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(54) Title of the invention : A MODAL INTERFEROMETER BASED SYSTEM TO IMPROVE PERFORMANCE OF VORTEX FLOWMETER AND A METHOD THEREOF

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(57) Abstract :

The present invention discloses a fiber optic based sensing system for embedding in a vortex flowmeter for detection of vortex shedding frequency at low flow rates and high temperature. The developed fiber optic based sensing system comprises a highly sensitive optical fiber modal interferometry based sensor which can detect the vortex shedding frequency at low flow rates and improves the overall operating range of the flowmeter. The optical fiber modal interferometry based sensor involves periodic arrangement of silica and air holes for operating as the interferometer and generating temperature fluctuations independent interference pattern sensitive to incident frequency and hence vortex flow enabling said vortex flowmeter to accurately measure fluid flow rates in both directions (bi-directional) at high temperatures and/or low flow rates irrespective of external vibrations. The developed fiber optic based sensor for the vortex flowmeter is suitably located in between symmetric split bluff bodies to enable bi-directional flow measurement capability to the flowmeter. The shape of the bluff body and the sensor location can also be optimized to cater to a specific requirement so as to obtain large turndown ratio.

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