UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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MICRO MOTION, INC.
Petitioner
v.

INVENSYS SYSTEMS, INC.
Patent Owner

Patent No. 7,571,062
Issue Date: August 4, 2009
Title: DIGITAL FLOWMETER

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Inter Partes Review No. <u>Unassigned</u>

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DECLARATION OF DR. MICHAEL D. SIDMAN

1.   I, Dr. Michael D. Sidman, resident at 6120 Wilson Road Colorado Springs, CO, hereby declare as follows:

2.   I have been retained by Foley & Lardner LLP to provide my opinion concerning the validity of U.S. Pat. No. 7,571,062. I am being compensated for my time at the rate of $450/hour in preparing this declaration.

I.   QUALIFICATIONS

3.   I completed my undergraduate studies at Northeastern University, where I received a Bachelor's and a Master's degree in Electrical Engineering concurrently in 1975.

4.   I received my Ph.D. from Stanford University in 1986. My work at Stanford as a Digital Equipment Corporation Fellow and University Resident included developing a high-performance digital control system for a lightly-damped mechanism in the Stanford Aero/Astro Robotics Laboratory.

5.   My dissertation was entitled: *Adaptive Control of a Flexible Structure*. This research culminated in an adaptive control system that actively damps the vibrations of a lightly-damped mechanism, like a large space structure or disk drive actuator, whose resonant frequencies may be unpredictable or variable. The system performed on-line system identification of the frequencies of the mechanism's mechanical resonances.

6. I have worked for over 35 years in the field of motor, motion and servo control systems, and specifically in the field of digital control and signal processing systems. I have researched the control and mechanical dynamics of high performance, precision digital servo systems such as found in a range of computer peripheral devices.

7. Since 1992, I have been working as an independent engineering consultant. I am currently President of Sidman Engineering, Inc. I provide engineering design services to manufacturers worldwide, which span a range of industries. This work has included the following: (1) optimizing and simulating mechatronic systems (2) developing comprehensive custom design and dynamic system simulation tools including computer models of motor, motion and servo control systems; (3) teaching on-site technical short courses to design engineers and scientists; and (4) consulting on high-performance digital servo systems design and problem resolution.

8. The field of "mechatronics" encompasses mechanics, electronics and control systems technologies.

9. A "servo" or "servomechanical" system is a control system that controls position, velocity or acceleration, often utilizing motion sensor feedback .

10. Through Sidman Engineering, I provide interdisciplinary analysis and resolution of complex design issues. This may include providing clients with

customized, comprehensive computer based design tools and simulation models of a variety of dynamic systems, including electromechanical products and systems. These comprehensive models integrate actuator dynamics and electrodynamics, mechanical resonances, electronic circuitry, sensors, signal processing and filtering. In this role I have developed comprehensive servo system simulation models and design tools. The design tools I provide generally are used by product or system design engineers to understand system behavior and to optimize system parameters. As discussed below, I also provide on-site high level technical training courses for design engineers and scientists at companies. My business address is at 6120 Wilson Road, Colorado Springs, Colorado, 80919.

11.   My commercial clients span the following industries and applications:

- Industrial and commercial: chemical process control, steel manufacturing, hydraulic control, commercial aviation, medical equipment, textile manufacturing, food processing, bicycle motor control, fuel cells.

- Computer peripherals and related test equipment: hard disk drives, optical disc drives, tape drives, printers, digital pens, robotics.

- Automotive: tire manufacturing & test, engine and vehicle dynamometers, electromechanical EGR valves, electric power assisted steering.

- Chip design: motor, motion and digital servo control IC's, DSPs and microcontrollers.

- Defense: aerospace, naval, optical reconnaissance, security scanning.

- Instrumentation: software, flow meters, optical position sensing, coordinate measurement machines.

- Telecommunications: digital signal processing, speech analysis, optical switching.

This list is simply representative of my technical consulting activities to companies over a period of more than two decades.

12.   Before I became an independent engineering consultant, I spent 17 years at Digital Equipment Corporation (DEC) in roles spanning product development, advanced development and research. I headed DEC's Advanced Servo Development Group and Servo-Mechanical Advanced Development Group, both of which I founded. These groups developed and demonstrated technology involving, for example, position and velocity sensing, MEMS accelerometers, active vibration control, optimal seek control, piezoelectric head positioning actuators and DSP-based digital servo systems for hard disk drives. In a prior product design development role, I was the Project Engineer for DEC's RK07 disk drive product.

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