

Floating Wiper Inductive Voltage Divider Type Displacement Transducer

IITM Technology Available for Licensing

Problem Statement

- ❑ The problem statement discussed in the present invention is **how to configure inductive voltage divider type sensor** configured for **detecting displacement in the jet engines in effective manner**.
- ❑ Hence, claimed invention addresses the issue.

Technology Category/ Market

Technology: Floating Wiper Inductive Voltage Divider Type Displacement sensor;

Industry/Application: Automotive Industry, Aerospace, Defense, Medical & Industrial-Oil & Gas;

Market: The global **displacement sensor** market is projected to reach at a **CAGR** of **8.9%** during the forecast period (**2024-30**).

Technology

- ❑ Present patent describes a discloses an **inductive voltage divider type sensor** configured for **detecting displacement**.
- ❑ The **sensor circuit** comprises:

1

• a **sensing part** which has an **inductive element** having a **single wound coil** over which a **contactless wiper** is placed to slide laterally for **measuring displacement**;

2

• a **signal conditioning circuit** which has a **voltage controlled amplifier** to excite the inductive element;

- ❑ The disclosed inductive voltage divider type sensor has capability for **sensing either unipolar or bipolar displacement**. (Refer Fig.1, and Fig.3)

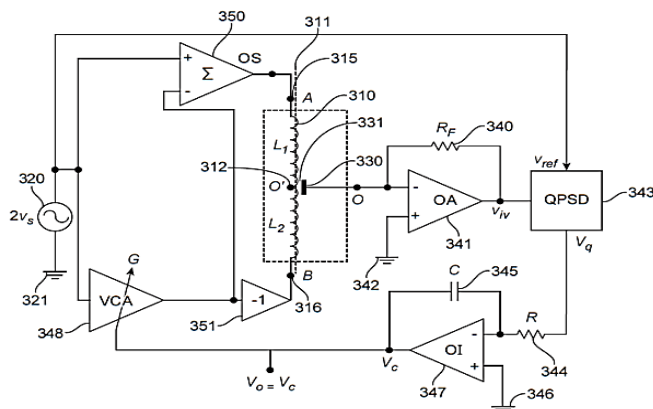


Fig.1 depicts an IVD displacement sensor with self-balancing signal conditioning circuit configured for sensing either unipolar or bipolar displacement.

- ❑ Further subject invention relates to a **displacement sensor** that has an **inductive voltage divider type sensing unit** and a **signal conditioning circuit**.
- ❑ The **inductive voltage divider type sensing unit** includes an inductive element that has a **single wound coil** having an axis that terminate at a **first end & a second end**.
- ❑ A **contactless wiper** is placed at a **fixed distance** from the **axis of the coil** and is configured to be displaced laterally in a **plane parallel to the axis** of the coil. (Refer Fig.2)

TRL (Technology Readiness Level)

TRL-4, Technology validated in Laboratory

Intellectual Property

IITM IDF Ref. 1327; IN Patent No. 490651

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Images

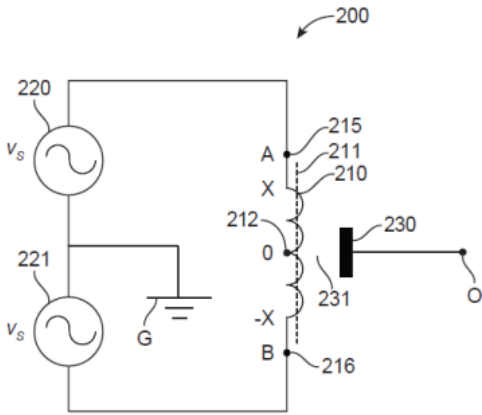


FIG. 2 illustrates an IVD displacement sensor with a floating wiper for measuring bipolar displacement x , where x varies in the range between x , X at point B and $x=X$ at point A;

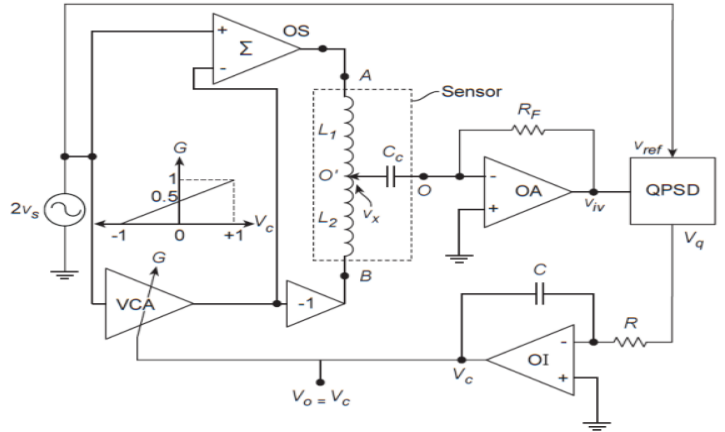


Fig.3 depicts an IVD displacement sensor with a floating wiper and self-balancing circuit configured for bipolar displacement;

Key Features / Value Proposition

Experimental Image

Increased operational life. And Provides better accuracy;

Consumes less power, and Suitable for precision instrumentation;

Reduced weight & compact size.

Applicable in precision measurements in industrial, automotive, medical, utility, scientific, oil and gas sectors in particular Aerospace, Defense, Medical & Industrial.

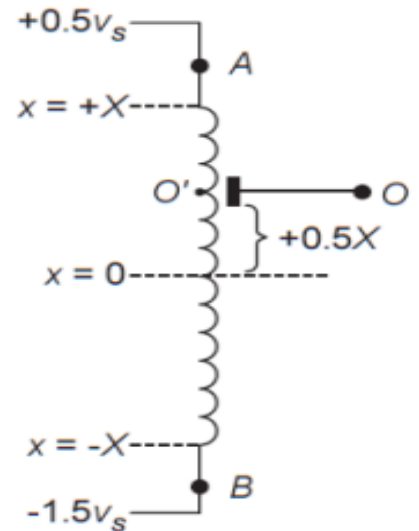


Fig. 4 shows the change in excitation voltages v_a and v_b to achieve self-balancing as the displacement is in the positive direction with $x=0.5X$

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