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"Innovate or Die"

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INNOVATE OR DIE

Robert Edmund, CEO of Edmund Optics, says innovation is the only way to flourish—and survive—in the optics industry.

By **Kathy Sheehan**

Many factors can combine to spell success in the optics business. For Robert Edmund, the blueprint for a profitable and prosperous business is no big secret.

“Innovate or die. It’s that simple,” says the CEO of Edmund Optics, the world’s largest catalog-based distributor of industrial optics.

Edmund’s \$85 million-a-year global enterprise has seen tremendous growth since it was founded by his father, Norman, in 1942 as a supplier of surplus optical equipment for amateur photographers and astronomers, frugal science teachers, researchers, hobbyists, and collectors.

“We’ve got a lot of brilliant people in this industry who come up with a great idea,” Edmund says. They create successful, small companies. Then, instead of reinvesting in equipment, seeking new partners, researching new markets and technologies, or developing new products, they reward themselves by spending profits on themselves.

“The minute you do that, the company stops growing,” and begins

to die, the 60-year-old entrepreneur says.

Edmund has kept that mandate for growth at the fore as he re-invented Edmund Optics with innovative ideas numerous times since joining his father’s company in 1970 as accounting and personnel manager. In addition to its catalog, EO now has offices in eight countries, including four with manufacturing facilities, and it both develops and distributes precision optics, metrology equipment, and optomechanical assembly technology.

Need Ignites Startup

The birth of Edmund Optics was an innovation itself. Had Norman W. Edmund been able to find a lens for his photography hobby easily, the company might never have been founded. Edmund Salvage was an entrepreneurial solution to a simple need. Norman Edmund established his surplus optics supply business in New Jersey in 1942, and the first-ever Edmund Catalog was mailed in 1943 to photographers and others who needed lenses and other optical equipment.



1940s: Norman W. Edmund establishes Edmund Salvage, a small surplus optics supply business in New Jersey, mails first catalog. Son Robert is born as company begins to stock other scientific and educational instruments. Norman travels to Japan for surplus optics.

1950s: With Norman's growing mission to supply equipment for science education, the company becomes Edmund Scientific.

1960s: Optical components from Edmund Scientific used as part of Apollo 11's historic lunar mission.

1970s: Robert Edmund joins company full time as accounting and personnel manager, tries to steer his father into focusing on basic optics only. Norman retires and Robert becomes president.

1980s: Moving into industrial optics market, Edmund introduces TECHSPEC line of optical components after developing business relationship with John Plummer, a friend and former colleague of Norman who is a leading manufacturer of optical products and technologies. Distributes first industrial optics catalog.

1990s: EO designs custom optomechanical assemblies using its large inventory of optical components. EO optics used by U.S. military in Operation Desert Storm. Offices opened and catalogs printed for markets in China, Tokyo, UK. Launches electronic imaging resource guide, offers edge-blackened optics and aspherized achromats. Prints "Master Source Book" with more than 15,000 optical products.

2000s: Edmund Optics acquires assets of Plummer Precision Optics and sells scientific division. Business expands in Singapore, Germany, France, China, Korea, and Pennsylvania where a new plant has metal machining and optical coating capabilities. Receives ISO 9001 certification, designates official R&D team, announces breakthrough LED illumination technology, offers edge-blackened optics and aspherized achromats. Prints "Master Source Book" with more than 15,000 optical products.

Within a short time, the catalog business was able to support a full-time owner and employees. Still, like many new entrepreneurial ventures, the staff occasionally included family.

"I remember playing with war surplus optics that my Dad had in the factory," Robert Edmund says of the early years. "But my father was a bit of a taskmaster, so by the age of 10, I was working a couple of Saturdays, packing orders, going to the optics shop and what-not."

Mixing Family, Business

At Georgetown University School of Business in the late 1960s, Robert Edmund was more interested in organizational development and industrial psychology and had no plans to enter the family business.

When he graduated, though, "My father cleverly had a job offer, which was probably twice what anyone else would have paid me," he says. With his wife pregnant with their first child, "It was not a hard decision" to accept.

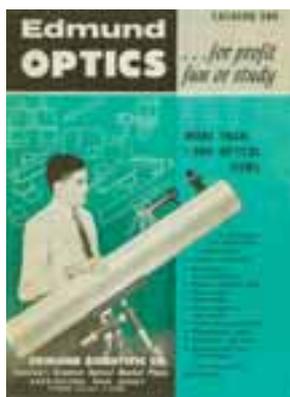
He quickly moved up to operations manager at the company that had expanded to include other

optical instruments and educational supplies in its catalog and was then called Edmund Scientific. When his father retired in 1975, he became president. In charge of the company before he was even 30, he found himself in a perfect spot to use his communication and organizational development skills for business development.

For more than three decades now, he has led a number of business and technical innovations at the company. Recognizing the importance of owning a piece of the supply chain, he spearheaded Edmund's first partnership with a supplier of new optical equipment and technology for industry and military applications. He reorganized Edmund Optics into two divisions, consumer and industrial, and then spun off

the consumer division when the market for educational products had peaked.

When his father was still at the company, Edmund says he wasn't able to convince him that focusing solely on optics was the best strategy—even though he wrote a college term paper recommending that Edmund Optics do just that.



Norman W. Edmund

Online Extras

To see a video of Robert Edmund discussing these and other topics, go to the SPIE Newsroom: <http://spie.org/x20177.xml>.

An extended version of this story is available at <http://spie.org/spieprofessional>.

"I got an A in the paper," he says. But when he gave it to his father shortly after joining the company, Norman Edmund "read it and threw it in the waste bin. He said that's not the way we're going."

Bringing the company's focus back to core optics after he took the helm in 1975, Robert Edmund has also given a higher profile to EO's research and development activities, leading to the company becoming well-known as a source for custom lens and coating design, OEM services, and application integration.

Focusing on R&D

Edmund says he was astounded to hear one of his managers tell a new engineer at a strategy meeting three years ago that EO didn't conduct any research or development. "I stood there and said, 'You are absolutely nuts.'" The company had a design center in Arizona, numerous optical engineers conducting optical testing and other research, and the glass-molding machine at the manufacturing facility in Pennsburg, PA, was the source of many optics innovations.

Believing that if his own employees didn't recognize the R&D taking place, the customers might not, either, Edmund immediately established a formal R&D team. "You have to point out to people sometimes that you are doing things that are very innovative, that are very cutting edge, and that's what R&D means," he says. "They've got some crazy idea in their heads that unless you've got 12 scientists locked in a lab, that you're not doing R&D."

Talking to customers is another part of R&D that hardly gets noticed but has been essential to the growth of Edmund Optics. "Your best ideas come from your customers," Edmund says. "You're in business to serve your customers. It's just a matter of asking and listening to what they say." A bonus payoff to that strategy is that Edmund's best customers have become suppliers and partners.

Investing in Innovation

Among the many business decisions Edmund has made over the years, three illustrate how reinvestment and innovation have kept Edmund Optics growing in new directions while staying focused on its core business.

- In 1999, the company established a board of directors, even though it remains privately held. About 50 family members and employees are shareholders, says Marisa Edmund, Robert's daughter and vice president of marketing. The idea of a corporate board was to create some distance between the shareholders and management and to help plan for the company's future, she explains.

- A year ago, EO created a program to provide customers with a network of partner companies that specialize in installing and integrating Edmund Optics machine vision products into complex manufacturing, fabrication, and assembly environments. The Vision Integration Partners (VIP) program has been successful in the United States and in Europe.
- This year, EO has partnered with Clemson University and Benét Laboratories, a U.S. Army research facility, to develop assembly technology for molded aspheres. The goal of the three-year, \$2.8 million project is to minimize the time and cost of producing aspheric lenses, used in night vision goggles, fire control systems, and other military items.

Building a Large Niche

Edmund says he has found a comfortable balance between expansion and retrenchment, diversification and consolidation. EO fills the needs of the optics community spread out across the world, for instance, but the company's marketing plan covers just three regions of the globe: the Americas, Asia, and Europe.

In Asia, EO has expanded in recent years with manufacturing facilities in Japan, China, and Singapore. But unlike other American companies that are investing heavily and sometimes solely in China and Japan, Edmund says his marketing strategy for Asia is to have a presence in several different Asian countries, rather than putting "all of our eggs in the Chinese basket."

Some might view his sale of the consumer division in 2001 as putting EO in just such a vulnerable position. But Edmund says the decision to focus on the core business was a wise and strategic consolidation of resources that eventually resulted in growth and new opportunities. The Edmund-Benét Labs-Clemson project, for instance, is expected to yield major advances in optical technology, assembly, components, and systems. The cooperative effort will draw on EO's research and development with precision machining, design, metrology, and manufacturing technology, specifically with glass-molded aspheres, which it has been developing for years.

You don't need wholesale business diversification to feel secure or innovative, he says.

"I feel very comfortable being in the optics world and diversifying within the optics world in terms of serving different markets and having a broad spectrum of products," he says. ■

—Kathy Sheehan is managing editor of SPIE Professional.

Team Approach

The contract under which Edmund Optics, Benét Laboratories, and Clemson University are developing assembly technology for molded aspheric systems is an interdisciplinary effort.

Edmund partnered with Clemson on the project this year, and Kathleen Richardson, an SPIE Fellow and director of the School of Materials Science and Engineering at Clemson University, will lead the Clemson effort. The project includes using computer simulations to study material parameters critical to the successful interaction of glass and the mold.

"Such collaboration allows an interdisciplinary team of academic researchers to address an industrially relevant challenge," Richardson says. "Blending the technical skills of faculty and students with process experience of military and commercial manufacturers provides meaningful results not obtainable through other, single investigator efforts."

Military Markets

Edmund Optics entered the global market when Norman Edmund went to Japan in 1949. The founder recognized that Japan had produced excellent optics for the war effort, and the surplus equipment was a good fit for his catalog company. Edmund Optics consequently gained a foothold in the military optics market where some of the most cutting-edge products and technologies are being developed. A current EO contract is driven by the Army's interest in having lighter optics. "And lighter optics translates to aspheric optics," Robert Edmund notes. Edmund's sales in the military market now account for 20% of its volume.