

METHODS OF GATHERING EGM DATA

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Introduction

In today's natural gas industry, it is of paramount importance that we focus on the accuracy and timeliness for the transfer of gas measurement data from the field measurement sites to a centralized gas measurement database to be verified, edited, and shared with all applicable groups.

Measurement of wellhead deliveries, pipeline interconnects to town plants, city gates, and ultimately the end-user must be efficient and verifiable.

To achieve this goal, various methodologies for gathering EGM data have evolved and improved over the past few years.

History

In past years, the time factor for transferring measurement data from field locations to the central gas measurement function was very slow. In the case of a seven-day paper chart, it could easily take up to ten working days before the chart was received in the measurement office. The chart then had to be censored and manually entered into the system. This could easily add on another three days before meaningful data was available for billing. In addition, the data needed to be corrected by the results of the gas analysis and could not be accomplished before a thirty day time lag. That was because the spot sample had to be shipped into the laboratory, analyzed and the results manually transmitted to the measurement group. By the time the analysis was available, the flow data was typically a month old.

That required a correction to the preceding month's volume statement on an ongoing basis.

Methods:

Many communications options are available in today's technology to serve EGM data systems. Some of these include telephone dedicated leased lines, cellular phones, radio, and satellite.

The communication systems can vary from a simple and straight forward approach to a very complex system.

An example of a simple system is the use of a dialup telephone or a cellular phone using a modem connected between a host and the switched telephone system. A disadvantage of this type of communication is that the central collection location must have numerous modems

available to retrieve the data. Also, phone lines are dependent on a physical connection which is vulnerable to numerous interruption possibilities. The data retrieval process is totally dependent on the speed of the modem which can slow down the process.

A more complex system involves a radio system that includes a master tower, a master radio, a converter, and a router. The host computer located at the data retrieval site sends a request for data through the communications port to the master radio tower. The signal is then broadcast throughout the system to the EGMs. Once the EGM responds, the signal returns back to the host through the air link. Some radio systems require line of sight in order to operate efficiently. Site surveys are performed to strategically place towers where airwave signals will not be distorted or lost altogether. Examples of these locations are mountainous regions or forests.

Although satellite systems provide the most efficient means of data communication, they are sometimes cost prohibitive.

Advantages of the current technology

Measurement Analyst/Host

The current technology better utilizes the gas measurement analysts time by allowing them to enter data on a daily basis in a "bulk" form as opposed to countless keystrokes as in the past. This allows more time to more closely audit the data received into Gas Measurement, resulting in increased speed of data entry. An added benefit can be greater accuracy thus reducing the possibility of errors. The online (live) corrections enable the company to provide the customer a daily volume.

The database operator must be familiar with the field equipment and the associated software programs to maintain the database efficiently.

Field Technician

Better communication capability utilizes the technician's time to diversify in other required areas of technical tasks. Now the technician, through remote communication can troubleshoot EGMs saving time and alleviating a trip to the site in many cases. A more experienced technician can help another technician troubleshoot and resolve a problem from a remote area without the need to visit the

site. Other advantages are tracking of load demand on a system and indications when and if a measurement device is over-ranged. Other items such as inlet/outlet pressure may be monitored for lost and unaccounted-for gas concerns. EGMs on a communication link can be set up to track gas volumes in and out of a pipeline system and provide an overview of the balancing zone. The technician can also remotely monitor the chromatograph for accuracy and/or potential problems.

Laboratory

Since standard billing is now based on the MMBTU rather than MCF, online analysis allows a direct volume correction in the EGM and enables the lab to gather the analysis to be applied to other sites within the same system that do not have a chromatograph installed. There is no longer an extended time lag in making the volume correction. The laboratory personnel can become an integral part of gas chromatograph troubleshooting thereby assisting the technician.

SCADA

Being a 24 hour, seven day per week function, Gas control (SCADA), although not relied on as a gas measurement entity, can monitor an EGM site remotely and contact the appropriate technician in the event that a problem exists. SCADA can utilize the results of monitoring the flow data to comply with daily contract nominations. The marketing group relies heavily on current data for the nominations.

It also allows trending which can indicate flow patterns over an extended period of time and predict future demands. Since not all sites have remote terminal units, the SCADA group can use the EGM flow data to indicate conditions at those sites.

Conclusion

A communication system that is well designed and thought out can provide an extremely reliable information resources concerning gas volumes from the wellhead to the burner tip and are performed in an environment where more is accomplished.

General the time and expense to send personnel around to each wellheads, pipeline interconnect and city gate manually collect data can be shifted to other activities,

The efficient and reliable transfer of gas measurement data is extremely important for the financial benefit of a gas company. The new era of communication technology available and the affordability of such systems lends itself to the bottom line financials of the company.