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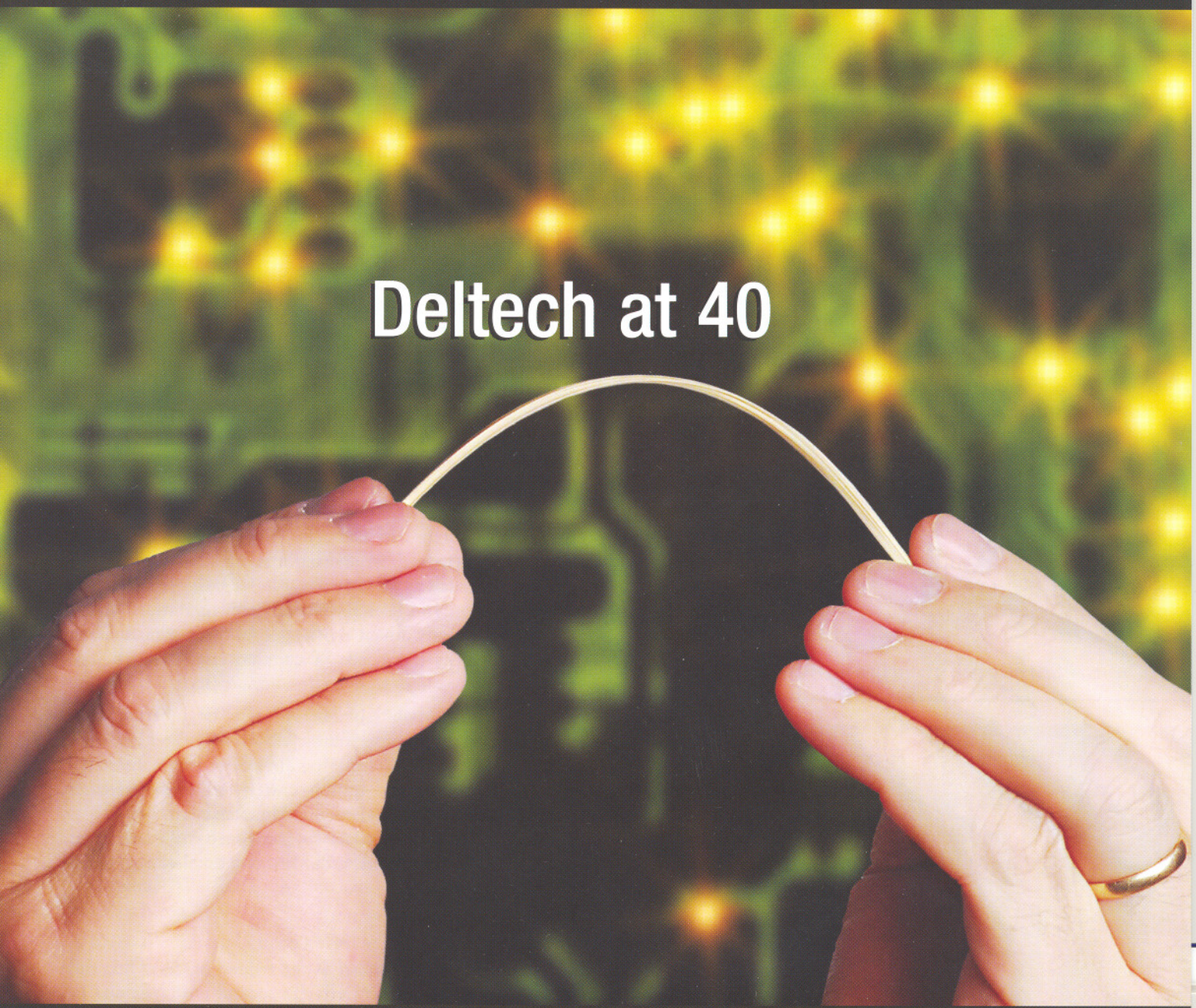
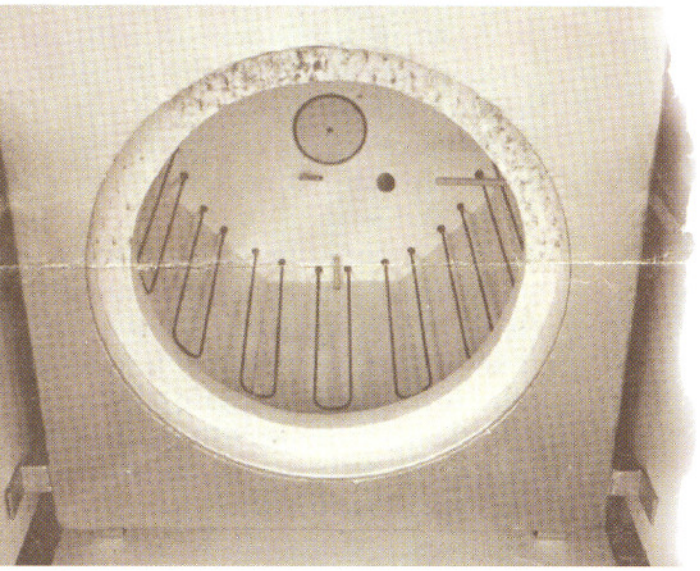
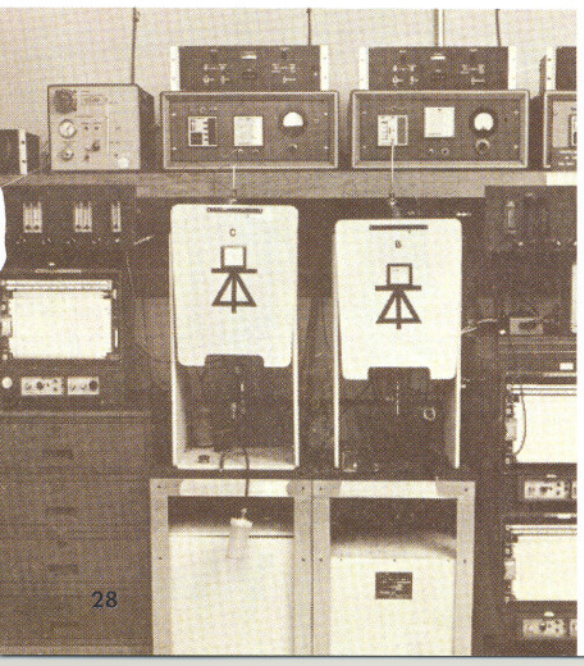


Deltech at 40





Deltech at 40

Furnace company grew and prospered by defining and filling ceramists' needs

Mary Stevenson

As is the case with any of the businesses that have served the materials science industry over the years, a look at Deltech Inc.'s 40-year history is inseparable from a look at some aspects of the development of materials research and technology during that period. Cofounder, technical director and CEO Calvin L. Stevenson recalls, for example, the new refractory materials that were available for use in Deltech's first furnaces, circa 1970. While the lightweight insulating materials allowed marked improvements (such as rapid cycling) in furnace operation, they were available only in 8-inch squares. Such limitations created only one of the many design challenges for furnace manufacturers trying to meet the needs of ceramic engineers for high-temperature processing.

Deltech began corporate life in 1968 as an engineering services company for the mining industry. Stevenson and cofounder Donald J. Drinkwater were mining engineers with considerable combined experience in mining and metallurgical research, process troubleshooting, and sales and management. Before leaving to start Deltech, Stevenson was the director of research and Drinkwater was a vice president at Mine and Smelter Supply, also located in Denver.

The First Furnace

Deltech built its first furnace at the request of CoorsTek, then known as Coors Porcelain. Deltech's second customer was Los

After their moon landings, Apollo astronauts brought back lunar rock samples, which became the subject of intense scientific examination (top left). Deltech's vertical tube quench testing furnaces (middle and bottom left) were part of that process.

Responding to Sandia's needs, Deltech developed the 'RS' glass melt furnace.

Alamos National Laboratories, thanks to Steven Stoddard, who would become president of The American Ceramic Society and an ACerS Distinguished Life Member. Stevenson recalls that, "The bid we submitted for a custom furnace was so low that Steve came to Denver to see if we were for real." The company was, and the furnace was to be the first of many supplied to the lab.

The custom furnaces built for Los Alamos helped to define Deltech's forte:

"We listened to what the ceramist wanted to accomplish and to what his processes involved," explains Stevenson, "and then set out to design and build the furnace to help him do the job. Many times that meant that we put considerable time, money and sometimes frustration into research and experimentation, but the returns were priceless. We enjoyed the excitement involved in new product development, we had a new design to offer, and Deltech had another customer whose furnace was one of the tools he used to meet his own goals."

This view of Deltech's mission eventually led Stevenson to coin what has become the corporation's registered trademark, "We Build The Furnace To Fit Your Need."

Over the years, Deltech's reputation for custom design has led to involvement in some exciting projects. In the 1970s, the company designed vertical tube quench testing furnaces for NASA, where they were used in studies of lunar rock samples. In response to the demanding requirements of the Sandia glass labs (then under the direction of Robert Eagan, another future ACerS president and Distinguished Life Member), Deltech developed its "RS" glass melt furnaces, which were used extensively at Sandia for many years. A look in the September 1972 issue of the *Ceramic Bulletin* reveals an article on a material called Thixite™ made from waste ceramics by the Thixon Corp. using a Deltech furnace.

The Chinese Connection

In the 1980s, Deltech began offering 2000°C furnaces that operate in an air atmosphere. The zirconia heating elements used for these furnaces were obtained from the Iron and Steel Institute in Beijing, thanks to the cooperative efforts of Qing-guo Liu, then of the University of Pennsylvania. The negotiations required a trip to China, where Stevenson and his family had the privilege of visiting some ceramics manufacturing facilities.

In the 1990s, Deltech supplied a lab furnace to Pacific Northwest Laboratories designed to be operated and maintained robotically inside a hot cell, and began making production size "top hat units" for use in processing such products as engine, semiconductor, fuel-cell, biomedical and fiber-optics components. In 2000, the company built its largest ever furnace, a 1700°C "top hat" design unit with a 10-ft diameter and 3-ft-high workspace for use in the manufacture of a composite mirror for the Jet Propulsion Laboratory's FIRST project.

Today, Deltech furnaces can be found in universities, laboratories and production facilities worldwide, and in use for projects ranging from planetary research to the manufacture of ceramic armor. Stevenson reports that the company's best advertisement has always been the referrals received from its customers, many of whom began using Deltech furnaces when they were students.

Since Drinkwater's retirement in 1984, Deltech has been entirely owned and managed by the Stevenson family. Stevenson's wife Mary serves as company president, and son J.J., a master's level mechanical engineer, is Deltech's engineering manager. In 2003, the company moved into a new facility specially designed to optimize its ability to build furnaces of all sizes.

The Personal Touch

Over the years, it has become apparent that Deltech has impacted people on a personal as well as a practical level.

In 1980, while visiting the Poster Session at the annual ACerS meeting, Cal Stevenson was surprised to see a cartoon featuring two witches eyeing a cold cauldron. "I don't use it much anymore, since I got my Deltech furnaces," says one witch to the other. The paper's author, Henry Schreiber of the Virginia Military Institute, kindly supplied Stevenson with a copy of the cartoon, which is today displayed at Deltech, along with a larger version sketched by daughter and artist Marical Farner. Stevenson relates this story as one of his fondest memories, and he says it is representative of the many wonderful experiences he has had working with so many diverse and interesting men and women in the materials world.

However, he also is quick to add that some encounters have been a bit prickly. From the archives, he pulls out a letter headed, "Some Weaknesses in Deltech…Furnace", containing the following paragraph: "Herewith I am sending a report regarding the weaknesses and possible solutions for each weakness…If you find my suggestions are useful to you, you may pay me some money."

On to the next 40! ■

About the Author

Mary Stevenson is president of Deltech Inc.

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