

## Challenges of Cryogenic Fluid Metering by Coriolis Flowmeter

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**Abstract :** The present paper is aimed at providing a review of error sources in cryogenic metering by Coriolis flowmeters (CFMs). Whereas these flowmeters allow accurate water metering, high uncertainty and low repeatability are commonly observed at cryogenic fluid metering, which is often necessary for effective renewable energy production and storage. The sources of these issues might be classified as general and cryogenic specific challenges. A conducted analysis of experimental and theoretical studies shows that material behaviour at cryogenic temperatures, composition variety, and multiphase presence are the most significant cryogenic challenges. At the same time, pipeline diameter limitation, ambient vibration impact, and drawbacks of the installation may be highlighted as the most important general challenges of cryogenic metering by CFM. Finally, the techniques, which mitigate the impact of these challenges are reviewed, and future development direction is indicated.

**Keywords :** Coriolis flowmeter, cryogenic, multicomponent flow, multiphase flow

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