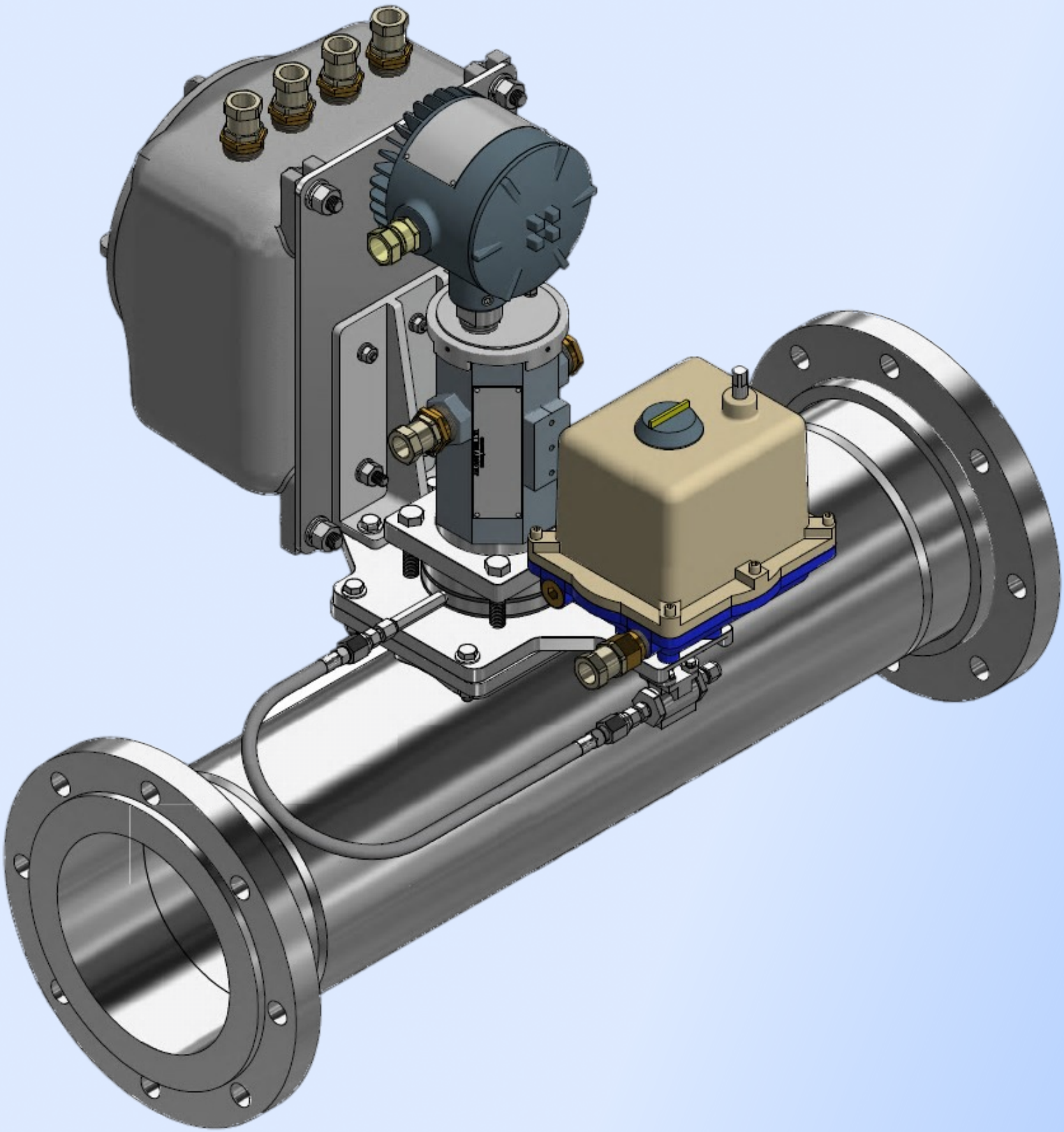
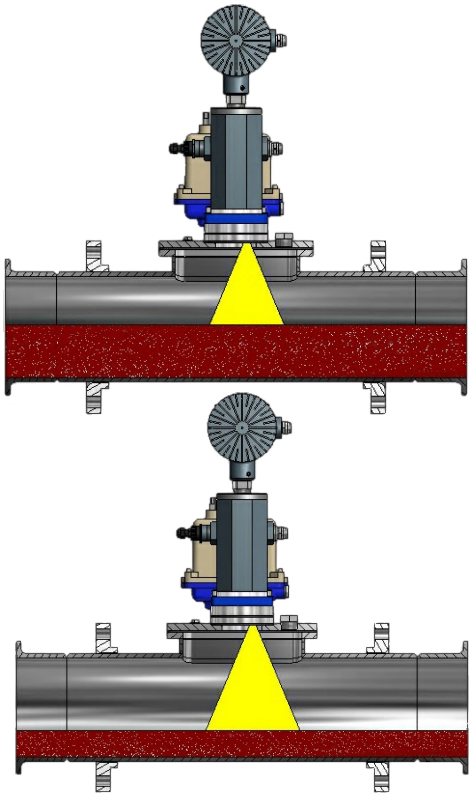
CANTY
PROCESS TECHNOLOGY

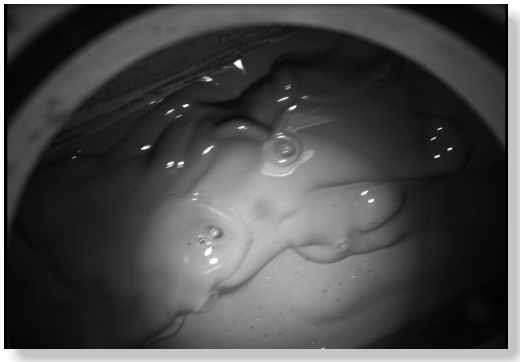
ADVANCED MUDFLOW

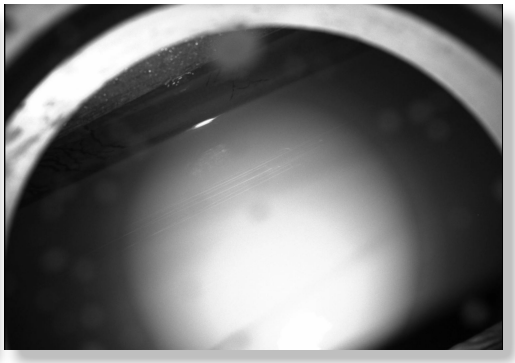
DRILLING MUD PIPE LOW FLOW TO HIGH FLOW



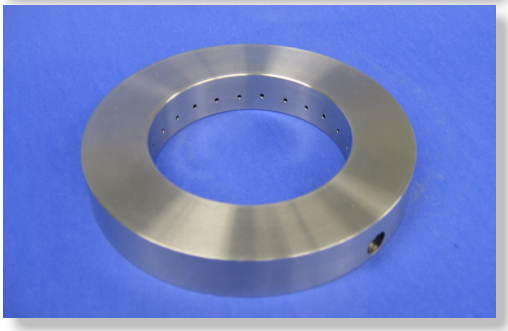


HOW IT WORKS





The Canty Mud Flow Camera System is set up to view the mud going down the pipe after it rises from the drill pipe. The rugged industrial turn key system mounts to the top of the pipe and allows for non-Contact measurement of flow and level of the mud. The combination of a Canty Fiber Optic Light with the digital Ethernet camera allows for optimal view into this dirty dark environment for visual verification of the flow and quality. CANTYVISION™ Software is used to analyze the level and the measurement results can be outputted through 4-20mA or OPC to the control system. This system is a replacement for the Mud Flow Flapper/Paddle style units.



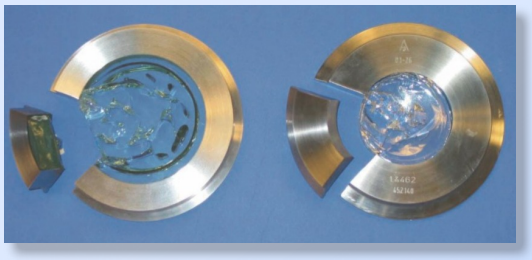
CANTY ADVANTAGE

Drilling operators have many safety factors that must be monitored. Typically, rig instrumentation or data monitoring services (mud loggers, etc.) will hook up a variety of mechanical measurements that help to optimize and provide safety warnings for operational conditions. One of the most important, yet one that is done poorly up until now, is fluid flow out of the wellbore.

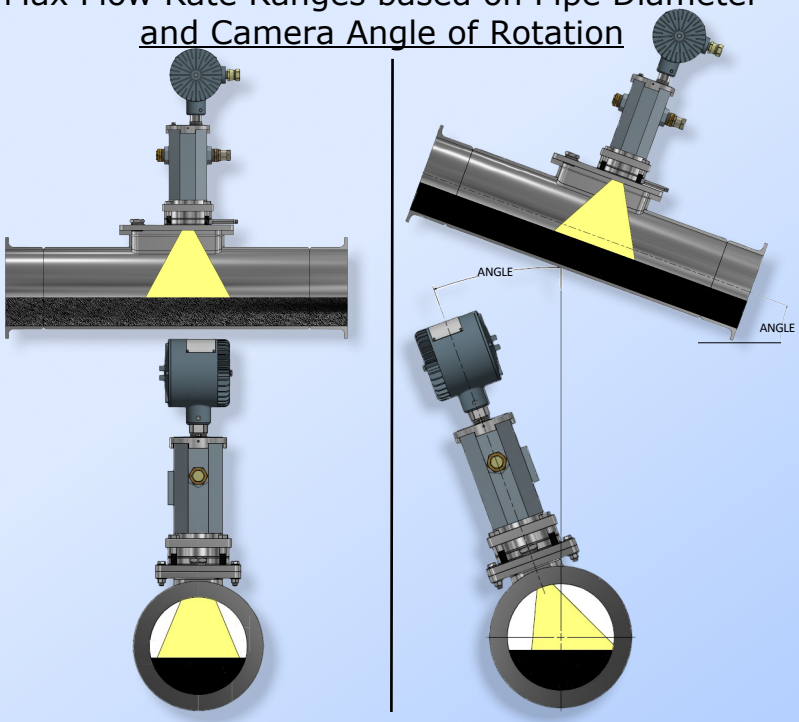
For years, very archaic systems such as 'paddle' that have electronic or hydraulic deflection measurements have been primarily utilized. More recently, very expensive Coriolis meters have been rigged up and monitored. There are fundamental problems with both systems.

Paddle - Poor accuracy, intrusive, subject to major solids build-up resulting in paddle being dislodged, stuck, or completely knocked off. No low flow measurement.
Coriolis - Expensive, difficult to install, intrusive, clogging issues, measurement effected by solids & gas.

CANTY Advanced Mudflow System:
• Inexpensive
• Visual Verification allowing operators an unparalleled view into the process
• Non-contact
• Direct Measurement - multiphase fluid flow of liquids, solids & gas
• High accuracy ultra-low flow to high flow measurements independent of fluid
• Detect fluid foaming and gas
• Easily retrofitted and installed onto existing pipework - replacing paddle system
• View and confirm the mud flow and mud surface condition and low flow pressure test leak condition



Max Flow Rate Ranges based on Pipe Diameter and Camera Angle of Rotation

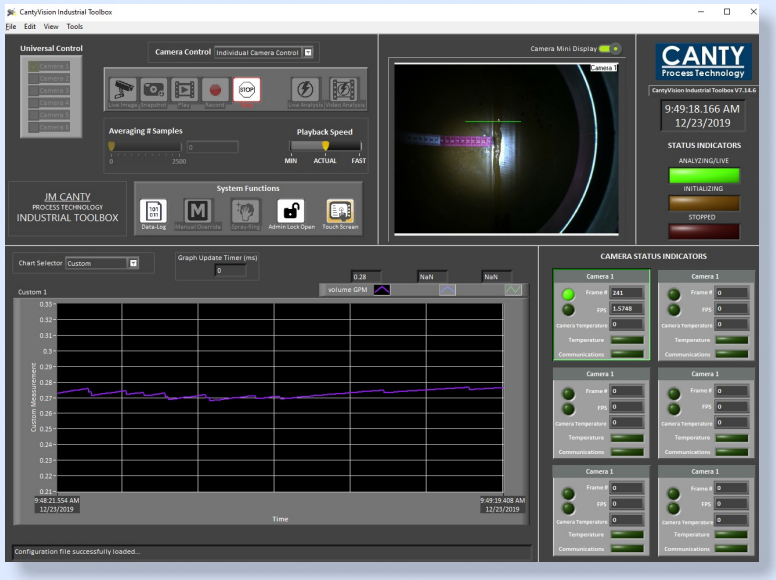


CAMERA ANGLE OF ROTATION FROM TDC MAX FLOW GPM		
PIPE SIZE (DIAMETER)	**0°**	**30°**
8"	200	400
12"	500	1,100
24"	3,400	7,300
36"	10,000	21,500

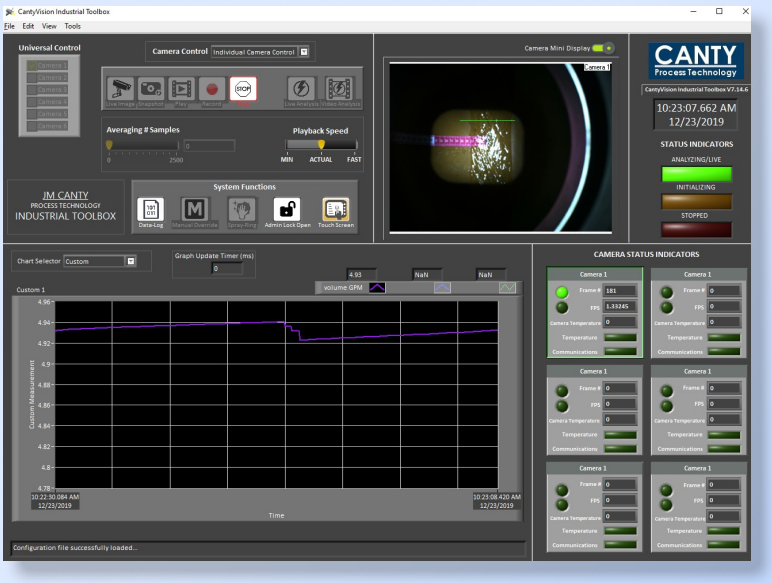
Note low flow rates for all pipeline sizes and camera mounting angle is 0.03 GPM (Visual Verification below this value)

FLOW RATES

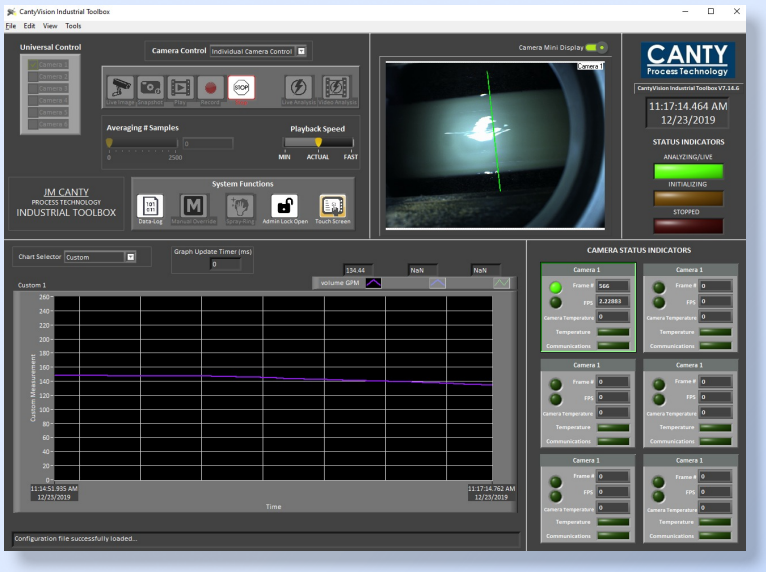
ZERO FLOW



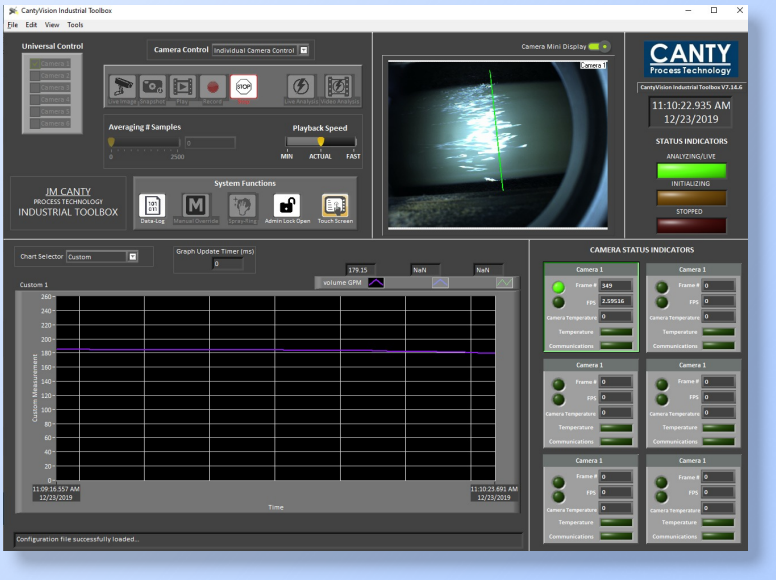
5 GPM



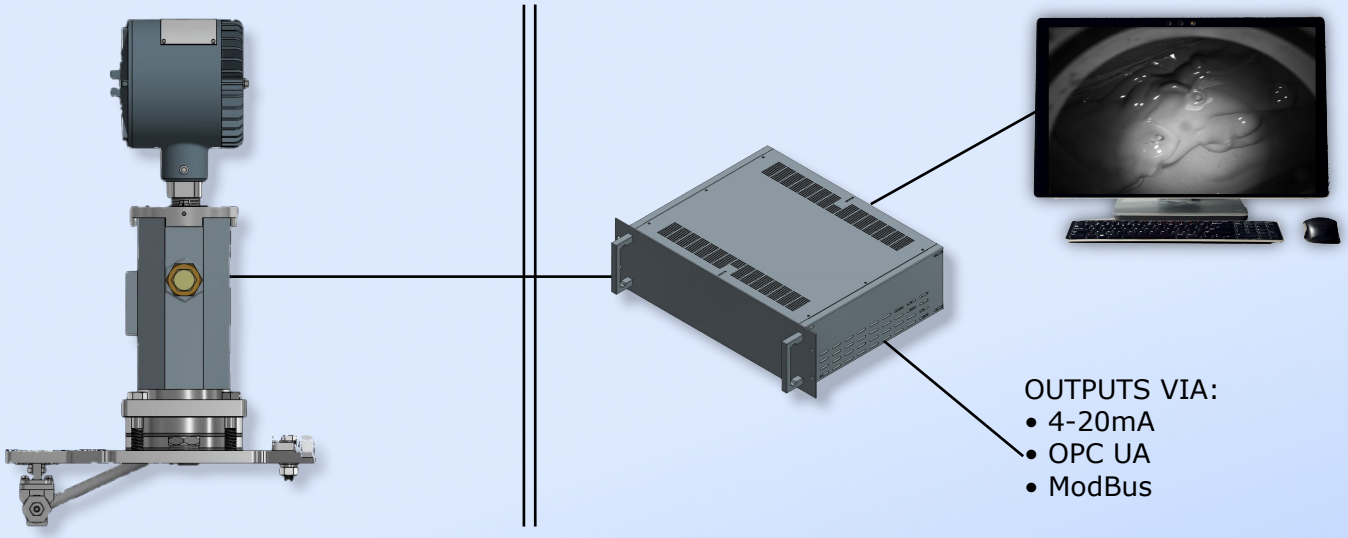
130 GPM



180 GPM



TYPICAL INSTALLATION



TECHNICAL INFORMATION		
Lower Detectable Limit	0.03 GPM (Visual verification below this value)	
Range	0.03 GPM	Please see page 2 for max flow rate based on pipe diameter and camera angle of rotation
Precision*	+/- 5% of the calibrated range	
Power	115/230V AC, 50/60 Hz	
Calibration Method	Factory set (Field Verified with Displacement pump)	
Calibration Frequency	Every 6 months	
Calibration Verification	At casing point, Closed system	
Certification	ATEX, IECEx, EX II 1 / 2 GD	

*Accuracy depends on fluids used during calibration. Model fluids will reduce accuracy.

HOW TO ORDER

VMFB1101-1

Wetted Material
B = 316 S.S.

Plate
1= Standard (12 by 7 inches)

Camera/ Light Options
1 - 1SRDO (Toroidal light)
2- Remote Flex Bundle lighting (72" TYP.)

Spray Ring
1 = Spraytube

ENVIRONMENTAL RATING
1 - Explosion Proof (120 Volts)
2 - Flame Proof (240 Volts)
2 - WP (120 Volts)
4- IP (240 Volts)