

# GTA Advanced Manufacturing Case Studies

Executive Report



*Discover How Design Adds Value*



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## **Research Commissioned by**

Greater Toronto Marketing Alliance in collaboration with the Design Industry Advisory Committee

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# Executive Summary

What does a maker of plastic housewares have in common with an automotive testing equipment provider and the developer of the world's most advanced ultra-filtration membranes? These companies are all advanced manufacturers. They are based in the Greater Toronto Area (GTA). They have won global recognition for product excellence. And they connect design to their business strategy.

The three companies are Umbra, D&V Electronics, and Zenon Membrane Solutions, now part of GE Water & Process Technologies. They are the first companies to be researched in a new case study project commissioned by The Greater Toronto Marketing Alliance (GTMA) in collaboration with Ontario's Design Industry Advisory Committee (DIAC). The objective of this ongoing research is to explore how leading advanced manufacturers, in various industry sectors, are working with Canadian designers to establish competitive advantage.

## **Design-Rich Region**

The study defines advanced manufacturing as: thinking smarter at the fuzzy front end of the manufacturing process. This approach puts more emphasis on high value jobs in research, development and design. The GTA is a premier North American centre for advanced manufacturing. It is also a premier centre for design. The GTMA research study demonstrates the Design Value Proposition for the GTA by linking its manufacturing and design capabilities. The research references other jurisdictions that have leveraged this connection. The talent of the design workforce in the United Kingdom has attracted in-bound investment from international companies including Samsung, Nissan and Orange. As part of its spectacular business transformation, South Korean manufacturer Samsung has mobilized local design talent in its major markets to capture and reflect cultural and customer trends in its value-added high design products. In this context, harnessing the GTA's design talent to add value to its well-established manufacturing capability makes very good sense.

The GTA has world-leading design education infrastructure. As for its design workforce, the GTA has the third highest concentration of designers in the labour force of any North American city (after New York and Boston). This gives international companies one more good reason to locate in the Greater Toronto Area. The findings could also help Canadian manufacturers, who are struggling to find new ways of competing against the low price, high volume strategies of their formidable offshore competitors.

A number of significant insights emerged from the study. The research identified Umbra, D&V Electronics, and GE Water & Process Technologies - Zenon Membrane Solutions as design-led manufacturers because each of these companies has used design to improve its products and to promote its brands internationally.

## Seven Best Practices

In integrating design with competitive business strategy, these companies demonstrate seven best practices:

- 1. Entrepreneurial Leadership.** The history of innovation at these companies has been directed by dynamic, entrepreneurial leaders with a strong vision of how to make products better by design.
- 2. Focus on R&D Linked to Design Thinking.** These companies have world-leading track records in the rapid commercialization of innovation in their industries. They have taken advantage of the Ontario R&D tax credit to conduct cutting-edge research that integrates advanced technologies with new materials and design thinking.
- 3. Adding Value Through User-Centred Design.** The companies have worked with local designers to reduce costs in production and to enhance the performance, quality, adaptability, accessibility, value, and aesthetic look of their products to maintain a competitive advantage in the global marketplace and to pass this advantage on to their customers.
- 4. Long-Term Relationships with Designers.** The companies have worked in long-term relationships with design consultants. One company, Umbra, also maintains a large, multi-disciplinary in-house design team comprised of industrial and graphic designers and one engineer.
- 5. Investment in Brand and Communications Design.** The companies have invested in state-of-the-art communications design to build global awareness for their brands. This investment is reflected in the consistency of their corporate identities and product branding, the quality of their product literature, and the highly sophisticated design of their web sites. These same values are evident in the way these companies present their products at international trade shows.
- 6. Reflecting a Culture of Innovation in the Workplace.** Each of these companies has used design to celebrate and reflect a culture of creativity and innovation in the workplace. At their head offices, they have used architecture, landscape architecture and interior design to reinforce company values and to celebrate the essence of their brands with employees, clients, suppliers and other visitors. The workplace design elements explored in these case studies include: the design-centric headquarters of Umbra; the ZeeWeed Museum at GE Water & Process Technologies' Zenon head office; and the interior design ambience at D&V Electronics.
- 7. Research Relationships with Local University and College Network.** All of these companies employ co-op students and have built research and advisory relationships with faculty and students in the strong university and college network in the region.

## Umbra

Reinventing Everyday  
Products for the Home



### Case Summary

“Masterminding new products to send around the world”. That’s how Umbra co-founder and Vice President of Design, Paul Rowan, describes the company business strategy. Umbra’s core competency is breakthrough design.

Its products are currently sold through 25,000 retailers in more than 75 countries. As a world-leading manufacturer in housewares, Umbra focuses on developing innovative and affordable products and accessories for every room in the home. The vision is to establish Umbra as the number one global brand in the category.

To achieve this vision, Umbra has established a winning formula: a red-hot design team based in Toronto, and a rigorous methodology for integrating smart design with advanced manufacturing processes. Umbra’s design and production teams rotate between the Toronto head office and a major production facility in China. They are continuously working with carefully selected suppliers and sub-contractors to find better, more efficient, more innovative, and more environmentally sensitive ways to make things. They experiment with colour, new materials, forms and finishes to produce well-designed, affordable products to fit post-modern consumer tastes. This proposition has enabled them to rise to the top in a fiercely competitive industry.

Umbra has demonstrated its capabilities as an advanced manufacturer through its investment in research and design innovation; through its work with injection-molded plastics; and most recently through its experiments with laminating technologies. With the launch of its first Concept Store in downtown Toronto, and a new sustainability research plan focusing on transformative business practices, the company is entering a mature phase in its evolution as a successful Canadian manufacturer.

## GE Water & Process Technologies - Zenon Membrane Solutions

Global Leader in UF Membrane Technology



### Case Summary

Zenon Membrane Solutions, now part of GE Water and Process Technologies, is a research and innovation-driven company with a world-leading track record in advanced membrane technology. The company pioneered the use of ultrafiltration immersed membranes for water and wastewater treatment. Its evolution has been marked by innovation breakthroughs from the development of the early tubular microfiltration and ultrafiltration prototypes to the full-scale water treatment plants developed and commissioned for public and private sector clients in North America, Europe and Asia. Its extensive product portfolio has set the industry standard by providing low life-cycle cost for customers in one of the fastest growing sectors in water purification and wastewater treatment. GE Water and Process Technologies acquired Zenon Membrane Solutions, in 2006. The acquisition of the Oakville, Ontario based company has enabled GE to add UF membrane technology to its extensive portfolio of water and process technology products.

As well as positioning itself as a world leading environmental technology manufacturer, this company has always maintained a strong branding and design vision. So, it is not surprising to find that its head office facility houses a full-scale science exhibit in its central atrium demonstrating the technology breakthroughs in generations of filtration products. Or that its ZeeWeed family of products has been branded with memorable names that blend science fact with science fiction. Or that a high-profile Toronto industrial designer working with the company's product development team, has won a design award for one of its signature products: the packaged water treatment plant called the Z-Box. Design improvements to the Z-Box have taken cost out of production, and made this pre-engineered packaged UF plant faster to install and simpler to operate. Overall the design improvements helped to reduce costs of the Z-Box by nearly half. Sales are up and the new and improved Z-Box has a strong aesthetic look which makes it a showstopper at the trade fairs.

In line with its global vision for the management of water resources, GE Water & Process Technologies is poised to expand the ZeeWeed product portfolio in the areas of research, new product development and international marketing.

## D&V Electronics

The Gold Standard in  
Automotive Testing



### Case Summary

D&V Electronics is North America's leading manufacturer of custom automotive testing equipment for rotating electrical systems. Its competitive advantage is based on a commitment to continuous innovation, supported by a significant investment in R&D and a strong design vision. The computerized assessment tools developed by the company are based on a universal software platform and user-centred design principles that have enabled the customization of products and services for over 400 large and small automotive clients worldwide. The international client base includes Remy, Ford, Bosch, Valeo, Denso, Hitachi, Mitsubishi, Rayloc, MPA, Holger Christensen and many others.

The company has grown rapidly since it was launched just ten years ago, and its rapid growth has coincided with the pace of technological change in the automotive industry. D&V's entrepreneurial founder is a former university professor with a Ph.D in electronics who maintains strong links with university research departments in the region. Building on these relationships and the expertise of local computer scientists, engineers and designers, the company has created breakthrough solutions for several generations of testing equipment. The products and services have helped clients to maintain their technological edge in a fast-paced and ever changing industry.

D&V Electronics has used its design know-how to build a dynamic interactive web site that extends the company brand internationally and delivers high-level remote access services to its broad client base. The company's design philosophy is also clearly articulated on the site.

The company manufactures its leading-edge electronic equipment in an elegant facility situated in a Vaughan, Ontario industrial park. The interior design ambience of the plant reflects the company commitment to a design-led culture of innovation.

Current research is focused on developing testing tools for hybrid vehicles. The company vision is to expand its global leadership in automotive testing equipment and to mobilize its technological capability to enter new markets.