MEASUREMENT SPECIALTIES INC
Form 10-K
May 27, 2004

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

(Mark One)
[X] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

FOR THE FISCAL YEAR ENDED MARCH 31, 2004
OR

[ ] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

FOR THE TRANSITION PERIOD FROM TO

COMMISSION FILE NUMBER 1-11906

MEASUREMENT SPECIALTIES, INC.

(EXACT NAME OF REGISTRANT AS SPECIFIED IN ITS CHARTER)

NEW JERSEY	22-2378738
(STATE OR OTHER JURISDICTION OF INCORPORATION OR ORGANIZATION)	(I.R.S. EMPLOYER IDENTIFICATION NO.)
710 ROUTE 46 EAST, SUITE 206, FAIRFIELD, NEW JERSEY (ADDRESS OF PRINCIPAL EXECUTIVE OFFICES)	07004 (ZIP CODE)

REGISTRANT'S TELEPHONE NUMBER, INCLUDING AREA CODE (973) 808-3020

SECURITIES REGISTERED UNDER SECTION 12(b) OF THE ACT:

TITLE OF EACH CLASS	NAME OF EACH EXCHANGE ON WHICH REGISTERED
COMMON STOCK, NO PAR VALUE	AMERICAN STOCK EXCHANGE

SECURITIES REGISTERED UNDER SECTION 12(g) OF THE ACT: NONE

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes [X] No [ ]

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. [ ]

Indicate by check mark whether the registrant is an accelerated filer (as defined in Exchange Act Rule 12b-2) Yes [X] No [ ]

At September 30, 2003, the aggregate market value of the voting and

non-voting common equity held by non-affiliates was approximately $166.9 million based on the closing price of the registrant's common stock on September 30, 2003.

At May 13, 2004, 13,265,724 shares of the registrant's common stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

THE INFORMATION REQUIRED TO BE FURNISHED PURSUANT TO PART III OF THIS FORM 10-K IS SET FORTH IN, AND IS HEREBY INCORPORATED BY REFERENCE HEREIN FROM, THE REGISTRANT'S DEFINITIVE PROXY STATEMENT FOR THE ANNUAL MEETING OF SHAREHOLDERS TO BE HELD ON AUGUST 31, 2004 TO BE FILED BY THE REGISTRANT WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO REGULATION 14A NOT

LATER THAN 120 DAYS AFTER THE FISCAL YEAR ENDED MARCH 31, 2004.

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PART I

ITEM 1. BUSINESS

INTRODUCTION

NOTES:

(1) AS MORE FULLY DESCRIBED BELOW UNDER "CHANGES TO OUR BUSINESS," WE DISCONTINUED CERTAIN OF OUR BUSINESSES DURING THE FISCAL YEAR ENDED MARCH 31, 2003, AND SOLD ASSETS DURING THE FISCAL YEARS ENDED MARCH 31, 2003 AND 2004. EXCEPT AS OTHERWISE NOTED, THE DESCRIPTIONS OF OUR BUSINESS, RESULTS AND OPERATIONS CONTAINED IN THIS REPORT REFLECT ONLY OUR CONTINUING OPERATIONS.

(2) AS MORE FULLY DESCRIBED IN OUR ANNUAL REPORT ON FORM 10-K FOR THE FISCAL YEAR ENDED MARCH 31, 2002, OUR FINANCIAL STATEMENTS FOR THE FISCAL YEAR ENDED MARCH 31, 2001 AND FOR THE FIRST THREE QUARTERS OF THE FISCAL YEAR ENDED MARCH 31, 2002 WERE RESTATED. ALL AMOUNTS INCLUDED IN THIS ANNUAL REPORT ON FORM 10-K REFLECT THIS RESTATEMENT.

(3) ALL DOLLAR AMOUNTS IN THIS REPORT ARE IN THOUSANDS, EXCEPT PER SHARE AMOUNTS AND PRODUCT PRICES.

We are a designer and manufacturer of sensors and sensor-based consumer products. We produce a wide variety of sensors that use advanced technologies to measure precise ranges of physical characteristics, including pressure, motion, force, displacement, tilt / angle, flow, and distance. We have two businesses, a Sensor business and a Consumer Products business. We are a New Jersey corporation organized in 1981.

Our Sensor segment designs and manufacturers sensors for original equipment manufacturers (OEMs). These sensors are used for automotive, medical, consumer, military/aerospace and industrial applications. Our sensor products include piezoresistive pressure sensors, transducers and transmitters, electromagnetic displacement sensors, piezoelectric polymer film sensors, tilt sensors, membrane switch panel sensors, custom microstructures, load cells and accelerometers.

Our Consumer Products segment designs and manufactures sensor-based consumer products. Our sensor-based consumer bath and kitchen scale products are sold and marketed primarily under the brand names of our original equipment manufacturer customers. Our tire pressure gauges and distance measurement products are sold and marketed under our own brand names, as well as those of our OEM and private label customers.

Each of our businesses benefits from the same core technology base. Our advanced technologies include piezoresistive silicon sensors, application-specific integrated circuits, micro-electromechanical systems (MEMS), piezoelectric polymers, foil strain gauges, force balance systems, fluid capacitive devices, linear and rotational variable differential transformers, electromagnetic displacement sensors and ultrasonics. These technologies allow our sensors to operate precisely and cost effectively. We have a global operation with facilities located in North America, Europe and Asia. By functioning globally, we have been able to enhance our applications engineering capabilities and increase our geographic proximity to our customers.

We are focusing our development efforts in both our Sensor business and Consumer Products business on the OEM market. In particular, we are focused on

aggressively growing our Sensor segment, which management believes has greater growth potential. We expect that growth of our Sensor business will come through a combination of organic growth and acquisitions.

In the Consumer Products segment, having both a branded and OEM consumer scale business has created channel conflicts. As part of our effort to focus on the OEM market, we sold certain assets associated with our Thinner branded bathroom and kitchen scale business to Conair Corporation on January 30, 2004. We previously sold our Thinner branded scales directly to retailers, predominately in the U.S. and Canada. On a going-forward basis, we expect to supply these scales directly to Conair and intend to continue our efforts in the design, development and manufacture of innovative scale products for sale to our worldwide base of OEM customers. Although our development focus is on the OEM market, we intend to continue to develop and manufacture our tire pressure gauges and distance measurement products for sale to both retail customers and OEM customers.

Key to executing our strategy is to utilize our expertise in sensor technologies to target expanding market segments and to develop new products and applications, thereby increasing demand for our sensors and sensor-based consumer products. Our global design teams support our production facilities and engineering resources in the United States and in China. By combining our manufacturing expertise with our core technology, we strive to provide our global customers with an advantageous price-value relationship.

OUR SENSORS

The majority of our sensors are devices, sense elements and transducers that convert mechanical information into a proportionate electronic signal for display, processing, interpretation, or control. Sensors are essential to the accurate measurement, resolution, and display of pressure, motion, force, displacement, angle, flow, and distance. Our other Sensor products are transducers that convert an applied electrical signal into a mechanical motion corresponding to the amplitude and frequency of the electrical input.

MARKETS

Sensor manufacturers are moving toward smart sensors that use digital intelligence to enhance measurement and control signals. The shift toward sensors utilizing digital signal processing technologies has enhanced applications in the automotive, medical, military, and consumer products markets. Examples of our sensor applications include:

- automotive applications in braking, transmission, fuel pressure, diesel common rail pressure monitoring, security sensing, and onboard tire pressure monitoring;

- industrial sensors for regulating flow in industrial paint sprayers and agricultural equipment, monitoring pressures in refrigeration and heating/ventilating/air conditioning compressors, controlling valves in process control and electrical power generation equipment and traffic monitoring, vehicle speed and traffic light enforcement;

- medical sensors for invasive blood pressure measurement, drug infusion flow monitoring, electronic stethoscopes, vascular health diagnostics, sleep disorder sensing, and body activity feedback in heart pacemakers;

- military applications, which continue to drive sensor development, with new systems requiring small, high performance sensors for smart systems such as navigation and weapons control systems, pressure monitoring, and collision avoidance systems; and

- consumer products applications including the measurement of weight, distance, and movement, digitizing information for electronic white boards and pen input devices for laptops, acoustic devices for musical instruments and speakers, and imbalance sensors for appliances.

TECHNOLOGY

In the rapidly evolving markets for sensors and sensor-based consumer products, there is an increasing demand for technologies such as:

Piezoresistive Technology. Piezoresistive materials, most often silicon, respond to changes in applied mechanical variables such as stress, strain, or pressure by changing electrical conductivity. Changes in electrical conductivity can be readily detected in circuits by changes in current with a constant applied voltage, or conversely by changes in voltage with a constant supplied current. Piezoresistive technology is widely used for the measurement of pressure, load and acceleration, and its use in these applications is expanding significantly.

Application Specific Integrated Circuits (ASICs). These circuits convert analog electrical signals into digital signals for measurement, computation, or transmission. Application specific integrated circuits are well suited for use in consumer products because they can be designed to operate from a relatively small power source and are inexpensive.

Micro-Electromechanical Systems (MEMS). Micro-electromechanical systems and related silicon micromachining technology are used to manufacture components for physical measurement and control. Silicon micromachining is an ideal technology to use in the construction of miniature systems involving electronic, sensing, and mechanical components because it is inexpensive and has excellent physical properties. Micro-electromechanical systems have several advantages over their conventionally manufactured counterparts. For example, by leveraging existing silicon manufacturing technology, micro-electromechanical systems allow for the cost-effective manufacture of small devices with high reliability and superior performance.

Piezoelectric Polymer Technology. Piezoelectric materials convert mechanical stress or strain into proportionate electrical energy, and conversely, these materials mechanically expand or contract when voltages of opposite polarities are applied. Piezoelectric polymer films are also pyroelectric, converting heat into electrical charge. These polymer films offer unique sensor design and performance opportunities because they are thin, flexible, inert, broadband, and relatively inexpensive. This technology is ideal for applications where the use of rigid sensors would not be possible or cost-effective.

Strain Gauge Technology. A strain gauge consists of metallic foil that is impregnated into an insulating material and bonded to a sensing element. The foil is etched to produce a grid pattern that is sensitive to changes in geometry, usually length, along the sensitive axis producing a change in resistance. The gauge operates through a direct conversion of strain to a change in gauge resistance. This

technology is useful for the construction of reliable pressure sensors.

Force Balance Technology. A force-balanced accelerometer is a mass referenced device that under the application of tilt or linear acceleration, detects the resulting change in position of the internal mass by a position sensor and an error signal is produced. This error signal is passed to a servo amplifier and a current developed is fed back into a moving coil. This current is proportional to the applied tilt angle or applied linear acceleration and will balance the mass back to its original position. These devices are used in military and industrial applications where high accuracy is required.

Fluid Capacitive Technology. This technology is also referred to as fluid filled, variable capacitance. The output from the sensing element is two variable capacitance signals per axis. Rotation of the sensor about its sensitive axis produces a linear change in capacitance. This change in capacitance is electronically converted into angular data, and provides the user with a choice of ratiometric, analog, digital, or serial output signals. These signals can be easily interfaced to a number of readout and/or data collection systems.

Linear Variable Differential Transformers (LVDT). An LVDT is an electromechanical sensor that produces an electrical signal proportional to the displacement of a separate movable core. LVDT's are widely used as measurement and control sensors wherever displacements of a few micro inches to several feet can be measured directly, or where mechanical input, such as force or pressure, can be converted into linear displacement. LVDT's are capable of extremely accurate and repeatable measurements in severe environments.

Ultrasonic Technology. Ultrasonic sensors measure distance by calculating the time delay between transmitting and receiving an acoustic signal that is inaudible to the human ear. This technology allows for the quick, easy, and accurate measurement of distances between two points without physical contact.

BUSINESS SEGMENTS

Our financial results by business segment for the fiscal years ended March 31, 2004, 2003 and 2002 are presented in Note 16 to the consolidated financial statements included in this Annual Report on Form 10-K.

PRODUCTS

Sensors. A summary of our Sensor business product offerings as of March 31, 2004 is presented in the following table:

PRODUCT	TECHNOLOGY	BRAND NAME	APPLICATIONS
Pressure Sensors	Micro-Electromechanical Systems (MEMS)	IC Sensors	Disposable catheter blood pressure, altimeter, dive tank pressure, process instrumentation, fluid level, measurement and intravenous drug administration monitoring
	Piezoresistive	microFused	Fertilizer and paint spraying, diesel engine control, hydraulics, refrigeration and automotive power train

	Strain Gauge	Schaevitz	Instrumentation-grade aerospace and weapon control systems, sub-sea pressure, ship cargo level, and steel mills
Accelerometers	Piezoelectric Polymer	PiezoSensors	Transportation shipment monitoring, audio speaker feedback, appliance imbalance and consumer exercise monitoring
	Micro-Electromechanical Systems (MEMS)	IC Sensors	Traffic alert and collision avoidance systems, railroad, tilt, and instrumentation
	Force Balance	Schaevitz	Aerospace, weapon fire control, inertial navigation, angle, and tilt

Rotary Displacement Sensors	Linear and Rotary Variable Displacement Transducer	Schaevitz	Aerospace, machine control systems, knitting machines, industrial process control, and hydraulic actuators
Tilt/Angle Sensors	Fluid Capacitive	Schaevitz	Tire balancing, heavy equipment level measurement, and consumer electronic level measurement
Traffic Sensors	Piezoelectric Polymer	PiezoSensors	Traffic survey, speed and traffic light enforcement, toll, and in-motion vehicle weight measurement
Custom Piezofilm Sensors	Piezoelectric Polymer	PiezoSensors	Medical diagnostics, ultrasound, consumer electronic, electronic stethoscope, and sonar
Custom Microstructures	Micro-Electromechanical Systems (MEMS)	IC Sensors	Atomic force microscopes, optical switching, hydrogen and humidity sensors

Consumer Products. A summary of our sensor-based consumer products as of March 31, 2004 is presented in the following table:

PRODUCT	TECHNOLOGY	BRAND NAMES(1)	TYPES OF PRODUCTS	PRICE RANGE

Scales	Piezoresistive, Application Specific Integrated Circuits	Thinner (2) Health-o-meter, Laica, Salter, Weight Watchers and Babyliss Portion Power	Bathroom Scales	$ 5.00-60.00
			Kitchen Scales	$ 3.00-25.00
Tire Pressure Gauges	Piezoresistive	Accutire	Digital and Mechanical Tire Pressure Gauges	$ 0.50-35.00
Distance Measurement Products	Ultrasonic	Accutape	Interior Distance Estimator	$13.00-22.00
		Park-Zone	Distance Estimator for Parking	$10.00-25.00