

CLAIMS

We Claim:

1. A vibrating sensor assembly (310), comprising:
 - a conduit (103A);
 - 5 a driver (104) including a first driver component (104a) and a second driver component (104b);
 - a first pick-off sensor (105) including a first pick-off component (105a) and a second pick-off component (105b);
 - 10 a first reference member (250), wherein the first pick-off component (105a) is coupled to the conduit (103A) and the second pick-off component (105b) is coupled to the first reference member (250);
 - a balance member (360) coupled to the conduit (103A); and
 - 15 a second reference member (350) coupled to the balance member (360), wherein the first driver component (104a) is coupled to the conduit (103A) and the second driver component (104b) is coupled to the second reference member (350).
2. The vibrating sensor assembly (310) of claim 1, wherein the second reference member (350) is coupled to the balance member (360) such that a combined center of mass (CM_C) of the second reference member (350) and the balance member (360) is
20 located on a bending axis (W-W) of the conduit (103A).
3. The vibrating sensor assembly (310) of claim 1, further comprising a second pick-off sensor (105') including a first pick-off component (105a') coupled to the
25 conduit (103A) and a second pick-off component (105b') coupled to the first reference member (250).
4. The vibrating sensor assembly (310) of claim 1, further comprising a second pick-off sensor (105') including a first pick-off component (105a') coupled to the
30 conduit (103A) and a second pick-off component (105b') coupled to a third reference member (550).

5. A method for forming a flow meter including a flow conduit, a driver with a first driver component and a second driver component, and a first pick-off sensor with a first pick-off component and a second pick-off component, comprising steps of:
- positioning a first reference member proximate the flow conduit;
 - 5 coupling the first pick-off component to the flow conduit;
 - coupling the second pick-off component to the first reference member proximate the first pick-off component;
 - coupling the balance member to the conduit;
 - coupling a second reference member to the balance member proximate the flow
 - 10 conduit;
 - coupling the first driver component to the flow conduit; and
 - coupling the second driver component to the second reference member proximate the first driver component.
- 15 6. The method of claim 5, further comprising a step of coupling the second reference member to the balance member such that a combined center of mass of the second reference member and the balance member are located on a bending axis of the flow conduit.
- 20 7. The method of claim 5, further comprising steps of coupling a first pick-off component of a second pick-off to the flow conduit and coupling a second pick-off component of the second pick-off to the first reference member proximate the first pick-off component of the second pick-off.
- 25 8. The method of claim 5, further comprising steps of coupling a first pick-off component of a second pick-off to the flow conduit and coupling a second pick-off component of the second pick-off to a third reference member proximate the first pick-off component of the second pick-off.

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We Claim:

1. A vibrating sensor assembly (310), comprising:

a conduit (103A);

5 a driver (104) including a first driver component (104a) and a second driver component (104b);

a first pick-off sensor (105) including a first pick-off component (105a) and a second pick-off component (105b);

10 a first reference member (250), wherein the first pick-off component (105a) is coupled to the conduit (103A) and the second pick-off component (105b) is coupled to the first reference member (250);

a second reference member (350), wherein the first driver component (104a) is coupled to the conduit (103A) and the second driver component (104b) is coupled to the second reference member (350); and

15 a balance member (360) coupled to the conduit (103A), wherein the second reference member (350) is coupled to the balance member (360).

2. The vibrating sensor assembly (310) of claim 1, wherein the balance member (360) vibrates in phase opposition to the conduit (103A).

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3. The vibrating sensor assembly (310) of claim 1, wherein the second reference member (350) is coupled to the balance member (360) such that a combined center of mass (CM_C) of the second reference member (350) and the balance member (360) is located on a bending axis (W-W) of the conduit (103A).

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4. The vibrating sensor assembly (310) of claim 1, further comprising a second pick-off sensor (105') including a first pick-off component (105a') coupled to the conduit (103A) and a second pick-off component (105b') coupled to the first reference member (250).

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5. The vibrating sensor assembly (310) of claim 1, further comprising a second pick-off sensor (105') including a first pick-off component (105a') coupled to the

conduit (103A) and a second pick-off component (105b') coupled to a third reference member (550).

6. A method for forming a flow meter including a flow conduit, a driver with a first driver component and a second driver component, and a first pick-off sensor with a first pick-off component and a second pick-off component, comprising the steps of:

positioning a first reference member proximate the flow conduit;

coupling the first pick-off component to the flow conduit;

coupling the second pick-off component to the first reference member proximate

the first pick-off component;

coupling a balance member to the flow conduit;

coupling a second reference member to the balance member proximate the flow conduit;

coupling the first driver component to the flow conduit; and

coupling the second driver component to the second reference member proximate the first driver component.

7. The method of claim 6, further comprising the step of coupling the second reference member to the balance member such that a combined center of mass of the second reference member and the balance member are located on a bending axis of the flow conduit.

8. The method of claim 6, further comprising the steps of coupling a first pick-off component of a second pick-off to the flow conduit and coupling a second pick-off component of the second pick-off to the first reference member proximate the first pick-off component of the second pick-off.

9. The method of claim 6, further comprising the steps of coupling a first pick-off component of a second pick-off to the flow conduit and coupling a second pick-off component of the second pick-off to a third reference member proximate the first pick-off component of the second pick-off.