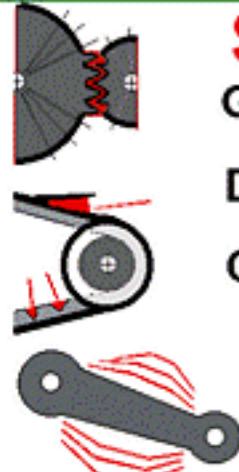


# HOW SMOOTH DO YOU NEED YOUR SYSTEM TO BE ?

Generally accepted levels of residual fluctuation percentage allowed, to protect against the average level of the problems listed.

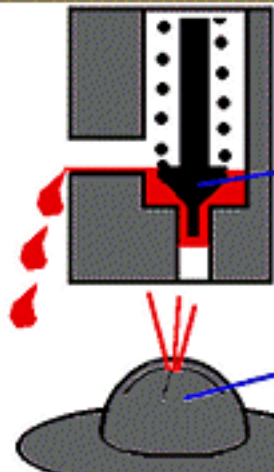
## COARSE DAMPENING

**STOP PUMP PARTS DAMAGE**  
 GEAR TOOTH WEAR, CHATTER, AND FRACTURE.  
 DRIVE BELT SLIP, BURN-OUT, AND BREAK-UP  
 CROSS-HEAD, ROD, AND YOKE DEFLECTION  
**KEEP PRESSURE VARIATION LESS THAN 12%**



PmpPtsDm.bmp

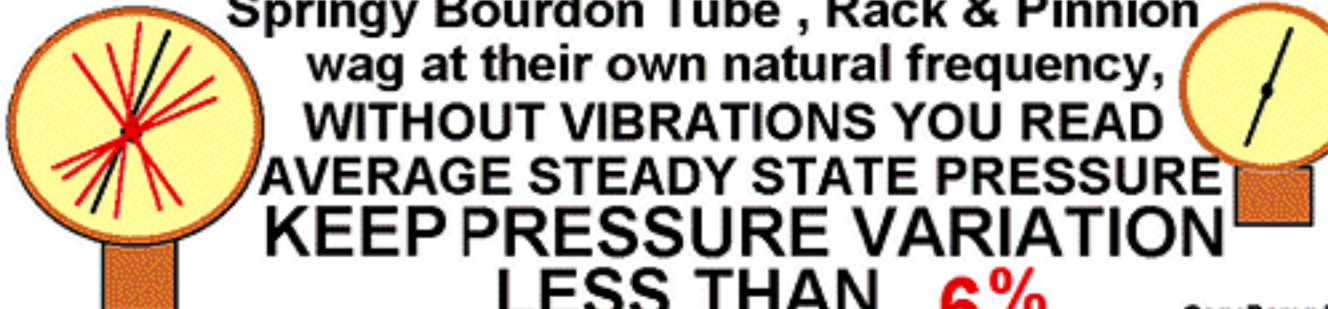
**STOP WEEPAGE**  
 RELIEF VALVE WEEPING  
 SURGES CAUSING PREMATURE LIFT  
 FATIGUE CRACKING OF BURST DISKS  
**KEEP PRESSURE VARIATION LESS THAN 9%**



RVBDweep.bmp

**STOP GAUGE DAMAGE**  
 GAUGES DON'T READ PULSATION  
 Springy Bourdon Tube, Rack & Pinion wag at their own natural frequency, WITHOUT VIBRATIONS YOU READ AVERAGE STEADY STATE PRESSURE  
**KEEP PRESSURE VARIATION LESS THAN 6%**

BEFORE AFTER



GageDang.bmp

**INCOMPLETE ATOMIZATION**  
 Stop Globlets, Drops & Squirts - when you want a fine spray -  
 Depending on viscosity and nozzle design  
**KEEP PRESSURE VARIATION LESS THAN 5%**

BEFORE AFTER

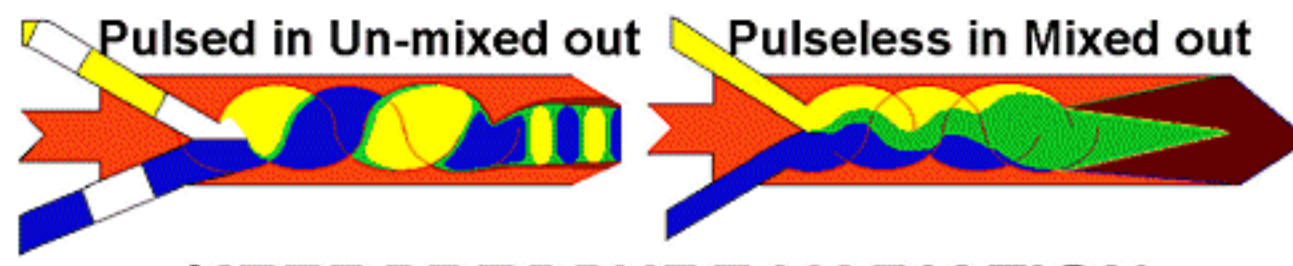


Atomize.bmp

## MEDIUM DAMPENING

**IMPROVE STATIC MIXING**  
 Pulsed in Un-mixed out Pulseless in Mixed out  
**KEEP PRESSURE VARIATION LESS THAN 4%**

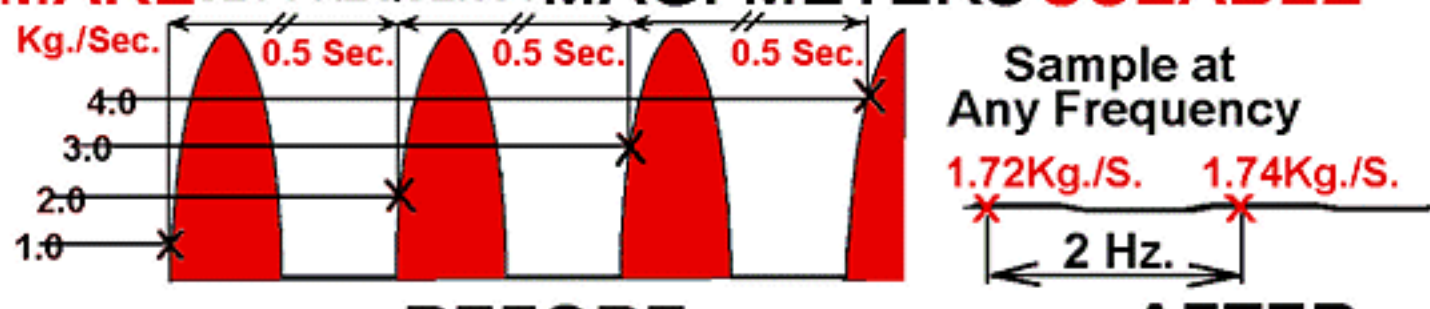
BEFORE AFTER



StatMix.bmp

**MAKE SET FREQUENCY MAG. METERS USEABLE**  
 Sample at Any Frequency  
 1.72Kg./S. 1.74Kg./S.  
 2 Hz.  
**KEEP FLOW FLUCTUATION LESS THAN 3%**

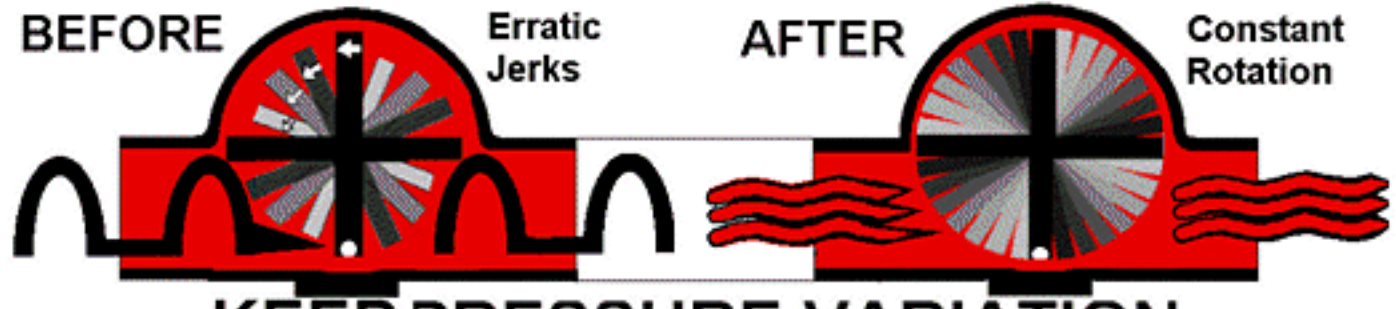
BEFORE AFTER



MagMetr.bmp

**STOP PADDLE WHEEL METER SURGING**  
 Erratic Jerks Constant Rotation  
**KEEP PRESSURE VARIATION LESS THAN 2%**

BEFORE AFTER



PadlWheel.bmp

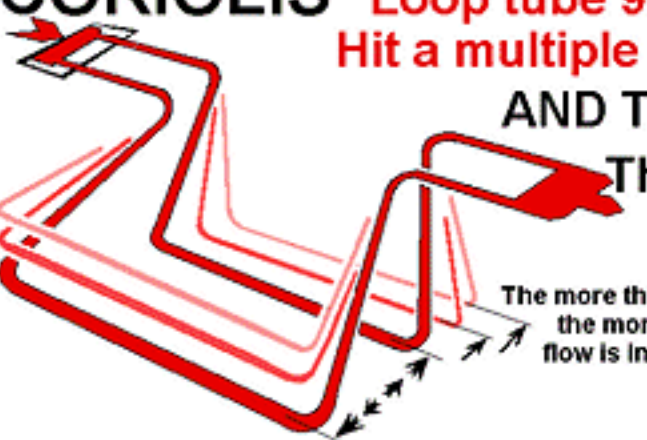
**TURBINE SCREW METER "RATCHETING"**  
 KICK FROM PULSE STARTS THE SPIN WEIGHT OF SCREW BLADES & SHAFT KEEPS IT SPINNING, NEXT KICK GIVES OVERSPEED OR STOPS IT,  
**SOON YOU HAVE NO ACCURACY STAY LESS THAN 1.5%**  
 DEPENDING ON VISCOSITY



TurbMetr.bmp

## FINE DAMPENING

**CORIOLIS** Loop tube 90 Hz or Straight tube 900 Hz  
 Hit a multiple or divisor of, or that frequency AND THE TUBES SWING WILDLY  
 They can register 100 Kilos /sec. When you have only 5  
 The more the swing the more mass flow is indicated  
**Stabilize to LESS THAN 1.0%**



Coriolis.bmp

**NO NON-SENSE VORTEX SHEDDING**  
 VORTEXES, ARE MINUTE LOW PRESSURE ZONES AND ARE CREATED AT A RATE RELATIVE TO FLOW VELOCITY  
 WITHOUT PRESSURE PULSATION "VORTEX SHEDDING" METERS WORK  
**GO LESS THAN 0.75 %**

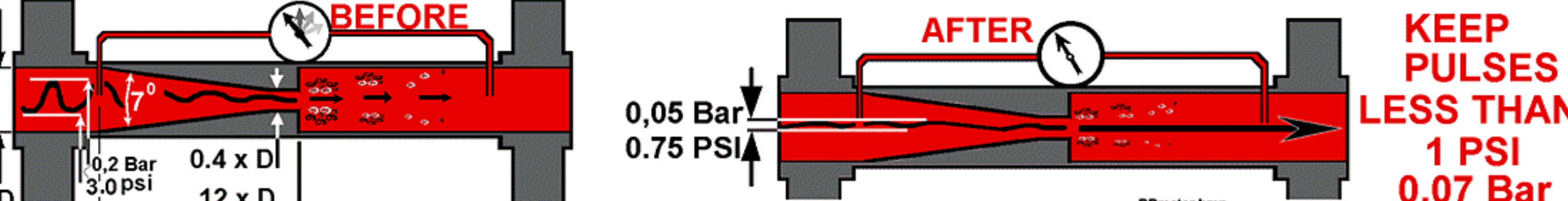
BEFORE AFTER



VortShed.bmp

**DELTA P. METER A SHARP EDGED ORIFICE & A DIFFERENTIAL PRESSURE GAUGE**  
**KEEP PULSES LESS THAN 1 PSI 0,07 Bar**

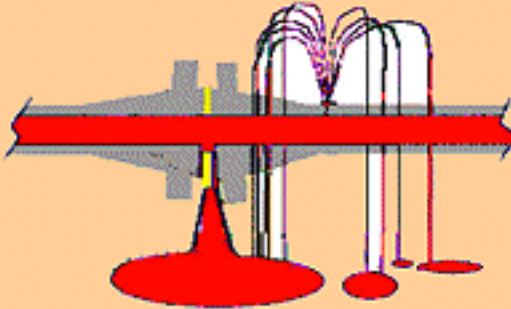
BEFORE AFTER



DPmeter.bmp

## MECHANICAL DAMAGE PROTECTION

**Pipe Shake, Fatigue, Weld Cracking, & Over Stress Unions, Flanges, & Fittings.**  
 The level of allowable pressure pulsation, depends on three factors :  
 1. Diameter of pipe. 2. Operating Pressure. 3. Pulse Frequency.  
 A Nomogram - or " 3 axis Graph " - to help you specify allowable residual pressure fluctuation has been included.



**PULSEGUARD**