

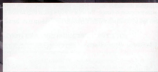
SPECIAL SECTION: Brick & Clay Record

# CERAMIC INDUSTRY

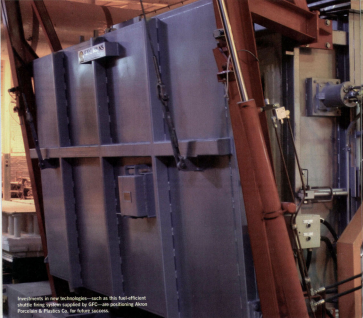
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Investments in new technologies—such as this fuel-efficient shuttle firing system supplied by GFC—are positioning Alcor Porcelain & Plastics Co. for future success.

## CASE STUDY

# Rolling with the Changes

by Ralph Ruark, Senior Technical Editor



A willingness to adapt to market demands has enabled Akron Porcelain & Plastics Co. to remain a successful family-owned business for more than a century.

Incorporated as the Akron Smoking Pipe Co. in 1890, the company produced clay pipe bowls that were popular at the time. Despite a recession in 1893, the company's president, F. W. Butler, and his management team had captured 83% of the domestic market by 1903.

Though the company was prosperous, the directors of Akron Smoking Pipe Co. did not want to rely on just one product. Diversification was seen as a way to ensure future success. In the words of the company's president, continued prosperity "involved going beyond existing practices or techniques, and required the doing of new things or the doing of things that have already been done in a new way."

Interestingly, clay pipe bowls began to be gradually produced by penitentiaries using prison labor. It would have been hard to compete with zero-cost labor, just as it is hard to compete with the low-cost labor in China and other countries today. Yet Akron Smoking Pipe Co. survived this obstacle by being flexible enough to develop new products and enter new markets.

#### Improving Operations

Flexibility was one of the company's founding philosophies, and it has remained intact for generations of leadership, all of whom are directly or indirectly related to Butler. From the clay pipes at the beginning, to today's broad product mix that includes both small and large specialty ceramic products for electrical insulation, steel market products, and thermoset plastics for a range of markets, diversity of the company's product mix has been the key to successful operations.

As America "electrified" at the turn of the century, Akron Porcelain & Plastics Co. developed and marketed electrical porcelain products requiring new bodies and glazes. Despite wars, energy crises, severe depressions and labor upheavals, the company remained steadfast in its resolve to adapt. When bakelite insulators were developed, Akron Porcelain & Plastics Co. responded by moving into plastic product production, which now comprises nearly 68% of the company's revenues. The paradigm shift

away from ceramics in certain electrical components put many companies out of business, but Akron Porcelain & Plastics Co.'s flexibility and underlying philosophy guided the company to try new technologies and maintain its business success.

Another legacy of the company is its tie to the local community. Akron Porcelain & Plastics Co. realizes and respects the fact that it affects the lives of hundreds of people in the area, and it has done everything possible to make sure that it honors this responsibility. While the company could have outsourced all of its products to a region with lower manufacturing costs, Akron Porcelain & Plastics Co. decided instead to improve its existing operations and maintain the majority of its manufacturing base in Akron. One aspect of this improvement recently included purchasing a new kiln.

#### Evaluating Kiln Technologies

By 2004, the increased cost of natural gas—which has more than tripled in the past decade—and the declining volume of ceramics had made the company's tunnel kiln far less efficient due to a decreased pushing rate. The company evaluated both domestic and offshore kiln producers, with fuel efficiency, kiln car handling flexibility, firing cycle accuracy, and support services as the key criteria.

**Fuel Efficiency.** The company's slow tunnel kiln cycles consumed a significant amount of fuel. Large gains in efficiency were essential to the success of the project.

**Kiln Car Handling Flexibility.** Products had to be transported from several locations to the tunnel kiln cars, and the size of the cars required repetitive reaching and lifting that put an ergonomic strain on the employees. Akron Porcelain & Plastics Co.'s managers wanted a system that would deliver wide, short cars to the product forming areas so that cars could be directly loaded to reduce the amount of strenuous manual labor necessary.

**Firing Cycle Accuracy.** With the tunnel kiln cycle dependent on business volume, very little control of heating and cooling rates could be achieved, and all products had to be force-fit into a standard

**I**t is normal today to think of the seemingly insurmountable problems faced by many manufacturers in this industry—cheap products from offshore, high labor costs, increasingly expensive fuel. However, a quick study of history reveals that adversity is nothing new. While many companies have succumbed to a range of challenges past and present, others seem to be able to look to the future with optimism and not only survive, but prosper. Akron Porcelain & Plastics Co., based in Akron, Ohio, is one such company, and a review of its history illustrates why it continues to grow despite continual obstacles.

cycle. The company needed a kiln in which multiple cycles could be easily programmed, allowing for variable cycle times and the flexibility to develop new products.

**Support Services.** Akron Porcelain & Plastics Co. demanded solid around-the-clock support for the new kiln technology, no matter where the kiln originated.

The managers of Akron Porcelain became aware of a new shuttle kiln technology offered by GFC Kilns of Australia, which promised significant gains in thermal efficiency through an integrated multi-zone pulsing system (IMPS®). The burners in this system pulse from high to low to generate an even temperature with good fuel economy, and the pulsing is controlled by a programmable logic controller in sequence to match kiln's temperature requirements. Akron Porcelain & Plastics Co. was already looking for greater flexibility for new products; this new shuttle firing system offered the degree of freedom to consider multiple firing cycles with better uniformity—and 50% less fuel use—than its existing tunnel kiln.



Unloaded kiln cars alongside the company's new shuttle kiln.

### Meeting New Challenges

GFC Kilns was awarded the contract and designed a custom kiln with downdraft exhaust, ceramic lining for cleanliness, and tailored kiln car size for ease of loading and unloading. The kiln is fired with the IMPS for optimum energy efficiency, and it is equipped with Ethernet connections that allow GFC to examine the kiln's firing from across the world at any time of day. Although the new kiln has only been operating for a short time, Akron Porcelain & Plastics Co. is certain it will achieve its objectives.

"We expect to save 50% of our fuel costs with the new kiln, despite the fact that it is

replacing a continuous kiln. Plus, the customized car handling system, with a separate unloading section, and three specific loading locations will make unloading and reloading the kiln cars far easier for our employees. And we know that the flexibility of a periodic kiln will allow the development of new products to increase our market share," says Dave Lewis, president.

Today, Akron Porcelain & Plastics Co. operates two plants with a total of 127,000 square feet of manufacturing space, and employs 130 people. The company recently acquired the assets and client base of Universal Clay Products in Sandusky, Ohio, which has, among other things, expanded its extruding capability to 12-in. diameter refractory or electrical ceramic materials. Just as important, the company is moving into injection-molded precision ceramics; its strong background in injection-molded plastics provides crossover technologies that enhance the company's skills in this field. As a result of these changes, the company projects a 40% increase in ceramic volume this year alone.

Akron Porcelain & Plastics Co. will undoubtedly face more challenges in the years ahead, but the company has strategically positioned itself to meet them.

Kenneth Burkins, vice president of sales, summarizes the reason for the company's success: "The Akron Porcelain & Plastics Co. has survived for over a century for several reasons. First, the company's leadership over the years has been provided largely by one family. Since the time of E.W. Butler Sr.'s founding, four more men—E.W. Butler Jr., George H. Lewis Jr., George H. "Mike" Lewis III and David W. Lewis—have continued the tra-

Akron Porcelain & Plastics Co. is committed to quality, consistency, and customer and community service.

dition of family ownership. But it is not blood ties that kept the business going. It is the traditional values that each man passes down. These values—conservative fiscal policy (the pay-as-you-go attitude, incurring a few debts), the diversification of products manufactured (always with an eye to the future), the constant upgrading of facilities, good wages and fair treatment of employees, and the tradition of fine service to customers—have brought the company a continuity and purpose that allowed it to survive and prosper.

"Consistency, foresight, service to the community and customer, and a quality work environment are the legacy of the Akron Porcelain & Plastics Co., a survivor of 115 years of change—molding the future of a second century." ■

For more information about Akron Porcelain & Plastics Co., contact the company at 2759 Org Ave., P.O. Box 15157, Akron, OH 44314-0157; (330) 745-2158; fax (330) 745-6688; e-mail [sales@akronporcelain.com](mailto:sales@akronporcelain.com) or visit [www.akron-porcelain.com](http://www.akron-porcelain.com).

For more information about GFC Kilns, contact the company at 327 Princes Hwy., Dandenong 3175, Victoria, Australia; (61) 3-9792-9211; fax (61) 3-9792-5605; e-mail [gk@ghfukilns.com.au](mailto:gk@ghfukilns.com.au) or visit [www.gfkilns.com.au](http://www.gfkilns.com.au).

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2. From the company history section at [www.akronporcelain.com](http://www.akronporcelain.com).

### About the Author

Ralph Ruark is a registered professional engineer with degrees in ceramic engineering and business, and 28 years of experience in the ceramic industry. He formed Ruark Engineering Inc. several years ago and serves as a technical consultant to a number of ceramic manufacturers and kiln companies, including GFC Kilns. He is dedicated to assisting ceramic companies with a variety of kiln and firing needs, leading kiln analysis efforts, providing training expertise, and improving operations. Ruark can be reached at (941) 360-3311, fax (941) 360-3211, e-mail [ruarke@rafi.com](mailto:ruarke@rafi.com) or online at [www.ruarkeengineering.com](http://www.ruarkeengineering.com).