R&D champion Dr. David Duke passes, leaving wide-sweeping legacy

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Dr. David A. Duke joined Corning in 1962 – the same year as Jamie Houghton and Roger Ackerman. Seen above at Corning's 2012 retiree luncheon, the three retired senior leaders spend time with Wendell Weeks. From left are Weeks, Ackerman, Duke, and Houghton.

SALT LAKE CITY – Retired Vice Chairman-Technology Dr. David A. Duke passed away peacefully on Oct. 9 at the age of 81. Joining Corning in 1962 as a senior scientist, Duke went on to serve as general manager of two businesses in the 1970s before leading Telecommunications Products from 1980-84. In 1985 he became senior vice president of R&D and in 1988 was elected vice chairman, and a member of Corning's Board of Directors, helming the company's worldwide technology and materials management activities as Chief Technology Officer until retirement in 1996.

Duke is remembered for playing a key role in establishing Corning in two defining areas – first helping the company win the emissions-control race in the early 1970s and then applying learnings from that victory to build the optical-fiber business. He also made a lasting impact in the S&T community, where he led as a champion of R&D and intellectual property.

"He was a wonderful man, a truly good person, and I will miss him dearly," said Dr. David Morse, executive vice president and chief technology officer, recounting how Duke's "broad skills" helped create two of Corning's current divisions.

Leading a race to define the clean-air solution

In the early 1970s, Duke ran a management team with Dick Dulude and Charles "Skip" Deneka. These leaders were tasked with capitalizing on Corning's new extrusion process, which produced the honeycomb ceramic structure ultimately named Celcor.

They took on multiple challenges to make Corning the solution of choice for automakers rushing to meet new U.S. emissions regulations for their 1975 models: first ramping up production in time to capture

"There are so few people in one's life who are indispensable. David Duke – Dr. David Duke – Bishop David Duke – was one – an extraordinary mixture of deep technical knowledge with a keen sense of where to apply that to the market... I'm going to miss him both professionally and personally."

Amory Houghton Jr., retired Corning Glass Works Chairman and CEO business; then successfully demonstrating that the ceramic substrate provided the function prospective customers needed; and finally, ensuring that Corning could produce millions of units each year reliably and at an affordable price.

Adding to the pressure, competitors such as Monsanto and 3M were in the game, and automakers were actively exploring their own alternatives to ceramic substrates.

A round-the-clock development effort ensued, with an estimated three-quarters of Sullivan Park dedicated to Celcor. On the production side, Corning broke ground in 1973 on the Erwin plant with no customer commitment.

The bet worked. Erwin shipped its first products in 1974, just months ahead of automakers' deadlines and the rest was history. Celcor accounted for more than $100 million in profitable sales in its first year.

The next opportunity: Optical fiber

Not too long after this success, Duke shifted from GM of Corning's Industrial Products business, where he was overseeing those numbers and 1,000 employees, to GM of Corning's Telecommunications Products division, with six employees and virtually no sales. The goal: create an optical wave guide business.

He would oversee some big risks in order to commercialize what would become Corning's optical-fiber business. The company needed to invest significantly in perfecting its manufacturing process. Then, mirroring the Erwin gamble, Duke and others decided to move from a pilot operation to a full-fledged plant before Corning ever received a sizeable order for fiber.

But the orders would come and Corning would keep honing its capabilities under great pressure.

"Dr. Duke is legendary for having taken the first order for single mode optical fiber, before we had truly established the ability to produce it," Morse said. "He challenged corporate structures by establishing the PPD capability for in house development and engineering in the first optical-fiber plant in Wilmington, North Carolina."

And Duke's support of a business with no significant revenue didn't end there. With his unwavering belief that optical fiber was a pioneering invention worth fighting for, he was instrumental in a Corning decision to launch a 1976 patent infringement suit against ITT and the U.S. government. They countered with anti-monopoly charges that created litigation costs and distractions that far exceeded anyone's imagination.

Al Michaelsen, who litigated the ITT case as a member of a private law firm and who later joined Corning as chief patent counsel, saw this foresight and Corning's unwillingness to bend even in view of over five years of expense-riddled litigation as one of the bravest decisions he had witnessed in his career.

"Looking back, it appears obvious that Corning would risk everything to fight a patent battle on optical fiber," said Tom Beall, vice president and chief IP counsel. "But at the time, the business was uncertain and the legal costs were enormous. Dr. Duke's decision to litigate these patents against such formidable foes – and to succeed – is truly a critical part of the history of success of Corning's optical-fiber business."

The big payoff started in 1982, when MCI challenged AT&T for market share, with plans for a national phone network of its own, and MCI approached Corning with an order for 100,000 kilometers of fiber. By shipment time, Corning had a business, producing enough fiber to wrap around the equator twice.

These reflections are all the more meaningful right now as the entire company celebrates a major milestone in the fiber business, looking back at several generations of important contributions.

Clark Kinlin, executive vice president, Optical Communications, helped lead a ceremony last month celebrating Corning's one billionth kilometer of fiber sold. During the event, Duke was singled out for helping set Optical Communications on a path to success.

Responding to the news of Duke's passing this week, Kinlin emphasized his role.

"There are a number of people who were instrumental in helping set the vision and guide Optical through our first nearly 50 years as a business," Kinlin said. "But we would not be in the position we are today without Dave Duke's belief in our technology and our people, and his unrelenting focus on commercializing the breakthrough innovation this business was founded upon."

Helping shape Corning's innovation culture

After ten years focused on that commercialization, when Duke left fiber, it was becoming one of Corning's largest businesses. He went on to replace Tom MacAvoy as vice chairman, directing R&D. Here he would come to apply learnings from the experience with Celcor and optical fiber, helping Corning establish and maintain a focus on anticipating and innovating for the future.

Looking back at how Duke helped shape Corning's S&T community, David Morse highlighted two crucial aspects of his legacy – a commitment to far-sighted efforts and a model for leadership.

"Dr. Duke stood up for continuous investment in research, development, and engineering while mentoring leaders of the future including many of us who followed him in leadership roles at Corning," Morse said.

Charlie Craig, senior vice president, S&T, Administration & Operations, added that Duke led by example, embodying Corning's Values.

"We have lost someone who exemplified the Corning Blue Line," Craig said, sharing some personal insights on Duke's impact on S&T culture across many areas. He said Duke was a skilled sportsman and helped create a very active Sullivan Park athletics program.

"The softball fields at Sullivan Park are named David Duke Field. Today, in addition to softball, you find teams playing soccer and cricket, reflecting our cultural diversity," Craig said.

In terms of leadership, Craig called Duke "a straight shooter."

"He did not equivocate and you always knew where he stood after welcoming the discussion first," Craig said. "And his success building the Celcor and Optical Fiber businesses are clear testaments to his exceptional technical, business, and organizational leadership skills."

Duke had a clear vision for how those three areas came together for success. Perhaps the best summary of how he believed they should apply to Corning's innovation culture can be found in his own words.

"Today, more than ever before, we must search the world for science and technology of value," Duke wrote in a 1991 S&T publication. "Only in this way can we remain at the leading edge in our chosen fields."