



Osmonics Incorporated: Creating Competitive Advantage in the Filter Industry

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Introduction

Osmonics, Inc., founded in 1969, originated from its founder's development of an improved method of molecular and small-particle filtration. This method was made possible by advances in polymer membrane technology. As a result of its patented, proprietary filtration products, Osmonics successfully entered markets dominated by much larger, established firms. A company strength was that its products enhanced the productivity of manufacturing processes in many key industries.

This case examines the strategies Osmonics used to succeed and grow, reaching almost \$100M in revenues in 1994, while competing with a diverse number of large and small companies. Part of this growth has been stimulated by water discharge and drinking-water safety regulations. Osmonics' filters and membranes were used in wastewater treatment systems, for recycling, and for pollution prevention. The company now had to determine what it should do. It was in the midst of reassessing its successful growth strategy and considering alternative options for the future.

Pioneering a New Technology

In the mid 1960s, DuPont and Eastman Kodak developed plastic membranes that could be used for small-particle filtration. These membranes did not have the drawbacks of conventional ion exchange or chromatography filtration methods. The conventional methods used plastic beads that had the ability to adsorb contaminants from fluids. However, when the bead surfaces became sufficiently occupied by the contaminants, the process had to be interrupted to

clean the beads with undesirable chemical solvents. The new plastic membrane technology developed by DuPont and Eastman Kodak overcame these problems. Removed by selective passage through the membrane, the contaminants did not collect on the membrane to the same extent. This allowed the system to run for much longer periods of time between filter replacements. The use of harsh cleaning chemicals was eliminated; costs for many applications were reduced.

Through pressure and flow ("cross-flow filtration"), the components of the fluid were separated by semi-permeable membranes. The system could produce precise separations in order to concentrate feed stream materials, purify solvents, or selectively pass through some materials while concentrating others.

This approach had many advantages. It expended little energy. It required no heat, which could have damaged the product. Solutes and solids were swept away with the concentrate stream, so frequent filter and media changes or resin regeneration were not necessary.

Osmonics achieved many breakthroughs in the early applications of the new technology. It was the first to:

- separate and reclaim nickel salts from nickel plating rinses (1970)
- concentrate maple sap (1971)
- supply a "zero discharge" waste treatment system (1972)

It also was among the first to commercially fractionate cheese whey with ultrafiltration (1972), and it proved that water purified by reverse osmosis was superior for kidney dialysis.

Developing Products

Shortly after Osmonics started, Eastman Kodak, which supplied the polymer membranes, withdrew from the business. Osmonics decided to manufacture its own membranes and initiated a strategy of vertical integration. It manufactured membrane elements, called **sepralators**. In 1971, it raised close to \$500,000 in its first public stock offering. By 1973, it had obtained a patent for a standard reverse-osmosis/ultrafiltration machine and system. Since applications of the new technology involved diverse separation scenarios requiring a variety of membrane pore sizes and other features, Osmonics began developing an array of membrane materials and pore sizes. By 1994, the company offered more than 30 different membranes and was in the process of developing more.

Processes that used membranes with the smallest pore sizes, requiring the highest pressures, were referred to as **reverse osmosis (RO)**. These had many applications:

- brackish sea water desalting
- metal ion recovery
- boiler feed purification and blowdown reclamation
- dye purification
- water waste stream contaminant removal

Processes utilizing membranes with mid-level pore sizes and pressures were referred to as **ultrafiltration (UF)**. Applications of UF included breaking up and concentrating proteins, blood, foodstuffs, and vegetable extracts; purifying and clarifying fermentation broths; and concentrating/recovering industrial organics and dilute suspended oils. A final process, filtration employing larger pore sizes at lower pressures, was referred to as **nanofiltration**.

Cross-flow filtration processing required high-quality pumps that were resistant to corrosion and capable of transferring fluids cleanly and under high pressures. Despite the existence of several well-established pump manufacturers such as Sundstrand and Goulds Pumps, Osmonics developed its own, the TONKAFLOW pump, in 1977. By 1994, TONKAFLOW pumps outsold all other competing manufacturer's pumps used for pure fluids and industrial separation applications. The company sold its pumps to so many of its competitors that about 50 percent of these systems contained an Osmonics pump.

Targeted Markets and Applications

Osmonics' filtration systems found a home in many key industries. Representative customers included:

- *beverage manufacturing* (Anheuser-Busch, Coca-Cola bottlers, Pepsi, Lipton)
- *chemical and textile processing* (Celanese, Dow, DuPont, ICI, 3M, Monsanto, Union Carbide)
- *dairy processing* (Borden, Kraft, Wisconsin Dairies Cooperative)
- *electronics manufacturing* (AMP, AT&T, Control Data, Harris, Honeywell, IBM, Motorola, National Semiconductor, Philips A. G., Texas Instruments)
- *food processing* (Beatrice Foods, Campbell Soup, CPC Intl., Continental Can, General Mills, Pillsbury Co., Philip Morris, Ralston Purina)
- *health care* (Abbott Labs, Baxter Travenol, Ciba-Geigy, Eli Lilly, G.D. Searle, Hoffman-LaRoche, Johnson and Johnson, Merck, Miles Laboratories, Pfizer, Sandoz, Smith Kline Beckman, Upjohn, Warner-Lambert)
- *metal finishing and metal working* (Bendix, Boeing, Bosch A.G., Cummins Engine, Fiat, Ford, General Electric, General Motors, Lockheed, McDonnell Douglas, Mitsui, Sundstrand, United Technologies, Westinghouse, Whirlpool)
- *electric power industry*
- *paper* (Champion International)
- *petroleum and other resource extraction* (Asarco, Atlantic Richfield, Exxon, Getty Oil, Koppers, Occidental Petroleum, Phelps-Dodge, Shell Oil, Sun, Texaco, Union Oil of California, U.S. Steel)
- *personal products* (Gillette, Proctor and Gamble, Revlon)
- *photography and printing* (Eastman Kodak, Polaroid, R. R. Donnelley, Xerox)

In addition, Osmonics systems had been installed in numerous laboratories, commercial and industrial laundries, and municipal and other potable water applications.

These systems had up to three kinds of applications: fluid processing, water purification, and wastewater treatment and recovery.

In many industries, customers were able to employ Osmonics' systems for all three applications. For example, pharmaceutical and biomedical manufacturers employed Osmonics systems in fluid processing to:

- *separate and concentrate* plasma proteins, vaccines, polypeptides, enzymes, yeasts, antibiotics, vitamins, and organic acids
- *fractionate blood and concentrate* red blood cells, plasma, albumin, and globulin
- *retain antigens* in antibiotic solutions
- *harvest* cells
- *concentrate* viri

The water used by these manufacturers had to be exceptionally pure. As with most Osmonics' customers, these companies used filtration systems to treat wastewater to facilitate its disposal and to recover valuable reagents. Such treatment reduced, and in some cases entirely eliminated, a manufacturer's disposal problems.

Partnering

Osmonics' market strategy was to target industries with fluid-handling and reacting processes that would benefit from filtration systems, which would improve quality and/or reduce costs. Osmonics' products purified the water its customers needed, increased process efficiencies, and provided health benefits. They recovered valuable materials and solved customers' wastewater disposal problems at lower costs than alternative treatments. By identifying its filtration systems with greater efficiency and quality, Osmonics presented itself as a provider of value-added services that increased profitability while solving environmental problems.

The company approached its customers as partners. Its sales engineers had engineering degrees. They received a year's training in the company's many products and systems. They were then responsible for selling products and services that ranged in price from \$50,000 to \$2,000,000.

The sales engineers asked questions about the customers' needs. Their training enabled them to work closely with buyers and come up with the right system, including customizing it if need be. A Pepsi purchasing team called the Osmonics sales engineers' involvement

“far superior,” specifically because they “consulted with Pepsi on all decisions they have made regarding the system, making changes in response to input” and following up completely.

A typical sale began with an analysis of the solution in need of filtration. In some cases this would require complex work in Osmonics' laboratory. When high-value fluids such as in bioengineered materials and enzymes were involved, Osmonics did bench-scale testing of separation performance before scaling up to pilot plant or full production systems. Its laboratory conducted larger “batch tests” to evaluate a range of separators that could meet the customer's objectives. If the batch tests yielded encouraging but inconclusive data for final system design, Osmonics would offer to operate one of the pilot filtration plants at the customer's facility to generate more data under field conditions. When the data was finally clearly established, Osmonics engineers, using CAD systems, created the membrane system for the customer's objectives.

Osmonics could afford to invest this much in selling one system because (1) its gross margins were sufficiently high and (2) each new system sold generated steady separator and other filter replacement sales. Furthermore, as Osmonics' customers own sales grew, so did demand for additional systems with lower selling prices.

This marketing strategy was particularly successful among the Fortune 500 companies — almost all had at least one Osmonics product. In addition to direct sales, Osmonics sold through distributors. Company salespeople spent a great deal of time educating distributors about their products so that the distributors could in turn work well with their own customers for Osmonics products. The company also sold aggressively to its competition and offered volume discounts, since sales and marketing costs were substantially less for such sales.

Acquisitions

Most customers needed more than molecular and very small particle size filtration systems. They required filters with larger pore sizes capable of retaining bigger particles, organic matter, and bacteria.

Osmonics recognized this opportunity and decided to sell a wider range of filtration products. Rather than develop such products independently, it made targeted

acquisitions, such as the following, which extended its product lines to increased-pore-size filters:

- 1983 Purchased HYTREX business from Celanese Corp. (HYTREX makes depth cartridge filters with retention of larger particles.)
- 1984 Acquired FLOTRONICS from Selas Corp. (FLOTRONICS makes pleated cartridge filters with retention of larger particles.)
- 1985 Acquired Aqua Media Intl., Inc., and Aqua Media Asia, Ltd.
- 1985 Funded the start-up of Poretics Corporation, a wholly owned subsidiary, for the development, manufacture, and sale of membranes and related hardware (used for laboratory and medical diagnostic applications).
- 1990 Osmonics acquired some of the assets of the FASTEK Division of Eastman Kodak. This gave the company two sites for the manufacture of membranes and sepralators.

Osmonics built on these acquisitions by applying its own R&D expertise to improve and integrate the new filters with its existing product line. The firm also strengthened its pump manufacturing capabilities by acquiring American Pump Company in 1987. Similar moves included the purchase in 1989 of certain assets for the manufacture and sale of MACE products including pumps and valves made from DuPont's Teflon PTFE, the most chemically stable polymer available, used to handle ultra-pure and aggressive materials. Another new offering was distillation units. This capability was enhanced by the acquisition of Vaponics Inc. in 1987.

Osmonics started a second wave of acquisitions after 1989 to continue broadening its product line beyond polymer-membrane-based devices. It started by adding a capability to offer activated carbon and ceramic cartridge filters for micro-filtration and particulate filtration. It also began marketing separation elements and equipment used in coalescing filtration, which separates different liquids based on their density and adsorption differences. This process can reduce concentrations of contaminants from several percent to only a few parts per million. Applications of coalescing filtration include removal of contaminants from compressed air and gas lines, dewatering of solvents and jet fuel, and removal of trace oil from wastewater prior to disposal.

Osmonics also moved aggressively into the water treatment and purification markets. It started marketing these systems because some of the company's customers had a need for them. In 1989, it bought OREC (Ozone Research and Equipment Corp.) of Phoenix, Arizona. OREC was founded in 1957 and pioneered the manufacture of ozone-generation equipment for water purification and testing.

The capability to sell these newly acquired products to Osmonics' customer base produced synergistic effects. OREC's ozonators were well established in the aquarium market but virtually unknown elsewhere. Building on OREC expertise, Osmonics engineers developed the HM Ozonator for applications in the beverage, pharmaceutical and other industries and for cooling-tower applications. Close to half of OREC's expanded sales were through new distribution channels.

In 1993 Osmonics acquired Autotrol Corporation through a pooling of interests in a stock transaction. Autotrol was founded in 1962 and was a leader in the manufacture of controllers for water softening and filtration equipment. The company also manufactured other fluid control and measuring devices for **original equipment manufacturers** (OEMs). It manufactured softener and filter controllers, valves, flow meters and feed pumps that it sold to the OEMs, who assembled purchased components into water softeners and other water conditioning equipment largely for residential use. This acquisition, therefore, gave Osmonics access to a new market for its products. In addition, the company began to use advanced Autotrol flow meters in its industrial equipment.

Autotrol was a sizable acquisition for Osmonics. When Osmonics' 1993 income statement was consolidated with Autotrol's for the entire year, revenues advanced from \$50.5 million in 1992 to \$89.0 million in 1993, of which the acquisition accounted for \$32.9 million. Earnings increased 74%, but earnings per share increased only 26% because of the greater number of shares outstanding. (EPS grew another 25% in 1994.) Prior to the Autotrol purchase, foreign sales were only 23% of Osmonics' sales. With Autotrol's foreign sales at 40% of total sales, the acquisition accelerated Osmonics' expansion into markets abroad. As a result, Osmonics was now selling its systems for home use in Italy.

In 1994, Osmonics purchased substantially all of the assets of Lakewood Instruments, adding a line of instruments, sensors, and analyzers to measure fluid characteristics. This acquisition gave Osmonics a line of analog and digital instrumentation, which strengthened and broadened corporate offerings in the chemical water treatment and high-purity water industries. Lakewood's analyzers and controllers offered unique synergies with Autotrol's flow-based controls and enabled chemical water treatment companies to offer a comprehensive line of products for cooling-tower and boiler-water treatment from a single source.

Lakewood also was developing new local operating network communications and data acquisition capabilities, which allowed the networking of multiple sensors to an individual control/display device using standard telephone cable. Osmonics envisioned a significant number of service companies buying this cost-effective remote monitoring technology, perhaps in conjunction with the company's other products.

Osmonics' acquisition strategy enabled it to vertically integrate its product lines to satisfy customer needs for a full range of filtration items, from individual components to entire systems composed almost exclusively of Osmonics components. Its vertical integration and product-broadening strategies gave its salespeople a wide range of products to sell. Osmonics targeted facilities that could productively employ these systems for two to three of their major applications: fluid processing, water purification, and wastewater treatment and recovery. In addition, the company was able to make several purchases that expanded its customer base by opening up new markets (such as residential water treatment) or by strengthening its foreign operations (such as in Italy) while adding to its product capabilities in its traditional industrial markets.

As a result of selling a full range of cartridge and other disposable filters, and because even the separator filters employed in RO and UF systems needed replacement eventually, a high proportion of Osmonics' revenues still came from replacing filters. This large percentage of replacement sales added a high degree of stability to the company's cash flow and maintained a valuable ongoing relationship with its customers after making system and other equipment sales.

Financial Performance

An acquisition that adds to a company's product line and/or expands its markets avoids the risks of trying to achieve these goals through internal development. On the other hand, the company has to pay for the value that the new acquisition is adding. This strategy only makes financial sense if the value of the acquired asset is greater for the acquiring company than it is for the seller. Many of Osmonics' acquisitions produced products that they could not sell as efficiently or effectively as Osmonics.

Acquisitions do bring elements of risk. In contrast to an internally developed product that is achieved within the company culture and with the company's existing systems and organization, an acquisition introduces a different culture, system, and organization. Furthermore, no matter how diligently a company's staff may examine the property being sought after, there are almost always unforeseen problems that must be dealt with after the purchase. In addition, customers of the acquired company or product line must be reassured that the quality of the product and service will not deteriorate now that ownership has changed hands.

Over a 12-year period (1983–1994), Osmonics acquired 10 small companies, subsidiaries, and product lines. The company also had an active and successful R&D program that developed new membrane products and started a new subsidiary, Poretics Corporation. This combination of acquisitions and internal growth enabled Osmonics' revenues to grow rapidly at a compound rate of 25.3% per year from 1983 to 1994, but it did so in spurts. For example, revenues more than doubled from 1983 to 1985, declined slightly in 1986, and then doubled again from 1986 to 1988.

During the 1983–1988 period, Osmonics made five acquisitions, started up Poretics, and considerably expanded its presence overseas. Revenues per share grew at a slower rate over the same period due to a 35% increase in total shares outstanding. Net income and earnings per share (EPS), on the other hand, did not match this growth in sales. This was particularly true between 1983 and 1987, when sales grew by 154%, net income by only 41%, and EPS by an anemic 7%. Margins collapsed in 1985, 1986, and 1987 and only returned to normal levels in 1988 when earnings more than doubled. From 1983 through 1987, return on year-end equity averaged only 7.5% and recovered to a still-weak 10.3% in 1988.

Osmonics used long-term debt to help fund these acquisitions but was always able to keep its debt levels manageable. In 1983, the company's ratio of long-term debt-to-equity was over 44%, but this ratio came down rapidly as shareholders' equity grew, aided considerably by additional sales of stock in 1985 and 1986. The debt-to-equity ratio continued to fall until it bottomed at 11.5% in 1989.

This period of inconsistent earnings performance was due to many factors besides Osmonics' difficulty in digesting a large number of acquisitions. The 1983–1987 interval was one of sluggish growth in industrial production, weak capital investment, and a strong dollar that impeded U.S. exports. The dollar had peaked in 1985 but fell sharply thereafter: by the late '80s, exports were surging, industrial production much improved, and Osmonics' earnings improved along with it.

Rapid earnings growth continued through 1989, when earnings and EPS grew by 35%. That year, Osmonics acquired OREC and MACE Teflon pumps and flow-control products and introduced two of its own new filters. In 1990, Osmonics acquired FASTEK from Eastman Kodak. In 1990, sales went up 20%, but net earnings declined 8%; earnings per share actually increased more than 17% because, during a period of depressed stock prices, the company also initiated an aggressive stock buy-back financed largely by increased long-term debt. Average shares were reduced from almost 12 million in 1989 to 9 million in 1991, while the debt-to-equity ratio soared to 55.7% in 1990.

The years 1990 to 1992 were marked by recession and slow growth, and Osmonics' sales and earnings growth slowed considerably. The external environment was a more important factor contributing to Osmonics' slow-down than any difficulties in absorbing the new acquisitions. Indeed, the company's financials indicate that it managed this difficult period a lot better than the 1983–1987 period. Presumably, Osmonics was helped by its expanded product portfolio and customer base.

Osmonics made its largest acquisition in 1993 when it added Autotrol to the company in a pooling-of-interests merger. Consequently, Osmonics began consolidating both companies' income statements, including revising the statements of the previous four years. The Autotrol merger represented a change from Osmonics' previous acquisition strategy and carried with it, therefore, greater risks. Autotrol was a much larger company for Osmonics to integrate. While previous purchases

tended to expand the company's product lines for vertical integration into its systems and for sale into its existing customer base, Autotrol gave Osmonics the opportunity to enter an entirely new market: residential water treatment. Autotrol's control devices could also be relatively easily modified for use with Osmonics' industrial filtration systems. The acquisition also gave Osmonics an increased marketing presence abroad.

Along with these opportunities, however, Autotrol brought several problems. Prior to the acquisition, more than half of Osmonics' sales were of filter replacement items, giving the company a high degree of earnings reliability and visibility. Adding Autotrol dropped the ratio to only 40%, although Osmonics had hopes of bringing it up to a targeted 50%. Autotrol's revenue growth had been poor over the past few years and experienced no growth in 1993 and 1994.

Osmonics' 1994 annual report notes, in the C.E.O.'s letter to shareholders, that when Autotrol's sales in 1994 were coming in below expectations, Osmonics had begun "significant restructuring steps aimed at expanding Autotrol sales," steps management expected to bear fruit by mid-1995. Finally, Autotrol's financial controls needed tightening. A few months before the acquisition, in February 1993, Autotrol discovered that a former employee of its French subsidiary had embezzled approximately \$4.75 million from 1988 to 1992. The embezzler issued fraudulent checks and falsified value-added tax returns to the French government, pocketing the government's reimbursements.

Competitors

The growing demand for high-tech filtration systems and the resulting replacement sales made the filter business a very attractive one. How did Osmonics manage to survive given the competition that came from an array of much larger, well established firms?

The two largest filter manufacturers that competed with Osmonics were Pall Corporation, with revenues about seven times that of Osmonics, and Millipore Corporation, whose revenues were about five times that of Osmonics. As their much greater revenues indicated, Pall and Millipore marketed a broader array of filtration products, so they never regarded Osmonics as a serious overall competitor. Osmonics was able to enter the filter market in the first place because it offered a new technology ahead of the competition and, in terms of its targeted markets, was able to achieve a significant

presence. Similarly, Osmonics successfully introduced pumps it designed specifically for its filtration systems, capturing a significant share of this specialized market despite the threat of competition from larger pump manufacturers such as Goulds and Sundstrand.

Osmonics had decided to make its own polymer membranes when its supplier, Eastman Kodak, exited the business. More recently, DuPont, aside from one small product, also discontinued manufacturing membranes. Larger competitors such as Dow Chemical remained, and Osmonics most likely had no more than a 10–15% market share for these products. Dow and others like it were able to invest considerably more in membrane R&D, constantly challenging Osmonics to compete in this area. The company had made a strategic decision to manufacture its own membranes to better control the quality of its systems, avoid being dependent on a large supplier, and capture for itself the value added in membrane production. Osmonics competed successfully, but in only a small part of these much larger companies' overall markets.

Finally, another relatively new technology Osmonics recognized early and gained a significant market share in was water purification. Aided by its acquisition of OREC, Osmonics became a leader in ozone water purification; many ozonator system assemblers, competing with Osmonics, used Osmonics supplied ozonator equipment. This was a niche market where there were no large companies that were competitors.

Conclusions

Osmonics successfully evolved from a start-up company, getting to market first with the new RO filtration technology and becoming a \$100 million corporation listed on the New York Stock Exchange. A patient shareholder who participated in the company's initial public offering in 1971 would have enjoyed compound annual returns of about 20% despite the stock's losing half its market value during the mid-1980s. By focusing on its customers and expanding its product offerings through its own R&D and a considerable number of acquisitions, Osmonics built a solid customer base of Fortune 500 companies. In accomplishing this, the company was able to successfully compete with much larger companies. Those like Pall regarded Osmonics as a small specialty *filter* manufacturer; others, like Dow, saw it as a small specialized *membrane* manufacturer; still others, like Goulds, regarded it as a small specialty

pump manufacturer. None recognized Osmonics as a significant threat to their own operations, yet it became a very important force in the filtration industry.

Osmonics products benefited from increased environmental regulation, especially regarding water discharges and toxic waste disposal. Nevertheless, Osmonics did not narrow its customer appeal by concentrating on environmental applications. Instead, management recognized its systems' value of improving customers' productivity and lowering their production costs. Rather than just helping customers comply with regulations, Osmonics became their strategic partner.

Osmonics vertical integration strategy gave it a distinct advantage over other filtration equipment manufacturers: lower costs, better quality, and greater reliability. While the company sold a lot of standard equipment, many customers required custom systems. By manufacturing all the components, Osmonics was in a strong position to meet such customers' needs. Even though it supplied competitors with custom-designed components, it still was better at establishing customer partnerships.

Osmonics' acquisition strategy was not without risks: the acquired products and companies had to be integrated into Osmonics' product lines, shared values, systems, and structures. Glitches along the way were due to external economic factors as well as difficulties digesting new acquisitions. But as a result Osmonics was able to offer its customers practically every conceivable kind of filtration or water purification device.

More recently, Osmonics decided to expand beyond industrial fluid processing and enter the large home water treatment market with Autotrol (by far its largest acquisition) and Lakeland Instruments. Autotrol and Lakeland supplied OEMs with control and monitoring devices for home water treatment systems. Osmonics hoped to sell some of its filtration products to these OEMs, developing synergies with products offered by these acquisitions. The firm also hoped to apply Autotrol and Lakeland technologies to its industrial filtration systems businesses. The opportunities were great but so were the difficulties in realizing them.

Osmonics was embarking on the next stage of its journey, but it was still relatively small. Could it reach the status of a mid-sized company with revenues of over \$500 million? Could it continue to go relatively unnoticed by its dispersed but much larger competition? For example, how would it respond to an attack by Pall?

Appendix

OSMONICS, INC.
Income Model
(Dollars in millions except per-share data)

	<u>FY 89A</u>	<u>FY 90A</u>	<u>FY 91A</u>	<u>FY 92E</u>	<u>FY 93E</u>	<u>89-93 CAGR</u>
Revenues	\$36.22	\$43.55	\$46.73	\$52.50	\$59.52	13.2%
Cost of Sales	<u>20.01</u>	<u>24.57</u>	<u>26.93</u>	<u>30.33</u>	<u>34.02</u>	
Gross Profit	\$16.21	\$18.98	\$19.80	\$22.17	\$25.49	
S, G & A	\$8.83	\$10.60	\$11.52	\$12.60	\$14.40	
Rsch., Dvlpmt., and Engr.	<u>1.83</u>	<u>2.54</u>	<u>2.93</u>	<u>3.10</u>	<u>3.50</u>	
Operating Income	\$5.55	\$5.85	\$5.35	\$6.47	\$7.59	8.2%
Interest expense	(0.32)	(1.27)	(1.10)	(0.78)	(0.94)	
Other income	<u>0.85</u>	<u>0.86</u>	<u>1.55</u>	<u>0.77</u>	<u>0.77</u>	
Pretax Income	\$6.08	\$5.44	\$5.80	\$6.46	\$7.42	5.1%
Taxes	<u>\$2.03</u>	<u>\$1.73</u>	<u>\$1.90</u>	<u>\$2.13</u>	<u>\$2.45</u>	
Net Income	\$4.05	\$3.71	\$3.90	\$4.33	\$4.97	
EPS	\$0.51	\$0.60	\$0.65	\$0.72	\$0.83	12.8%
Avg. Shares Out (mil.)	7.9	6.2	6.0	6.0	6.0	

Percent of Sales

Gross Profit	44.8%	43.6%	42.4%	42.2%	42.8%
S, G & A	24.4%	24.3%	24.6%	24.0%	24.2%
Rsch., Dvlpmt., and Engr.	<u>5.1%</u>	<u>5.8%</u>	<u>6.3%</u>	<u>5.9%</u>	<u>5.9%</u>
Operating Profit	15.3%	13.4%	11.4%	12.3%	12.8%
Pretax margin	16.8%	12.5%	12.4%	12.3%	12.5%
Tax rate	33.4%	31.8%	32.8%	33.0%	33.0%
Net margin	11.2%	8.5%	8.3%	8.2%	8.4%

Year-Over-Year Percent Change

Revenues	16.6%	20.2%	7.3%	12.4%	13.4%
Operating income	33.1%	5.3%	-8.6%	21.0%	17.4%
Pretax income	37.4%	-10.4%	6.6%	11.4%	14.9%
Net income	35.4%	-8.2%	5.0%	11.0%	14.9%
Earnings Per Share	34.2%	17.6%	8.3%	10.8%	15.3%

OSMONICS, INC.
 Financial Highlights
 (In thousands, except per-share data)

	Restated for merger with Autotrol		As Previously Reported	
	1993	1992	1992	1991
Net Sales	\$89,043	\$84,017	\$50,541	\$46,738
Pretax income from continuing operations	\$10,792	\$ 5,576	\$ 5,963	\$ 5,804
Net income	\$ 7,895	\$ 1,449	\$ 4,528	\$ 3,902
Cash flows from operations	\$12,201	\$ 5,802	\$ 6,484	\$ 4,313
Gross investment in plant and equipment	\$44,520	\$42,044	\$29,156	\$26,833
Capital investment	\$ 3,257	\$ 4,150	\$ 3,102	\$ 2,061
Working capital	\$44,048	\$37,044	\$28,238	\$24,722
Shareholders' equity	\$52,070	\$43,843	\$33,793	\$28,891
Shareholders' equity per share	\$ 4.12	\$ 3.49	\$ 3.73	\$ 3.21
Net income per share	\$ 0.63	\$ 0.12	\$ 0.50	\$ 0.43
Average shares outstanding	12,624	12,561	9,064	8,998
Current ratio	3.3	2.8	3.7	3.7
Return on average shareholders' equity	16.5%	3.4%	14.4%	14.6%
Net income to sales	8.9%	1.7%	9.0%	8.3%

Source: Company reports, Alex Brown & Sons estimates

Discussion Questions

1. Discuss Osmonics' strategy of vertical integration.

Why do you think the company pursued this course of action rather than buy some components (e.g., membranes) from an outside supplier? By building all the components of its filtration systems in-house, Osmonics captures the additional value added and maintains high gross margins. Is this a good criteria for adopting this strategy? Include in your analysis the relatively high costs the company incurs to make direct sales of its systems. Please justify your answer.

2. Discuss the advantages and disadvantages of

Osmonics' acquisition of Autotrol. Should Osmonics try to enter the home water treatment market? Once it decided to do so, can you suggest other strategies it might have adopted instead of acquiring Autotrol?

3. Examine the argument that Osmonics could forge stronger partnerships with its customers as a provider of productivity solutions rather than as a solver of their water-related environmental problems. Don't Osmonics' solutions to a manufacturer's waste water problems also reduce costs and increase profits?



Osmonics Case Teaching Note

Main Issues

There are two obvious issues raised by this case. One is connected to analyses of Ringer and Deluxe, which students can do prior to analyzing this case: why is Osmonics successful and why does it remain committed to its environmental businesses, while Ringer has not been successful and Deluxe has decided to abandon its commitments to an emerging environmental business with some potential? The other issue is raised by Osmonics' acquisition of Autotrol. How does this fit into the company Osmonics is trying to build? What is the strategy behind the acquisition? What challenges does the acquisition pose?

Acquisitions. Osmonics has grown four times since 1983 to the size where it does more than \$85 million in business. A substantial portion of its growth has come from the acquisition of nine other companies. A good question to explore with students is, "What is Osmonics' core competency, and how is that enhanced and extended by these acquisitions?" It aims to be a \$100 million company. What types of acquisitions should it look for in the future to achieve this goal?

Maintaining Consistent Earnings. Its earnings from 1989–93 were consistently good. In 1993, they were at \$8 million. What accounts for the company's consistent success? The consistency of the earnings is important, and the reasons for this consistency should be pursued. In analyzing this case, the instructor should try to systematically take Osmonics apart in order to understand the reasons for its consistent success.

Creating Environmental Improvement. Another important issue to pursue with students is why Osmonics is considered to be an environmental business. For instance, how does what it does contribute to pollution prevention and other laudable environmental goals? The answer has to do with its water purification/separation work, the reuse of water, and the recovery of valuable products from the waste stream.

The Core Competency. One might argue that Osmonics' core competency is in its ability to deliver complete

systems of membranes, valves, pumps, and flow control components. Other companies cannot do this.

Osmonics supplies both original equipment and replacement parts. This is also unique and important with respect to its ability to generate consistent earnings. It provides the filters — Flotrex, Memtrex, Sprialtrex, and Purtrex — after it sells a company the original equipment. It aims for about a 50-50 split between being an original equipment and replacement parts supplier, but with Autotrol this split is somewhat altered. Students might mention this, perhaps while discussing Autotrol.

Another strength of Osmonics' is that it sells parts as components to its competitors's systems as well as its own systems. Its reputation for quality and for being the only manufacturer of entire systems gives it an advantage over its competitors. It also services and maintains systems, which adds to its capability as the only full-service vendor and provides it with a unique position in the industry.

Yet another part of its competency is that its fluid processing expertise is very broad and includes reverse osmosis, nanofiltration, ultrafiltration, microfiltration, ion exchange, chromatography, and ozonation distillation. It has unequalled product breadth

However, all this breadth originates out of single core technology with a wide variety of applications in many different industries. It might be worth going over with students the wide variety of markets that Osmonics serves from food, beverage, and dairy to chemical, petroleum, gas, mining, pulp and paper, textiles, metal, aquariums and pools, laundries and car washes, labs, and kidney dialysis machines, power generation, pharmaceuticals, cosmetics, photography, and printing. The need for separating particles out of water is nearly ubiquitous.

Osmonics also has a very well-developed group of distributors (640) who act as system integrators. To serve these distributors, its sales force has to be technically trained and very skilled. It has to be able to custom-

tailor its offerings to the purification needs of a vast array of companies in very different industries. The sales force has offices in HongKong, Thailand, Indonesia, Singapore, and Switzerland as well as across the U.S. and Canada. All of Osmonics' manufacturing was done in six U.S. plants, but a high percentage of sales were foreign, and it had a very strong presence in France, Japan, and Australia.

Osmonics provided a business value that was very connected to an environmental value. It lowered the costs of pure water and increased yields, thus preventing pollution. It also lowered waste management costs by allowing recycling of valuable contaminants and reuse of water. These services led to higher quality manufacturing and lower energy costs, for example by making boilers run more efficiently.

Eastman Kodak and Du Pont vacated this market to Osmonics because they could not compete with its single source capability. Osmonics' ability to respond to a wide variety of customer requests in many different industries and provide total solutions to all a customer's needs were beyond what either of these larger enterprises were able to do. The competitors' products and applications were very specific.

Key Weakness. Osmonics' breadth, which was its key strength, was also a key weakness: it only had the highest market share in filtration equipment, and this was because, unlike its competitors, it made all the components. It was a small operator compared to Pall (a \$600 million company) and Millipore, and it was about the same size as other smaller companies like Filterlife, Cuno, and Gelman. In the membrane market, although DuPont was gone, Osmonics continued to compete with Dow, and it had other competitors in Fluid Systems, Koch, and AMT. In pumps, it had to compete with Goulds, Sunstrand, and Webtrol, and it had only a small part of the market, though it made half the pumps

used in large membrane systems. Osmonics was the only company to have a presence in all these areas, but it didn't dominate any except filtration equipment.

Summary

Osmonics was the only company able to manufacture all membrane system components; because of this, it could give customers good prices, uniformity, and reliability. It gained customer confidence through its high quality reputation as a pioneer in this industry, and buyers found it easier to deal with one company. Its core competence thus was not easily reproducible. It was unique. It had a non-imitable asset. However, the acquisition of Autotrol, a large company in its own right, was a new question mark. What did it show about where the company was moving? How could it be successfully absorbed?

Osmonics is a good contrast to Ringer in that it shows how, in building a business, it is necessary to patiently put all the pieces together — core technology, marketing, and manufacturing expertise — and to grow a company gradually but persistently through a series of well-thought-out acquisitions. Osmonics' ability to handle competition from many large companies in many different markets is very different than Ringer which has had such difficulty in doing so. A good discussion would be one that asks students to list reasons why Osmonics is so successful and Ringer is not when their competitive environments in some respects are so similar — a relative upstart facing industry giants.

The key to Osmonics' success may be twofold. First, environmental values are incidental to the profitability enhancement it provides its customers. Second, Osmonics capacity for system integration cannot be matched by any of its competitors, no matter how large. Its competitors have ceded this very unique niche to Osmonics, which almost guarantees it consistent if not spectacular profits.



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