

## A legacy of refractories commitment to glass advancements

By HarbisonWalker International

The impact of glass on our civilization is nothing less than astounding, which is why the United Nations has designated 2022 as the International Year of Glass.

For every glass marvel throughout history and looking ahead to the future, refractories continue to be an essential enabler of progress in glass manufacturing. For HarbisonWalker International (HWI), the relationship began in 1864 when Charles Taylor and Sons opened a small fire-brick business in Ohio to serve glass manufacturers. Today these origins are part of a rich history for HWI, which provides the largest refractory manufacturing capacity to the glass industry in North America.

### Addressing global industry challenges

During the past century of HWI's history, the company's research and development teams serving the glass market have pioneered a host of innovative solutions that continue to impact how glass is manufactured today. Sustainability has been and continues to be a significant focus for the glass industry, which has been seeking solutions for energy reduction in melting glass and employing even more recycling solutions throughout product lifecycles.

Almost 30 years ago, as concerns about the environmental impact of chromia alumina refractories grew, HWI created the first reuse program for these products to provide alternatives to hazardous waste landfilling for glassmakers. Today, all suppliers of refractories to the glass industry have followed this lead.

Refractory design and engineering for energy reduction also have been a focus at HWI for decades. Since 2008, for instance, HWI has used outside technologies such as high emissivity coatings to increase efficiency, reduce emissions, prevent oxidation and corrosion, and reduce maintenance in the manufacture of glass.

### Laser mapping the future of glass furnaces

As we look to the future, refractories innovations in predictive analytics will have a significant positive impact on glass manufacturing energy reduction, higher production, extended furnace life, safety improvements, and cost savings. Integrating high-temperature laser mapping with processed data will provide a more precise measure of refractory performance compared to the subjectivity of visual inspection or thermal imagery. As scanning is incorporated into production processes, it will provide real-time data and more exact control over oper-

ations and decision-making, all without production delays. Drawing on laser mapping innovations developed for the steel industry, HWI was recently granted a new continuation on its patented predictive refractory performance measurement system, extending this process for use in glass furnaces.

### An exciting future of continued innovation

Additional areas of innovation in refractories include a shift to larger shapes of refractories in furnace design, in recognition that fewer joints can reduce the potential influx of cooler air and offer greater energy efficiencies. In addition to continued product development to accommodate this trend, HWI is collaborating closely with customers and cross-functional teams to increase installation capabilities. For example, it is initiating opportunities to employ robotics in installation practices. HWI's successful partnership with the robotic MULE-R used in refractory installation for other industries holds potential for glass furnaces. Many teams are working together to determine how to maximize the deployment of this technology to benefit glass manufacturers.

As the glass industry moves toward a sustainable future, refractories will continue to play an essential role in ensuring that glass manufacturers around the world continue to innovate, maximize furnace performance, and improve energy efficiencies. ■

