THE BEL FUSE STORY

bel

POWER | PROTECT | CONNECT

DEDICATION

This book is dedicated to all of the associates who have worked for Bel and its affiliated companies over the years. While we could not mention everyone by name, the collective contributions of talented and dedicated staff around the world are what led to Bel's success throughout decades of ever-changing technology. We would like to thank you, our associates both past and present.

THE BEL FUSE STORY

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Bel Fuse Inc. founder Elliot Bernstein didn't grow up planning to start an electronics company. As a US Marine veteran returning from World War II, he leveraged his English Literature degree into a job at a large Manhattan advertising agency. The pay was good—an important factor since Elliot and his wife Sybil, an interior designer, had started a family that would include five sons.

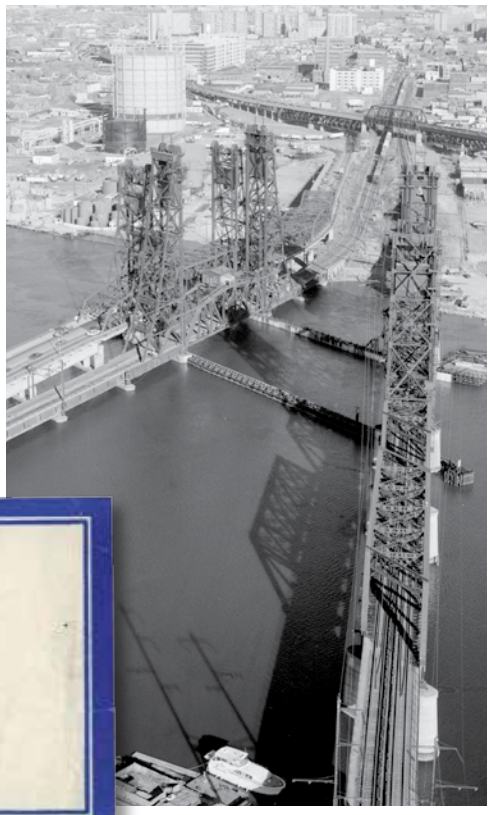
But the "Mad Men" world wasn't for Elliot. After a major layoff occurred at the agency, Elliot realized that the only way to protect his family was to be self-employed. So when the opportunity arose to buy into a new business with the father of a friend, Elliot took it. The fact that it involved fuse-making was especially appealing. As a wedding gift from his captain in the Marines, he had been given the opportunity to attend radar school. This program would become the foundation of Elliot's knowledge in electronics.

With an $8,000 loan from Sybil's mother, Elliot joined Charles Lindeman in setting up shop at 311 Mountain Road in Union City, New Jersey, across the Hudson River from Manhattan. Stories vary as to why they chose the name Bel. "My father always joked that Bell Labs was already taken," says current President and CEO Dan Bernstein, referring to the legendary research arm of AT&T. Sybil says that the B stood for Bernstein, the L for Lindeman, and the E linked the two.

CLOCKWISE: Bel Fuse founder Elliot Bernstein and his wife Sybil circa 1960, with the family dog and (left to right) sons Dan, Andy, Adam, Alexander (Lex), and Steven.

Hudson County in the 1940s was a hub of manufacturing and transportation.

The company's first location was in an industrial building in Union City.



LEFT: After five years in business, Bel's typical monthly sales income was in the range of $13,000. Accountants recorded expenditures to the penny, including a bank charge of 11 cents.

BEL FUSE, INC.

STATEMENT OF INCOME, PROFIT AND LOSS

	For Period Ended May 31, 1954		For Month of May, 1954	
SALES INCOME		$ 60,038.80		$ 13,738
Less: Sales Discount		1,222.72		272
NET SALES INCOME		$ 58,816.08		$ 13,466
COST OF GOODS SOLD				
Inventory-Beginning-Submitted		8,108.67		8,222
Raw Materials Purchased	$ 19,248.25		$ 4,763.38	
Less:Discount on Purchases	251.10		41.23	
Net Cost of Materials Purchased	$ 18,997.15		$ 4,722.15	
Freight and Express In	131.21		28.57	
Labor	9,321.10		2,472.04	
Outside Labor	2,231.51		398.06	
TOTAL COST OF PURCHASES AND LABOR		30,680.97		7,620.82
TOTAL COST OF GOODS AVAILABLE		$ 38,789.64		$ 15,842.96
Inventory at End-Submitted		8,278.00		8,278.00
PRIME COST OF GOODS SOLD		$ 30,511.64		$ 7,564.96
GROSS PROFIT		$ 28,304.44		$ 5,901.29
DIRECT OVERHEAD				
Factory Supplies and Expense	$ 787.90		$ 152.71	
Engineering Expense	220.45		-	
Rent	1,500.00		300.00	
Gas and Electric	165.02		35.00	
Insurance	235.00		47.00	
Employment Taxes	797.43		165.69	
Machinery Depreciation	307.90		64.84	
Total		4,013.70		765.24
SHIPPING AND SELLING EXPENSES				
Freight and Express Out	$ 8.74		$ 1.13	
Parcel Post and Postage	153.88		65.08	
Shipping Supplies	110.65		17.00	
Commissions	1,115.37		344.39	
Advertising	150.00		-	
Traveling and Selling	1,605.34		738.29	
Automobile Expense	369.94		127.99	
Total		3,513.92		1,293.88
GENERAL AND ADMINISTRATIVE EXPENSE				
Telephone and Telegraph	$ 432.90		$ 165.23	
Stationery and Printing	106.53		93.00	
Towels and Water Cooler	78.40		13.80	
Sundry Taxes	129.71		52.35	
Bank Charge	.11		-	
Sundry Expenses	444.19		-	
Office Furniture Depreciation	12.55		2.51	
Officers' Salaries	6,350.00		1,150.00	
Legal and Professional	195.00		40.00	
Total		7,749.39		1,516.89
TOTAL OVERHEAD EXPENSE		$ 15,277.01		$ 3,576.01
NET PROFIT		$ 13,027.43		$ 2,325.28

GOLDBERG & FREEDMAN
CERTIFIED PUBLIC ACCOUNTANTS

ABOVE: Howard Bernstein joined Bel in 1954 and was active in the company through May 2016. He and Elliot worked as a team, forming the foundation that Bel continues to build on.

BELOW: Bel's reputation as a developer of industry-standard electronics began with RCA, a pioneer in color television.

In 1949, television was the big emerging technology. A Lindeman family member worked at the broadcasting giant NBC, which was then owned by RCA; that may have helped Bel Fuse Inc. secure its first order from RCA for television-set fuses. In any event, RCA and Zenith—which controlled 70 percent of the television manufacturing market in the United States at that time—lasted far longer in Bel history than the Lindeman connection did. The partner soon bowed out and Elliot ran the company alone until 1954, when his brother Howard joined him. Howard had just completed his Ph.D. in Psychology at Temple University, where he was a member of the research science society Sigma Xi. "I was very happy when Elliot brought Howard in," Sybil recalls. "We had five young children. Howard and his wife had just had their first. I said to Elliot, 'If something happens to you, we have somebody there who is family, who can protect us.' That, to me, was safer than life insurance."

Howard oversaw the financial end and worked directly with non-television customers, freeing Elliot to focus on developing new products with RCA. These products would later become industry standards. As Howard recalled those years:

"I can still picture the room upon room of engineers and draftsmen at RCA's center in Cherry Hill, New Jersey . . . the sets developed there had vacuum tubes that sometimes had a momentary short in the circuit. The problem was that RCA had to send a serviceman to the customer's home to replace the blown fuse, which was very costly. Elliot Bernstein developed the Kemfuze™ that used a dab of chemical, which would withstand the momentary surge . . . it saved money and promoted customer satisfaction. It became widely used in the TV industry."

Bel Fuse hit another industry sweet spot with TV delay lines, a device that would regulate the current within the circuit. This product would become an integral part in the development of color television. "Initially, TV delay lines cost about $5. That was a lot of money in the 1950s, when manufacturers would redesign a circuit board to save 50 cents," Howard noted. "Bel developed a delay line component for 75 cents and soon found itself producing and selling 75,000 units a week."

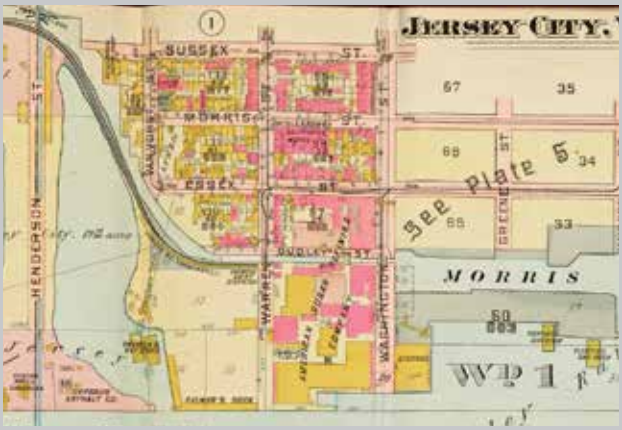
By 1959, business was so good that Bel relocated to larger quarters at the corner of Van Vorst Street and Morris Street in the Paulus Hook section of Jersey City. Why the Bernsteins moved there is not known. Probably the one-story facility at 198 Van Vorst fit the bill in terms of low rent and ready access to labor. Paulus Hook had been a gritty industrial area since the 1800s, when the Morris Canal ran through it—with mules pulling barges that transported coal, iron ore, and other heavy goods from points west to industrialized eastern Jersey and the Hudson River. The canal ran alongside Morris Street, still a main thoroughfare. The water table in Paulus Hook is high and the area is subject to flooding, but that didn't concern the Bernsteins. After nine years of leasing, Bel purchased its building in 1968. Along the way Bel also bought nearby plots of land and smaller buildings for storage and additional manufacturing, a strategy

that would pay off decades later as real estate values rose.

Sybil Bernstein applied her interior design expertise to the exterior and front office, but most of 198 Van Vorst was devoted to manufacturing. It was strictly no-frills. Operations Vice President Dennis Ackerman, who joined Bel in 1986, describes it as "the kind of building you see everywhere along old highways in north Jersey—cinder block with frosted windows, paneling inside. Elliot didn't see the building as a good thing to spend your money on. Spend it instead on equipment, engineering, sales, and on building a better production line."

Elliot could have relocated Bel nearer to his home on Long Island at any point, thus reducing his long and congested commute to Jersey City. "I would have loved that!" Sybil says. "But Elliot liked the distance because it got him away from the business. If he was living close, it would have been 24 hours a day."

At its height, the manufacturing line at 198 Van Vorst supported three shifts. Noemi Rolon, who lived in the neighborhood, was hired in 1967 at age 20. The Bernsteins and other associates trained her; within three years she was a group leader, training others. "We built entire units by hand and tested them," Noemi recalls. "You didn't just learn one job. You did everything. We loved it. I understand why manufacturing had to move to Asia in the 1970s. But I still miss it." Noemi never left Bel, however. Fifty years later, she was still working in the office. Miriam Martinez, an associate who joined Bel in 1979, recalls that "we would come to work on Fridays all dressed up like we were going to a party because it was



TOP TO BOTTOM: Jersey City in 1908, showing the proximity of the Morris Canal to Van Vorst Street. The Canal was paved over by the 1920s, but the water table remains high.

Bel associates Johnny Kuchenmeister and Sharon Geraghty at 198 Van Vorst Street. The silver letters were saved and reused in the building at 206 Van Vorst, which opened in 2001.

The entrance to 198 Van Vorst.

Arnold Sutta (far left), Lex Bernstein (kneeling), and Dan Bernstein (front row, second from right) with Bel associates in the factory at 198 Van Vorst in 1998.

ABOVE: Typical product catalog, whose contents included delay lines, pulse transformers, fuses and circuit breakers, balun transformers, and coil and toroid assemblies.

payday. It was a pleasure coming to work every day. Mr. Bernstein and Howard were gentlemen. How many CEOs and executives do you know who take the time to say thank you and good night to ordinary workers? They always did."

The 1960s and 1970s marked the emergence of the computer age. Room-sized mainframe computers, which had been developed for military use in World War II to process large volumes of data, had begun to be adopted by very large companies for business applications in the 1950s and 1960s. Elliot saw the potential application for using delay lines in computer hardware. By 1966 Bel had landed the biggest name in the field, International Business Machines (IBM), as a client.

The space program also provided new opportunities. Russia had put the first man in space in 1961. The United States desperately wanted to surpass its Cold War enemy by putting the first man on the moon, which finally happened in 1969. During the space race, the National Aeronautics and Space Administration (NASA) was flush with money. Bel's involvement seemed thrilling at first, as Howard recalled with classic Bernstein humor: "We were asked to develop a delay line for a communication satellite. After thousands of hours of testing, we were really excited when our part was approved for blast-off. We waited for the big order. It came: Ten units. There and then we decided our mission was to be among the earthlings. The computer industry held a more promising future."

He was right. For example, Honeywell Information Systems was developing a network system that required a specialized type of delay line, one that utilized integrated circuits (ICs) in small, transistorized packets called dual-in-line packages (DIPs). "Honeywell surveyed the industry," Howard said. "All vendors except Bel said it could not be done. Bel delivered the first DIP delay line. The amusing thing is that a year or so later, all of our competitors somehow learned that it could be done."

Dan notes that his father's particular talents played a large role in these achievements. "I think he had a mind similar to Thomas Edison," he says. "He didn't have an engineering background, but he read books and approached product design without preconceived concepts. Everybody thought he was an engineer, based on how well he could design new products and the machinery to build them."

Expansion was in the cards, which required capital. The Bernstein brothers had run a tight ship; there had been no outside financing since Elliot paid back the original $8,000 from his mother-in-law. Seeking money for expansion, Bel was surprised to be turned down by a local bank. Then they had success with First Fidelity, then New Jersey's largest bank. Its loan officers recognized the company's innovative approach to identifying customer needs. A small public offering in 1967 also raised capital.

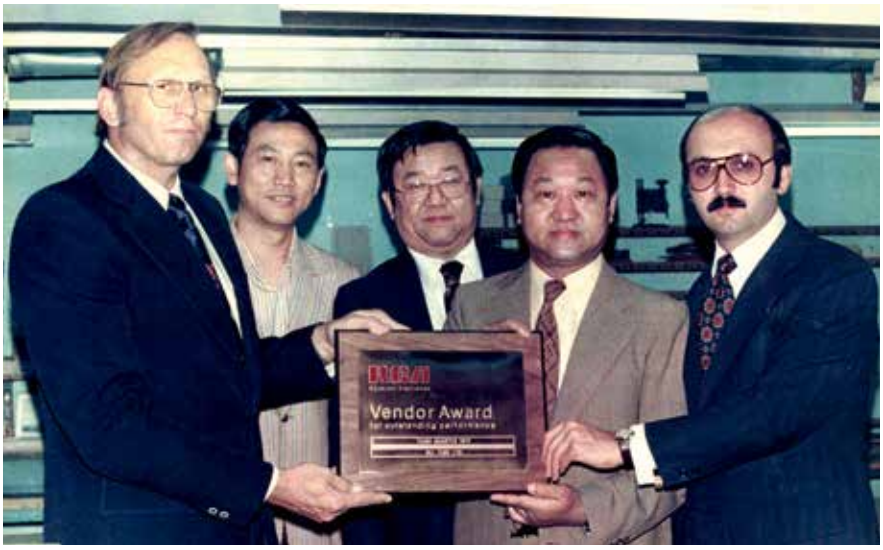
With the growth of the company, the management team expanded to include Arnold Sutta, Vice President of Sales; Don Morehouse, Vice President of Production; Bob King, Engineering Manager for delay lines; and Sharon

Geraghty, who was in charge of Information Technology.

In 1970, RCA and Zenith had transferred the production of TV sets to Asia for cost savings. Bel had to follow suit in order to maintain these customers. Elliot didn't hesitate. He had accurate foresight. Asian expansion put Bel into the right place at the right time, years and even decades before competitors followed. "With profit margins rapidly disintegrating for TV components, we phased out of this production in our offshore facilities and dedicated these workers to the growing demand for the more sophisticated and higher-margin products to support the computer delay lines industry," he noted. The development offered Bel more opportunities to serve the computer market. Bel's success with IBM and Honeywell swelled to a customer base of 700 computer companies, including Control Data, Digital Equipment Corporation, and Univac in the United States; Olivetti and Siemens in Europe; and a host of Asian companies including Brother, Epson, Samsung, and Toshiba.

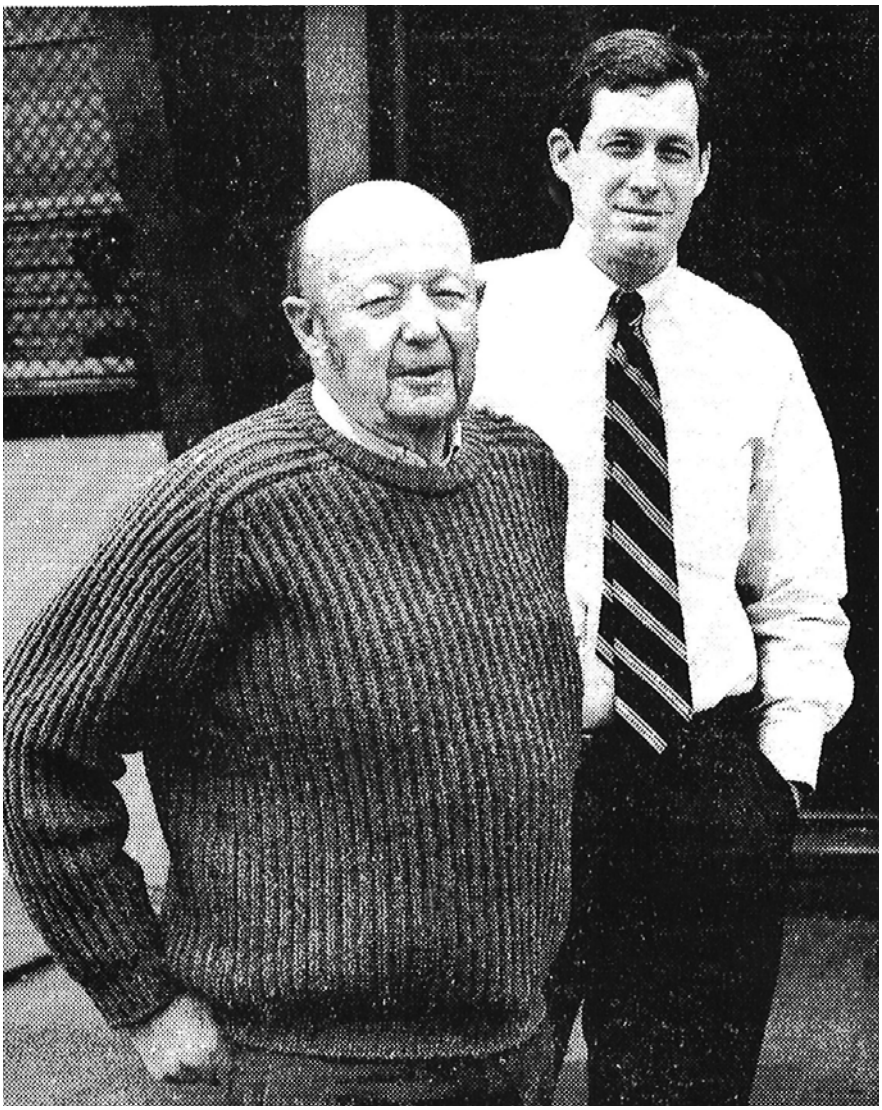
Furthermore, as Howard focused on the sales of delay lines to these customers, Elliot thrived on Asia's business-friendly culture. He hired members of the Loh family—Peter, Bill, and Henry—to run the Far East operation. The Loh brothers oversaw staff at Bel's plants in Hong Kong, Macau, and China. Henry Loh was instrumental in ensuring that the new Far East facilities met the high standards of multinational companies. Other key associates included Andrew Wong, who oversaw fuse production (and who was considered by many to be Elliot's adopted son); Y. K. Tso, who oversaw delay lines and went on to direct Bel's core production in the Far East; Annie Ngai, who was in charge of customer service; Regina Fung in accounting; and Joseph Meccariello, an associate who went to Asia for two weeks and ended up staying for 20 years as Vice President of Production. Joe was the only full-time American based in the Far East.

During these years, four of the five Bernstein sons—Alex (Lex), Steven, Dan, and Adam—began to work at Bel in



TOP: Flanked by RCA executives, Loh brothers William, Henry, and Peter accepted the RCA Vendor Award for Outstanding Service on Bel's behalf in 1976. The Loh family worked closely with Elliot in Bel's Far East expansion.

ABOVE: The Bel Fuse House in Hong Kong in 1986. It occupied 70,000 square feet on 7 floors.



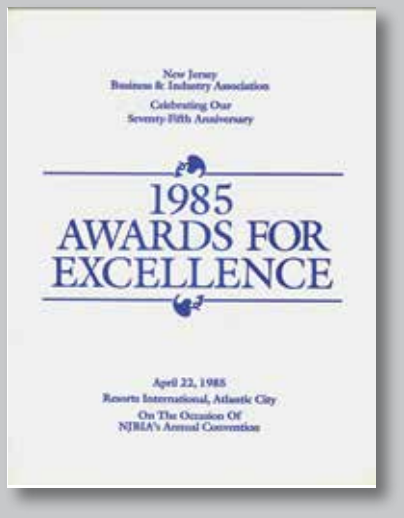
ABOVE: Elliot and Dan in 1989. This photo accompanied a feature article in New Jersey's largest newspaper, *The Star-Ledger.*

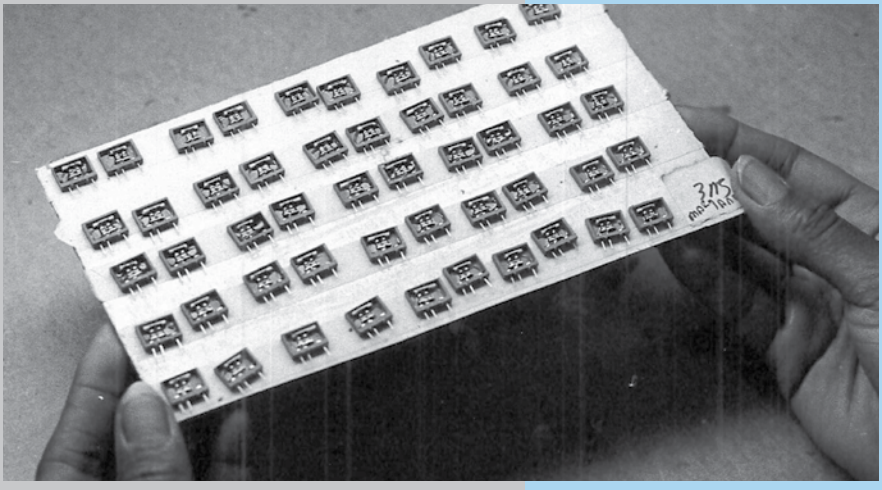
different capacities at different times. (In a terrible blow to the family, Andy, the eldest, had died in an accident in his early 20s.) Growing up, all of them had visited the company and done odd jobs during school vacations. But only Dan, according to his mother, had announced at the age of 13 that he would be President of Bel Fuse someday.

Dan's first job after attending SUNY Brockport was as an assistant soccer coach at Colgate University in upstate New York. While supervising an alumni soccer game, he viewed the parking lot full of Mercedes-Benzes, BMWs, and Jaguars as he drove in his beat-up car. "At that point, I realized that the best future I could have was working for my father, and he was kind enough to give me a job," Dan says. "Initially, I learned the business by following my father around the world. After a two-year internship, I led the effort to reintroduce our fuse product line. Even though we're called Bel Fuse, we had stopped making fuses when we lost our Kemfuze™ UL approvals many years before." While working at Bel, Dan also earned an MBA at Baruch College in New York City.

While Dan respected his father's entrepreneurial approach, from the mid-1980s onward he moved Bel toward a more structured management style. He recruited a solid team of professionals to lead various functions: Bob McBrien, Circuit Protection; Mark Coggan, Sales; Paul Ochmann, European Sales; Raymond Cheung, Vice President of Far East Operations; Mike Grosso, Information Technology; Kevin Meehan, Purchasing; Kathy Biegay, Customer Service; and Sandy Axelrad, Quality Director and then General Manager for Signal. This was also the timeframe when Dan's first executive team was established: Dennis Ackerman as Vice President of Operations and Colin Dunn as Vice President of Finance.

Dennis started with Bel in 1986 as Customer Service Manager. He worked his way through various departments, becoming Inside Sales Manager, then Purchasing Manager. He would be named Vice President of Operations in 2001.





LEFT: Bel associates Carlos Veguilla (top) and Carmen Alvarado (below) working on delay lines in 1985. These photos appeared in a *Jersey Journal* newspaper article announcing the company's Award for Excellence from the New Jersey Business & Industry Association. The article called Bel "a longtime Jersey City firm in the center of New Jersey's growing high technology industry" and quoted Elliot's prediction that "home computers will be the size of a calculator" by the 1990s.

TOP: Dennis Ackerman started in 1986 and worked his way up to top management, developing a specialty in the integration of acquired companies.

ABOVE: Colin Dunn started in 1991, bringing international expertise in operations and finance. Colin retired in 2017.

"During this period, no one had a better understanding of the inner workings of the company than Dennis," Dan notes. "However, Dennis's greatest strength has been his ability to integrate acquired companies into the Bel fold. He has been the lead person for the majority of our acquisitions. I always joke that I have the easy job of buying the companies; Dennis has the tough job of making them work."

Colin came on board in 1991 as Finance Manager and was quickly promoted to Vice President of Finance and Treasurer in 1992. Having grown up in Australia and working his way throughout the Far East over several years, he gained a vast knowledge of the international landscape, from both an operations and financial point of view. Colin made his way to the United States by way of an MBA program at Yale University. "We were essentially a family-run business until Howard's retirement in 1987. As a publicly-traded company with global operations, we realized the need for a solid financial person who had global experience," Dan explains. "With Colin's background, he was easily suited to take Bel forward to becoming an over-$500 million company. And his uncanny ability to smooth over difficult situations has become one of Colin's most appreciated qualities."

Bel rode the crest of technologies in networking and telecommunications in the 1980s and early 1990s. As telephone systems and desktop computers were changing the face of businesses and households, Bel designed and made components for them. Another leap forward came with the 1986 acquisition of Computer Avionics Corporation in Mount Carmel, Illinois. Bel changed the name to CAC Microcircuits. CAC made thick-film hybrid circuits, a distinct product line from Bel's traditional electronic components. (In 1987, fuses and delay lines still accounted for almost 70 percent of Bel's sales.) Warren Mitch, who was hired in 1990 as CAC's sales and marketing manager, recalled that Elliot foresaw the potential for the thick-film hybrid market as "estimated to reach $9 billion by the early 1990s." This technology, which develops an electronic circuit on a ceramic substrate, was a game-changer because it helped devices to become smaller, lighter, and more resistant to severe environmental conditions—quests that remain the Holy Grail of electronics.

Strategic acquisitions began on a small scale after the CAC purchase. In 1988, Bel purchased Central Coil to better position itself in the emerging market of networking-related components. That company's owner, Bob Moore, and key employee Tony Imburgia played vital roles. "Bob and Tony helped us gain the knowledge we needed to build coils and transformers for telecommunications, which made us less dependent on consumer products. Tony was a driving force behind penetrating the pulse transformer market for the networking industry," Dan notes.

CAC and Central Coil would be streamlined and consolidated into a single Indiana facility by 1992. This foreshadowed an approach that would be continued by Dan, who moved from Vice President of Operations to company President that year. Elliot remained active as CEO. Howard, who had retired in

1987, remained a director, shareholder, and part-time consultant.

"The key to our acquisitions is to empower the people to do their jobs properly while finding areas for improvement and not on reporting back to corporate," Dan says. "In addition, we always support R&D and engineering to ensure they have the proper resources to grow the business."

Because of the increased cost of labor in both Hong Kong and Macau, it was necessary for Bel to expand its footprint into China in 1989. To penetrate the European market, Bel set up a sales office in Paris, France, and acquired Preferred Magnetics, a small transformer manufacturing company in Ireland.

Pricing pressure continued in North America, which forced manufacturing to be shifted over time from Jersey City to Asia. The last production line on Van Vorst Street fell silent in 1993. "To survive, Bel had to move all manufacturing for magnetics, delay lines, and custom thick film hybrid circuits to lower-cost locations in Asia where full production was completed by mid-1994," Dan reported. Jersey City continued to provide sales support, information technology, and warehousing for North American customers.

With the rapid growth of Silicon Valley, Bel established an R&D center in Pleasanton, California in 1993. This group was led by Johnny Chen, who would be recognized throughout the Valley as the go-to person if you had questions regarding magnetics and their performance. "This team was instrumental in building our relationships with Cisco,

TOP TO BOTTOM: Management kickoff for a 1993 intercompany soccer match in Macau.

The Macau plant under construction in 1992.

Signage alongside the finished building.

Grand opening in Macau on March 9, 1994.

VOL. 3 NO. 2 JULY 1994

bel tell

NEWS AND VIEWS ; PRESENTED SEMIANNUALLY

FROM THE CORPORATE DESK:

bel TIGHTENS VENDOR ALLIANCES:

LEAD TIMES AT A GLANCE:

DELAY LINES	7 to 8 wks.
FUSES	4 to 6 wks.
TRANSFORMERS	10 wks.
DC/DC CONVRTRS	Call Factory.
HYBRID CKTS	Call Factory

ABOVE: As Bel's geographic reach grew in the 1990s, the twice-annual "bel tell" newsletter became a way to share information across various facilities.

Hewlett-Packard, 3Com, and many other customers in the Valley," noted Dan. Bel's reputation gained momentum and attracted notice. "Being near the 3Coms and Intels of the world, Bel Fuse is able to offer a higher level of engineering support than its competitors," industry analyst Brent Bracelin told *Business News New Jersey* at the time. "That has really opened quite a few doors for the company." In 1996 Bel won 3Com's Global Supplier Award, a high honor from the leading network company later acquired by Hewlett-Packard.

Growth continued in the late 1990s as Bel was able to develop products for DSL (Digital Subscriber Line) and other new telecom technologies. To broaden Bel's product portfolio into the telecommunications industry, the company acquired the Transformer and Inductor (T&I) Group of Lucent Technologies. This became a turning point in many ways.

A bit of background: For more than a century, AT&T and its Bell Telephone subsidiary had been America's "Ma Bell," also known simply as "the phone company." AT&T's telecommunications monopoly ended in 1984, when it broke into various "Baby Bell" companies as part of US President Ronald Reagan's drive for deregulation. Bell Labs, AT&T's renowned research arm, was spun off as Lucent Technologies. In turn, Lucent began to spin off smaller companies in the 1990s. When Bel bought Lucent's T&I Group in 1998, Dan characterized it as "an ideal acquisition that brings us more than 100 years of Bell Labs' telecommunications engineering expertise and significantly augments our product line in this rapidly growing market."

Integrating the T&I Group wasn't easy. This was the first major acquisition that required Bel to deal with the procedures of a multibillion-dollar company. For example, it took six weeks just to have a new phone line installed at a desk in the acquired office. In addition, this was also Bel's first experience with moving manufacturing operations from one country to another. There were 600 employees in Mexico, and the plan was to shift manufacturing to China. That meant translating work instructions from Spanish into English and then into Chinese. Samples of the products were then built in China. Once those met Lucent's approval, the next steps were to disassemble the manufacturing equipment in Mexico, ship it to China, and reassemble it there.

Throughout this long and complex process, product quality and on-time deliveries to customers had to be maintained—and they were. Colin Dunn, Vice President of Finance, credits Dennis Ackerman for the success of this transition. "Dennis did a phenomenal job in structuring a smooth transition. It became a model for future acquisitions," Colin says. Aiding in the transition was the T&I Group's Joe Berry, who stayed on and became a key person at Bel.

Most importantly, in acquiring a business from Lucent, Bel gained a new level of credibility throughout the industry. The company was viewed as a viable source to Fortune 500 customers and, just as significantly, as a key acquirer of divestitures. The acquisition further became a turning point by launching an era of high growth through strategic acquisitions. It became the foundation

of the 13 acquisitions that would ultimately follow. In 1999 *Forbes* magazine named Bel one of the 200 Best Small Companies in the United States, objective affirmation that the company had firmly moved into the big leagues. (Bel made the list again in 2000, when it was also named to the Communications Industry Group of *Standard & Poor's* SmallCap 600 Index.)

Dan adds, "Some of our acquisitions have been technology plays, while the majority have been complementary companies that fit well within our product groups. We have also done many divestitures with multimillion-dollar companies since the Lucent deal, working with companies such as Safran, TE, ABB, and Emerson. In all these cases, the seller was more concerned with treating their workers fairly and maintaining customer relationships than with the purchase price."

At its 50th anniversary, the company had plenty to be proud of. In his Chairman's Letter written to honor the occasion, Elliot drew on his literary side. He wrote eloquently of "dreams of products that may be introduced in the foreseeable future. There will be disappointments, but the dreams are based on my deep faith in the strengths, talents, and capabilities of our engineering and development teams, field sales personnel, production employees, and production managers throughout the world . . . . A dreamer must have a dream . . . my dream is of a new market, never before explored, to herald the next 50 years."

ABOVE: Elliot lived to see Bel honored on the *Forbes* list of America's 200 Best Small Companies. He was equally proud of the "strengths, talents, and capabilities" of the people in the company he founded.

BELOW LEFT: One of the last pictures of 198 Van Vorst showed Craig Somach, Sandy Axelrad, Elliot, Juan Maldonado, and Joe Meccariello at the parking lot.

TOP TO BOTTOM: Bel's headquarters at 206 Van Vorst Street under construction in 2000. Architects retained much of the façade of the former building, which was a carriage-making shop dating to the mid-1800s. It is visible in the red brick on the left of the top and bottom photos, which was matched by the new red brick facing the parking lot.

BELOW: Bel associates Melanie Hammond, Paula Gerena, Marcy Desciscio, and Mike Nevedomsky inside the second floor of 206 Van Vorst in late 2001. Over their shoulders, the building at 198 was still visible. It would soon be torn down to make way for an apartment tower.

Many things would soon change, at Bel and in the world at large. With the building at 198 Van Vorst Street reaching the end of its useful life, Bel had begun construction of a two-story, 13,000-square-foot headquarters across the street at 206 Van Vorst. It had purchased the property in the 1970s for storage and parking. The existing building at 206 had stood with few changes since the 1850s, when it was erected by Brinkmann and Hauck Wheelwrights as a horse-carriage manufacturing shop. Bel incorporated the façade into the redesign. "The architect called it industrial renaissance design," notes Dennis Ackerman. (The vehicle-sized doors make the building look like a former firehouse, but in fact it never served that purpose.) The Jersey City Landmarks Conservancy later awarded Bel for "creative adaptive reuse of a building while respecting its historical and architectural integrity," and the 198 property was sold to a developer. It now houses the upscale Madox Apartments tower.

Even though Dan (like his father) commuted some three hours a day roundtrip from Long Island, the idea of relocating Bel never arose. "When we came here Jersey City was a blue-collar community," he told a reporter from the *Jersey Journal.* "Today it's a thriving white-collar town with available banking, a financial district, and a growing international reputation. We couldn't be in a better locale."

Business-wise, the year 2000 became Bel's best ever. The move into the new building in April 2001 and *Business Week* magazine naming Bel one of the Best 100 Small Companies in June 2001 were additional reasons to celebrate. Then came a series of dark events. Elliot died in July 2001 at age 78, mourned by colleagues worldwide and by hundreds of Jersey City associates who had worked with him for decades. With his father's passing, Dan started as CEO during an especially difficult time. The "tech bubble" began to collapse that summer, a prolonged financial downturn that would result in Bel's year-end revenues falling by 33 percent. But the most unfathomable thing happened on the morning of September 11, and Bel associates saw it unfold before their eyes.

When the first plane hit the World Trade Center at 8:46 a.m., Colin Dunn happened to be hosting a consultant from Boston that morning. They and others heard the boom and rushed up to Bel's roof, which had an unobstructed view of the Twin Towers. "We heard the first plane hit and saw the second plane hit the building just after 9 o'clock. We

BELOW: View from Jersey City of the World Trade Center under construction in 1970.

ABOVE: The 9/11 attacks on the World Trade Center were commemorated 10 years later by this "Tribute in Light," seen here from the Jersey City waterfront.

saw them come down in front of our eyes. All that flame! We were saying, 'Can't they put the flame out?' They couldn't," said Jerry Kimmel, Bel's Controller, who still shakes at the memory. Many associates in the Jersey City office had relatives or friends who were lost that day, and their memories will never be forgotten.

Bel soldiered on through a difficult business climate and turned around. Amid lingering financial and political uncertainty, "Bel endeavored to make the most of any and all business that was available," Dan wrote in his 2002 letter to shareholders. One of the positive moves of 2001 was the creation of Bel Power, which had as its foundation the newly acquired companies Current Concepts and E-Power. Marshall Miles, the former marketing director of Artesyn, played a vital role in these major acquisitions. The overarching concept was to make Bel Power a one-stop source for all of its customers' power supply needs. It succeeded.

As Dennis Ackerman noted, such moves were made in response to changing markets. "Dan saw a much bigger role for the company in the industry and the marketplace. A lot of today's customers don't even buy products. They design them to be built by contract manufacturers. Dan saw this coming. He had the vision to be bigger and to grow Bel through acquisitions and organic growth."

With a string of acquisitions in the mid-2000s, Bel was able to increase its sales, diversify its product offerings and strengthen its management team for the coming years. Avi Eden, who joined Bel's board in 2004 after a distinguished career at Vishay Intertechnology, was an integral part of the acquisitions team. Acquired companies included Stewart Connector, InNet Technologies, the Communications Products Division of APC, Galaxy Power, and Netwatch s.r.o.

"With these acquisitions," Dan says, "we picked up two key members who would substantially strengthen Bel's future management team: Pete Bittner, current President of Bel's Cinch Connectivity Solutions business, and Craig Brosious, who succeeded Colin Dunn as Vice President of Finance in May 2017." Several other associates who play significant roles in Bel's growth also came to Bel through acquisitions, including Lee Hancock, Regional Sales Manager; Mark Jutras, Vice President of Engineering and R&D for Power; and Mark Masera, Director of Engineering for Power.

In this period, Bel made major investments in its overseas operations. Specifically, it expanded and upgraded its 15-acre campus in Zhongshan, China, where associates turned out more than 130 million components each month. Chinese manufacturing operations are similar to those of American company towns of the early 1900s, in that they provide housing, cafeterias, and recreational facilities on site. Improving the Zhongshan campus helped Bel maintain a stable workforce that could better support its upsurge in sales. In the Dominican Republic, rebuilding took place from the ground up when the Signal Transformer Group's factory was destroyed by fire in 2006. Thanks to extraordinary efforts by Signal associates, a new leased plant was up and running within seven months.

The downturn of 2008–2009 took a severe toll. Bel started 2008 on two high notes: It had 13 companies under evaluation as possible acquisitions, and it hired an additional 5,000 workers in China to support the increased revenue. But as the worldwide global recession gathered momentum in the spring, orders began to decline. By September, financial services firm Lehman Brothers declared bankruptcy and set off a stock market plunge that persisted into 2009 and beyond. For Bel, sales dropped by 30 percent to $183 million in 2009. Although the company had always observed Elliot Bernstein's values on employee loyalty, the steep decrease in revenue forced layoffs at all locations. Four-day work weeks became the norm, and Bel's global workforce was cut from 12,000 associates to 3,000 by the end of 2009. "Many difficult decisions, none tougher than the workforce reductions," Dan recalls. "It was a very sobering time across the company," adds Colin Dunn. "But although there were certainly cutbacks, it wasn't a slash-and-burn."

But business slowly began to improve, and by January 2010 Bel had very good news to report: the acquisition of Cinch Connectors, an esteemed company founded in 1917. Cinch allowed Bel to enter the military and aerospace markets for the first time. Overnight, Boeing would become Bel's second largest customer. Additionally, Cinch contributed an extensive customer base and manufacturing facilities in Oklahoma, Mexico, and the UK. Its loyal associates also shared core values with their counterparts at Bel. "It was a very steady transition, not a whole lot of changes or shocks," said Jim O'Donnell, who has worked in Cinch's engineering department since 1980.

"After 2008–2009, we quickly migrated the Cinch business," adds Pete Bittner, who joined Bel acquisition Stewart in 1991. "We moved toward the aerospace, military, industrial, and transportation markets, and decided that's where our focus needed to be. And we caught lightning in the bottle at the time when we became the dominant connectivity supplier for the largest aircraft manufacturer, the Boeing Aircraft Company." Cinch's product line allowed Bel to participate in many different markets and substantially reduced its dependency on computer, networking, and telecommunications manufacturers.

TOP: Craig Brosious came to Bel through the acquisition of Insilco Technologies (the parent company of Stewart Connector Systems). He went on to become Vice President of Finance.

ABOVE: Pete Bittner also came to Bel through the acquisition of Insilco Technologies and went on to become President of Bel's Cinch Connectivity Solutions business.

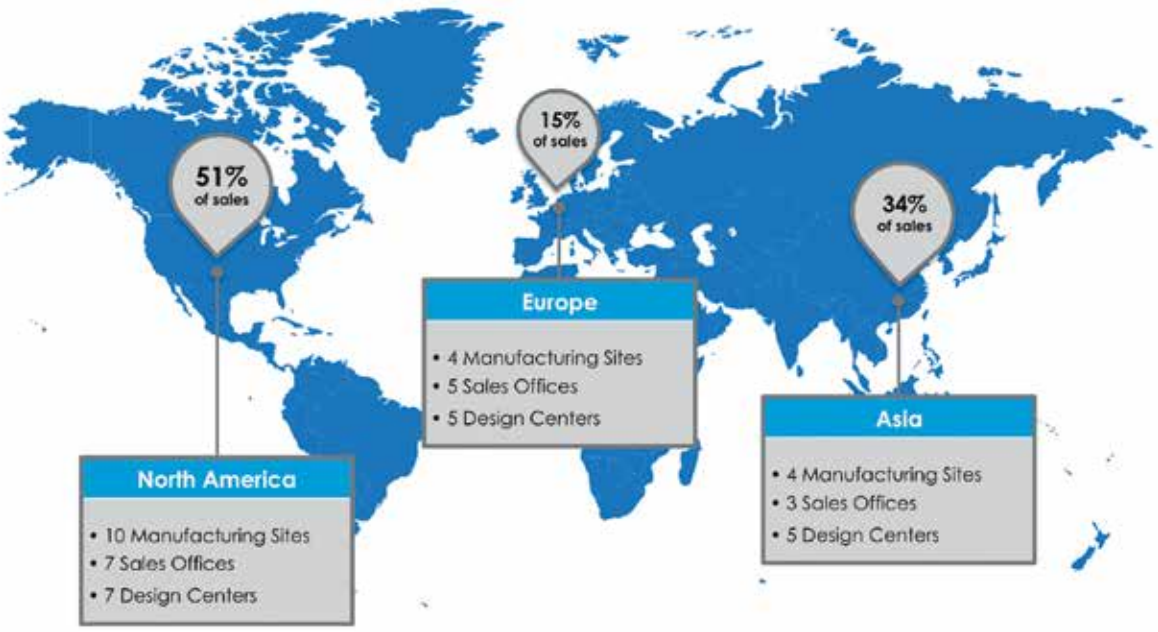
ABOVE: Bel's 2010 Annual Report introduced the "believe" theme, appropriate for the hard times that followed the 2008–2009 financial downturn.

BELOW RIGHT: New Jersey was especially hard hit by Hurricane Sandy in November 2012. This National Guard photo was taken on the border of Jersey City and Hoboken. Rising waters devastated the first floor of the Bel building.

The theme of the 2010 Annual Report had urged readers to *Bel-ieve,* and by 2011 Bel was rehiring. It was also able to move some of its Chinese manufacturing further inland to a new facility located in a region with more labor stability and fewer inflationary pressures. The company took a well-deserved bow as recipient of Cisco's prestigious "Excellence in Service and Responsiveness" award. It had also been nominated for Cisco's "Excellence in Technology Alignment" and "Supplier of the Year" awards. Bel was the only Cisco supplier to be a candidate in all three award categories, surpassing hundreds of competitors including Fortune 500 companies.

A dose of Bel-ieve came in handy again in November 2012, when Hurricane Sandy devastated much of New Jersey. Bel's Paulus Hook neighborhood was especially hard hit by what turned out to be the second-costliest hurricane in US history. Architects had designed 206 Van Vorst to withstand water damage—that's why the first floor is raised 5 feet from street level—but Sandy rose 2 feet higher, cresting above 8 feet. Some 80 percent of company records were lost, along with all the belongings that first-floor workers had in their desks. "I managed to get to work that morning, and as I walked there from the PATH train, furniture was already floating in the street," Jerry Kimmel recalls. Workers rolled up their sleeves and helped with the cleanup effort. The second floor was crowded for five weeks while first-floor associates temporarily moved upstairs, but no one minded.

Quickly getting back on track with acquisitions, Bel continued its acquisition strategy in 2012–2014 by adding Gigacom Interconnect, Fibreco, Powerbox Italia, TE Connectivity's Transpower Magnetics business (now known as TRP Connector), Array Connector, ABB's Power Solutions business, and Emerson's Connectivity Solutions business. These additions doubled Bel's historical sales and provided significant economies of scale. Another benefit: On the management side, the TE acquisition brought with it Kenneth Lai as its General Manager. After seeing his tremendous



ABOVE: Bel's global presence has grown steadily, with manufacturing sites, sales offices, and design centers on three continents.

capabilities running the TRP operations, management decided to add the Bel Power Solutions factory in Shenzhen, China, under his umbrella.

Given the sheer number of new businesses in the Bel fold, it made sense to streamline them into three product groups: Magnetic Solutions, Power Solutions and Protection, and Connectivity Solutions. Rebranding followed, with a new master logo: Power–Protect–Connect. Individual company logos were also created to highlight the core company instead of the parent. "This approach helps keep the identity of each company, which is good for the people who work for it," notes Warren Mitch. "It also lets customers recognize that each of these companies is part of a very big organization. There's a lot of support behind it. That's important to a lot of our customers, especially the big companies."

With the new product groups in place, Dennis Ackerman was named President of Bel Power Solutions and Pete Bittner was named President of Bel Connectivity Solutions in 2015. As previously noted, Dennis and Pete had both come up through the ranks at Bel (and in Pete's case, through one of Bel's acquired connector businesses), and so they were both well-equipped to take on their expanded roles when the opportunity arose.

Bel retains a family feeling, which is a significant accomplishment given its size and global reach. When Howard Bernstein passed away in March 2017 at age 91, many long-time associates felt they had lost a member of their own family. Howard often spoke with Dan and remained interested in company news until the very end. And there is a third generation at Bel. Anna Bernstein Randak, the daughter of Dan's brother Adam, joined the company in 2013 and is currently General Manager of the Signal division.

Customers, products, and markets change, but to Dan Bernstein, the more that certain things change, the more they remain the same. "We have the same philosophy that we've always had—honor our work and maintain relationships with our customers and their engineers to solve their problems faster than our competitors," he says. "If we continue to make that our number one priority, and have dedicated associates, Bel will always be successful."

BEL ASSOCIATES IN PICTURES AND WORDS

"We are what we are. There's not much pretense. Customers over the years have liked that, and I think associates like it too."
—Dennis Ackerman

Dennis Ackerman, Allan Kwan, Rita, Janet Wong, and Joe Meccariello

"You can see how many people leave this company—hardly any. They stay until they retire. That says a lot. It's a good team to work with, to get things done."
—Warren Mitch

Howard Bernstein and Joe Bromberg, 1990

Warren Mitch and his wife Debra, 1996

Mary Johnson, Sue Cseh, Joe Cseh, Andy Knapik, Lena Weathersbee, Dan Bernstein, and Claire Flannery, 2001

Donna Sangastiano, Kathy Biegay, Mary Landis, Annie Ngai, and Claire Flannery, 1994

Juan Maldonado and Renee Taliaferro, 1994

Miriam Martinez and Santa

"We had wonderful Christmas parties where the office employees and factory workers got together and we would all dance. I truly believe that Mr. Elliot Bernstein is still looking after the company he loved."

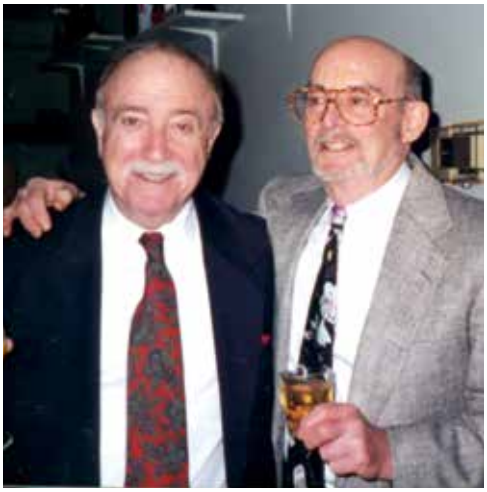
—Miriam Martinez

Dale and Dan Bernstein

Elliot and Sybil Bernstein

"Take care of the customers, build long-term relationships, take care of manufacturing. Have well-engineered products, good technology, quality, and delivery. That's what the company was built on. That's what a lot of us learned from the Bernsteins along the way."

—Dennis Ackerman



Arnold Sutta and Howard Bernstein, 1996

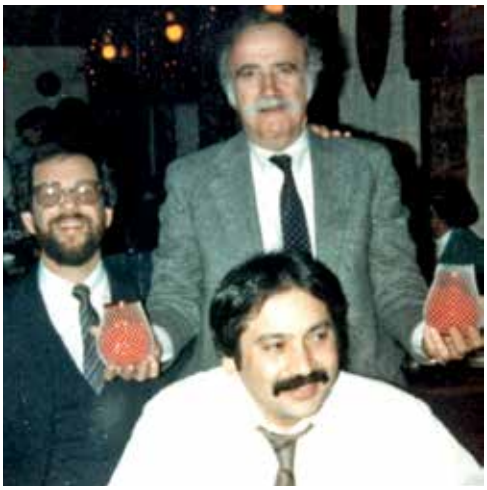
Sue Cseh, Barbara Abicca, Michael Waxman (back), and Gopal Bhowmick, 1996

"We're doing good. A lot of growth. We work hard for Bel. We love Bel."

—Gopal Bhowmick

"We have good times here, you know? I don't regret being here all those years. We were happy all the time here. Good bosses. All the Bernsteins were gentlemen. Great with people. Very respectful. I think everybody here would say the same thing."
—Noemi Rolon


Noemi Rolon and Santa


Jerry Kimmel, Arnold Sutta, and Mike Grosso


Mike Nevedomsky and Dori Weathersbee, 1997


Mabel Brooks, Marcy Desciscio, and Paula Gerena, 1990


Sandy Axelrad

"The value of Bel stock shows what people think of Bel. Shareholders say, 'It's not a fly-by-night company. They care about what they do. They care about their customers. They care about their products. They care about everything.' That's why we've been in business this long."
—Jerry Kimmel


Seated: Linda Sorrentino, Dan Bernstein, Annie Ngai, and Kathy Biegay. Standing: Dennis Ackerman, Joe Meccariello, Raymond Cheung, Colin Dunn, Mike Grosso, Joe Berry, Andrew Chewuk, Sandy Axelrad, Michael Wong, and William Wong

Bob McBrien and his wife Veronica with Lex Bernstein and his wife Donna, 1995

Jonathan Klempner and his wife Colleen with Dennis Ackerman and his wife Debbie, 1995

Colin Dunn, Sharon Geraghty, and Barbara Abicca, 1991

Dennis Ackerman, Dan Bernstein, and Colin Dunn, 2017

Mark Jutras, Colin Dunn, Raymond Cheung, Dan Bernstein, Andrew Wong, Joe Meccariello, Dennis Ackerman, Kevin Meehan, and Annie Ngai

"Bel's strategy has always been to run the company the best we can, every day. And then the results end up on the bottom line. That's the philosophy that we have always followed."

—Colin Dunn

TIMELINE AND ACQUISTIONS

1949 Elliot Bernstein founds Bel Fuse Inc. in Union City, New Jersey, to manufacture fuses for automotive use

1953 Bel doubles its space to add components for the television industry

1954 Howard B. Bernstein, Elliot's brother, joins Bel as Vice President and Treasurer

1956 Bel's chemically activated fuse becomes the television industry standard, used by RCA, Zenith, and other major manufacturers

1959 Bel moves to larger leased space at 198 Van Vorst Street, Jersey City

1960 Bel begins manufacturing delay lines for the television industry

1966 IBM becomes a major purchaser of Bel delay lines for mainframe computers

1967 Bel becomes a public company (NASDAQ: BELF) under the majority ownership of Elliot and Howard

1968 Bel purchases its building at 198 Van Vorst Street; develops the first dual in-line delay line package used by the computer industry; and makes its first acquisition, Delay Devices Corporation

1970 At the urging of key customers RCA and Zenith, Bel establishes a Hong Kong manufacturing facility

1972 Bel develops its magnetic product line for the television industry

1983 Bel adds an Asian manufacturing facility in Macau

1984 Under massive competition from foreign producers in the television industry, Bel devotes resources to the burgeoning field of home and small office computers, modems, and fax machines, developing a customer base that includes Apple, 3Com, Compaq, Digital Equipment Corporation, IBM, Philips, and Siemens

1985 New Jersey State Business and Industry Association honors Bel with its Award for Excellence

1986 The acquisition of Computer Avionics Corporation (CAC) positions Bel in the thick film hybrid circuit market

1988 Bel acquires Central Coil to support the emerging network market

1989 Expansion adds Bel's first mainland China manufacturing facility

1990 Bel establishes a European facility and introduces modules that combine Bel magnetics with other components to produce a complete functioning circuit

1992 Daniel J. Bernstein becomes President after several years in key roles at Bel, including Director of Operations; CAC and Central Coil are consolidated into a new facility in Indiana

1993 Bel opens a Silicon Valley (California) design center to support networking device manufacturers

1994 Certain manufacturing functions transfer from Hong Kong to China and Macau; the Hong Kong facility obtains ISO 9001 certification

1995 The Macau facility obtains ISO 9002 certification

1996 The China facility obtains ISO 9002 certification; Bel wins 3Com's Global Supplier Award

1998 Bel establishes a marketing and new product development group in San Diego, California, and purchases the Transformer & Inductor Division of Lucent Technologies, which launches an era of growth by strategic acquisitions

1999 Forbes names Bel one of the 200 best small companies in America; the company opens a telecommunications design center in Dallas, Texas; and adds a large facility in China for telecom magnetics

2001 Elliot Bernstein passes away; the company moves into newly built headquarters at 206 Van Vorst Street; the creation of Bel Power (from acquisitions Current Concepts and E-Power) makes the company a one-stop source for all of its customers' power supply needs

2002 Bel acquires APC Modules Group in the UK

2003 Bel wins the Cisco Award for Supplier Excellence in Service and Responsiveness; it acquires Stewart Connector and Signal Transformer

2005 Bel acquires Galaxy Power to expand Bel Power

2010 Bel acquires Cinch Connectors to facilitate entry into the aerospace, military, and transportation markets

2011 Bel again wins the Cisco Award for Supplier Excellence in Service and Responsiveness

2012 Bel acquires Gigacom Interconnect, Fibreco, and Powerbox Italia

2013 Bel acquires TE Connectivity's Transpower Magnetics business and Array Connectors

2014 Bel acquires Emerson Connectivity Solutions business, ABB Power-One AC/DC and Power Solutions business; it further integrates recent numerous acquisitions into three product groups: Magnetic Solutions, Power Solutions and Protection, and Connectivity Solutions

2017 Howard Bernstein passes away; Bel recognizes the 100th anniversary of Cinch

BEL GROUP FIRSTS AND INNOVATIONS

Automotive

1949 Glass fuse tubes, among the first on the automotive aftermarket

1993 Quick-acting microfuses for climate control and alarm modules

1994 High-mount stoplight module for the Ford Explorer

1998 Ballasts for high-intensity discharge (HID) vehicle lighting systems

2016 New series of fuses with improved electrical rating and worldwide safety agency approvals

Television

1953 First internally soldered pigtail fuse

1956 Chemical-activated circuit protector fuses; these become the industry standard

1958 Delay lines required to develop color TV

1978 First 5x20mm fuses that meet UL and CSA safety requirements

1995 Time-lag radial lead microfuse series for secondary circuit protection in TVs and VCRs

Computer Hardware

1968 Miniaturized delay lines that control timing sequences on circuit boards

1968 First dual in-line delay line package

1985 First transfer molded, auto-insertable delay line

1987 First transfer molded microfuse

1988 Surface-mounted, higher-density delay lines that facilitate higher processing speeds

1989 Quick-acting, slow-blow microfuses to protect peripheral circuits

1995 Optimized delay lines to meet high-speed design requirements

Aerospace, Defense, Transportation, Industrial, and Medical

1975 Fuel quantity measurement system wire harnesses and connector systems for Boeing commercial aircraft

1982 OPTLIGN Fiber Optic splice for the US Navy

1984 High density interconnect system for onboard electrical control units in John Deere equipment

1985 Compu-Shield securely shielded connector system for defense applications

1990 CIN::APSE Z-axis rugged interconnect system for Mars Rover and other clients

2001 Largest supplier of Boeing-approved circular connectors (BACC 63 and 45) for aerospace

2004 First Expanded Beam Optical Sub Assembly (EBOSA) for harsh environment weight sensitivity applications, the gateway to market leadership

2005 Modular integrated connector enclosures and intergraded connector enclosures developed for John Deere

2014 Expanded offerings for railway power applications

2017 Extensive selection of 50/60HZ transformers, switch mode transformers, and WMD power inductors

Telecommunications and Networking

1982 Protective fuses for phones, modems, and fax machines

1988 Local area networking (LAN) magnetics to support emerging networking technologies

1991 First modular plug contact that allows one contact to terminate both solid and stranded wire

1992 Hermetic connector systems, cylindrical and rectangular solutions, Y-connectors, and feed-through headers

1994 High-rate digital subscriber line (DSL) filters to enhance “plain old telephone service” (POTS)

1994 First mass-produced CAT5e plug and jack connector system for premise wiring applications

1994 External modules to interconnect computers for LAN

1995 Multi-port transformer modules for LAN switches, routers, and hubs

1995 Time-lag radial lead microfuse series for secondary circuit protection in audio-visual equipment and cell phone chargers

1996 Transmission line module for DSL-POTS interface

1996 Surface mount module for LAN interface cards (NICs)

1997 Highest-density stacked RJ45 “compressor jack”

1998 RJ-45 connector modules with integrated high-speed LAN magnetics

1999 Transformer modules for leading-edge DSL applications

2000 First low-profile RJ45 connector for laptop network interface card slots

2006 Highest performing CAT6a connector insert with performance capabilities through 500MHz

2007 Smallest stamped termini technology in iQ/iQ Flex to EIT/Cadence and Sun Microsystems

2007 ARJ45®, a CAT7a 1000MHz connectivity system to support extended reach 10G Base-T and Gigabit Ethernet over a single pair

2008 Flexible and configurable DSP-based power system controller (more than 2 million units shipped)

2008 Proprietary compound EPP-918a to extend the contract life of a connector by a factor of five

2011 Board battery backup module for high-end servers

2012 First surface-mount Intel Voltage Regulator Module (VRM) 12.0 for precision control of microprocessor power

2012 First 3GHz 55-meter channel able to support 40 and 100 Gigabit Ethernet over copper

2016 Industry-leading platinum and titanium solutions for the Internet of Everything

2017 Market leader in integrated connector module products (MagJack®)

2017 Only ICM manufacturer to effectively demonstrate 40 gigabyte feasibility within IEEE standards development

OFFICERS AND DIRECTORS

CURRENT* AND FORMER OFFICERS

Dates reflect years as an officer of Bel; titles reflect most recent position held.

Dennis Ackerman*	Vice President—President of Bel Power Solutions *2001–present*
Alexander Bernstein	Vice President—Materials *1992–1994*
Daniel Bernstein*	President and Chief Executive Officer *1985–present*
Elliot Bernstein	Chairman and Chief Executive Officer *1954–2001*
Howard Bernstein	Vice President and Treasurer *1954–1986*
Peter Bittner III*	Vice President—President of Bel Connectivity Solutions *2015–present*
Craig Brosious*	Vice President—Finance and Secretary *2017–present*
Raymond Cheung*	Vice President—Asia Operations *2007–present*
Peter Christoffer	Vice President—Engineering *1986–2001*
Colin Dunn	Vice President—Finance and Secretary *1992–2017*
Peter Loh	Managing Director—Hong Kong Subsidiary *1970–1990*
Joseph Meccariello	Vice President—Manufacturing *1995–2008*
Don Morehouse	Vice President—Production *1986–1995*
Arnold Sutta	Vice President—Sales *1985–2000*
Dwayne Vasquez	Vice President—Sales *2001–2004*
Andrew Wong	Vice President—Circuit Protection *2007–2009*

CURRENT* AND FORMER DIRECTORS

Daniel Bernstein*	*1986–present*	Eric Nowling*	*2014–present*
Elliot Bernstein	*1949–2001*	Seymour Offerman	*1967–1985*
Howard Bernstein	*1954–2016*	David Olsan	*1986–1995*
Lloyd Dustmann	*1986–1988*	Milton Schwebel	*circa 1969*
Avi Eden*	*2004–present*	Mark Segall*	*2011–present*
Sidney Faber	*1967–1985*	Robert Simandl*	*1967–present*
Peter Gilbert*	*1987–present*	John Tweedy*	*1996–present*
John Johnson	*1996–2017*	Vincent Vellucci*	*2016–present*
Peter Loh	*1979–1990*	Joel Wiener	*1984–1992*
J. Anthony Naylor	*circa 1969*	Norman Yeung*	*2013–present*

CORPORATE OFFICE
Bel Fuse Inc.
206 Van Vorst Street
Jersey City, New Jersey 07302 USA
Telephone: 1-201-432-0463
www.belfuse.com

PRODUCED BY
CorporateHistory.net LLC
Hasbrouck Heights, New Jersey
www.corporatehistory.net

RESEARCHER AND WRITER
Marian Calabro

ART DIRECTOR AND PRODUCTION MANAGER
Christine Reynolds

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Christine Reynolds: inside front cover (Bel Fuse sign); page 14 (206 Van Vorst Street, 2017)

©*Jersey Journal:* page 9 (Bel associates, 1985)

Library of Congress: page 2 (Jersey City aerial, 1944); page 15 (World Trade Center under construction, 1970)

New York Public Library: page 5 (Jersey City street plan, 1908)

U.S. National Guard: page 18 (Hurricane Sandy, 2012)

Wikimedia/Creative Commons: page 4 (RCA pavilion, 1964); page 16 (9/11 Tribute in Light, photo by Kim Carpenter, 2011)


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