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(54) **APPARATUS AND METHOD FOR PROVIDING A FLOW MEASUREMENT COMPENSATED FOR ENTRAINED GAS**

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(57) **ABSTRACT**

A apparatus **10, 110** is provided that measures the speed of sound and/or vortical disturbances propagating in a fluid or mixture having entrained gas/air to determine the gas volume fraction of the flow **12** propagating through a pipe and compensating or correcting the volumetric flow measurement for entrained air. The GVF meter includes an array of sensor disposed axially along the length of the pipe. The GVF measures the speed of sound propagating through the pipe and fluid to determine the gas volume fraction of the mixture using array processing. The GVF meter can be used with an electromagnetic meter and a consistency meter to compensate for volumetric flow rate and consistency measurement respective, to correct for errors due to entrained gas/air.

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(63) Continuation of application No. 10/766,440, filed on Jan. 27, 2004, now Pat. No. 7,165,464, which is a continuation-in-part of application No. 10/715,197, filed on Nov. 17, 2003, now abandoned.  
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