# FOX APPLICATION GUIDE

## Direct Mass Flow Measurement for Allocation

**TYPICAL APPLICATIONS INCLUDE:**

- Natural Gas Allocation
- Flare Gas Monitoring
- Vent Gas Monitoring
- Oil & Condensate Storage Tank Vents
- Natural Gas Flow

Allocation requires accurate measurement across many measurement points to create reports suitable for ownership with multiple interested parties.

## Natural Gas Allocation in the Oil & Gas Industry

The Oil & Gas Industry uses allocation as a part of the hydrocarbon accounting process. The flow of petroleum from contributing sources - like natural gas - must be measured or "allocated" in order to determine ownership of sources that become commingled from the source to storage or the point of sale. Investors in Oil & Gas exploration or production often share costs over multiple owners in order to decrease individual risk. However, once production begins, determining ownership percentages from the product can become tricky if there are inaccuracies in the estimation of flow.

Beyond ownership of produced hydrocarbons, the objectives of allocation are:

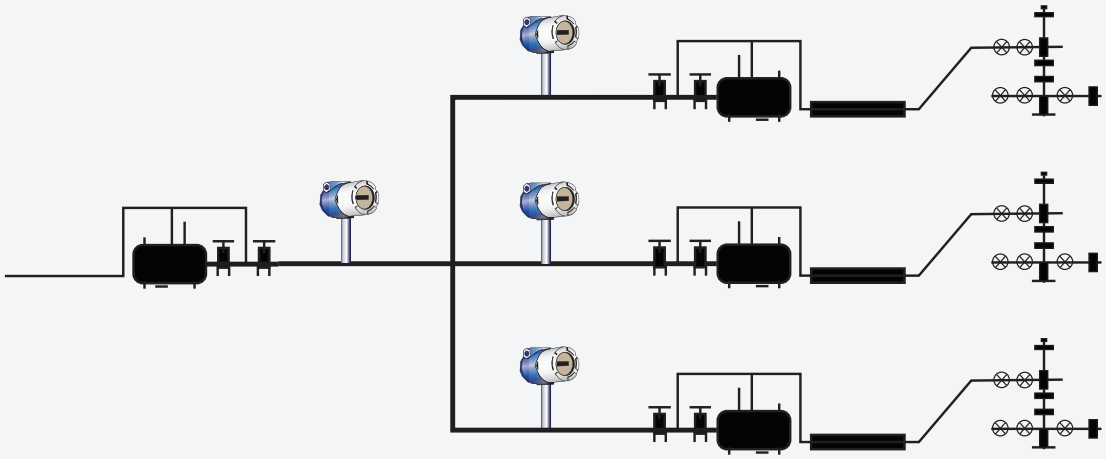
- To account for product transported from source to customer
- To help production planners determine offtake schedules
- To assist engineering staff regarding reservoir, well & production facility behavior
- To record data for report, audit & review purposes

Without accurate data on flow, the integrity of these objectives is compromised.

## Current Allocation Measuring Methods

Traditional methods for determining flow for allocation usually involve creating a Monthly Report of Producing Wells (MRPWs). MRPWs are created by performing monthly well tests. This method does not account for several factors that could greatly change the accuracy of the information supplied for the report:

- Well rates can vary unpredictably in-between testing
- Testing equipment may not be appropriate for the type of source being tested or could be out of calibration
- Short-cuts in testing (i.e. testing only one well as a basis for an estimate on all wells on site) can lead to vast miscalculations
- Well stream composition can suddenly change



Allocation requires accurate readings at multiple measurement points to analyze gas data for investor reporting.

The chance of inaccurate data being recorded in MRPWs is quite substantial when using well testing as the primary method of data collection. For this reason, operators are turning to continuous flow monitoring at the source in order to get the most accurate data accounting results.

## Continuous Flow Monitoring from Thermal Mass Flow Meters

Thermal Mass Flow Meters by Fox Thermal are often used in the Oil & Gas Industry for the purpose of monitoring the flow of fuel, flare, vent or natural gas. For allocation in particular, the flow meter must be accurate, cost-efficient, practical, easy to use, and easy to install. Fox Meters not only fit this description, but can greatly help with the ongoing process of allocation by continuously monitoring the flow of gases at the source for daily production reports at or near the individual wellheads. The accuracy of thermal mass flow meters is well within specifications determined by 40 CFR Part 98 for use in the Oil & Gas Industry.


Thermal mass flow meters from Fox Thermal offer an in-situ gas selection feature called Gas-SelectX®.

FOX® THERMAL

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