A method for reducing errors in wet gas measurement with Coriolis meters

Testing at Southwest Research Institute and Pipeline Research Council testing shows some coriolis meter designs are able to detect liquids at as low as 0.013% by volume using drive gain. Drive gain is the amount of energy used to keep the tubes inside the sensor vibrating at target amplitude. Two phase conditions cause damping and more power is sent to maintain vibration amplitude.

Advanced Phase Measurement Remediation Algorithm


e Results from testing at the 4-inch wet gas flow loop at CEESI agree with field test. The algorithm is able to output dry gas mass flow rate, with error in the 1.5-2% range, as measured against a separator in the case of filed tests, and gas injection measurement in the lab.

Country Mixed-Phase Mass Flow Output vs Gas Reference

With the algorithm, errors in dry gas measurement are greatly reduced and are largely insensitive to pressure. Future work will focus on increasing the accuracy and robustness of the algorithm.