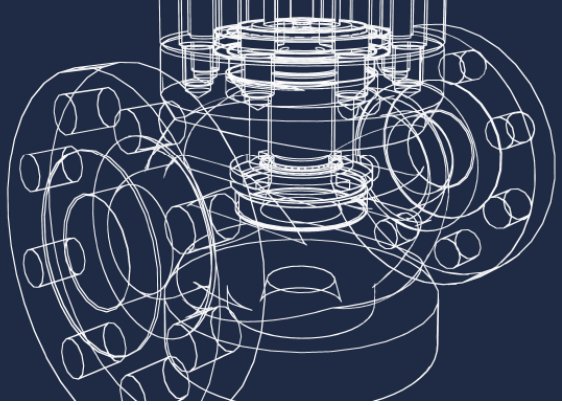
The use of optimised thickness separator plates is perfectly acceptable where fluids are clean and even slightly erosive because by design the trim controls the fluid velocity to acceptable limits and erosion of the separator is avoided.

Severn’s experience of severe service applications and investigations into the failure modes of many OEM’s trims has shown that the use of vertical turns and separator plates in more erosive applications often results in premature failure of the trim.

The common failure mode is a breach of the separator and flow into the adjacent trim elements.

The adjacent photograph of a well known OEM’s choke valve trim, shows such a breach which has developed through to the base of the trim.

Recognising the need for a more suitable technology, Severn have developed the CCD severe service trim for erosive service.

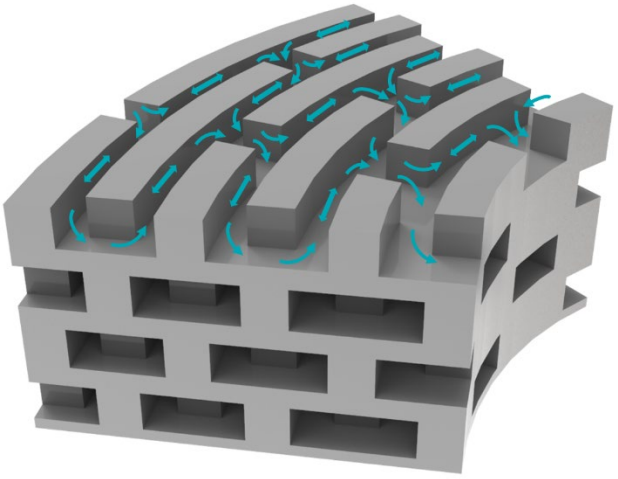


SEVERN
Superior Valve Engineering

Manufactured in solid Tungsten Carbide the CCD trim provides distinct pressure reduction stages by turning the fluid through 90 degree turns. The fluid only flows horizontally and is made to turn via separators formed into the surface of each plate, the section of these separators are maximised to prolong the life of the trim in the most erosive of duties.

Once formed the plates are sinter welded to produce a solid carbide stack.

The CCD trim is available for control valve applications such as produced water level control, MOL pump re-cycle as well as many others and also for choke applications from single to multiphase fluids. CCD trims are manufactured in a range of materials from ceramics and extremely wear resistant Tungsten carbide grades through duplex stainless steels and even a variety of nickel-based alloys. The fully assembled stacks are either brazed or sintered as one unit to prevent the interstage erosion issues that can be found on disk stacks that do not have this method of manufacture.



Issue no.	1
Last revised	10/06/21