

AMP AgileMidstream PRODUCTS

Maturation of Water Measurement



HighWire

Drivers for improved water measurement

1. Profit – we have heard that some of our customers make more revenue from water disposal than crude oil transportation. As in crude, you cannot charge for transportation on barrels you lose via measurement issues!
2. Environmental – with the current government’s focus on fossil fuels, tracking the water from well to disposal may become more important over time. Will the government want to get involved in verifying that every barrel at the well is delivered for disposal?
3. Cost – Companies can achieve savings by using common process for disposal water and crude processes. Savings on training and common operational procedures.

Measurement processes Crude vs Water

Crude	Water
Polling	Polling
Meter Types - Turbine, Coriolis, PD	Meter Types - Turbine, PD, Mag
Meter Proving	Companies are starting to prove water meters
Grind Out	N/A
Validation / Editing	Validation / Editing
API Calculations	Future?
Inventory - Tank Gauging / Line Fill	Future?
Material Balance	Material Balance
Loss Allowance	Future?
Quality	Future?

Future

Balance total system water?

- Water separated at LACT
- Water from Tanks
- Water delivered as SW

Water balance in Crude

- Companies are starting to balance water in the crude to validate SW
 - For inventory changes
 - SW in crude in tanks
 - Bottom water
 - Future - SW in line fill?
- Receipts and delivery
 - SW of crude

Demo

Water balance

Crude balance

Water in crude balance