

PREPARING FOR CONTINGENCIES HELPED COMPANIES GROW DURING THE PANDEMIC

By David Holthaus

No one could have predicted a global pandemic. But a crisis? Those happen, in varying degrees, on a regular basis.

Companies that were prepared for the next crisis not only survived the last year but, in some cases, found new opportunities, and even grew. They did so against the odds during a once-in-a-hundred years emergency—the COVID-19 pandemic that has proven fatal to more than 3 million people and impacted business around the world.



Top: A rendering of CoorsTek's finished plant in Thailand. Bottom: Construction proceeds on CoorsTek's Thailand plant. Credit: CoorsTek Inc.

Despite restrictions on travel, CoorsTek, the Golden, Colo.-based maker of advanced technical ceramics, accomplished the planning, design, and initial stages of construction of a large, new plant in Thailand with few delays.

The company had wanted to expand its presence in the growing markets of Southeast Asia, and in mid-2019, its board gave the green light to a plan to build a large manufacturing plant in the province of Rayong, Thailand.

Before the virus emerged, CoorsTek already had a team in place in the region that was working on securing land and establishing vital relationships with the Thailand government and agencies that would be involved in the construction, says Andy Filson, CoorsTek's chief operations officer. It also had hired its first employee for the facility, the plant manager.

"Fortunately, pre-COVID, we had already selected Rayong, Thailand, as our location to expand, purchased land, and we began building relationships with the industrial park operators and government officials involved with foreign direct investments," Filson says.

Some of leadership of the Thailand project team were already on the ground in South Korea working on a project in that country, where CoorsTek operates a large manufacturing facility. Even as COVID emerged, some countries in the region had reciprocal agreements to permit travel between them, Filson says. The CoorsTek team found a window to travel from South Korea to Thailand, quarantine for two weeks, and be tested to allow for travel within the country.

In April and May 2020, as the virus spread, Thailand closed its borders, which resulted in a slight delay in progress. After that, the country permitted a limited number of entries and mandated curfews and restrictions on in-person gatherings, efforts that limited the spread of the virus.

"CoorsTek got a jump on establishing protocols to keep people safe, even before public health agencies were prescribing such practices," Filson says. "Globally, we implemented strict guidelines around social distancing, even on the production floor, with flexible schedules and machine assignments, wearing of masks, entry screenings, and regular sanitizing of workspaces. We were ready when the Thailand mandates were announced," he says. "Our practice is to follow local regulations or our global standards, whichever has tighter restrictions."

The relationships that CoorsTek already established with government agencies and with the owners of the industrial park where the new plant would be built, connections that would be critical anytime, were especially important as travel and meeting restrictions were put into place.

"We needed to leverage these early relationships to continue expansion planning via online methods versus in person," Filson says. "We selected construction partners that already have a presence and extensive experience building in Thailand, so it all came together pretty seamlessly."

Like the rest of the world, the company made use of online meeting tools and other options for regular communication, including GoPro cameras and drone footage that permitted video from the site to be shared in near real-time.

"Use of such virtual tools got us close to having an onsite presence, so an expert on one side of the world could work with someone on the other side of the world, and both be looking at the same thing," Filson says. "This became critical not only for progress on the Thailand expansion, but also enabled CoorsTek to continue to move product lines around the world, improving our ability to keep employees safe, serve customers, preserve cash, and preserve jobs."



Andy Filson

In the first phase, the company will build more than 110,000 square feet of manufacturing space, which is expected to be completed sometime in the third quarter of this year. Plans call for an expansion to more than 400,000 square feet over several years. "That will make Thailand one of the major manufacturing hubs for us and well-positioned for growth in that region," Filson says.

In addition to the expansion in Thailand, CoorsTek also continued to grow business throughout the pandemic. As a critical infrastructure business, the company kept the lights on even during the strictest portions of the lockdown to produce orders for critical components for medical equipment, semiconductor manufacturing, utilities, and other infrastructure.

"Keeping our employees safe during this time was our number-one concern, so we had to implement strict protocols almost overnight," says Filson. "The extraordinary flexibility and commitment shown by our employees around the world, working collaboratively with constant communications to all of our stakeholders, enabled the company to have far fewer internal COVID cases than what the world was experiencing, and prevent interruptions to our business."

In Saxonburg, Pa., the pandemic caused the leadership of Du-Co Ceramics to realize how essential its products are. The company makes ceramic insulators that are components of heaters, igniters, and sensors that wind up in larger products. The company often does not know what the end products are, but the pandemic changed that.

As shutdown orders came down in March 2020 across the U.S., many manufacturers were declared essential businesses and permitted to remain open. They needed parts.

"Within weeks, we had letters from more than a hundred of our customers saying they were essential manufacturers," says Du-Co president Tom Arbanas. "We were learning that our ceramic insulators were ending up in many critical applications," he says. "Pharmaceutical, medical, steel mills, defense products, foods, transportation, and energy."

One critical product they are used in is hospital ventilators. One of the first calls Du-Co received after the shutdown was from a customer that makes heaters for the machines that were suddenly in high demand. The customer needed as many parts as Du-Co could produce, and as quickly as it could make them.

"We did our best to fulfill orders quickly and keep our customers operating," Arbanas says.

It was able to do that partly because of decisions made long before the pandemic to keep a large amount of raw materials in its inventory. Du-Co ships a million parts a day out of its Saxonburg plant and burns through 300,000 pounds per month of talcs, clays, flux and other materials, Arbanas says. The pandemic disrupted the manufacturing supply chain, but the company's practice of stockpiling raw material meant it could continue to fulfill orders, sometimes when other vendors could not.

That spelled opportunity for the company. So did the decisions of some of its customers to "reshore" some of their purchases to U.S. companies as supplies from overseas became delayed or halted.

"Our sales team reached out to some of our customer base to tell them the benefits of buying their products within the United States," Arbanas says. "That was another area we've seen some growth in."

The sales team has not physically gone out on the road yet, but it will soon, he says.

Du-Co management is continually looking for ways to become more self-sufficient, Arbanas says. It is working on making its own firing fixtures, for example, and is getting close to being able to do that.

Pandemics, thankfully, are rare occurrences. But supply chain disruptions are not, and Du-Co's efforts to be self-sufficient helped it weather the impact of the February storm in Texas, where some of its raw material is mined, and of the six-day blockage of shipping through the Suez Canal in March.

"Things like that seem to come up periodically," Arbanas says.

Supplying essential parts to essential manufacturers has provided a morale boost to employees through the pandemic. "It's given our workforce a sense of pride knowing we're helping keep America safe and running," Arbanas says.

Employees at Corning Inc. (Corning, N.Y.) are helping to get America—and the world—vaccinated.

Thanks to research efforts begun more than a decade ago, Corning was able to quickly step up its production of the glass vials needed to hold COVID-19 vaccines and get them to the vaccine makers to help meet the extraordinary demand.

Corning had been in the pharmaceutical vial business for decades, including the years in which the polio vaccine was being administered in the '50s and '60s. But the industry commoditized, and Corning exited it nearly 30 years ago.

But in 2010, executives from pharmaceutical maker Merck approached Corning CEO Wendell Weeks, who served on Merck's board of directors, and asked if Corning could help solve manufacturing concerns that Merck and other drug makers had with traditional vials made with borosilicate glass.

Friction on the outer surface of borosilicate vials can cause them to bunch together and create backups in the high-output manufacturing environments where vials are filled and capped, Corning says. That can cause damage and breakage. The glass can also flake, or delaminate, on the inside, potentially contaminating the drug. That led to an FDA advisory in 2011 on the potential for glass fragments in injectable drugs, and to several manufacturer recalls.

Corning researchers experimented with more than 200 different glass compositions before landing on an aluminosilicate glass that it says is 10 times stronger than conventional vials and more chemically durable on the inside, avoiding the delamination problem. In addition, Corning says a production line using vials made with this glass, which they call Valor Glass, can fill up to 750 vials a minute, nearly double the maximum speed that conventional vials



Du-Co Ceramics president Tom Arbanas, far right, during a pre-COVID trip to the National Science Teachers Association Conference. Credit: Du-Co Ceramics



Corning's glass composition melting process. Credit: Corning, Inc.



Corning's Valor Glass lab. Credit: Corning, Inc.

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can tolerate. That has put the product in high demand during the unprecedented national and global vaccination effort.

"We're fortunate to have a transformative product," says Brendan Mosher, vice president and general manager of Corning Pharmaceutical Technologies. "It wasn't really meant for pandemic response, but in hindsight, it's really the perfect packaging for a pandemic response. It's the strongest and fastest-to-fill vials ever made."

Drug maker Pfizer, whose COVID vaccine must be stored at ultracold temperatures, signed a long-term purchase and supply agreement with Corning for Valor Glass, the glass maker says.

The U.S. government took note, and in June 2020, announced a \$204 million grant to Corning to ramp up manufacturing of the vials. The grant helped add capacity almost immediately at Corning's Big Flats, N.Y. plant, led to increased production at its glass tubing

Trade shows plan return to in-person events

Trade shows and conferences are slowly emerging from the pandemic-enforced virtual world.

Two of the largest ceramic industry events are currently planning to be held in person this year.

Ceramics Expo

Ceramics Expo is planning for an in-person event from Aug. 30 to Sept. 1 in Cleveland, Ohio. The sessions will focus on the theme of enabling a clean, efficient, and electrified future.

Conference organizers say they will follow physical distancing and crowd-density guidelines recommended by local government authorities, will minimize wait times at registration, and increase entry points to facilitate quicker admittance. They also plan to increase aisle widths and use dedicated travel lanes to help manage traffic.

As far as face masks, organizers say they “will take the necessary measures with regards to face coverings based on medical guidance at the time of the show.”

Up-to-date information is available at www.ceramicsexposusa.com.

Read more about Ceramics Expo’s response to the pandemic on p. 9, “The rocky road back to ‘live.’”

ceramitec

The ceramitec conference and exhibition is scheduled to take place in Munich on Sept. 15–16.

Conference topics include technical ceramics, additive manufacturing, powder metallurgy, process control, and equipment supply and materials.

“Personal exchange and interaction are irreplaceable—especially in industries with short innovation cycles,” Ceramitec says in announcing the event.

Current information and registration are available at www.ceramitec.com.

The American Ceramic Society rescheduled or canceled several events based on guidance from the World Health Organization and the Centers for Disease Control and Prevention, as well as from local government and public health authorities.

The Society maintained a series of professional development webinars and online events through the pandemic. A list of upcoming events is available at www.ceramics.org/meetings-events.

“We appreciate the efforts of our organizers, volunteers, vendors, and partners to work with us and respond to a fast-changing situation in a way that allows us to continue to serve our members and mission,” says Mark Mecklenborg, ACerS executive director.

plant in Vineland, N.J., and will accelerate by roughly two years its plans for a high-volume manufacturing facility in Durham, N.C., Mosher says.

The federal government’s Biomedical Advanced Research and Development Authority (BARDA) followed up that grant with one for \$57 million, announced in March.

In addition to Pfizer, Corning is supporting other leading vaccine producers, with glass tubing in some cases, and directly with vials in others, Mosher says.

“The expansion we’re doing now would be challenging under any conditions,” Mosher says. “It’s probably one of the fastest, most aggressive expansions Corning has ever done.”

Pandemic travel and meeting restrictions have made it more difficult to move people and equipment around the country and the world, but the company is four to five months ahead of plan on the new North Carolina facility, he says.

Other glass makers also responded to the global need for pharmaceutical vials. Schott AG, based in Mainz, Germany, is on track to deliver vials for more than 2 billion vaccine doses through 2021, the company says. In March, it announced that its pharmaceutical packaging business unit had delivered enough vials to provide more than 1 billion doses of COVID-19 vaccines.

In early 2019, Schott announced a multiyear, \$1 billion global investment in pharmaceutical glass and packaging facilities.

“The entire industry is successfully working together to ensure an adequate supply,” Frank Heinrich, CEO of Schott AG, said in March. “We’re also working with our government partners to evaluate ways to improve the supply chain and expand production capacity.”

In June 2020, Italy-based Stevanato Group agreed to supply 100 million glass vials to hold up to 2 billion doses of COVID-19 vaccine to the Coalition for Epidemic Preparedness Innovations, a global partnership that is funding and coordinating the development of COVID-19 vaccines.

Last September, in the midst of the pandemic, as vaccine demand ramped up, Stevanato inaugurated its Technology Excellence Center in Boston, where it works with pharmaceutical companies and others to improve drug-container systems and reduce the time to market.

“We can anticipate challenges, and present viable, robust solutions that save development time and resources,” says Paolo Patri, Stevanato’s chief technology officer.

The planning of these companies and many others will help end the pandemic and prepare them for whatever the next crisis will be. ▀

THE ROCKY ROAD BACK TO 'LIVE': IMPACT OF THE PANDEMIC FROM A TRADE SHOW PERSPECTIVE

By Emma Stokes

Exhibition organizer Smarter Shows shares how they navigated the pandemic to continue bringing industry professionals together virtually while planning the return to live events.

During the early winter months of 2020, we here in the small city of Brighton on the south coast of the United Kingdom watched with increasing interest and, gradually, concern, the speed at which something called “coronavirus” grew in significance. By late February, we saw an undeniable shift in the communications we received from the advanced engineering and manufacturing communities that we serve globally.



Ceramics Expo 2019, pictured, took place in Cleveland, Ohio. The 2020 event took place virtually because of the COVID-19 pandemic. Credit: Smarter Shows

By early March, we faced an incredibly difficult decision. We were scheduled to run our B2B tradeshow Foam Expo alongside the Adhesives & Bonding Expo in Michigan just a few short weeks later. We had 450 exhibitors and many thousands of attendees ready and prepared to descend on the Suburban Collection Showplace exhibition center in Novi, just outside of Detroit, on March 24. With the global situation changing at pace, we needed to carefully consider our response.

On March 9, we formally took the decision to postpone that event—the health and safety of our attendees were paramount. A couple of days later, I took a call from my daughter’s nursery. My youngest, then 4, was being sent home. She had a slight temperature, and under new guidance from the government, she now needed to stay away for a full two weeks. I left the office immediately. Little did we know that two days later we would close the office entirely and send all staff to work from home. It feels naïve to think back now, but we initially thought this situation would be an unusual one that we would need to carefully manage for a few short weeks. Here we are 14 months on—a live B2B events company with no live events to our name since November 2019.

The postponement or “deferral” of live events would become a regular occurrence for our business and so many others like ours across the world as we all tried to predict the unpredictable. We worked with venues to secure new dates; with hotel partners to secure new room blocks; with contractors to defer contracts; and with exhibitors, speakers, media partners, and attendees to try to understand and keep on top of the disparate and ever-changing regulatory environment related to live events. In addition, corporate policies concerning live events, as well as organizational and individual views on the topic, proved just as wide ranging. The “right” thing to do was never an easy answer to find.

Ceramics Expo was our second event to be postponed in the spring of 2020. Initially scheduled for early May in Cleveland, Ohio—as it has been since its inception in 2015—we postponed to September 2020 and finally had to accept that we could not successfully deliver a live event at all in 2020. Despite the regulatory environment in theory permitting events to happen in autumn, fundamentally live events were not what our communities wanted at that time.

Ceramics Expo is typical of our portfolio of events, being very much focused on advanced manufacturing and engineering challenges spanning a wide range of end-user industries. A great many of our exhibitors rely on meetings such as Ceramics Expo to meet with prospective clients, partners, and suppliers in a tangible, face-to-face environment.

So, what do you do if you are in the business of bringing people together but you cannot bring people together?

We set about getting back to basics and understanding the true value that we create via Ceramics Expo, along with our other events, and investigating ways in which we could replicate that value for our participants in the absence of being able to run the show in the normal way.



Ceramics Expo is planned to return in-person to Cleveland, Ohio, at the end of August. Credit: Smarter Shows

Such was the unanticipated nature of the pandemic. It’s true to say that it caught the world and indeed almost every industry off guard. Hence, we first undertook to publish a series of free COVID-impact reports. Led by our highly experienced conference production team, the Ceramics Expo industry report involved extensive research with around 200 industry professionals from throughout the ceramics manufacturing supply chain. The report was highly insightful and enabled benchmarking against customers, competitors, partners, and suppliers, but it also permitted organizations to see the bigger picture and thus be able to plan and reprioritize their activities accordingly. The report was published in May 2020 to resounding success, and its findings were discussed in a complimentary webinar in the same month with valuable commentary from key industry players Cerion Nanomaterials, Kyocera, C Foam, and Precision Ceramics. We are incredibly proud of the contribution that the report made in informing and reassuring people at an unnerving and challenging time for all.

When the time came to admit that live events would not happen at all in 2020, our “Connect” virtual events were born. The digital answer to a B2B exposition in the middle of a global pandemic—Ceramics Expo Connect—enabled participants to hear from and interact with great speakers, browse and meet with exhibitors, and network with a wide range of attendees. I don’t think the team will mind me saying that an unfamiliar and bumpy road lay ahead. We had some good experience already at running digital content via our webinars—however, this undertaking was much more significant. We tried to replicate practically every part of a live show in digital form.

The weeks leading up to the virtual shows proved incredibly challenging and, looking back, this experience was hardly surprising. We had to source and collaborate with a new technology platform to host and provide the technical infrastructure for the show. Many providers existed long before the pandemic, but none could have foreseen or been truly prepared for the uplift in demand that the pandemic would throw their way from event organizers the world over trying to pivot to the

new "norm." Furthermore, our own team had to quickly learn the platform from scratch and learn digital event delivery as did our speakers, exhibitors, and attendees. Despite a well-thought-out educational program, we saw an unprecedented level of questions, queries, and the ever-feared technical glitches.

Nevertheless, we are very pleased to say that the overwhelming response to the event itself was positive—delivering as it did to over 1,600 attendees involved in more than 30 hours of events, meetings, and sessions over four days, including 34 speakers from industry leaders such as Ford, DuPont, Samsung, and GE Aviation. The event achieved its objective in assisting businesses to collectively overcome the impact of travel restrictions and concerns around meeting face-to-face. There also were some very valuable lessons learned along the way.

First, we were very pleased to see a huge uplift in international participation in Ceramics Expo as a result of moving to digital last year. With location not being a consideration, we were able to see the true global appetite for learning and connecting across this industry, and this observation is certainly something that we are motivated to continue to develop and nurture.

We saw that content can be delivered in a highly effective and accessible manner online. We are now committed to a much more comprehensive digital content program spanning the entire year and thus better serving our communities by bridging the gaps between the live shows. This program will include tried and tested formats, such as our webinars and industry reports, in addition to new opportunities led by feedback from our communities, such as our Lunch & Learn product-focused briefing and Q&A sessions. Furthermore, we permanently developed the exhibitor listings on our websites to facilitate vital connections throughout the year via the new "Connect Exhibitor" functionality and further via the ability for exhibitors to upload a variety of rich content to educate browsing visitors on their products and services.

While we value the opportunities that the events of the past year have afforded us to improve and innovate, I am certain that I speak for the entire team in saying that we couldn't be happier to be looking eagerly ahead at running our full complement of eight live events this year, beginning in mid-July, and with Ceramics Expo 2021 ready to return August 30–September 1. We look forward to seeing you in Cleveland. ▀

ABOUT THE AUTHOR

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Ceramics Expo 2021

August 30–September 1

Advanced ceramics: enabling a clean, efficient & electrified future

We are delighted to bring Ceramics Expo back to Cleveland, Ohio, after a wait of more than two years. We are thrilled to say that the appetite to be back at the live show has never been greater within the ceramic manufacturing community that we serve.

Over 250 exhibitors will meet with thousands of attendees at the show's new home in downtown Cleveland—the Huntington Convention Center.

Visit the exhibition to source new materials, components, and technologies; network with like-minded professionals; discuss challenges and opportunities; and gain the latest industry intelligence and knowledge.

The theme of the event this year is "Advanced ceramics: enabling a clean, efficient & electrified future."

The industry-leading conference allows our speakers to share their technical expertise in ceramics and provide real-world case studies, profile new technologies and materials, and disseminate information on key industry trends. Speaking companies confirmed this year include Kyocera, GE Aviation, CoorsTek, Northrup Grumman, Skyworks, and Morgan Advanced Materials, plus many more.

