Flare Gas Flow Meters: Desirable Zeroes in Specifications

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TECHNICAL NOTE

Accurate gas flow measurement is a challenging task and it has been for many years. Today, technical capabilities of products are in tune with the growing usage of computing solutions and networking. People are no longer fascinated by the miniature color printers with a few thousand DPI resolution as the 3D printers are knocking at the door. However, this progress, may lead to exaggerations and overestimations of product's technical capabilities, which may mislead the users and create confusion.

Those of us who deal with gas flow metering will agree that "accuracy better than 1%" specification is frequently announced not only for the classic high-accuracy flow measurement and the fiscal gas metering, but also for the flare gas measurement, vent gas, biogas, etc. Sub-one percept accuracy is not easily achieved despite the use of modern high frequency DSP's and increases in flash memory in excess of 1TB.

While scrolling through the newly published paper, "Flare Gas Mass Flow Metering Innovations Promise More Economical Choices" by ControlGlobal, in the middle of the article, one can find Table 2, labeled "Comparison of Flow Technologies Considered for Flare Gas Metering" (http://www.controlglobal.com/assets/14WPpdf/140311-Sierra-FlareGas.pdf). The reader will most definitely fall in love with the last product on the list, a thermal mass flow meter called QuadraTherm. It has the highest turndown ratio of 2,000 to 1 and label "excellent" next to it, offered at a price of $3,000. In comparison, in the same table, the European built ultrasonic meter, appears to have only 100 to 1 turn down ratio, and is labeled "fair" at the steep price of $15,000.

Such an unbelievable performance inspired us to take a look at the author's website to review the specifications of the promoted device, based on the published manufacture's data. Our doubts were quickly justified after reviewing the QuadraTherm datasheet which stated that the thermal mass flow meter has "Mass Flow Rate Turndown 100:1". Now we are in the real world. The rangebility limit for thermal dispersion mass flow metering technology is at the 100:1 level.

So how did this incorrect value appear in the paper which leaded to these questionable conclusions? The answer can only be speculated by the modern tendency of placing many zeroes in published specifications, thus stimulating the swapping of the desirable and the real.