



The Massachusetts Strategic Envirotechnology Partnership

STEP in Action: CASTion Corporation

November 2001

Technology Description

Ludlow, Massachusetts-based CASTion Corporation is a developer, manufacturer, and installer of zero-discharge wastewater/process chemistry recovery systems. CASTion's *patented* vacuum flash distillation and vapor recovery systems eliminate the cost of hazardous waste and process effluent disposal by recovering nearly 100% of valuable chemical resources and water for immediate reuse in a facility.

STEP Assistance

STEP began working with CASTion in 1996, through a referral from Mass Ventures, a venture consulting firm affiliated with the University of Massachusetts, that was providing management assistance to the company. After technical evaluation by engineers at the University of Massachusetts – Lowell, and market research conducted by the Environmental Business and Technology Center at the University of Massachusetts – Boston, STEP worked with the company's management team to reorient its technology to a closed-loop system targeted at the automotive, aerospace, electronics and metal finishing industries.

STEP, through the Massachusetts Department of Environmental Protection (DEP), worked with the Environmental Protection Agency (EPA) - Region 1 to review the technical information and determine the regulatory requirements for multiple configurations of the technology. DEP and EPA – Region 1 jointly determined that CASTion's Controlled Atmosphere Separation Technology (CAST®) system met the criteria for a "totally enclosed" hazardous wastewater treatment system and was therefore exempt from the permitting requirements of the federal Resource Conservation and Recovery Act (RCRA). This exemption made CAST systems unique in the wastewater recovery industry and cleared the way for the technology to be installed throughout the New England states. By the end of 2001, CASTion will have installed 32 CAST systems at metal finishing facilities in New England, New York, New Jersey, Pennsylvania, California, Florida, Tennessee, Texas, and Ontario, Canada.

STEP Results – Company Perspective

According to John Gannon, CASTion President, STEP's "favorable business and technology assessments of the CAST technology helped CASTion attract its first \$1.5 million in new equity financing from Mountain Energy in Burlington, Vermont," a subsidiary of the Green Mountain Power Corporation.

Gannon said the \$1.5 million investment was the second in the wastewater treatment area for Mountain Energy and that CASTion used the capital to launch "an aggressive commercialization program" of its CAST product line.

Columbia Manufacturing, Inc., the second largest school furniture manufacturer in the nation, located in Westfield, Massachusetts, recently became the largest customer of the CAST system. Columbia Manufacturing wanted to modernize and expand its chrome-nickel plating line as well as achieve zero water discharge. Columbia Manufacturing was impressed with the CAST system based on the

independent review by STEP and the exemption from the RCRA requirements. Because of STEP's earlier work, the DEP western regional office already knew of the technology and the exemption for zero discharge technologies, and so saw no regulatory issues for installation of the CAST system at Columbia Manufacturing. In fact, within two weeks, DEP issued a statement to the company formalizing this conclusion. This closed the deal for CASTion and supported Columbia Manufacturing's expansion goals.

Technology Acceptance and Reciprocity Partnership Assistance

Through the Technology Acceptance and Reciprocity Partnership (TARP), STEP has developed a close working relationship with environmental officials in other states. The TARP alliance allows interstate sharing of scientifically credible, reliable data and regulatory determinations to make scientifically sound and defensible decisions. TARP states reviewed the technical data and regulatory conclusions made by Massachusetts and also concluded that multiple configurations of the technology were exempt from permitting.

According to John Gannon, CASTion President, this "has already helped us gain the permits we needed to install our CAST technology in TARP states of New Jersey, New York, Pennsylvania, and California". In recent CAST installations in other states such as Florida, Tennessee and Texas, CASTion has suggested that the customer request that their local state environmental authority contact their counterparts in Massachusetts to discuss TARP and explore reciprocity of permit exemptions.

Environmental and Economic Results

Impressive estimates of environmental results from the installation of the CAST technology can be made. For example, from mid-March to the end of October 2001 at Columbia Manufacturing, over twenty five million gallons of water were not used and over five million gallons recycled in the plating line rinse baths. Columbia Manufacturing is also successfully recycling valuable nickel plating chemistry reclaimed from the plating waste stream, and will shortly recover valuable chromic acid. The overall return on investment payback on the CASTion wastewater recovery and chemical recovery system is well under two years.

Other examples of CAST® wastewater and chemical recovery applications include:

- General Metal Finishing, S. Attleboro, Massachusetts has dedicated a 400 gpd CAST system to the effluent stream from a silver plating line: 98% concentration of silver cyanide from its plating process by this CAST unit permits easy refining of silver metal for economic savings as well as recycling of the clean distillate water to the rinse baths. Another 1500 gpd CAST system upgrades an ion exchange wastewater recovery system in a new plating line to zero-discharge by recovering 95-97% concentrated hazardous regenerant wastewater as clean distillate which is recycled to rinse baths.
- Kuntz Electroplating, Kitchener, Ontario is the largest electroplater in Canada and a major supplier of nickel/chrome plated bumpers and wheels to the Big Three Automakers. Two 5,000 gpd CAST systems were installed last year to recover valuable nickel from the plating process, which is recycled to the plating baths of two large nickel plating lines; additionally, the clean CAST distillate water is recycled to the respective rinse baths.

The Massachusetts Strategic Envirotechnology Partnership (STEP) is a collaborative effort of the Executive Office of Environmental Affairs (EOEA) and the University of Massachusetts (UMass) to promote the development of innovative environmental technologies. For additional information on the STEP program, please visit the STEP web site, at <http://www.stepsite.org> or contact Linda Benevides at EOEA at (617) 626-1197.