

The Clothes Truly Did Make *This* Man

By Heidi Parsons, Technical Editor, IEST

Among the honors handed out at the annual membership meeting during ESTECH 2010, IEST conferred its Fellow designation upon Edward B. Davis, president of Euclid Vidaro Manufacturing Company, “for his innovative contributions to the advancement of contamination control technology in the field of cleanroom garments, and for his long-standing support of IEST.” Davis and his colleagues have been responsible for many innovations in cleanroom garments over the past five decades; he discusses several of those developments and the impetus behind them in the following interview.

Early days

Ed Davis did not study engineering or science, but then, contamination control did not become a recognized field until the early 1960s, more than a decade after he graduated from college. Davis majored in marketing at Western Reserve University (now Case Western Reserve University) in Cleveland, Ohio. His brother Larry was in the garment business, and before Ed had completed his bachelor of business administration, Larry had referred him for a job as a button salesman. “Most of the people I worked with were women designers about my mother’s age,” Davis recalls. “They took me under their wings and taught me all about the ladies’ garment business.”

After graduation, Davis took a job with Burlington Mills, selling fabric for women’s apparel, men’s shirting and suiting, and industrial fabric applications. In 1956, Burlington asked him to move to Chicago to head up the company’s new office for the industrial division. He sold work clothing fabrics to Sears Roebuck, laminating scrims to lawn furniture manufacturers for seat webbing, truck tarpaulins, baseball tarps, and air structures.

Davis then moved back to Cleveland and sold sewing machine equipment for about 18 months before joining the Euclid Garment Manufacturing Company in 1960. That company had been founded in 1870 by the ancestors of Davis’ friend and business partner, Charles Rosenblatt. Euclid manufactured work garments for several industries, including the ore boats that moved tons of iron ore across the Great Lakes to supply the then-booming steel industry.

In 1961, Sandia National Laboratories engineer Willis Whitfield introduced the concept of using laminar airflow to reduce particulate matter in cleanrooms, and by 1963, the first national cleanroom standard (FED-STD-209) had been published. Companies in the aerospace, semiconductor, and pharmaceutical industries began asking for garments that met specific requirements. To cater to the burgeoning market, in 1964 Davis and Rosenblatt partnered with Hank Vircant to establish a sister company, Vidaro (named for **Vir**cant, **Davis**, and **Rosenblatt**) Corporation. Their first facility was housed in a large Quonset hut in Twinsburg, Ohio.



Ed Davis

“I remember talking with a friend about starting this company, and they said, ‘Oh, you’re an entrepreneur,’ which sounded like a bad word to me at the time,” Davis quips. “That term was not commonly used in those days.”

Customer service: the mother of invention

Davis says each time he and his partners received a special request or faced a particular challenge in creating garments for this emerging market, they ended up developing another innovation. He notes that probably the most significant of these was the development, in conjunction with Burlington Barrier Products, of a fabric that was particularly effective at reducing electrostatic discharge (ESD) in cleanrooms. Burlington had developed a polyester fabric that incorporated carbon fibers only in the warp, meaning that they ran longitudinally through the garment. Customers told Davis that fabric wasn’t meeting their static control requirements, so he asked Burlington to add carbon fibers that ran latitudinally as well. The resulting carbon-fiber grid within the weave proved to be much more effective at bleeding off static charge — and satisfying customers’ requirements.



This cleanroom hood uses non-linting, high-density polyester fabric that contains carbon fibers in a grid pattern to control static.

Davis also worked with Chicago-based Western Piece Dyers to develop heavy-duty flame-retardant clothing for mill employees at US Steel in Gary, Indiana. The market for those garments now also includes firefighters and other safety professionals.

When domestic zipper manufacturers stopped making the non-conductive brass zippers used in cleanroom garments, Davis looked overseas and contracted with a Japan-based company to make zippers to cleanroom standards.

As cleanrooms became more prevalent in a wider range of applications, some companies began installing perforated flooring. Davis found himself fielding complaints about abrasion damage to the cleanroom boots, and when he visited a customer with the new flooring, the cause and effect of the abrasion became readily apparent. Thus, a “soft sole” was developed, composed of a polyester substrate with a synthetic rubber coating to yield a skid- and abrasion-resistant sole material that was cleanroom-compatible, washable, and autoclavable.



Polyester taffeta cleanroom shoe covers feature soft tan soles.

The most unusual challenge, according to Davis, came from Motorola in the early 1990s, when concerns first arose about the potential for cell phone usage to cause brain tumors. Seeking to perform extensive testing to determine the effect of radio frequency (RF) radiation on the human body, Motorola engineers built a complex, see-through body model with a slit cut into it from head to toe so that it could be filled with a fluid that simulated blood and other bodily fluids. Motorola commissioned a full-coverage garment with a head-to-toe slit that would line up with the slit in the body model. It wasn’t easy, Davis recalls, but the requirement was met. As a result, a line of suits specifically designed to protect cell tower operators’ maintenance and repair personnel was introduced to the marketplace.



Eileen (left) and Ed Davis staff their booth at IEST's Annual Technical Meeting and Exposition in San Jose, California in 1987.

On October 1, 2010, Euclid Garment Manufacturing Company and Vidaro Corporation merged to form Euclid Vidaro Manufacturing Company. Combining the companies allowed for a broader product line.

Industry contributions

Ed Davis has long understood the value of working with colleagues from all segments of the contamination control field to share knowledge and help advance the field as a whole. In 1970, he became involved in the American Association for Contamination Control (A^2C^2), which merged with the Institute of Environmental Sciences (IES) in 1973. In the mid-1980s, Davis and several others IES members saw the need to establish consensus-based guidance on cleanroom garments. They formed Working Group (WG) CC003, Garment System Considerations for Cleanrooms and Other Controlled Environments, to develop a Recommended Practice (RP) on the subject. IES-RP-CC-003-87-T was published in October 1987.

Davis remained a voting member of WG-CC003 for many years, and also served as Chair of WG-CC022, Electrostatic Charge in Cleanrooms and Other Controlled Environments. In recognition of that service and his many contributions to the field of contamination control, Davis received IEST's Robert L. Mielke Award in 2002. Then, at ESTECH 2010, he was named an IEST Fellow.

For he's a jolly good Fellow

Davis says he has derived a great deal of satisfaction from his involvement in IEST over the years, but he particularly appreciates the opportunity to tell his story and thank his IEST colleagues for their support and camaraderie. "For many years, I attended the annual meeting and watched various people receive Fellow awards — they were all scientists and engineers," he says. "I didn't think someone from the garment business could be named a Fellow. A lot of what I've said here [during this interview], I wanted to say when I received my Fellow award at ESTECH, but I was too emotional at the time. This is a great honor."

The Institute of Environmental Sciences and Technology (IEST), founded in 1953, is a multidisciplinary, international technical society whose members are internationally recognized for their contributions to the environmental sciences in the areas of contamination control in electronics manufacturing and pharmaceutical processes; design, test, and evaluation of commercial and military equipment; and product reliability issues associated with commercial and military systems. IEST is an ANSI-accredited standards-developing organization. For more information about the many benefits of IEST membership, visit www.iest.org.