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Paper 14
Entered: February 18, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICRO MOTION, INC.,
Petitioner,

v.

INVENSYS SYSTEMS, INC.,
Patent Owner.

Case IPR2014-01409
Patent 7,571,062 B2

Before WILLIAM V. SAINDON, MICHAEL R. ZECHER, and JENNIFER M. MEYER, *Administrative Patent Judge*.

SAINDON, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108
Denying Petitioner's Motion for Joinder
37 C.F.R. § 42.122

I. INTRODUCTION

Petitioner requests an *inter partes* review of claims 1, 12, 23–25, 29, 36, and 43 of U.S. Patent No. 7,571,062 (Ex. 1001, "the '062 patent"). Paper 2, 3 ("Pet"). Petitioner acknowledges that it was served more than a year before filing its Petition, but asserts that 35 U.S.C. § 315(b) does not apply to this proceeding because its Petition is accompanied by a timely Motion for Joinder under 35 U.S.C. § 315(c) to a pending *inter partes* review of the '062 patent. Pet. 2–3; *see also* Paper 3 (Petitioner's Motion for Joinder); *Micro Motion, Inc. v. Invensys Sys., Inc.*, Case IPR2014-00393 (PTAB Aug. 4, 2014) (Paper 16, instituting *inter partes* review on claims 1, 29, 40, and 45 of the '062 patent). Patent Owner timely filed a Preliminary Response. Paper 13 ("Prelim. Resp.").

We have jurisdiction under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted "unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Upon consideration of the Petition, Preliminary Response, and the papers and exhibits cited therein, we do not institute an *inter partes* review on any challenged claim. Likewise, we do not grant Petitioner's Motion for Joinder.

A. Related Matters

The '062 patent is subject to the aforementioned *inter partes* review, IPR2014-00393. Pet. 1.

Petitioner alleges the '062 patent has been asserted in *Invensys Sys., Inc. v. Emerson Electric Co.*, No. 6:12-cv-00799-LED (E.D. Tex.). Pet. 1.

Petitioner has filed a number of petitions for *inter partes* review of Patent Owner's patents. *Id.* at 2.

B. Background on Flow Meter Technology

As described in the background section of the '062 patent, Coriolis flow meters seek to measure the flow of material through a tube by taking advantage of the Coriolis effect. Ex. 1001, 1:31–41. A driving mechanism applies forces to the tube to induce it to oscillate. *Id.* at 1:42–43. The flow meter uses sensors to measure the twisting of the tube (due to the Coriolis effect, as explained below) and thereby, estimates the mass and/or density of the material. *See id.* at 3:47–56; *see also* Ex. 1064 ¶¶ 28–38 (Declaration of Dr. Michael D. Sidman explaining how Coriolis flow meters operate). Figures 1–3 of Exhibit 1009,[1] reproduced below, show the Coriolis effect in action:

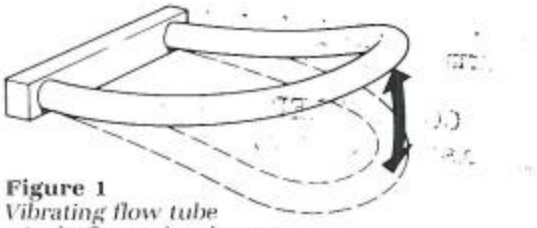

Figure 1
Vibrating flow tube (single flow tube shown)

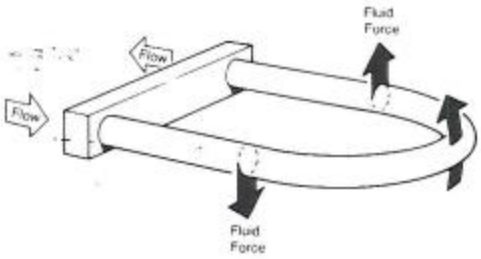

Figure 2
Fluid forces reacting to vibration of flow tube

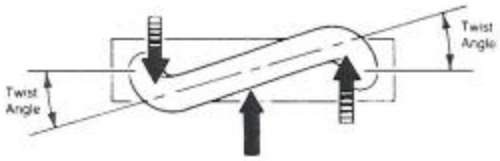

Figure 3
End view of flow tube showing twist

In Figure 1, an empty tube bent in a horseshoe shape is made to oscillate up and down; both legs of the tube pass the midpoint of the up-and-

[1] Micro Motion, *How the Micro Motion® Mass Flow and Density Sensor Works*, (1990) (Ex. 1009).

down oscillation at the same time. Ex. 1009, 1. In Figure 2, fluid now flows in one end of the tube and out the other. *Id.* The tube is depicted as rising, in the upward swing of its oscillation. *Id.* In this moment, the fluid flowing into the first leg of the tube is pushed upwards by the rising tube, but resists this motion, due to inertia, and exerts a downward force on this leg, holding back the upward rise of this leg. *Id.* By the time the fluid has passed around the bend and into the second leg of the tube, however, the fluid has been accelerated upwards by the upward rise of the tube, and, thus, pushes upward on the second leg of the rising tube. *Id.* Figure 3 depicts an end view of the tube, and the net result of these forces—a twisting of the tube. *Id.* When the tube moves in its downward swing of its oscillation, the opposite twist occurs. *Id.* The amount of twisting is proportional to the mass of the fluid moving through the tube. *Id.*

Accordingly, a flow meter uses the left and right velocity sensor signals for two purposes. The first is to determine the difference in phase between the two legs of the flow meter, which, in turn, is used to determine the mass flow rate of the fluid that flows through the tube. Ex. 1064 ¶ 33. We refer to this as the flow measurement function. The second is to measure the oscillation of the tube, which, in turn, is used to control that oscillation to drive it in a manner to obtain accurate phase difference measurements. *Id.* ¶ 41. We refer to this as the drive function.[2]

[2] The oscillation of the tube also is measured to determine the frequency of oscillation, which, in turn, is used to determine the density of the material in the tube. Ex. 1064 ¶¶ 37, 39. This particular density measurement function is not important to our discussion.

C. The '062 Patent

The '062 patent describes a flow meter that uses digital signal processing to generate a drive signal. The flow meter measures the amplitude, frequency, and phase of velocity sensor signals located on the legs of the flow tube. Ex. 1001, 12:9–19. Among other uses, the digital signal processor uses these measurements to drive the vibration of the tube in a manner leading to the most accurate measurements. Measuring the signals, as well as computing the drive signal, however, takes time. *Id.* at 20:53–60. To be most effective, the drive signal needs to be coordinated with the actual vibration of the flow tube. The '062 patent introduces a phase shift of the calculated drive signal to compensate for the delays introduced by the measurements and computations. *Id.*

D. Illustrative Claim

Of the claims challenged, claim 1 is independent and claims 12, 23–25, 29, and 36 depend therefrom. Challenged claim 43 depends from independent claim 40, which is not challenged in this proceeding. Independent claim 1 is reproduced below with emphasis added:

> 1. A digital flowmeter comprising:
> a vibratable conduit;
> a driver connected to the conduit and operable to impart motion to the conduit;
> a sensor connected to the conduit and operable to sense the motion of the conduit; and
> a control and measurement system connected between the driver and the sensor, wherein the control and measurement system is configured to:
> receive a sensor signal from the sensor,
> generate a drive signal based on the sensor signal using digital signal processing,

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