

New York State Department of Taxation and Finance  
**Office of Tax Policy Analysis**  
**Technical Services Division**

TSB-A-03(27)S  
Sales Tax  
June 24, 2003

STATE OF NEW YORK  
COMMISSIONER OF TAXATION AND FINANCE

ADVISORY OPINION

PETITION NO.S000502C

On May 2, 2000, the Department of Taxation and Finance received a Petition for Advisory Opinion from Motorola, Inc., 611 Jamison Road, Elma, NY 14059. Petitioner, Motorola, Inc., provided additional information pertaining to the Petition on May 18, 2000 and March 7, 2001.

The issues raised by Petitioner are:

(1) Whether certain equipment used in connection with Petitioner's production of automotive electronic components for sale is exempt from sales and compensating use tax.

(2) Whether the purchase of parts and maintenance for the equipment is exempt from sales and compensating use tax.

(3) Whether the purchase of electricity and water used in Petitioner's manufacturing operations is exempt from sales and compensating use tax.

Petitioner submitted the following facts as the basis for this Advisory Opinion.

Petitioner is a manufacturer of automotive electronic components. Petitioner's manufacturing area houses 800 employees. More than 95% of the electricity and water used at Petitioner's 190,000 square foot facility is dedicated to the manufacturing of Petitioner's products. The water is used in the facility's cooling system to cool production machinery and comes from Petitioner's regular water supply, i.e., is delivered through pipes and mains. Petitioner has submitted the following list of equipment used in its manufacturing operations along with a description of the function of each item:

- Compressed Air System - consists of four 150 hp, one 350 hp, and one 75 hp oil free rotary screw and two smaller duplex reciprocating air compressors, six air dryers, filtration, and associated piping.

The compressed air produced by this system is used in manufacturing for control and material handling during production such as powering robotics and pick and place operations. The air is also used for pressurizing and purging chambers such as ovens, wave soldering machines, and dryers which contain parts in process. Where liquids, pastes, or gels need to be dispensed onto parts as they move along production lines, compressed air forces the material through nozzles or other applicators. Some air is used to create a vacuum for manufacturing processes via venturi eductors, in lieu of running a separate vacuum pipe to that machine.

- Vacuum System - consists of six 7 ½ hp and one 20 hp vacuum pumps and associated piping.

A vacuum is used in production primarily for picking up parts as they are moved throughout the automated manufacturing process and to de-air some materials for further processing.

- Nitrogen System - consists of two bulk liquid nitrogen tanks with appropriate vaporization, a Praxair packaged nitrogen-generating plant which separates nitrogen from other gases in ambient air, and associated piping.

Nitrogen is used in the manufacturing process to prevent corrosion of parts for proper bonding of soldered connections by blanketing these parts with this dry inert gas during the assembly. Liquid nitrogen is used in thermal shock chambers to pre-stress component parts prior to further assembly along the lines to eliminate failure from thermal stresses encountered during completion. It is also mixed with hydrogen for one soldering machine on a Sensor manufacturing line.

- Hydrogen System - consists of a tank farm of pressurized cylinders and associated supply piping.

This system provides a hydrogen atmosphere directly into one reflow oven which heats parts, re-flowing solder to a liquid state. Hydrogen also mixes with nitrogen for proper atmosphere in another soldering machine on a Sensor manufacturing line.

- Process Cooling Water System - consists of one 200 ton rotary liquid chiller, a multi-circuit shell and tube heat exchanger, a cooling tower, six circulating pumps, and associated piping.

This closed-loop system flows 500 gallons per minute of water at 65 degrees Fahrenheit to provide heat rejection for manufacturing equipment on the production lines. Equipment requiring cooling includes air compressors, ovens, thermal chambers, and production lasers.

- Exhaust System - consists of approximately 27 rooftop centrifugal exhaust fans with sizes ranging from approximately one to five horsepower, and associated collection and discharge ductwork.

These are required for production by serving to exhaust heat, noxious fumes and vapors from ovens, dryers, solvent filled parts cleaners and the like, all of which contain parts in process of production. They also vent ozone discharges from the production lasers. All are NYSDEC permitted for production use.

- Heating, Ventilation and Air Conditioning Units (HVAC) System - consists of 18 primarily rooftop air handlers distributed throughout the facility area. Each unit includes an air cooled condensing unit, a supply fan, a return fan, a direct expansion cooling coil, electric heating coil, filters, ductwork and, typically, three compressors totaling 95 tons of cooling capacity. Associated with each air handler is a humidifier which injects steam into the ductwork manifold. These air handlers predominantly serve manufacturing floor space, which comprises the vast majority of the area of the plant.

This system is needed to create specific temperature and humidity conditions for the high tech electronic components to be produced. These products require strict adherence to environmental specifications as follows:

Integrated circuit (IC) chips which are applied to circuit boards in Petitioner's Autobody control lines cannot be used if exposed to excessive humidity for certain durations (different for specific chips).

In the Phase I Print and Fire area of the plant precious metals and inks are printed onto ceramic substrates, requiring the maintenance of specific temperature and relative humidity ranges for proper curing while controlling electrostatic discharge (ESD).

Soldering is performed throughout all areas of the plant using soldering paste in a reflow or wave oven. To maintain consistency for uniform flowing and product quality, the paste is required to be kept at the same parameters as the items discussed above, 60 - 75 degrees Fahrenheit and 30 - 40% Relative Humidity (RH).

Laser processes require maintaining consistent temperatures and relative humidity to perform properly. The lasers trim conductive ink from circuit boards to set the proper resistive values in the product. If temperature or humidity levels exceed the range of 60 - 75 degrees Fahrenheit and 30 - 40% relative humidity, the laser beam will act erratically, trimming out of value and creating scrap product.

Finally, the purpose of providing space conditioning in an electronics manufacturing environment is to control electrostatic discharge (ESD). ESD will cause damage to sensitive electronic parts as static electricity is discharged to the product. This can even happen from machine operators touching the product, as static might have built up on their bodies in the same way as static results from walking across a ("dry") carpet at home and touching a doorknob. Damage can be done even at threshold levels not detected by the person. Special precautions are used to help prevent this such as wrist and foot grounding straps and special ESD resistant frocks and mats. Also, ESD is minimized when space temperature and relative humidity are maintained between 60 - 75 degrees Fahrenheit and 30 - 40%, respectively. From

local experience, industry practice, and customer requirements, this space conditioning is a requirement to produce quality electronic products.

As part of its Petition, Petitioner has submitted a user manual, technical bulletins, and product information from its suppliers which indicate the optimum relative humidity levels that should be maintained in ESD controlled work areas for their products.

**Applicable Law and Regulations**

Section 1105 of the Tax Law imposes sales tax, in part, on:

(a) The receipts from every retail sale of tangible personal property, except as otherwise provided in this article.

(b)(1) The receipts from every sale, other than sales for resale, of the following: (A) gas, electricity, refrigeration and steam, and gas, electric, refrigeration and steam service of whatever nature. . . .

Section 1105(c) of the Tax Law imposes sales tax, in part, upon:

The receipts from every sale, except for resale, of the following services:

\* \* \*

(3) Installing tangible personal property . . . or maintaining, servicing or repairing tangible personal property . . . not held for sale in the regular course of business, whether or not the services are performed directly or by means of coin-operated equipment or by any other means, and whether or not any tangible personal property is transferred in conjunction therewith. . . .

Section 1105-B of the Tax Law provides, in part:

(a) Receipts from the retail sales of parts with a useful life of one year or less, tools and supplies for use or consumption directly and predominantly in the production of tangible personal property . . . for sale by manufacturing, processing, generating, assembling, refining, mining or extracting shall be exempt from the tax imposed by subdivision (a) of section eleven hundred five of this article.

(b) Receipts from every sale of the services of installing, repairing, maintaining or servicing the tangible personal property described in paragraph twelve of subdivision (a) of section eleven hundred fifteen of this article, including the parts with a useful life of one year or less, tools and supplies described in subdivision (a) of this section, to the extent subject to such tax, shall be exempt from

the tax on sales imposed under subdivision (c) of section eleven hundred five of this article.

Section 1115 of the Tax Law provides, in part:

(a) Receipts from the following shall be exempt from the tax on retail sales imposed under subdivision (a) of section eleven hundred five and the compensating use tax imposed under section eleven hundred ten:

\* \* \*

(2) Water, when delivered to the consumer through mains or pipes.

\* \* \*

(12) Machinery or equipment for use or consumption directly and predominantly in the production of tangible personal property . . . for sale, by manufacturing, processing, generating, assembling, refining, mining or extracting, but not including parts with a useful life of one year or less or tools or supplies used in connection with such machinery or equipment. . . .

\* \* \*

(40) Machinery or equipment for use or consumption directly and predominantly in the control, prevention, or abatement of pollution or contaminants from manufacturing or industrial facilities, to the extent such machinery or equipment is not otherwise exempt under paragraph twelve of this subdivision.

\* \* \*

(c)(1) Fuel, gas, electricity, refrigeration and steam, and gas, electric, refrigeration and steam service of whatever nature for use or consumption directly and exclusively in the production of tangible personal property . . . for sale, by manufacturing, processing, assembling, generating, refining, mining or extracting shall be exempt from the taxes imposed under subdivisions (a) and (b) of section eleven hundred five and the compensating use tax imposed under section eleven hundred ten of this article. (Emphasis added)

Section 526.8 of the Sales and Use Tax Regulations provides, in part:

(a) *Definition.* The term *tangible personal property* means corporeal personal property of any nature having a material existence and perceptibility to the human senses. Tangible personal property includes, without limitation:

\* \* \*

(5) water.

Section 527.5 of the Sales and Use Tax Regulations provides, in part:

(a) *Imposition.* (1) The tax is imposed on receipts from every sale of the services of installing, maintaining, servicing or repairing tangible personal property, by any means. . . .

\* \* \*

(10) Tax is not imposed on receipts from services rendered to certain machinery, equipment or apparatus, or parts, tools or supplies used in connection therewith, as described in section 1105-B of the Tax Law. . . .

Section 528.3 of the Sales and Use Tax Regulations provides, in part:

(a) Water when delivered through mains or pipes is exempt.

(b) Water sold in bottles or by any means other than through mains or pipes is taxable.

Section 528.13 of the Sales and Use Tax Regulations provides, in part:

(a)(1) Exemption from statewide tax. An exemption is allowed from the tax imposed under subdivisions (a) and (c) of section 1105 of the Tax Law, and from the compensating use tax imposed under section 1110 of the Tax Law, for receipts from sales of the following:

\* \* \*

(iii)(a) Parts with a useful life of one year or less, tools or supplies for use or consumption directly and predominantly in the production of tangible personal property, gas, electricity, refrigeration or steam for sale by manufacturing, processing, generating, assembling, refining, mining or extracting.

\* \* \*

(b)(1)(ii) *Production* includes the production line of the plant starting with the handling and storage of raw materials at the plant site and continuing through the last step of production where the product is finished and packaged for sale.

\* \* \*

(c) *Directly and predominantly.* (1) *Directly* means the machinery or equipment must, during the production phase of a process:

(i) act upon or effect a change in material to form the product to be sold, or

(ii) have an active causal relationship in the production of the product to be sold, or

(iii) be used in the handling, storage, or conveyance of materials or the product to be sold, or

(iv) be used to place the product to be sold in the package in which it will enter the stream of commerce.

(2) Usage in activities collateral to the actual production process is not deemed to be used directly in production.

\* \* \*

*Example 3:* A manufacturing plant has two boilers which generate steam carried by piping systems through two turbines. One turbine . . . provides mechanical power to drive the production machinery. The steam is then used in other phases of the manufacturing process, converted to water by condensation and returned to the boilers. The boilers, piping systems and condenser are all machinery and equipment used directly in the production of tangible personal property . . . for sale. (Emphasis added)

\* \* \*

(4) Machinery or equipment is used predominantly in production, if over 50 percent of its use is directly in the production phase of a process.

Section 528.22 of the Sales and Use Tax Regulations provides, in part:

(a) *Exemption.* (1) Fuel, gas, electricity, refrigeration and steam and gas, electric, refrigeration and steam service of whatever nature is exempt from the sales and compensating use tax when used directly and exclusively in the production, for sale, of tangible personal property . . . by one of the following endeavors:

(i) manufacturing . . . .

(2) Fuel, gas, electricity, refrigeration and steam and like services used or consumed in the heating, cooling or lighting of buildings . . . or in the storage of tangible personal property, are subject to the sales tax. (Emphasis added)

\* \* \*

(4) An exempt use certificate (Form ST-121) is used to make purchases eligible for this exemption, without payment of sales tax. . . .

\* \* \*

(c) *Directly and exclusively.* (1) *Directly* means the fuel, gas, electricity, refrigeration and steam . . . must during the production phase of a process, either:

- (i) operate exempt production machinery or equipment; or
- (ii) create conditions necessary for production; or
- (iii) perform an actual part of the production process.

(2) Usage in activities collateral to the actual production process is not deemed to be use directly in production.

\* \* \*

(3) (i) *Exclusively* means that the fuel, gas, electricity, refrigeration and steam . . . are used in total (100%) in the production process. (Emphasis added)

(ii) Because fuel, gas, electricity, refrigeration and steam when purchased by the user are normally received in bulk or in a continuous flow and a portion thereof is used for purposes which would make the exemption inapplicable to such purchases, the user may claim a refund or credit for the tax paid only on that portion used or consumed directly and exclusively in production.

(iii) In the alternative, an exempt use certificate (Form ST-121) may be used, providing full liability is assumed for any State and local tax due on any part of purchases used for other than exempt purposes described in subdivision (a) of this section. The taxable portion of these purchases is to be reported as a "purchase subject to use tax" on a sales and use tax return required to be filed with the Department of Taxation and Finance.

(iv) The user must maintain adequate records with respect to the allocation of fuel, gas, electricity, refrigeration and steam used directly and exclusively in production and for nonexempt purposes.

(v) For purpose of substantiating the allocation of fuel, gas, electricity, refrigeration and steam and like services used directly and exclusively in production from that used for nonexempt purposes, the user must, when claiming a refund or credit, submit an engineering survey or the formulae used in arriving at the amounts used in an exempt manner.

\* \* \*

*Example 4:* A manufacturing plant purchases electricity to power its production machinery and also to light its buildings. Only the electricity used to power the production machinery is used directly in production

### **Opinion**

Petitioner is a manufacturer of automotive electronic components. An exemption from sales and use tax is provided for machinery and equipment used or consumed **directly** and **predominantly** in producing tangible personal property for sale by manufacturing. See Section 1115(a)(12) of the Tax Law. For equipment to be used **directly** in production it must perform a continuous, synchronized operation that is necessary and integral to the production process. See Matter of International Salt Co. v. New York State Tax Commission, 79 AD2d 343; Matter of Niagara Mohawk Power Corporation v. Wanamaker, 286 AD 446 affd 2 NY2d 764; Matter of Deco Builders, Inc., Dec Tx App Trib, May 9, 1991, TSB-D-91(39)S. In Petitioner's case, the Compressed Air and Vacuum Systems are used in the handling of parts and materials and act upon parts as they move along production lines. Also acting upon parts along the lines are the Nitrogen System, which covers them with nitrogen to prevent corrosion, and the Hydrogen System, which provides a hydrogen atmosphere for heating them. The Process Cooling Water System is interrelated with production machinery and equipment to the extent it performs a cooling function essential to the effective operation of production machinery and equipment. See Chrysler Corporation, Adv Op St Tx Comm, December 4, 1985, TSB-A-85(62)S. Each of the aforementioned systems is an integral part of the continuous production process and has an active causal role in the manufacture of automotive electronic components. Without the processes provided by each of these systems, Petitioner would not be able to produce its products. Therefore, the Compressed Air, Vacuum, Nitrogen, Hydrogen, and Process Cooling Water Systems are used **directly** in production as this term is defined in section 528.13(c) of the Sales and Use Tax Regulations. In addition, these systems are **predominantly** used in production since their entire use (100%) is intimately and directly connected to the process of producing automotive electronic components. Accordingly, they qualify as machinery and equipment used directly and predominantly in production and are exempt from sales and compensating use taxes.

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With regard to Petitioner's Exhaust System consisting of 27 rooftop fans and associated collection and discharge ductwork, which serves to exhaust heat, noxious fumes and vapors from ovens, dryers, and the like, it is first noted that such Exhaust System does not qualify under the machinery and equipment exemption provisions contained in section 1115(a)(40) of the Tax Law because it is not used to control, prevent, or abate pollution or contaminants from Petitioner's facility. However, Petitioner's description of the Exhaust System suggests that in its absence the production equipment and/or the automotive electronic components being produced would be harmed by the heat, noxious fumes and vapors emitted by the production process. The heat, noxious fumes and vapors which the equipment is used to remove are a by-product of the final product being produced, and removal of them is a necessary and integral operation in the production of the automotive electronic components. See International Salt Co. v. New York State Tax Commission, supra. The use of the Exhaust System is at all times intimately connected to the production process. Accordingly, the Exhaust System used to remove the heat, noxious fumes and vapors constitutes equipment used directly and predominantly in the production of tangible personal property for sale and is likewise exempt from sales and compensating use tax.

Lastly, Petitioner maintains constant temperatures of 60 - 75 degrees Fahrenheit and relative humidities of 30 - 40% in its manufacturing area. This is accomplished through the use of 18 HVAC units distributed throughout the facility area. In Finch, Pruyn & Co., Inc., Adv Op Comm T&F, September 4, 1996, TSB-A-96(51)S, it was found that dedicated HVAC systems used to maintain specific environmental conditions in separate individual control rooms, for the protection of various electrical components which were directly connected to manufacturing line equipment, were considered machinery and equipment used directly and predominantly in producing tangible personal property for sale. These dedicated HVAC units were controlled and monitored separately and the electricity usage for HVAC operations was metered separately. Employee access or use of the rooms was restricted to maintenance and service functions only. By contrast, in Petitioner's case the HVAC units serve the entire manufacturing floor space, which comprises the vast majority of the area of the plant. This area houses 800 employees. Although keeping the temperature and humidity in a specified range will minimize the potential for static generation and damage to sensitive electronic parts, Petitioner is required to maintain this reasonably comfortable temperature and humidity in the manufacturing area in any event for purposes of employee comfort. Therefore, the HVAC System is not deemed to be used directly and predominantly (more than 50%) in production within the meaning of section 1115(a)(12) of the Tax Law and is not exempt from sales and use tax.

Concerning Issue (2), the service of maintaining machinery and equipment used directly and predominantly in the production of tangible personal property for sale is exempt from New York State and local sales and use taxes. See section 1105-B(b) of the Tax Law; New York State Department of Taxation and Finance Important Notice -00-2, Expanded Exemption for Services to Property Used in Production, February 2000. Purchases of replacement parts and supplies (such as oil, grease and sandpaper) installed on exempt production machinery or equipment or used in the maintenance of exempt production machinery, equipment, parts, and tools are exempt from State and local sales and use taxes because they are considered to be used directly and predominantly in

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the production process. See sections 1105-B(a) and 1115(a)(12) of the Tax Law; and New York State Department of Taxation and Finance Publication 852 (12/97), Sales Tax Information for Manufacturers, at page 21. Accordingly, since Petitioner's HVAC System does not constitute exempt production equipment, the purchase of parts and maintenance for such equipment is not exempt. However, Petitioner may claim an exemption from State and local sales taxes for the purchase of maintenance service, replacement parts, and supplies for its Compressed Air, Vacuum, Nitrogen, Hydrogen, Process Cooling Water, and Exhaust Systems by providing vendors with Form ST-121, *Exempt Use Certificate*, within 90 days of the purchase. See section 1132(c) of the Tax Law.

With regard to Issue (3), Petitioner's purchases of electricity for use **directly** and **exclusively** in the production process qualify for exemption from sales tax. See section 1115(c) of the Tax Law. "Directly" means the electricity must either operate exempt production machinery, create conditions necessary for production, or perform a part of the production process. "Exclusively" means electric power is used 100% in the production process. See section 528.22(c) of the Sales and Use Tax Regulations. The electricity consumed by Petitioner's HVAC System is taxable since this electricity is used to power equipment not entitled to the production exemption. Moreover, electricity used for general heating and cooling of plant areas does not qualify for the exemption (see MOD-PAC Corp., Adv Op St Tx Comm, June 12, 1985, TSB-A-85(20)S; Weber-Knapp Company, Adv Op St Tx Comm, May 29, 1985, TSB-A-85(15)S; Fancher Chair Co., Inc., Adv Op St Tx Comm, March 15, 1983, TSB-A-83(11)S. Electricity consumed by Petitioner's HVAC System insures the proper temperature and humidity for production, but it is also necessary for employee comfort. This dual use renders it ineligible for the exemption applicable only to electricity consumed **exclusively** in production. See Fancher Chair Co., Inc., *supra*. However, electricity consumed by Petitioner is fully exempt when operating machinery and equipment employed 100% of the time directly in production. Therefore, Petitioner's purchases of electricity used to power its Compressed Air, Vacuum, Nitrogen, Hydrogen, Process Cooling Water, and Exhaust Systems qualify for the exemption from tax provided under section 1115(c) of the Tax Law (see Finch, Pruyn & Co., Inc., *supra*).

When providing power to machinery and equipment used for both production and nonproduction purposes, electricity must be apportioned accordingly and exemption may be claimed only for the quantity consumed directly and exclusively in the production process. The exemption may be claimed by using Form ST-121, *Exempt Use Certificate*. Petitioner then assumes full liability for the State and local taxes due on that portion not used directly and exclusively in exempt production activities. As an alternative, Petitioner may pay tax on its entire energy bill and apply for a refund or credit for sales tax paid on that portion of the energy used directly and exclusively in production. See section 528.22(c)(3) of the Sales and Use Tax Regulations. To help calculate allocation percentages see Publication 852, *supra*, Appendix A, at page 44.

Lastly, the water at issue in this Advisory Opinion is part of Petitioner's regular water supply that is delivered through mains and pipes to Petitioner's manufacturing facility. The water purchased, being neither in a heated nor chilled state, is not considered a steam or refrigeration

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service subject to tax pursuant to section 1105(b) of the Tax Law, but instead, merely water delivered to Petitioner via pipes and mains. Water delivered to a consumer in this manner, for whatever purpose, is exempt from sales and use tax. See section 1115(a)(2) of the Tax Law. This exemption provision is generally aimed at, and has in practice been applied to, the sale of water by public utilities and the like where the water is brought from a distant location to the customer's home or place of business by mains or pipes. See Crystal Clear Water, Ltd., Adv Op St Tx Comm, June 24, 1983, TSB-A-83(28)S. Accordingly, provided Petitioner is merely purchasing water as such and not a steam or refrigeration service subject to tax under section 1105(b)(1) of the Tax Law, Petitioner's purchases of water delivered to it by way of pipes or mains are exempt from sales and use tax.

DATED: June 24, 2003

/s/  
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NOTE: The opinions expressed in Advisory Opinions are limited to the facts set forth therein.