Green Plater is Diamond in the Rough

When Nathan Feldstein sat his three sons down one day in 1972 and told them he was leaving his research job at RCA and starting his own finishing business, he had some caveats he wanted his offspring to keep in mind. “Things are going to be kind of lean for a while,” Dr. Feldstein told them. “So, don’t ask your mother for new clothes, bicycles or expensive cereal.”

The last part—replacing Apple Jacks and Frosted Flakes with far less worthy breakfast food—was what drew the largest gasps from him and his brothers, Michael Feldstein now recalls. “We knew it was serious when he mentioned cereal,” he says. Dr. Feldstein’s decision to leave a lucrative position as a research scientist at RCA Laboratories’ Sarnoff Research Center to start Surface Technology Inc. in Ewing, New Jersey, was risky, to say the least, especially in the early 1970s, when the country’s economy wasn’t so bright.

But Surface Technology was established as a place of invention and ingenuity in the finishing industry and grew slowly but surely in its first decades. The company started at a booming time for plastics, especially in the aerospace and automotive markets. As manufacturers sought to replace metals with more lightweight materials, the challenge became how to get a coating on to a non-conductive substrate such as plastic; it was a challenge on which the research scientist sought to capitalize.

Licensed by IBM and Others

By 1976, Surface Technology had been awarded its first four patents. Companies such as IBM licensed many of its products, and the company began to grow more rapidly. Dr. Feldstein passed away in 1996 at the age of 59, when he was still very much active in the finishing industry and in running his company. In recognition of his accomplishments and contributions to the industry, he was voted into the Products Finishing Hall of Fame in 2016.

His knack for ingenuity has carried over to his son Michael, who now leads Surface Technology and its growing line of products and services for the finishing industry. The company is one of the top plating operations in North America and has been named a Products Finishing Top Shop for several years.

Now in its fourth and vastly expanded facility, the company is unique in that it essentially has three separate entities: a research and development arm, manufacturing of a full line of electroless nickel solutions, and a plating job shop. Feldstein says there is a great advantage in being both a job shop and a supplier of EN solutions to other facilities. “This synergy of operations is one of Surface Technology’s keys to success,” he says. “We use the same products on our own lines that we sell to other platers and distributors worldwide, so we are able to give our customers first-hand practical advice on the chemistry as well as all aspects of plating operations. Our goal is always to have the best-in-class electroless nickel products, and also the know-how of doing it productively, economically and consistently.”

A Completely Different Company

Feldstein says Surface Technology is a totally different company now than it was when his father ran it. “As far as the products that we make, the industries we serve and even the distribution of how much of the business is plating shop and how much is chemical manufacturing, it is completely different,” he says.
Diversification has been a key to the company’s continued success. Half of the job shop business is from outside of the U.S., and about half of the EN solutions made by Surface Technology are exported overseas. The company has also extended its technology through license agreements to more than 40 licensees globally, which provide even more opportunities for Surface Technology to broaden its knowledge. It has more than 90 U.S. and foreign patents on its processes, and several more are pending. The company makes numerous proprietary finishing solutions, including One-Plate, AddPlate, NiPlate, NiSlip, Composite Diamond Coating, NanoPlate, TraceCoat, ENBO, Surfacit, Promoter, Deburr 1000, Bor-Fuse and Pitless NF, which are used by facilities around the world. The third entity within Surface Technology is its research and development activities. The laboratory in the company’s Ewing, New Jersey, facility is about five times larger than the lab was in its last facility and even larger than the entire first facility the company was in 45 years ago.

**Composite Diamond Coating**

“We weren’t the first to think of putting diamonds into electroless nickel, but we were the first that made it commercially viable,” Feldstein says.

Surface Technology used its know-how in electroless nickel and specialty surfactants to make the coating on a commercial scale to provide additional wear resistance to nickel and specialty surfactants to make the coating on a viable,” Feldstein says. “When we troless nickel, but we were the first that made it commercially

“Electroless Plating Fundamentals and Applications” is a chapter on composite electroless plating for the book published by the American Electroplaters and Surface Finishers Society. In total, Dr. Feldstein authored and presented more than 40 papers at national and international conferences, and wrote more than 50 technical papers that were published around the world. He was chairman of the Electrochemical Society national meeting symposium on electrodeposition processes in the electronics industry, and a member of several AESF committees, including its paper committee. All of this was in addition to founding Surface Technology Inc.

objects subject to heavy abrasion. The trademarked process is called Composite Diamond Coating, or CDC, and it has been used extensively in numerous industries, including robotics, paper, molding, tool and die, plastics, textiles, packaging, petrochemicals and automotive. The company even has developed a version for the heads of golf clubs that has been proven by scientific, robotic and professional golfer methods to make the ball go about 7 percent farther. The United States Golf Association has confirmed that it conforms to the rules of golf, so it seems diamonds can be a golfer’s best friend, too.

CDC is the primary coating produced in Surface Technology’s plating shop, and it includes a wide range of versions to meet the specific needs of different industry applications. The diamond used in the coatings can be as small as nanometers to produce exceptionally smooth surfaces to much larger sizes that can make a rougher texture that provides grip and friction. “The rougher CDC coatings have become even more popular in recent years as robotic applications requiring precision grip surfaces continue to grow,” Feldstein says. “We see this in our job shop as well as the sales of CDC bath solutions to other plating shops.”

CDC as a replacement for hard chrome in many applications continues to be an area of growth as well.

*STI scientist Thomas Lancsek uses an atomic absorption spectroscopy in the facility lab for the quantitative determination of chemical elements.*

In 2017, Surface Technology rolled out what it touted as a true breakthrough in EN technology. The One-Plate process has just a single “Q component” for both makeup and replenishment instead of the typical three-component ABC systems. The company has continued to develop this unique technology by adding a high-phosphorus version to its offerings and by combining the single component technology with all varieties of composite EN plating.

*For information, visit surfacetechnology.com.*