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## V-Cone Application Guide

**Industry:** Food & Beverage Production

**Application:** Steam & Specialty Gases Measurement in breweries.

**Measurement Challenge/Difficulty:** Steam being used in breweries had always been overlooked as a source or “reusable” or “capturable” energy. Averaging Pitot tubes typically used were not only inaccurate, but still required costly pipe runs along with very regular and expensive maintenance and replacement. In generating steam, thermal mass meters had been used but presented some of the same problems. Brewers looking to improve their efficiencies needed a new method to obtain and measure a thermal mass balance around the plant for steam generation and usage. Specialty gases such as Carbon Dioxide, Nitrogen, and Chlorine were being used in the utilities and process areas of the brewery. All of these were measured with previously mentioned flowmeter technologies, usually inadequately. The brewers needed a better flowmeter that would reduce the use of expensive purchased gases or be able to more accurately monitor use of generated steam and energy demands.

**Previous Method:** Steam measurement was made with orifice plates, then averaging pitot tubes. Specialty gases were measured with thermal mass dispersion meters. All of these technologies had similar problems with pipe diameter restriction, maintenance and replacement frequency and costs, and inaccuracies of the devices.

**Solution:** V-Cones were installed, reducing operating costs and virtually eliminating replacement expenses. The accuracy of the flowmeters helped the brewery to better calculate their steam/heat balance. V-Cones on specialty gas lines helped reduce usage and more accurately measure produced Carbon Dioxide, resulting in a more economical production.

V-Cones measuring Chlorine gas aided in the cleansing cycles thereby reducing gas purchases. V-Cones used in Nitrogen applications measured the gas more accurately, reducing the overall use of gas.

**Date Installed:** 1997 and Ongoing

**Submitted by:** McCrometer’s Process Industry Sales

**Literature No.**

24510-46/Rev. 1.0

**Industry:**

Food & Beverage  
Production

**Niche Market:**

Breweries

**Process:**

Specialty Gas & Steam  
Measurement.

**Product:**

Beer

**Fluid(s):**

Steam, Carbon Dioxide,  
Nitrogen, and Chlorine  
Gases.

**Viscosity:**

Varies per Fluid

**Flow Rate:**

Varies per Fluid

**Pressure:**

Varies per Fluid

**Temperature:**

Varies with Fluid

**Size:**

Varies per Fluid

**Date:**

March 31, 2004

**Submitted by:**

McCrometer Process  
Industry Sales