

Differential Pressure Flow Meters

Coal natural gas wellheads at a large energy company in the southwest are monitored and controlled by a sophisticated solar powered telemetering system reporting accumulated flow from each wellhead via AGA-3 Custody Transfer Orifice Plate Meters (see Photo 1).



Photo 1. Meter Runs

Application

By contract each production well sends 70% of the total output to the major supplier's pipeline with the remaining 30% collected and sent to their own pipeline system.

The supplier's custody transfer sales meters in place are the reference meters in this application. Installation of extremely accurate meters was required in existing take-off lines to assure the 70%/30% split. The remote computer system reads the custody transfer meter to periodically determine flow rate. The system then reads the take-off of the split flow meters (Veris Accelabars) and positions the control valve (see Photo 2) to maintain the customer's 30% and use the Accelabars to record the rate and accumulated flow for billing.



Photo 2. Control Valve

Fluid:	Natural Gas
Industry:	Gas Field
Application:	Coal Bed Methane
Specifications:	No straight run Turndown 25:1

Problems

- Each well produces from 40 MSCD to 1000 MSCD (25:1) thus high turndown and high accuracy is required. Orifice Plate sizes need to be changed out as wellhead flow drops over time (O/P effective turndown 4:1).
- Sites for the split flow meters exist with very little if any straight run available (see Photo 3) and adding pipe run is not an option.
- Meters need to be maintenance free. The existing Orifice Plates need to be removed monthly to check the edges and clean any paraffin build up, ice, dust particulates etc. which if not maintained will compromise the accuracy.
- In some cases meters needed to be installed in **vertical** pipe runs, not possible with Orifice plates or V-Cones (see Photo 3).



Photo 3. Accelabar

Solution

The Accelabar was selected for this application for the following reasons:

- High turndown up to **65:1**
- High accuracy **0.5% of rate** over **25:1** requirement
- **Zero** straight run required
- **Zero** maintenance required, no edges to wear
- Install **horizontal** or **vertical**

This customer is presently installing the first 30 of over 90 meters. Veris personnel assisted in installing the first few meters with impressive results – the Accelabars tracked the custody transfer meters within $\pm 1\%$ of the rate.