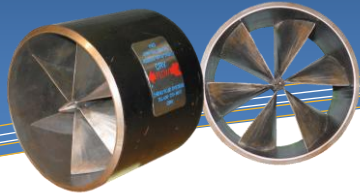


Cheng Rotation Vane® Application for Submarine & Naval Vessels

A CRV® is a compact solution reducing pipe length needs & system down time, while increasing parts life & efficiency. Installing a CRV® will correct a non-uniform flow preventing pipe cavitation, erosion and noise vibration. Fluid Flow Solution.

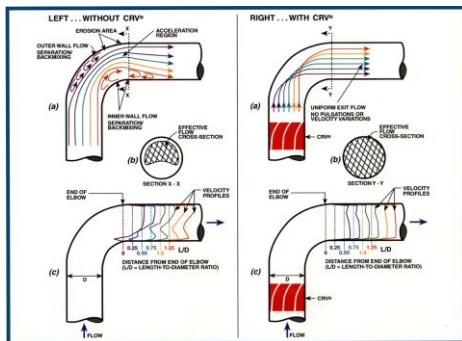


A CRV® installed close to: pumps, compressors, check valves, control valves, flow measurement equipment, elbow erosion/noise, water hammer, condensers, exhaust section, chemical processing, and heat exchangers, will have better performance results and increase the safety of all workers.

Fluid flowing through elbows and sudden expansions will experience:

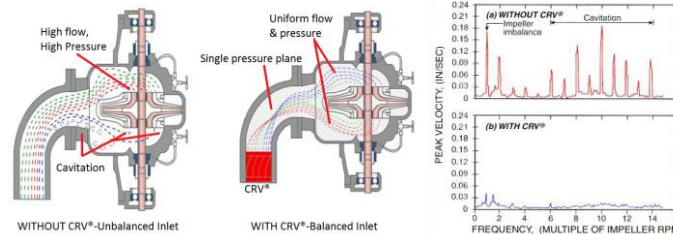
- Reverse Flow Pressure Loss Cavitation Noise
- Flashing Vibration Erosion Wearing
- Turbulence Leaks Flow Separation

The CRV® imparts to the fluid (gas or liquid) a gyroscopic motion, which counteracts the elbow induced gyroscopic motion, & enables the fluid to negotiate the turn through the elbow in a flat uniform flow across the entire cross sectional area of the pipe.



CFS is dedicated to solving our customer's fluid flow problems & protecting workers by using our technology and experience, along with our patented product, the Cheng Rotation Vane (CRV®).

Problem-Pump Cavitation: Pumping systems experience cavitation, cavities or bubbles form in the liquid that is being pumped due to low pressure from the suction side of the pump.



Problem-Pump & Check Valve Vibration: Check valves, respond to flow and pressure disturbances. Such turbulence cause the pin to fail, leakage though the pin starts, and the valve seat will not seal. CRV® installation reduced the noise, extended seal, bearing, impeller life, increased delivered head and flow.



Problem-Elbow Erosion: Elbow erosion is eliminated by preventing turbulence, internal pressure gradients, and cavitation, through the use of an internally hardened CRV®.



Problem-Compressors: Inlet distortions cause the compressor to operate at less than the factory rated flow, head and efficiency. Interstage hunting caused by non-uniform flow. CRV® applies a lower suction piping pressure drop allowing operations closer to the factory rated flow, head, and efficiency.

