

THIS ISSUE

1919-2019 Celebrating 100 years of Ferro Innovation



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2019 EXHIBITIONS

MIR STEKLA

Moscow, Russia, 2-5 April

SGCD

Indianapolis, USA, 6-7 April

SMT

Nuremberg, Germany, 22-25 May

CHINA GLASS

Beijing, China, 22-25 May

GLASSBUILD

Atlanta, USA, 17-19 September

VITRUM

Milan, Italy, 1-4 October

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FOREWORD CELEBRATING 100 YEARS OF INNOVATION

It's my pleasure to welcome you to the Spring 2019 edition of Color & Glass World, published to keep you up to date with the latest developments in the world of Ferro Performance Colors and Glass (PCG). 2019 is a special year for Ferro, as we celebrate 100 years of trailblazing since our original formation in 1919.

Ferro began as a unique partnership between two interrelated companies - based in Cleveland, Ohio, USA - that set out to modernize porcelain enameling. Starting out in 1919, the Ferro Enameling Company was incorporated to transition the ancient art of porcelain enamelling into modern industry, with the Ferro Enamel & Supply Co. set up to sell the frit and service products they manufactured. Our famous check-in-circle trademark was established from the beginning as a symbol of Ferro's high quality and technical standards, and this trademark has endured ever since. In spite of the 1920's 'Great Depression', the company continued to grow and in 1930, the two original partners merged to become the Ferro Enamel Corporation; in 1939 we began trading on the NYSE, under the ticker symbol 'FOE'. During the 1930's, 40's and 50's, the company expanded internationally with many new operations established across Europe, South America, and Asia-Pacific. In recognition of geographic, market and product expansion, in 1951 we changed our name to Ferro Corporation.

From the beginning, innovation has been part of the DNA of Ferro and it is interesting for me to note here a few of our historical landmarks with which you may not be familiar: In the 1920's, our founding fathers established the first industry trade publication, "The Enamelist"; new inorganic pigments for coloring porcelain enamel and glazes were developed in the 1930's; in the 1950's Ferro perfected a revolutionary, safer and more efficient frit-making process, and created the first "gel coat", a durable plastic coating which became the standard construction material for boats. In 1969, we invented a continuous-cleaning coating for household ovens which captured a total of six patents, coatings that we have continuously enhanced and improved in the years since.

The 1960's also marked our entry into the glass color market, and in the 1980's and 90's, we led the move to convert lead-containing glass enamels and ceramic dinnerware coatings to lead-free systems, and helped introduce organic inks and coatings for container glass. In the 1970's, we also pioneered the development of the forehearth coloration process as a cost effective alternative to glass tank coloration, and patented forehearth color concentrates for this application. We have since grown to become the largest manufacturer of glass colors, for coloration both in and on-the-glass, in the world.

At the start of the new century, along with our partner KeraJet, Ferro led the move to introduce digital printing of ceramics using durable inks, which has helped revolutionise the decoration of ceramic tiles. In 2017, we further enhanced our leadership position in this technology through the acquisition of Dip Tech, the pioneer and global leader in digital ceramic decoration systems for glass substrates.

A combination of organic growth and acquisitions grew the company's sales rapidly, from \$150M in 1970 to reach \$1.5 billion in the 2000's. The modern history of Ferro has seen a return to our core strengths centered around inorganic technology and services. Since 2010, we have successfully reshaped our product portfolio which is now based solely on functional coatings and color solutions, and established our Vision 2020 to reach \$1.7 billion of sales.

Innovation is as important today as at any point in our history, and PCG have a dedicated team of engineers committed to maintaining a constant pipeline of new products, closely aligned with our core platforms such as digital decoration and 'green' environment-friendly materials. Current innovation is delivering across a wide range of market segments, for example automotive glass colors with high functionality, organic thermoplastic and waterborne decorative coatings, laser marking technology, and functional glasses for electronics, dental, and other high performance applications.

In this edition, there are features about some of the new businesses that have been recently integrated into my PCG business, all of which are adding value in support of our Vision 2020. I am excited by the opportunities for growth that our latest acquisitions bring, and I hope you will find these features interesting and informative. The spirit of innovation is embedded in our culture. It continues to drive our organic pipeline and acquisition strategy, plays a significant role in broadening the range and performance of our products, and in delivering our overall growth.

As ever, all of us in PCG value your business, and we look forward to continuing to support your own business development as we enter the second century of the world of Ferro.

Dieter Binder
Vice President, Europe & Performance Colors and Glass
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WTC P-HUS (Sweden) Parking building, with glass panels that also provide solar control

DIGITAL PRINTING OF ARCHITECTURAL GLASS IN ASIA

CHINESE GLASS INDUSTRY POWERHOUSE - JYC GLASS - PURCHASES ITS FIFTH DIP-TECH DIGITAL PRINTER

Part of the POBO Group, JYC Glass (JYC) is a leader in China's competitive glass market. Founded in 1999 by Mr. Pang JingHua, JYC provides high-end decorative safety glass for buildings, furniture, art works and interior design. Located in the city of Foshan in Guangdong province, China, the company has grown rapidly to become a world-renowned supplier of printed flat glass. Today, through a vast number of digitally printed projects, including major public works, innumerable people around the globe enjoy JYC products daily.

At the heart of JYC's success is Mr. Pang's clear vision for leadership in the production of decorative glass, fuelled by the acquisition of the advanced technology and know-how needed to establish JYC as an industry powerhouse. In looking to become a technology leader in the decorative flat glass market, Mr. Pang turned to Dip-Tech,

which was acquired by Ferro in 2017, as a partner to meet his far-sighted aspirations. Dip-Tech is the pioneer in digital glass printing, and has helped to revolutionise the printing of flat glass with our complete solution of digital glass printers, long-lasting vibrant ceramic inks, and easy-to-use image processing software. Building with glass continues to grow in popularity and with architects and developers wanting to go bigger and better, digital glass printing technology increasingly provides the answer for exceptional functionality and aesthetic appeal; it is an ideal solution for significant design freedom at an affordable price.

In 2009, JYC partnered with Dip-Tech to purchase their first digital printer. This partnership grew over the years with JYC continuing to buy newer models of Dip-Tech machines in 2012. The company later obtained a digital printer from a different

company, but when the time was right to further expand their digital capacity in 2016, JYC again chose a Dip-Tech solution. And now, they have done it again, in October 2018, with the purchase of their fifth Dip-Tech digital printer. Following each purchase, Dip-Tech has continued to support JYC's staff and production engineers every step of the way with ongoing technical expertise, hands-on assistance, and a commitment to overcoming any obstacles together.

The results have been amazing, with JYC creating spectacular glass for customers worldwide. Some examples of the many projects printed with Dip-Tech technology are shown here. Through these projects, and many more, JYC has been instrumental in creating market demand for digital glass printing, quickly establishing itself as a true leader within this segment of the market.

While JYC has evolved with a variety of technologies over the years, it was the many joint achievements and close collaboration that helped cement the relationship between JYC and Dip-Tech in the area of digital printing. It was these factors that led JYC to purchase its latest Dip-Tech printer - the NEra-D Plus - on-the-spot at glasstec 2018. The newly released NEra-D Plus, like earlier NEra printers, is a dedicated machine for architecture and design applications, now enhanced with faster speed and an inline process for industrial batches. NEra-D Plus delivers premium quality results with extraordinary throughput, perfect for single color dots and lines, multi-color patterns, and photorealistic images.

For Mr. Pang, a demo of the NEra-D Plus at glasstec made it obvious that JYC needed one. "From my experience with

our previous Dip-Tech printer, the new model has a similar color system, high resolution and excellent printing quality but now at even higher productivity. As I see it, with this advanced digital glass printer, we get flexibility, cost-efficiency and serial production speeds all wrapped into one, which is a great boost to our business."

The sale of the NEra-D Plus at glasstec was also a momentous occasion for Mr. Raymond Kwok, Dip-Tech's Sales Manager in China, who said: "I have worked with Mr. Pang and the JYC team for many years now, and it's a pleasure to see what Mr. Pang's vision has done for the digital glass market. Now, armed with the latest NEra-D Plus, I can't wait to see where else they'll take digitally printed architectural, engineering and design glass. All of us in the Dip-Tech team are excited to continue this exciting

journey together, addressing the market's growing needs and helping bring the JYC vision to life on an even larger scale."

This sentiment of partnership was reflected by Mr. Pang, in describing why he chooses Dip-Tech again and again. "We see Dip-Tech as a strategic partner. Dip-Tech teams provide efficient service to JYC. Running our business with Dip-Tech machines gives us confidence, knowing we'll always be able to deliver exceptionally high-quality results, in a timely manner, bringing to life whatever our glass customers dream."

Please talk to our Ferro and Dip-Tech engineers in your region to discover more possibilities to bring your glass to life with Ferro technology.



DISNEY LAND (Shanghai, China)



HE HOMME store (Shenzhen, China)



glasstec 2018

From right to left: Mr. Alon Lumbroso (former Managing Director, Dip-Tech), Mr. Pang JingHua, (CEO, POBO Group / JYC Glass), Mr. Erik de-Jongh (co-Managing-Director, Dip-Tech), Mr. Raymond Kwok (Sales Manager, China, Dip-Tech), Mr. Yu (JYC)

BUILDING A NEW GLOBAL CHAMPION FOR ORGANIC COATINGS

STRATEGIC ACQUISITIONS SUPPORT INNOVATION AND MARKET PENETRATION

Thanks largely to our strong operational presence in Latin America established during the 1930's and 40's, Ferro were early entrants into the glass enamels market for containers. This was driven initially by the demand from brands such as Pepsi and Coca-Cola for durable decorations, resistant to strong acids and alkalis, that would be suitable for returnable, multi-trip soft drinks glass bottles. Subsequently, this technology was adopted widely by many famous brand labels for cosmetic and beverage glass packaging such as Corona beer and Absolut vodka, and Ferro became a global leader in the supply of colors for this market. For many years, the technology was based around systems that contained heavy metals such as lead and cadmium. However, in the 1980's and 90's, following increasing concerns about the adverse environmental and health and safety issues caused by the use of heavy metals in glass, legislation was enacted that led to their replacement by

lead-free enamels. Ferro was a pioneer in the development of the technology required to create durable glass enamels without lead, which were fully commercialised by the mid-1990's, and we continue to enjoy market leading positions in this market.

A further consequence of this need for more environment-friendly decorations was an increasing trend toward the adoption of organic coatings and inks, especially for certain segments of the cosmetic and beverage glass packaging markets, and for glass tableware. In response to this trend, Ferro developed a line of organic coatings and inks which, compared to glass enamels, have the potential to significantly enhance the available range of bright, vibrant color tones and effects (especially reds and oranges), whilst also reducing energy consumption during the production process.

Today, we are embarked on an ambitious path to become a global champion in the decoration of glass containers using organic coatings, through a program of targeted strategic acquisitions designed to enhance both our product technology and our global reach.

Since 2016, we have added three specialist organic coatings companies to the Ferro family. Pinturas Benicarlo, based in Benicarlo, near Valencia in south-east Spain were acquired in June 2016. Founded in 1992, Pinturas Benicarlo is a privately held company with market leading positions in Spain, Portugal and other Spanish and Portuguese speaking countries in Central



and South America. The company serves the highly demanding market segment of Perfume & Cosmetics, where colors need to be matched within 24 hours, and 3 day lead-times are the standard. They bring to Ferro an extensive range of high quality water-based coatings, and serve some of the largest international glass manufacturers and processors.



Delta Laboratories, with production in Ocala, Florida, USA were added in March 2018. Like Benicarlo, Delta have localised production facilities and its products are leading the way with significant container glass and tableware players in North America. In particular, Delta are well known for their state-of-the-art green technologies, for example with their low-VOC and BPA-free organic coatings. In the USA, Delta's main market segment is the candle industry.

Most recently, we completed the acquisition of Diegel Creative Coatings, a German family owned enterprise, founded in 1870, based in Alsfeld. With a rich history, Diegel manufactures industrial printing inks and coatings for decorative and functional applications. They bring to Ferro a broad, high quality product range that covers UV- and solvent-based inks for screen printing, water-borne coatings, automotive coatings for exterior and interior applications, laser etch paints and plastics coatings for optical lenses. Diegel was the first company ever to develop organic coatings specifically for application on glass; today, these coatings are widely used across Europe and internationally, for glass tableware, beverage and cosmetic packaging, lighting and other decorative applications. Their modern environment-friendly processing plant in Alsfeld, together with application-oriented R&D will add to Ferro's already high emphasis on innovation and customer service. Diegel's product portfolio contains unique special effects which are known from Brazil to Japan, and anywhere in between – the croco-effect cup/ saucer pictured here is just one example.

Customers in this market demand fast response and service from their suppliers, to provide highly formulated products and technical solutions. All three acquisitions share these attributes, providing specialized product solutions specifically formulated for customer's production methods and desired finishes. With localised production facilities in different parts of the world, all three expand our ability to provide fast service and response close to the market. As we work toward fully integrating these acquisitions into the PCG business, we see further opportunities to exchange product knowledge and formulations across the globe, assuring that the



highest quality products are available as close to the market as possible – further supporting our desire to deliver the best products, with fast color matching and service, to all regions around the world.

Combining Ferro's global reach and unmatched service capacity, market knowledge, and our long established connections with glass customers built over many decades, with the coatings expertise and technical leadership provided by each of the new Ferro companies, offers opportunities, we believe, beyond anything available today in the market. Anywhere, anytime and anything!



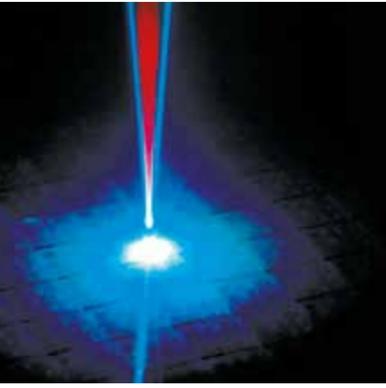
SAFETY FIRST WITH DIEGEL SHATTER-PROOF COATINGS

Our recent acquisition of Diegel has uncovered a number of exciting products, not least a specialty organic coating known as a shatter-proof coating. This is a clear, water-based coating that is developed to keep potentially dangerous fragments in place, in the event of the glass breaking or shattering.

This innovative product offers a broad field of applications. A typical application would be for lamps especially those used in food processing plants, supermarkets, bakeries etc., where splinters can cause significant damage to people. Other potential fields of application would be pharmaceutical bottles, or containers of hazardous chemicals. In all cases, Ferro's shatter-proof material is the ultimate coating to minimize the consequences of glass damage.

This special coating can be used on uneven, multi-dimensional surfaces. Depending on the application, use of a primer might be recommended, for example our HYDROGLASUR primer.

The shatter-proof coating is usually applied by spraying, with a wet film thickness of 100 - 150 µm. After drying at 80°C for 30 minutes, the film obtains a certain stability. Final resistances for the cured coating are reached after the ageing process. Therefore the coated objects need to be stored for 48 hours at room temperature. The final shatter-proof coating is glossy and UV-resistant, and can make our daily life safer.



EUROPEAN LASER MARKING LABORATORY GOES LIVE

We are pleased to announce the recent opening of a brand new laser marking laboratory at the European headquarters of our PCG business in Frankfurt, Germany. This laboratory will help to improve our customer service and enhance our R&D capabilities for the EMEA region. Laser bonding technology offers a unique solution for creating permanent, high contrast, high resolution marks on a wide variety of surfaces, including most metals, ceramic, glass and many plastics. These materials have been individually formulated for the best permanent chemical bonds possible. Our technology facilitates variable data such as barcodes, serialization and personalization using common industrial lasers, without compromising or damaging the substrate surface.

The new laboratory will collaborate closely with our USA-based laser marking technical service and R&D engineers, helping us to focus on the growing European market for individual marks, and to address the increasing demand for this technology in industrial applications. Serialization by matrix (2D) barcodes and linear barcodes for in process traceability as well as quality management are some typical requests we are facing from the aerospace, automotive, ceramics and glass industries. Falsification prevention is another key driver in the aerospace and pharmaceutical industries.

With our upgraded capacity, we will intensify our support to the processing line suppliers, as well as the end customers, for laser marking of all kind of metals, ceramics and glass. The laboratory installed CO₂ and fibre lasers, in combination with the different application technologies available, will provide the flexibility needed to support all requests for different substrates. Diegel's recently acquired product line of laser paints for plastics and glass will also be serviced from our new laboratory.



NEW DIGITAL INK LABORATORY OPENS IN GERMANY

In the year 2000, the first industrial digital printer for ceramic tiles was presented jointly by Ferro and KeraJet at the Cevisama international trade fair in Valencia, Spain. The first inks for this application were also patented by Ferro during that year. This patent described a set of four inks (CMYK) for 4-color printing. Since that time, Ferro has pioneered the development of digital printing ink technology, which has helped to revolutionise the decoration of ceramic wall and floor tiles.

In 2017 Ferro acquired Dip-Tech, the leading supplier of digital printers and inks for the decoration of flat glass for architectural, automotive, appliance and decorative glass. During glasstec 2018, DipTech launched a new generation of digital printers with faster printing speeds, including a brand new machine for the appliance glass market. With these machines, new fields of application, also for mass production become possible.

To fulfill the increasing demand for digital printing inks for the various sectors of the flat glass market, Ferro has dedicated a brand new applications laboratory in Frankfurt, Germany, and built a special project team to speed up the development of these specialised inks. This is in addition to the already existing R&D facilities active at the Dip-Tech headquarters building in Kfar Saba, Israel. The new laboratory in Frankfurt houses a Dip-Tech GPi 200 printer, along with various other state-of-the-art grinding, mixing, rheology, analytical and color measurement tools.

We were honored recently to host the Lord Mayor of the City of Frankfurt as one of the first visitors to our new laboratory, who was deeply impressed by the technical possibilities offered by digital printing on glass and ceramic surfaces.



NEW PRODUCTS INTRODUCED BY FERRO IN THE LAST THREE YEARS

FLAT GLASS		BENEFITS
s1de ONE matt and metallic	Architectural	New design opportunities for external surface application on buildings
System TEA (True Edge Application)	Architectural	TEA allows structural glazing with glass enamels at the edge of PVD-coated glass
LustReflex coating	Appliance and Architectural	Almost invisible coating to enhance durability of glass and ceramic glass surfaces
Cool Color coatings	Architectural and Appliance	Enamels with IR-reflecting properties for cool surface and energy saving
High Opaque/High Durability Black	Appliance	Bismuth-free, cost-efficient, passes appliance chemical durability and foodstuffs testing
AUTOGLASS		
Conductive silver pastes for coated windshields	Laminated glass	Especially designed to be compatible with different coatings on laminated glasses
Black inks for digital printing	Digital Printing	Exclusively for use with Dip-Tech digital printers or LPKF LaserTransferPrinters. Printing of inks on laminated and tempered glasses with high chemical durability, non-stick properties and more
Conductive silver inks	Digital printing	Exclusively for use with Dip-Tech digital printers or LPKF LaserTransferPrinters. Printing of silver inks for fine line conductive tracks, bus bars and antennae
High resistant conductive silver paste	Laminated/Tempered Glass	Especially designed to pass 20 cycles of PV1200 ageing test
Conductive silver paste for lead-free soldering	Laminated/Tempered Glass	Especially designed for the use in leadfree soldering process
High resistant black enamels	Tempered glass	Excellent antistick and silver hiding properties, deep black color, passes 140 hours H ₂ SO ₄ Toyota test
Black inks for LaserTransfer Printing (LTP)	Digital printing	Exclusively for use with LPKF LTP printers. Printing of edge bands, logos, serialisation
Conductive silver inks (LTP)	Digital printing	Exclusively for use with LPKF LTP printers. Printing of fine line conductive tracks, bus bars, antennae
High resistant press bend enamels	Laminated windshields	Benchmark products for application on laminated glasses in press bend technology, passing 72 hour H ₂ SO ₄ Toyota test
CONTAINER GLASS		
VNS series Metallic-effect colors	Beverage bottles Cosmetic bottles/Giftware Tumblers/Tableware	Special effect metallic shades with good scuff resistance
Organic HTP neon inks	Beverage bottles Cosmetic bottles/Giftware Tumblers/Tableware	Intensive neon color shades with good dishwasher resistance
Fluorescent effect forehearth colors	Beverage/ Cosmetic bottles/Tableware	Feeder frits or pearls to create fluorescence under UVA and Laser
Chrome pearl forehearth colors	Beverage/ Cosmetic bottles/Tableware	Environmentally friendly, allows to achieve a yellow shade (Cr6 ³⁺) in compliance with REACH
CERAMIC DINNERWARE		
7 Color Digital Process Inks	Dinnerware	Application onto the unfired glaze (earthenware, stoneware, bone china)
Matting agent 69600	Dinnerware	Allows matt appearance with very smooth finish
New Colors for Inglaze series Sky100	Decoration	Lead content < 100ppm
New Colors for Onglaze series Samba100	Decoration	Lead content < 100ppm
Starlight100 Metallic colors for high temperature fast-firing	Dinnerware	Lead content < 100ppm
INDUSTRIAL		
ZTH rings prefired	Process Temperature Control	Application for container glass firing cycles
ETH/ETL rings prefired	Process Temperature Control	Application for fast firing cycles, e.g. tiles
STH/STL rings prefired	Process Temperature Control	Application for fast firing cycles, e.g. tiles
Ultrafine filler Glasses for Dental	Dental Composites	0,4-0,7µ to get higher filling grades in dental composites
Phosphate glasses	Dental	Dental cements

GROUNDBREAKING TECHNOLOGIES LAUNCHED AT glasstec 2018



At glasstec 2018, in Dusseldorf, Germany last October, we combined for the first time with Dip-Tech to showcase our joint offerings and dedicated solutions for architectural, automotive, appliance and container glass. Glasstec is the premier international trade fair for glass production, processing and materials supply, and in 2018 celebrated its 25th anniversary with more than 42,000 visitors from 120 countries.

Together with Dip-Tech, the glasstec platform was used to unveil our newest digital print technology innovation - the VEra printer - designed specifically for the appliances market. Visitors to our booth were treated to a glimpse of the exciting opportunities provided by this printer, in combination with our ULTRA-FIX technology and compatible ULTRA-FIX inks. These included impressive displays such as 4-color control panels printed in one run, and oven doors printed with an innovative marble-like design.

Also showcased for the appliances segment was a full kitchen display highlighting the use of Ferro glass enamel inks in a combination of screen-printed oven doors and stove tops, together with digitally printed back-splash and table-tops.



Mary Abood, Director, Corporate Communications was on hand to cut the ribbon at the launch ceremony of the Dip-Tech Nera-D Plus, our enhanced digital printer for decorative architectural glass. In addition, as part of the innovative 'Glass Technology Live' exhibition at the show, we presented a scaled concept model of a futuristic commercial building featuring the best of both screen and digital printing. This display served to inspire architects and designers to the opportunities provided by decorative and functional glass using Ferro products. We were also honored that architect Eyal Porat was on hand to talk at the 'Function Meets Glass' conference. His presentation "Serial production goes Digital" outlined the story of Dip-Tech's pioneering work on automated digital printers designed specifically for automotive, architectural and appliance glass markets, and featured many examples from our stunning collection of printed glass projects around the world.

Oliver Heitman, PCG European Business Manager, Automotive & Electronics, introduced our latest screen printing enamels and digital ceramic inks for automotive glass, and helped launch Dip-Tech's NEra-V Plus

digital printer, a dedicated machine targeted exclusively at the automotive market. Joining him for the ceremony was Vidurglass Spain's R&D Manager Eduardo Tarrida who recently purchased a NEra-V, their second Dip-Tech printer. The NEra-V Plus now offers a competitive option for automotive glass printing in large batches.

Rounding out our complete glass market reach, we showcased a full range of the Ferro decorative products for container and tableware glass, including lead-free glass enamels, forehearth colors, organic inks and coatings, and laser marking technology. For the first time, we presented organic coatings from Diegel Creative Coatings, a leader in the supply of coatings for glass packaging and tableware, whose acquisition we completed a few weeks before the show opened.



"glasstec presents a unique opportunity to reach customers and potential markets with our dedicated inks and technology for the automotive, architectural, appliance and container markets," commented Dieter Binder, PCG Vice President. "glasstec clearly showcases how we are actively shaping change in the glass industry."

Ferro Corporation is a leading global supplier of technology-based functional coatings and color solutions. Ferro supplies functional coatings for glass, metal, ceramic and other substrates, and color solutions in the form of specialty pigments and colorants for a broad range of industries and applications.

Ferro products are sold into the building and construction, automotive, appliances, electronics, household furnishings, and industrial products markets.

Headquartered in Mayfield Heights, Ohio, USA, the Company has approximately 6,100 associates globally and reported 2018 sales of \$1.6 billion.

Our associates work in 30 countries, speak more than 17 languages and bring a wealth of knowledge and cultural perspective to our offices, laboratories and plant facilities every day. While we learn and benefit from the unique experiences that arise from our diversity, we also share a common set of core values and operating philosophies. We believe that our long term success will be determined by who we are and how we act.

Our core values apply equally to all interactions with customers, suppliers and colleagues:

- **Customer Focus:** Our customers are why we exist; we want to build trusting relationships that make customers successful.
- **Accountability for Performance:** We work to achieve the highest performance standards, to create value for customers and shareholders.
- **Innovative Thinking:** We seek new ideas for technologies and business processes, and are always striving to improve and serve our customers better.
- **Teamwork and Collaboration:** we are committed to a work environment of trust and respect, working together to consistently deliver value to customers and shareholders.

Where innovation delivers performance.

	KEY PRODUCTS	END-USE APPLICATIONS
PERFORMANCE MATERIALS	Tile coatings and digital inks; Porcelain enamel coatings; Structural and fine ceramics coatings; Glass enamels; Conductive metal pastes, powders and flakes; Forehearth colorants; Specialty colors and glasses; Organic coatings and inks; Electronics packaging materials and multilayer materials; Inorganic colored pigments; Organic pigments; High-performance polishing materials	Ceramic floor and wall tiles; Appliances; Dinnerware; cookware; Roof tiles; sanitaryware; Water heaters and industrial products; Automotive, architectural, furniture and container glass; Dental products; Electronics packaging; Semi-conductor wafers and capacitors; Paint & plastics; Vinyl siding, pipe and flooring; Touch sensitive displays; Ophthalmic lenses



Diegel Headquarters, Germany



Dip-Tech Headquarters, Israel



Pinturas Benicarlo, Spain

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Automotive Architectural Appliance Containers Tableware Laser Marking Industrial

 **FERRO** | 100 YEARS **AHEAD**

For outstanding color and coating technologies – both decorative and functional – Ferro are global market leaders.

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