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(71) Applicant: **DOW GLOBAL TECHNOLOGIES LLC**
[US/US]; 2211 H.H. Dow Way, Midland, 48674 (US).

(72) Inventors: **GEORGE, Sherine**; c/o The Dow Chemical Company, 2301 North Brazosport Boulevard, Freeport, Texas 77541 (US). **HEIDER, Patrick L.**; c/o The Dow Chemical Company, 2211 H.H. Dow Way, Midland, Michigan 48674 (US). **WANG, Zhenyu**; c/o The Dow Chemical Company, 230 Abner Jackson Parkway, Lake Jackson, Texas 77566 (US).

(74) Agent: **FOSTER, Justin B.** et al.; Dinsmore & Shohl LLP, One South Main Street, Fifth Third Center, Suite 1300, Dayton, Ohio 45402 (US).

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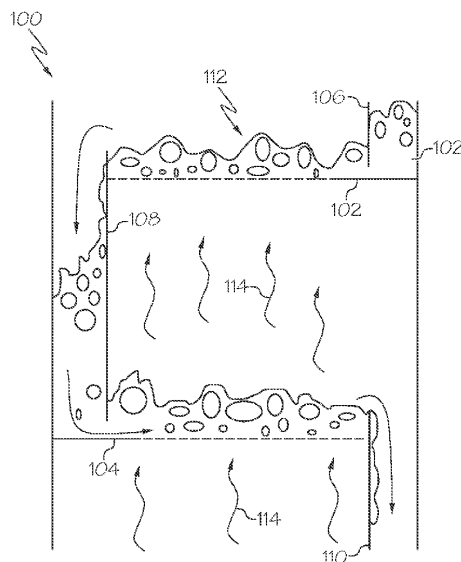


FIG. 1

(57) Abstract: A method is provided for detecting an operational condition of a vessel containing two fluid phases moving past each other. The method may include providing a fiber optic cable around an exterior surface of the vessel, receiving time domain data comprising distributed acoustic sensing measurements from the fiber optic cable at a plurality of locations along the exterior surface of the vessel, determining frequency domain data at each of the plurality of locations based on the time domain data, performing an analysis of the frequency domain data and/or the time domain data using a pre-trained model, and determining the operational condition of the vessel based on the analysis.

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