CARD MANUFACTURING™
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February 2019 Volume 29 • No. 1

HAS THE SUN SET ON THE RFID CARD MARKET?

Card Personalization Advances

2018 Card Industry Statistics, Trends Highlights

Exploring New Features in Modular Card Personalization Systems

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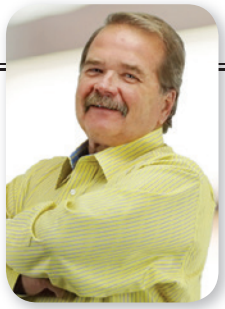

Ours is a $26.3 Billion Industry! Let's Celebrate!

| *By Jeffrey E. Barnhart*

In recognition that access control, financial, gas, gift, government, ID, health care, loyalty, membership, prepaid phone, promotional, retail, SIM and transportation cards are used to conduct a multitude of transactions around the world daily, this year's ICMA EXPO celebrates cards as **How the World Transacts.**

The EXPO is **#AllAboutTheCard** and the perfect venue to celebrate the business successes that make ours a $26.3 billion industry that drives commerce, security and technology while providing opportunities and employment for thousands of individuals around the world.

Hundreds of industry professionals from all card market segments will come together at the Omni Orlando Resort at ChampionsGate in Florida for three days of dynamic educational presentations, informal and formal networking opportunities, exhibits, the Élan Awards of Excellence dinner and ceremony, as well as ICMA's Advanced Card Education training and exams. For more information about the EXPO and our exhibitors, see the coverage starting on page 13.

Take advantage of this unique opportunity to meet suppliers, manufacturers and personalizers to discuss solutions to production challenges and learn about the latest innovations opening doors to continued prosperity in the global card business. As the world's only card-focused event, the EXPO is invaluable! If you haven't yet, register now at ICMAEXPO.com.

from the ICMA staff

Distinguish Yourself with ACE

| *By Lynn McCullough*

Many successful professionals agree that a continuous quest for knowledge is essential to developing and growing a career in the global card industry.

ICMA's Advanced Card Education (ACE) designations recognize ICMA members' expertise in card manufacturing (ACE-M), personalization & fulfillment (ACE-P) and advanced technologies (ACE-A). Earning one or all of these designations can help you:

- Manage aspects of work more effectively.
- Enhance your knowledge of card production through a comprehensive training session.
- Set yourself apart from the competition.
- Increase your earning potential.
- Build professional credibility.

ACE designations are a worthwhile investment because of the many advantages they can provide you throughout your career. To learn more about ACE, see page 35. To register for a training session or exam at the 2019 ICMA EXPO, email info@icma.com.

CARD MANUFACTURING

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FEBRUARY 2019

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RECURRING SECTIONS

FEATURES

COVER STORY

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CARD PERSONALIZATION ADVANCES

David Tushie – Magellan Consulting, Inc.,
ICMA Standards and Technical Representative

Historically, card personalization comprised the task of taking generic pre-printed cards and making them unique to the individual cardholder. For many years this was a very standard process for payment cards as the format of the personalization data, generally known as the "emboss file," was very similar and somewhat independent of the card issuer. Guidelines published by the major brands rarely changed. A further stabilizing factor was the detailed ANSI/INCITS and ISO specifications for the data, location of the data on the card, the tolerance of information and the test procedures available to guarantee successful financial transactions. But, as Bob Dylan coined a long time ago, "the times, they are a changin'."

When the major payment brands were private companies, they fought with each other to grow market share. Now, in addition to this healthy competition, American Express, Visa and Mastercard must adhere to Wall Street expectations of profitability, growth and customer service. Increasingly, these brands now look to enhance the loyalty of their cardholder base through cash-back rewards and services that will lead to increased growth and profitability. Improving the relationship of the cardholder to the card issuer through valuable card features is the goal of the brands. To support this goal, the brands have made many changes to the look and location of the personalization data on their cards.

Some of the more notable recent changes in card designs are:

- Using metal cards with or without plastic laminates.
- Placing the account number, expiration date and security code in convenient locations for the cardholder.
- Not always requiring embossing or a signature panel.
- Not always placing brand logos on the front of the card.
- Using polycarbonate cores and laser engraving for personalization data.

Also, card personalization options have never been greater for card issuers and their marketing departments. Why? In the case of payment cards, the brands have become partners in the quest for top-of-wallet positioning for their cards. Getting to know your customer not only applies to the issuer and cardholder but also to the entire chain of participants in the design, production and fulfillment of card programs. New digital printing technologies can help facilitate the movement of personalization data into one-off card manufacturing solutions for certain card products.

Additionally, Drop-on-Demand and inkjet printing products allow for total flexibility in the positioning of the card's personalization data in a digital printing environment. Until recently, all

payment cards were manufactured in a landscape format, which is no longer the case as we see some portrait-oriented cards being offered. Visa's Quick Read format is an example of this flexibility. Digital printing and flat card personalization make this change of card orientation possible. With the advent of more electronic elements (antennas, chips, sensors, buttons, keyboards, displays) in the card, acceleration to flat card printing and personalization volume is predictable. These kinds of card features and printing flexibility will also play well in the gift and loyalty card arenas as well.

One of the most recent developments in card personalization is color laser usage. While we have had black/gray laser personalization for many years, the addition of color laser capability will address many needs in secure ID and payment applications. With further refinement and development, it can also find applicability in many non-secure card applications as well.

All of these optional marketing requests require planning and trade-off evaluations before profitable quotes can be generated. And this means planning now.

Understanding marketing departments' top-of-wallet quest for their product and how that drives card manufacturing and card personalization can increase card margins while improving cardholder satisfaction.

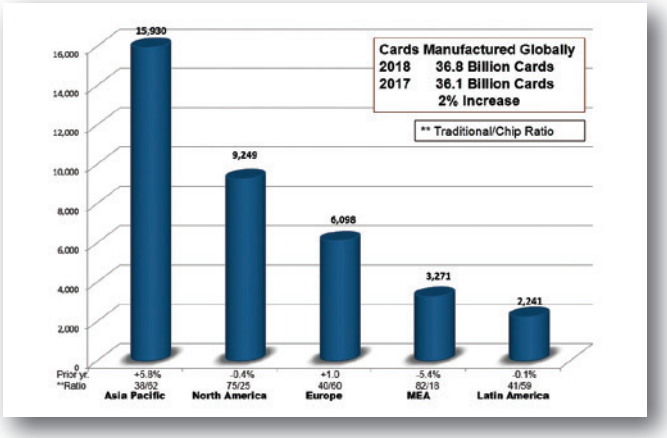
About the Author: *ICMA Standards and Technical Representative David Tushie has had a long and continuing career in the card industry working for international companies such as Datacard, UbiQ and NBS Technologies. He has master's degrees in engineering and business, holds U.S. and international patents in measurement and card issuance systems and has had several years of involvement with the ANSI, INCITS and ISO standards process. ICMA is represented at six ISO and ANSI standards meetings through his standards role within the association.*

Al Vrancart – ICMA Founder Emeritus and Industry Advisor

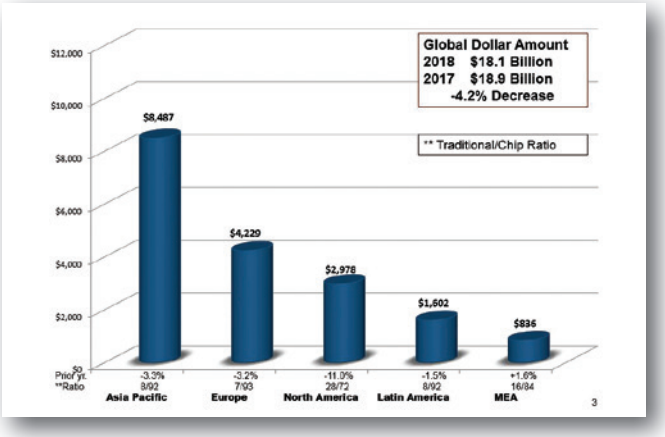
HIGHLIGHTS OF CARD INDUSTRY STATISTICS AND TRENDS

The global card industry manufactured 36.8 billion cards in 2018, which was 2 percent more than it manufactured in 2017. See the map below for ICMA's definition of the regional markets in the global card industry.

The Asia Pacific market continues to lead the industry in growth and is currently the largest regional market, having manufactured more than 15.9 billion cards in 2018. North America followed with 9.25 billion cards manufactured and then Europe with 6.1 billion cards manufactured.



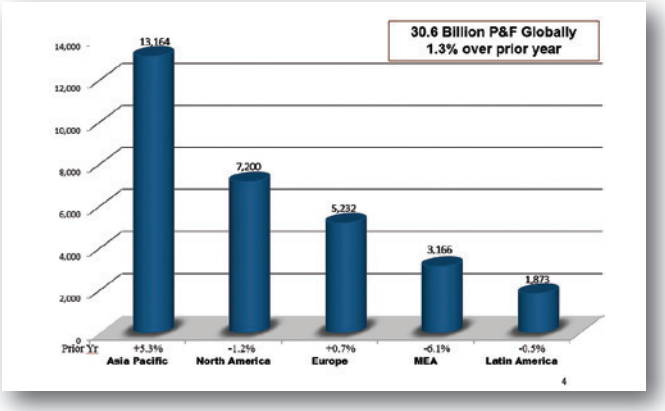
The global card industry manufactured $18.1 billion USD worth of cards in 2018, which was a 4.2 percent decrease in revenue from the prior year. This can be attributed to vigorous competition and declining chip card prices. Asia Pacific generated the most revenue, approximately $8.49 billion USD, as the region continues to embrace chip cards. Europe came in second with $4.23 billion USD and North America was third with $2.98 billion USD. Latin America and MEA rounded out the category.



GLOBAL PRODUCT CATEGORIES

More than 17.7 billion smart cards were manufactured across the globe in 2018. These included memory, contact, contactless and dual-interface cards, which represented 48 percent of the total card unit volume. There were 19 billion traditional cards manufactured, including magnetic stripe, bar-coded, QR-coded and basic plain cards, which represented 52 percent of the total unit volume. Globally, $16 billion USD worth of smart cards were manufactured, representing 88.5 percent the global industry's revenue. Traditional cards generated $2.1 billion USD in 2018, representing 11.5 percent the global industry's revenue. A total of $18.1 billion USD worth of cards were manufactured in 2018.

REGIONAL MARKETS–PERSONALIZATION AND FULFILLMENT



The global card industry personalized and fulfilled 30.6 billion cards in 2018, up 1.3 percent from 2017. Asia Pacific personalized and fulfilled the most, approximately 13.16 billion, cards driven by the SIM, financial and government/health card market segments. North America followed with 7.2 billion cards driven by the gift, government/health and access control card market segments. Europe ranked third in this category with more than 5.2 billion cards personalized and fulfilled in 2018 driven by the SIM, financial and government/health card market segments. MEA ranked

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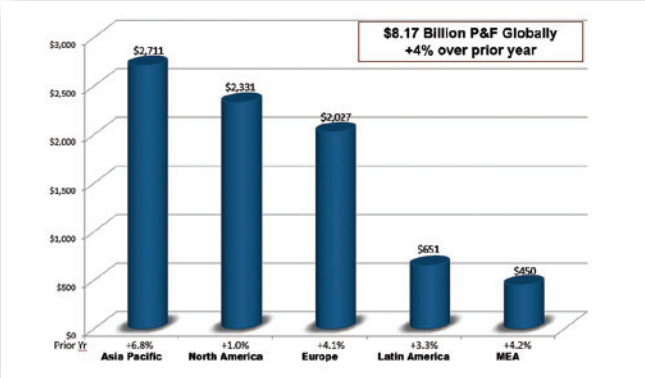
Highlights of 2018, continued from page 9

fourth due to its large prepaid phone card unit volume. The region personalized and fulfilled 3.17 billion cards, with 2.35 billion of those cards being prepaid phone cards. However, prepaid phone card volume will decrease as the number of alternate payment methods grows. Latin America personalized and fulfilled 1.87 billion cards in 2018.



In 2018, the global card industry's personalization and fulfillment services totaled $8.17 billion USD, which was 4 percent more than the prior year. Asia Pacific generated the most personalization and fulfillment revenue at $2.7 billion USD, which was 6.8 percent more than in 2017. This revenue growth was driven by the SIM and financial card market segments. Asia Pacific's personalization and fulfillment services are valued lower per unit than North America's and Europe's due to overall lower pricing and indirect distribution, which means the issuer provides fulfillment services and materials at the financial and retail branches and government offices where customers pick up their cards. North America ranked second in this category with $2.33 billion USD, up 1 percent from the prior year. This growth was driven by centralized issuing and direct distribution of higher valued personalization and fulfillment services in financial, gift and retail and gas issued cards. Europe's personalization and fulfillment revenue totaled $2.03 billion USD, up 4.1 percent from 2017. The European market growth was driven by centralized issuing and direct distribution of higher valued personalization and fulfillment services in financial, government/health and retail and gas issued cards. The global market anticipates more expensive personalization and fulfillment services as chip cards continue to penetrate.

The 2018 global card manufacturing industry is valued at $18.1 billion USD and the personalization and fulfillment services market is valued at $8.17 billion USD. The $26.27 billion USD global card industry drives commerce, security and technology while providing opportunities and employment for thousands of individuals around the world.

GLOBAL FINANCIAL

The financial card market, which includes credit, debit, prepaid and ATM/PIN cards, is the highest-profile card and personalization and fulfillment segment in the world. It is the largest segment with 5.63 billion cards manufactured in 2018 for 15.3 percent of the global share. At $3.83 billion USD, it is the third largest revenue market with 21.1 percent share of the global dollar volume. There were 4.88 billion financial cards that received personalization and fulfillment services, valued at $2.18 billion USD, in 2018.

There are new trends impacting the future growth of the financial card segment. Card issuers are increasing card expiration dates and the use of smartphone apps that support contactless card transactions is growing along with other payment technologies that do not support cards. Unit growth in this market segment will subside while its revenue remains buoyant, particularly as contactless and dual-interface cards continue to penetrate. Financial cards will remain in the market for several years to come.

GLOBAL SIM

Global SIM cards carry a chip that operates millions of mobile phones and devices. The global SIM card market had the largest dollar volume in 2018 with $4.95 billion USD, representing 27.3 percent of the global dollar card market and ranked second in units with nearly 5.6 billion cards representing 15.2 percent of global units.

Dollar revenue growth in this market has rapidly declined as chip prices decrease. Card unit growth in this market segment is driven by SIM-enabled devices and the conversion to smartphones. Slower consumer demand for frequent phone upgrades and embedded SIMs are a threat to this market. However, it currently has a significant unit and dollar market value, which continue to make it an appealing and dominant segment.

GLOBAL PREPAID PHONE

Global prepaid phone cards are generally thin plastic or composite paper based without a magnetic stripe and are used to enable or access mobile phones, payphones and the internet. In 2018, it was the third largest global card unit market segment with 4.92 billion units. It had $234 million USD revenue for cards manufactured while personalization and fulfillment revenue was $357 million USD. Since there

are alternative applications to enable prepaid phones, this market is rapidly declining.

GLOBAL GIFT CARDS

Gift cards are usually traditional cards typically used for "closed loop" branded retail transactions. Gift cards are the fourth largest global unit card market with 4.89 billion units, which is up 7.6 percent from 2017. Gift card manufacturing dollar revenue was $402 million USD and personalization and fulfillment services for these cards totaled $919 million USD in 2018, up 10.1 percent over 2017.

The majority of gift cards are manufactured in the third quarter for the Christmas season. Gift cards are now mature in North America and the United Kingdom. However, their use in the rest of the world continues to grow despite the introduction of digital gift cards as consumers prefer an impactful physical plastic card for gift giving.

GLOBAL GOVERNMENT/HEALTH CARE

This market segment has a diverse range of applications, including government benefits, health care, national IDs, drivers' licenses and passport cards. The government/health care card market is the fifth largest global unit market at 3.8 billion cards, up 9.1 percent from 2017, and the second largest global dollar market at $4.31 billion USD, which is up 17.5 percent over the prior year.

The market has been positively impacted with the trend toward chip card credentials, the shift to e-documents and new card technologies such as biometrics, government-imposed ID standards and security and fraud issues.

GLOBAL TRANSPORTATION

The global transportation card market segment is focused on ticketing for mass transit systems. There were 2.85 billion transportation cards manufactured and personalized in

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2018, up 7.3 percent over the prior year. It is the sixth largest dollar card market valued at $1.34 billion USD with an additional $371 million USD for personalization and fulfillment services. This market has increasingly grown, as it continues to embrace smart ticketing.

GLOBAL RETAIL & GAS

Global retail cards and gas cards are manufactured to standards similar to financial cards. In 2018, there were 2.65 billion retail cards and gas cards manufactured for a revenue of $1.37 billion USD and personalized and fulfilled for an additional revenue of $987 million USD. It is the seventh largest card unit market and personalization and fulfillment market. The outlook for this market is that it should modestly increase as it continues with chip card conversion.

GLOBAL LOYALTY AND PROMOTIONAL

The global loyalty and promotional market encompasses numerous applications for frequent customers who receive reward points and awards for their loyalty. In 2018, there were 1.85 billion loyalty and promotional cards manufactured giving the market a ranking of eighth. This market will continue to experience pressure from paper and digital cards, as well as smartphone applications. However, this market is growing in the Asia Pacific and MEA regions as they embrace these card products.

GLOBAL BANK CARDS

In 2018, there were 1.79 billion cards manufactured for a revenue of $183 million USD. Market growth is driven by instant issuance, a demand from smaller single card printers, as well as chip card growth.

GLOBAL ACCESS CONTROL

Access control cards provide access or entry into secure/private areas, such as hotel rooms, gated entrances, facilities and restricted areas. There were 1.68 billion cards manufactured for a revenue of $837 million USD in 2018. New technology and demand for increased security are driving the growth of this card market segment globally.

GLOBAL ID/MEMBERSHIP

The ID and membership card market does not include security documents issued by governments, but is focused on cards that are issued for associations, institutions and clubs. There were 749 million cards manufactured in 2018. Smartphone apps threaten the future growth of this market.

The information in this article was derived from my annual reports on the trends, opportunities, growth and forecast in the global card manufacturing and personalization and fulfillment markets. The reports provide a comprehensive overview of 12 vertical market segments for both the card and personalization and fulfillment sectors of the industry. This article represents an overview of the 42-page card report and 37-page personalization and fulfillment report.

The 2018 Global Card Market and Personalization/Fulfillment Reports are now available in the member-only section of ICMA.com. Members can download the reports for free. Non-members can purchase the reports by emailing info@icma.com.

All of the data for these reports have been garnered from primary and secondary research and statistical modeling. ICMA makes every effort to ensure that the information presented is reasonably correct and complete. ICMA does not guarantee the accuracy of any of the data presented and cannot be held liable for the use of or reliance on the information presented.

About the Author: *Al Vrancart is founder emeritus and industry advisor of ICMA. With more than 40 years of business experience, Vrancart previously served as president/CEO of NBS and Qualteq. His guidance and counsel has helped ICMA and other industry associations implement growth initiatives effectively and successfully. He is a frequent presenter/speaker at card manufacturing industry events. He is particularly focused on global and regional industry market statistics, metrics and trends.*

2019 ICMA EXPO is #AllAboutTheCard

Card manufacturers, personalizers, suppliers and issuers from around the world will convene at the Omni Orlando Resort at ChampionsGate in Florida from March 31 to April 3 to celebrate cards as **How the World Transacts.**

To ensure our industry thrives well into the future, the 2019 ICMA Card Manufacturing & Personalization EXPO will feature educational presentations developed by experts from leading card organizations. The broad spectrum of topics includes "going green" in the card industry, printed electronics, biometric cards, blockchain-inspired ID management, digital presses, metal cards, contactless and dual-interface cards, inks, employee engagement, packaging, secure identity and card design.

Besides having access to leading-edge panel discussions and seminars, the most valuable aspect of attending the EXPO is meeting face-to-face with industry thought leaders, suppliers, peers, as well as current clients and prospects. The agenda provides for both informal and formal networking at events such as the golf outing, new member reception, Speed Networking session on the exhibit floor and regular exhibition time, to discuss methods for improving manufacturing and personalization and growth opportunities in a congenial atmosphere.

Attendees will also enjoy the Élan Awards of Excellence ceremony and dinner during which companies with innovations that will help propel the card industry into the future receive recognition.

Overall, attending the 2019 ICMA EXPO can help you expand your industry knowledge, grow your business connections and learn best practices.

"With the future in mind, our card industry members will again have diverse, contemporary and unique opportunities to explore in Orlando," said Jeffrey Barnhart, executive director and founder of ICMA.

We are excited for the 2019 ICMA EXPO and look forward to seeing you there!

For more information or to register for the event, visit ICMAEXPO.com.

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2019 ICMA EXPO KEYNOTE SPOTLIGHT

ICMA is pleased to welcome Bernard Baumohl, chief global economist at The Economic Outlook Group, as the keynote speaker for the 2019 ICMA EXPO.

Baumohl, who was also one of the keynote speakers at the EXPO last year, will discuss geopolitics and the global economy and outline potential business opportunities and risks ahead.

While the U.S. economy will soon enter its 11th straight year of growth, Baumohl questions how much longer these good times can last. To provide an outlook for the near and far future, he delves into consumer and business spending, interest rates, inflation and energy prices. He ponders whether ongoing trade tensions will disrupt established supply chains throughout the world and how that would impact operating costs and economic growth.

Baumohl recognizes artificial intelligence, e-commerce, megadata and blockchain technology are profoundly changing how consumers and businesses act. He also notes that hackers are using these same technological innovations to access trade secrets, steal personal data and sabotage economies.

During his keynote speech, Baumohl will review how card industry organizations can protect themselves from adverse economic, geopolitical and cyber shocks.

ICMA EXPO AGENDA AT A GLANCE

ICMA's Card Manufacturing and Personalization EXPO will feature a comprehensive agenda of educational sessions that includes:

- The Economic & Geopolitical Outlook: What are the Opportunities & Risks Ahead? – Bernard Baumohl, The Economic Outlook Group
- The Greening of Card Manufacturing: Challenges and Solutions – Moderated by David Tushie
- How the Card Manufacturing Industry Can Benefit from Printed Electronics – Raghu Das, IDTechEX
- Innovations in Inks Panel - Moderated by Tim Weatherill, Klöckner Pentaplast
- Biometric Cards & Blockchain-Inspired ID Management System – Jöerg Fischer, Bundesdruckeri
- What You Need to Know about Digital Printing – James Gargus, HP
- Innovations in Packaging Panel
- Contactless Payments in the U.S. – Julie Scharff, Visa
- Card Design and More
- Combining Physical & Digital Technologies for Secure Identity – Mary Olson, Entrust Datacard
- Metal Cards and Beyond – Heather Bock, Visa
- The Challenges of Hiring Good Employees and Employee Retention – William Gardley, CareerBuilder

For a full listing of the educational sessions that will be presented, stay tuned to ICMAEXPO.com.

Élan
AWARDS

ÉLAN AWARDS RECOGNIZE EXCELLENCE IN THE GLOBAL CARD INDUSTRY

Earn a chance to step into the spotlight and accept an award for your company's innovation in card production by entering ICMA's Élan Awards of Excellence competition.

ICMA card manufacturer, personalization/fulfillment and supplier members are encouraged to submit entries for the next competition, which will take place during the 2019 ICMA EXPO at the Omni Orlando Resort at ChampionsGate in Florida from March 31 to April 3.

Entries are being sought for the following award categories: Secure Payment Cards; Loyalty, Promotional and Gift Cards; ID and Access Control Cards; Unique Innovation; Personalization and Fulfillment Product, Service or Project; Best Supplier/Vendor New Product, Service or Innovation and People's Choice.

An independent panel of card industry experts will judge entries and recognize winners and finalists in each award category. EXPO attendees will select their favorite card or personalization or fulfillment product or service for the People's Choice award.

The Élan Awards will be presented at the ICMA EXPO during a special ceremony on Tuesday, April 2. Winners will also be featured in an upcoming issue of *Card Manufacturing* magazine.

The entry form is located at ICMA.com. Show us your best!

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Check out our exhibitors to date:

101 RSID Solutions	103 SPS Ingroupe	105	107 sabic	109 Gans Ink & Supply Co.	111 BIOSMART	113 Atlantic Zeiser
115 Precision Finishing Systems	117 PES Pittsburgh Embossing Services	200 MATICA CORP	201 QCard The Lab Authority	202 kp klöckner pentaplast	203 KURZ	204 SWITZER
205 Bilcare Research	206 VTI	207 SICPA	208 printcolor high performance inks	209 Superior Tape & Label	210 Card Testing International	211 ADVANCED Card Systems & Solutions, Inc.
211 CASC	211 Cardel	212 UBIVELOX	213 BARNES INTERNATIONAL	214 FITEQ TECHNOLOGIES	215 NE NORTHERN ENGRAVING	216 OASYS
217 AdvanIDe	301 Mühlbauer High Tech International	302 BOYUAN	303/305 SunChemical a member of the DIC group	304 mdc Mathias Die Company	306 VFP Ink Technologies	307 KP
308 OpSec Secure · Enhance · Protect	309 Information Packaging	311 axode	312 ROWLAND TECHNOLOGIES AN ORAFOL COMPANY	313 Otto Künnecke ideas create solutions	314 Cardmatix Card & RFID Automation	315 TIANYU
316 BÜRKLE North America, Inc.	317 apollo colours	402 covestro	404 bg INGÉNIERIE FURTHER THAN THE NORM	406 LAUFFER PRESSEN	408 FWG folienwerk wolfen	410 BUSKRO
412 Anomatic Design. Manufacture. Finish	414 hp	416 GTUS				

EXPO Showcase: Meet the Exhibitors

The following companies have secured a booth as of press time:

Advanced Card Systems is a leading provider of high quality products and services to card manufacturers and personalization bureaus. Established in 2002, ACS provides a broad range of products which include; Card & Envelope Counters (Handheld and Desktop), Lamination Plates & Pads, Chip Bonding Adhesives, Card Affixing / Attaching Labels, Magnetic Stripe Material for PVC, PC, PS, & Paper, EMV Chip Modules (Contact & Dual-Interface: Visa, MC, Amex, Discover, UICS, and Interact), as well as, a full range of Personalization & Mailing Systems. www.AdvancedCardSystems.com

AdvanIDe – Advanced ID Electronics – is one of the leading semiconductor providers, focused on components for RFID transponders, chip cards and RFID readers and terminals. The company's products are used in the secure access market for applications including access management and control, automated fare collection and object identification, and secure ID and transactions for eGovernment, M2M, secure authentication, IoT and related uses. www.advanide.com

Anomatic, the world leader in anodized aluminum packaging is introducing AnoCards – the world's first fully aluminum, anodized card is impervious to wear and will not fade, chip, peel or delaminate as it is 100% metal. AnoCards can feature any hi-res imagery, multiple surface finishes, textures and any logo or artwork. AnoCards are manufactured at the company's HQ in New Albany, Ohio. http://www.anomatic.com/products/anocards

Apollo Colours NA Inc. is an industry leader in high-quality screen and offset inks for the plastic card industry for over 30 years. These inks include the latest technology in water-based pearls, metallic, special effects, coatings and adhesives along with UV and solvent products. We offer in-house colour matching and technical support for both offset and screen in our Markham, Canada facilities. Our experienced staff is here to provide you with superior support and products with expedited turnaround times. For more information, please visit us at www.apollocoloursna.ca.

Atlantic Zeiser has the ideal solutions for EMV-based credit, debit and prepaid financial cards, leveraging field-proven technology now fully approved by all major payment schemes. Utilizing high-speed drop-on-demand (DoD) inkjet imaging, Atlantic Zeiser systems produce cards that are up to 94% less expensive than what other systems offer. Adding the PERSOMAIL would provide users a complete card production and mailing solution. CARDLINE VERSA is still the most widely used system for producing gift cards and the CARDLINE COLOR can create a fully personalized card with high quality 4-color graphics in a single pass at speeds up to 6,000 cards per hour. www.atlanticzeiser.com

On the occasion of ICMA Expo 2019, come experience Axode's latest innovations and solutions dedicated to cards' quality control + track & trace: CardTracker is Axode's standalone camera based solution for high value plastic cards' inspection: performing high-resolution simultaneous duplex card image control (print defects, fibers, punching tolerance, etc), surface inspection (lamination, scratches, flashes, etc), security marks verification (OVI, holograms, hot stamping, engraved images, micro-text, invisible ink, etc) and positioning. Axode CardTracker is also able to inspect variable data (OCR, 1D, 2D, ID photo, etc) as well as mag stripe, smart chip and rfid... www.axode.com.

Baoding Lucky Innovative Materials Co., Ltd. is a professional manufacturer and supplier of Lo-co and Hi-co Magnetic Stripe; Black, Brown, Gold, Silver, Red, Green, Blue, as well as custom colors for plastic card, paper and bankbook application. Accredited with ISO9001, 2008 Quality Assurance, and ISO Environmental Protection, Lucky is committed to meeting or exceeding industry quality standards, and with stocking warehouses in China and the USA (New Jersey and California), Lucky can quickly meet customer's delivery requirements. Lucky and its global distributors will continually strive to provide our valued customers with quality products and best in class service.

Come to Barnes for EMV Smartcard Test Tools, Consultancy for Cards, Devices and Mobile Payment Application QC and Scheme Certification Personalization Validation; and for the world's most reliable & accurate ISO 7811/CQM Mag-Stripe Analysers. Barnes offers the quickest and most thorough Test Tools available with excellent service and support worldwide. We also now offer the P3 Data Preparation system. www.barnestest.com

BG INGENIERIE celebrates its 20th anniversary in 2019 with a new logo and website: www.bginge.com. We propose more than 90 machines developed and manufactured in France: Versatile equipment to produce, test and personalize your Smart Objects (cards, passports, SMD & eSIMs): Personalization: module handler, card programming, SMD & eSIMs programming and laser. Card manufacturing: manual and automatic glue tape lamination, milling, chip implanting, GSM-SIM punch, chip punch, fingerprint sensor embedding… Personalization: module handler, card programming, SMD & eSIMs programming and laser. Durability card and passport testing: CQM, ISO, ANSI, ICAO (bending, torsion, 3 wheels...) and specific. Specific development: around cards, e-ID and passport (desktop laminator, vision inspection, RFID tester…).

Founded in 1953, Bilcare Research Card Solutions is the number one manufacturer of innovative and durable core and overlay films for high end financial cards, ID, Driving license, e-passport. www.bilcaresolutions.com

BioSmart Co., Ltd is a provider if cards products such as Credit, Banking, Transportation and loyalty card since 1971, and became the largest card manufacturer in Korea. Biosmart now expanded its product boundaries as card manufacturer and is specialized in Metal and Premium PVC banking cards for exclusive members and clients in private banks and clubs. Through continuous R&D and technological innovation, Biosmart will continue to bring special card products to the market (Metal-fingerprint cards, All-in-one Cards) www.metal-credit.com

Tianjin Boyuan New Materials Co., Ltd was established in 1997. We are the first high-tech company who professionally engaged in card making materials research, development and industrialization in China. "Innovative materials lead the future" is our tenet. In 2018, our new products Pure PET Coated Overlay, IR Blocking Film as well as Foil PVC will meet all of you at the ICMA EXPO. Other of our main products include: Digital media used on HP Indigo, MGI, Konica as well as Xerox digital printer; PVC/PC/PETF/PETG Coated Overlay; PVC Core Stock and Film; Water Base Laminating Varnish; Hot Melt Adhesive Tape for Chip Cards. Boyuan in China, Boyuan for the World! www.boyuanmaterials.com

Manufacturer of single stack and twin stack lamination systems.

Buskro is a leader in the design and manufacturing of variable digital personalization systems. With over 35 years of knowledge and experience Buskro has become the trusted specialist in inkjet, transports and product integrity solutions. We design and manufacture a full line of innovative DOD inkjet imaging equipment to meet a broad range of personalization requirements. Complementing this equipment is a comprehensive line of robust high precision transport bases, magnetic stripe encoding modules, fully integrated product tracking, vision verification and audit reporting features, high speed labeling, feeders and conveyors. www.buskro.com

Cardel is a leading manufacturer to the card industry supplying best of class products to companies engaged in Card Manufacturing and Card Personalization. Cardel has supplied customers globally for over 22 years and continues to develop innovative, reliable products for clients. Cardel's core product lines include: Lamination Plates (Glossy, Silk, Matte, Security features, Etched and Engraved), Lamination Pads for laminators of all sizes and all applications, Chip bonding adhesives, Hi-Bond range for PVC, PC, PET, Magnetic stripe on overlay (Supplied in reels or sheets). Cardel has expanded its range of products to include decorative lamination films (see our samples) and products for Card personalization Bureaus. New products in 2019 include specialist adhesive for Metal card chip embedding, Card attaching labels (DatacCard, Kunnecke, Matica, NBS, Kern) and Laser PIN printing solutions. www.cardel.co.uk

Machines to Make Cards Smarter! Cardmatix sets the standard for value, speed, and reliability. ARIES Smart Card Milling and Embedding Machines: The "All-In-One" solution for making contact smart cards. Perfect for companies making cards for EMV, GSM and National ID card projects. DUET Dual Interface Card Production: Our patented DUET direct-solder technology drives the industries most reliable method for manufacturing dual interface cards. Number one in China, and now ready to take on the world… Our method is both economical and durable. It's the ideal solution for manufacturing dual-interface cards for critical applications such as banking, secure ID's and transport. CQM Card Testing: Cardmatix is also well known for its expertise in card testing equipment. Supplying Visa and MasterCard manufacturers all over the world with the equipment they need for CQM and ISO certification. With a dedicated in-house staff of engineers and technicians focused on making cards smarter, Cardmatix focuses on providing the best Price/Performance Ratio through innovation and quality engineering. We design durable, hard working equipment that will last. Cardmatix is headquartered within its R&D and manufacturing facility in Dongguan China. Direct sales offices are located in Hong Kong, San Jose, California. www.cardmatix.com

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Card Testing International (CTI) is the VISA accredited provider with the most ISO certified tests for Innovative Card Products including metalized, biometric, interactive, and other cutting edge materials. Also Accredited to ISO 17025, Amex Enabled and MC CQM (17025) Testing, and now serving the worlds card industry for over 20 years; the specialists at CTI are veterans in testing of financial, transport, and ID card testing services. CTI's lab focuses on technical testing/audit services of physical, electrical, and RFID attributes for Card Schemes, Manufacturers, Bank Issuers and Government Bodies. With a primary focus of 'Test Certification' and not vending test or production equipment, CTI is world leader of fast, precise and cost effective card certification. See us at Stand 210, or visit www.cardtest.com

Covestro LLC is one of the leading producers of high-performance polymers in North America and is part of the global Covestro business, which is among the world's largest polymer companies. Covestro is a leader in high-quality, made-to-order polycarbonate films and blends, as well as thermoplastic polyurethane films and also specialty elastomer films. With more than three decades of experience in the development and production of films, we contribute to solving your product and processing challenges. Our extensive portfolio of innovative film products expands to address numerous applications across many industries. https://www.films.covestro.com

FiTeq's proprietary molding process allows for the manufacturing of interactive, ultra-thin cards that pass ISO tests as well as be mass manufactured – ramping to 1.5 million cards per production line, per month, at FiTeq's Lakeland, Florida facility in 2019. Each of them may possess various features: LCDs, LEDs, buttons, biometric modules, contactless antennas. In 2019, part of FiTeq's strategic focus is providing an inlay or "powered core" – the electronic insides to these cards - to conventional card manufacturers. Consequently, these manufacturers would then have the ability of finishing the manufacturing of these cards with their existing manufacturing equipment – all without the capital expense required to enter the interactive card market. www.FiTeq.com

Folienwerk Wolfen is an established German film manufacturer producing since more than 20 years high value overlay and corefilms out of PETG, TritanTM, PEC and PC for ID-1 and ID-3 documents. www.smart-ecofilms.com

Gans Ink and Supply Company was founded by Bob Gans in 1950. Gans Ink is a family-owned American business. We have a reputation for fast service, quality products, taking on difficult projects, and pioneering specialty products and services. We carry a full line of conventional and UV inks for plastic substrates, UV LED inks for plastic substrates, security inks, clean-up solvents and fountain solutions, conventional and UV-compatible blankets, and even environmentally-friendly formulations. We also offer inkjet printing solutions, a full line of inkjet media, printers, and tech support. "Longevity Through Integrity" www.gansink.com

Graph-Tech will be demonstrating our EMVRunner - Open Contactless RFID Encoding eZ-ID System at the ICMA Expo in booth 416 including TotalMag, SuperTracker and eZ-Inkjet. Visit www.graphtech.us for more information. Graph-Tech USA manufactures inkjets and inkjet tracking control systems as well as economical card personalization, card affixing, RFID encoding and magnetic stripe encoding systems for the card industry.

HP is reinventing print to keep it relevant, profitable and growing for the graphics industry. HP Indigo and HP Inkjet technologies enable this with digital solutions for virtually any print job or application. HP believes printing is not just a task, but a way of creating something unique so that brands can reinvent their own offering and the way they engage with their own audiences. This is made possible with the industry's widest digital portfolio of presses, printers, workflow solutions and services across HP Indigo, HP PageWide Web Press, HP PageWide XL, HP DesignJet, HP Latex, HP Scitex and HP Services. HP products open up a world of possibilities for commercial printing, photo, labels and packaging, corrugated, publishing, high-volume production, sign & display, merchandising and all types of large format printing.

Information Packaging is a custom card packaging manufacturer specializing in envelopes, sleeves, and packaging options for cards of all kinds. We help you create unique, stunning new ways to deliver brand messaging. We're the world leader in RFID blocking packaging options. ArrmorShield® is our proprietary alloy-based Tyvek® material, developed to provide a barrier to the RF signals necessary to communicate with contactless cards. ArmorShield® sleeves provide an additional layer of protection against unauthorized access. Exceptional quality. Consistently delivering on-time, on-budget, customer satisfaction for over 33 years. How can we help you? Stop by Booth 309 at the ICMA Expo. www.infopkg.com

Pentacard® films are the most comprehensive card film line in the industry. We offer a full range of core films for single and multi-layer cards in various polymers. Our broad overlay films portfolio is available in coated (water- or solvent-based) and uncoated, with or without magnetic stripe. Combine core and overlay films to get the combination that works for you. And if you need a new film, our engineers will design a custom formulation. With kp, the opportunities are endless. www.kpfilms.com

KP Pigments is an industry leader in Pearl Pigment, Effect Pigment and ColorShift Pigment additives. Our products can be easily used for various types of printing inks, paints, coatings and resins and we boast a selection of over 200 different colors. www.kppigments.com

KURZ is a leading manufacturer of stamping and security foils and supplies a wide range of products, including standard and customized magnetic tape, signature panel, personalization and stamping foils, holographic and enhanced optically variable devices (OVD's). KURZ foils are also used widely used for primary and secondary packaging, such as electronic devices, appliances, cosmetics, and automotive. KURZ's application technology, magnetic foils, and holograms provide effective and attractive brand name protection, as well as increased security for businesses everywhere. In addition to foils, KURZ offers a wide range of other products such as stamping tools and machines. www.kurzusa.com

Lauffer Presses Germany: The new generation of Lauffer Card Lamination Systems offers proven Lauffer quality for the card production and all cards with an all new design. Lauffer offers universal production solutions for small batch sizes and flexible productions. Whether single sheet quick cycle lamination or conventional lamination book to build-ups. With the new Lauffer Short-Lamination-System Type SLS we guarantee proven process technology, flexible production and continuous quality control for high-end quality lamination. www.lauffer.de

Mathias Die Company, located in South St. Paul, MN, continues to be an industry leading tooling and converting solutions provider after nearly 50 years. Mathias Die provides engineered and designed tooling solutions for gift, financial and secure card applications. Our full spectrum of card tooling ranks among the best available and can be designed for use in all card punching systems. In addition, our exceptional Tool Makers provide sharpening and repair services for all card manufacturers tools. www.mathias-die.com

Matica is a fast-growing and innovative global company with a strong international network. Matica develops, manufactures and markets solutions to issue ID cards, financial cards and passports for secure ID and payments applications. The company offers a comprehensive hardware and software product portfolio, from desktop systems –including ID card printers, desktop laser engraving systems and passport printers– to central issuance solutions for high volume applications, including mailing systems. The Group is worldwide represented with offices in Germany, Italy, France, Singapore, China, the US, the UAE, and India. For further information, visit our website under www.maticacorp.com.

The Mühlbauer Group introduces its sophisticated MB ALFRESCO PICTURE technology which smartly combines color picture personalization with laser engraving in order to achieve high-secure personalization results. Mühlbauer is the global leader for production technologies for smart card, ePassport, semiconductor and RFID industries. With more than 80,000 systems in the market, Mühlbauer has the best proven reputation and performance history in these market segments. As an owner-driven, German-based company, the fulfillment of our clients' needs is our main priority and motivation. With more than 30 locations and service hubs worldwide, we guarantee excellent local support and customer care. www.muehlbauer.de

Northern Engraving supplies card manufacturers with decorated stainless steel card options using highly durable offset and screen printing. Our mechanical finishes provide depth and dimension to your card design without additional foils or metallic laminates. Our supply chain extends your products to a fully compliant, personalized, secure card. Our Design team is globally recognized, and your factories are fully equipped with on site testing labs. Visit us at www.norcorp.com. Stop and see us at booth #215 at the ICMA EXPO 2019.

Oasys is a leading manufacturer of innovative plastic card and secure ID document production machinery providing equipment for the 'Primary' stages of: tapelaying, collation, lamination, punching, guillotining and testing. In recent years new models have been launched to extend the range of collation and punching machines with a focus on compact footprints. The Oasys machinery range caters for low-volume, minimum-investment startup activities through to high-speed fully automated produc¬tion lines. Oasys machines incorporate the latest in technology, are UK built to match the needs of modern production techniques, and are fully supported, by a first-class team through Europe, USA and Asia. www.oasys.uk.com

OpSec is a global leader in securing, protecting and enhancing our customers' brands, service and revenue. Our Transaction Security Hologram business serves major payment brands including Visa, American Express, Diners Club, Discover, and MasterCard. With multiple approved manufacturing locations, OpSec provides unparalleled quality, lead times, service, and support. Our product range includes OpSec Precision™ DeMet holograms for the Visa hologram market. OpSec is also a leading integrator of solutions to governments for ID documents such as driver licenses and passports. We now support a variety of applications including holograms for polycarbonate documents. Learn more: www.opsecsecurity.com

Otto Kuennecke builds intelligent machine and software solutions for secure personalization, verification, grouping, packaging and mailing of high secure documents like passports, ID- and bank cards, PIN's, etc. More than 40 ID projects were successfully installed for banks, governmental institutions and service bureaus. Otto Kuennecke has long-term experiences in developing and constructing mailing systems as well as special machinery for the card industry. The product portfolio ranges from data-driven sheet-collating and punching systems to a fully automated card factory with selective functions. Software and digital solutions are developed in-house. Otto Kuennecke looks back on more than 80 years of experience and success. www.kuennecke.com

Pittsburgh Embossing Services (PES) has been in business for 30 years and is considered the leading global expert in refurbishment and support services for Datacard brand card personalization equipment. PES offers refurbished Datacard systems (MX6100, MX6000, 9000, Maxsys, etc.), individual modules, security consulting, parts, supplies, service, and training. PES has developed an extensive parts program to provide a new, PES brand, of parts for the Datacard MX and 9000 systems. PES is also a USA dealer for Matica Technologies new card personalization equipment and services. www.PittsburghEmbossing.com

Precision is the Superior Source for all your gift card affixing, encoding/ ink-jetting and gift card packaging needs. Our 10X High Speed Vacuum Transports can be configured for basic card on carrier formats or more complex multi card packs requiring intricate database management, specialty plow folding, gluing and batch-ing. Components for magnetic stripe reading/encoding, inkjet personalization, shrink and more are available. PFS Transports provide unmatched speed and versatility for all your application formats and we understand the need for accuracy in card placement, consistency in gluing and critical folding for today's card packages. Precision Finishing Systems- Imagine it we build it. www.precisionfsinc.com

Printcolor is your Swiss partner for innovative security inks and solutions for financial cards and government documents. Our spectraCARD product portfolio contains IR blocking inks for transparent card design, solvent and UV based high opaque white and metallic color shades for polycarbonate and PVC as well as various security elements such as optical shifting inks and anti-scratch coatings. With nearly 85 years of practical knowledge, Printcolor is a highly experienced partner when it comes to developing new product concepts, from the initial prototype to serial production with uniform quality. For more information visit our website at: www.printcolor.ch

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Q-Card Company is one of the most trusted names in the payments and ID market. Our broad range of expertise in EMV chip, contactless, NFC for mobile and magstripe cards, readers, and product development ensure your products and systems are reliable. Q-Card products include EMV test tools and hardware; magstripe analyzers; CQM tools such as dynamic bend and torsion card testers, impact and opacity testers; smartcard analyzers; magstripe test cards; secondary reference cards and magnetic developers. Q-Card also operates a third-party independent lab testing EMV chip and contactless cards, tags, fobs and wearables, NFC for mobile, physical card and terminal testing as well as providing product development, training and consulting. Visit us online at www.q-card.com.

Rowland Technologies Inc., an ORAFOL Company, is a leading manufacturer of high-quality plastic film and sheet. Our RowTec® SC polycarbonate films are an extension of the RowTec family of polycarbonate films and are available in Clear, White and Laser Markable in thicknesses from .002" - .025". RowTec® SC has a unique textured surface finish that delivers superb results when printed and laminated and meets the demand for durable performance required by manufacturers of security and identity cards. In addition, Rowland offers PETG Film for the security and identity card markets. www.rowtec.com

RSID SOLUTIONS, is a leading global supplier of card/RFID manufacture & personalization solutions. We provide turnkey solutions for smart card and RFID product manufacturing, personalization and testing. Equipment & Service: Card Manufacturing: Card Laminator, Card Punching Machine, Auto Collation Machine, etc. Card Counting: Portable Card Counter/Desktop Card Counter (Including Transparent card, Colorful edge card, Black card, etc.) Vision Inspection: 26K UPH for card, also inspection module for Hologram/S.P., Chip Implanting, Variable Data, etc. Card Personalization: Hologram Hot-stamping Machine, Sheet Hologram Hot-stamping Machine, Desktop Personalization Machine, chip initialization machine, etc. You are welcome to contact us: Inquiry@rsid-solutions.com.

SABIC will be displaying their polycarbonate (PC) based film materials under LEXAN™ SD film portfolio for sophisticated security ID Cards to guard them against counterfeiting, helping smart card, passport and e-ID manufacturers to integrate next level security features using a patented UV laser-technology. The demand for more sophisticated solutions to protect government ID cards and other related documents has led SABIC to pioneer the development of a PC material technology that enables customers to apply a ghost image into the card or document and create a tactile white marking which will fluoresce under UV light, all during the personalization phase, giving manufacturers greater flexibility in design. www.sabic.com/sfs

SICPA, a leading global provider of ink-based security solutions and integrated systems, offers anti-counterfeiting, anti-alteration and authentication technologies. SICPA works with card manufacturers and printers to develop a range of customized solutions, offering multi-level authentication and protection in response to specific needs of various card segments and card applications. SICPA inks offer a variety of colors and unique properties, adaptable to all card substrates. They are highly resistant, offering excellent adhesion and lamination compatibility. New innovations include: SICPA's Hot Stamp Secure Color-Shift providing robust color-shift security to printers who do not have the technical ability to print this feature; and ShiftMag®, innovative magnetic tape with color-shifting design for unparalleled card security. For cards with basic security demands to those requiring high-level security, SICPA inks add a new dimension to anti-fraud and anti-tampering protection. Contact us: securityinks@sicpa.com and www.sicpa.com.

SPS, is a subsidiary of IN Groupe and specializes in contactless and dual interface smart cards, and high-quality inlays for e-Passports. The company is positioned on markets for electronic ID and banking cards. Its market is based on an unrivalled proprietary patented technology, providing for governments, national printing houses and smart card manufacturers. www.s-p-s.com

Sun Chemical and its parent company, DIC, can provide a complete solution for credit card and laminated plastic card printing. We have a full line of ink systems, coatings, adhesives, and magnetic tapes. In addition to our color management solutions, we offer anti-counterfeiting brand protection products and silver/graphite conductive inks. www.sunchemical.com

At Superior Tape & Label we are fueled by a passion to provide the best products and unsurpassed customer service. Our dedicated team of engineers, coaters, and testing professionals goes to great lengths to develop and manufacture the highest quality labels in the industry. In addition to developing products on our own, we also work in partnership with many of our customers to develop new solutions to increase productivity and boost efficiency. Our rigorous tracking system reduces down-time, and our industry-leading testing program ensures that our products deliver consistent quality, optimal functionality and reliability. If you have a hard to please customer, a unique label or adhesive need, or you simply require a label that works the way you want it to, you can rely on STL to deliver. www.superlabel.com

Switzer, in collaboration with XCore Technologies, enables card manufacturers to produce metal cards with unprecedented designs. Switzer utilizes a unique metal etching capability to create metal cores which can exhibit unlimited branding and design elements. The etched metal cores are then encapsulated into an XCore prelaminated core sheet for final lamination at the card manufacturer. All XCore prelaminate core sheets are fully compatible with the hot lamination process for seamless integration into the card manufacturer's production environment.

Tianyu is a professional smart card manufacturer, and also a professional solution and service provider and we are dedicated to provide outstanding products and professional service for data security, mobile internet, multimedia broadcasting and payment service. www.whty.com

UBIVELOX is a global company with a wide portfolio of technological secure solutions for Banking, Telecommunication (USIM), Transportation, National ID, Smart University and Internet of Things (IoT). UBIVELOX annually ships over 80 million banking products and licenses Operating System worldwide. Our banking products are based on various Operating system and platforms such as Java, MULTOS, Native, supporting global payment applets such as VISA, Mastercard, JCB, Interac, UICS and Discover and still include further functionalities within the areas of loyalty or ticketing. As a South Korean market leader, UBIVELOX works closely with global certified partners. Offering fully customizable payment cards built in accordance with the clients specifications with advanced value added services. Contact EMV Card, Contactless EMV Card, Dual-Interface EMV Card. www.ubivelox.com

40 years of experience in development, manufacturing and distribution of screen printing inks, we provide many technological solutions worldwide with products specifically made for laminated plastic card market: AQUACARD, UVICARD, SOLVCARD & IR BLOCKER. Committed to protecting environment, we refuse to use glycol ethers and heavy metal based pigments in our ink formulation. Our new SOLVCARD is a new generation of solvent-based inks which meets the safety global stands and not only…! Discover all our solutions for new card designs. Interested? Let us show you the multiple advantages.: www.vfp-ink.com.

VTT Germany is the world leading manufacturer of lamination plates for the production of governmental security documents such as e.g. passport datapages, ID-cards, driving licenses with more than 20 years of experience. Securely engraved surfaces with raised/ inlaying security features (MLI-/CLI-lenses, guilloche patterns, VTT FlyEye, move ID & holo PHOTIC) make documents fraud resistant. Different security features can be combined making VTT's product highly modular and individually designed to cater each projects needs. With a global presence VTT actively supports clients in the development of new products, efficient production processes and highest quality cards that meet any defined standard. www.vtt.de

EXPO LOCATION

Omni Orlando Resort at ChampionsGate
ChampionsGate, Florida

The 2019 ICMA EXPO will take place at the Omni Orlando Resort at ChampionsGate in Florida from March 31 to April 3. The venue is located 25 minutes from the Orlando International Airport and 20 minutes from Universal Studios.

Surrounded by 36 holes of championship golf, the Leadbetter Golf Academy World Headquarters and 15 acres of pools and recreational activities, this four-diamond resort is one of the nation's premier golf, meeting and leisure retreats. The resort also has a European-style spa, five restaurants and an 850-foot lazy river.

Book your room by March 1 for the guaranteed group rate of $229 by calling 1-800-THE-OMNI and referencing ICMA or using the online link at ICMAEXPO.com.

DEVELOPMENTS IN LASER AND COLOR PRINTING FOR GOVERNMENT AND BANKING CARDS

Peter Bach – Mühlbauer GmbH & Co. KG,
Senior Product Manager

Due to tightened security measures in government ID card and passport projects in the past few years, the well-established black-and-white laser technology is currently being used in a growing number of projects. This technology offers superb picture quality and contrast and can also be flexibly used in central, de-central and even mixed projects. It does not need consumables or any other kind of production materials. Using the black-and-white laser is cost-efficient and one of the securest means of personalization.

As the use of black-and-white laser processes continues to gain in popularity, the prices for polycarbonate have significantly dropped. The card body production for polycarbonate or Teslin is not a specialty anymore and it has advantages with regard to price, quality, security and lifetime (10+years). However, it still presents challenges with regard to process optimization. For this reason, focus has turned toward the next generation of various color laser technologies.

Design and security features, such as personalization, watermark, relief, ultraviolet (UV) or forensic markers, can be individually added without limiting the existing technologies and features (like CLI, UV print). By using special translucent inks, even embedded holograms remain visible "through" the picture.

Combination of Color Photo and Laser Text

There is one major advantage to considering the combination of a color photo and laser technology for a card's textual and security elements, which is in polycarbonate—after the lamination process—a "monoblock" material, as well as holograms and other features can be embedded into the polycarbonate card body with no chance for delamination and fraud. Printing a color picture on the surface (regardless if it is by retransfer, dye-sublimation or ink) still requires a patch in order to protect the color and guarantee 10+ years of durability at the same time. However, printing the text and several other security features by means of laser is a rotten compromise, as the customer cannot benefit from the numerous advantages of polycarbonate and the patch still bears the disadvantages of high price, lower security, required stock management, fraud and manipulation.

Embedded Picture Technology

Another state-of-the-art solution is the embedded picture technology, by means of which the picture of the person is already personalized on sheet base and laminated into the card body. For a long time, this technology was highly acknowledged. However, this process requires a lot of effort, especially concerning logistics, as parts of the personalization process, such as reject handling, reproduction and tracing of the card, are shifted to the card body production. Due to different responsibilities for document production and personalization, as well as questions of physical distance and time, this is almost impossible to handle in the majority of projects.

More Color Picture Technologies

Another solution is the use of special materials and card body structure. In this case, the layers or pixels are activated (or respectively deactivated) by laser. Although this does not require any special surface protection, it is a very complex and cost-intensive technology that uses special lasers, algorithms, special materials and card composites or even multiple lasers with different wavelengths. It also has several disadvantages with regard to picture resolution, logistics and quality; this leads to some limitations with regard to the card body structure and to the security features available, which can result in weak security elements and a high degree of dependence on the related card or material supplier.

Due to increased security requirements and the need for high accuracy of alignment between the laser and inkjet printing position, a combination of laser (for black-and-white and contrast) and inkjet for the picture is preferred for national ID projects. By means of state-of-the-art software, the applicant's original picture is separated into black-and-white parts and colored parts. In the past, the use of this technology without extra protection (the inkjet being only on the surface) was common practice with regard to passport personalization. In the case of smart cards, an extra surface protection is required (due to abrasion) and the patch again has the disadvantages of high consumable prices and security feature limitations, such as changeable laser image (CLI) or multiple laser image (MLI) features.

Liquid Coating Technology

New inks have boosted the picture's lifetime to 6+ years, but the real breakthrough was achieved by a special varnish technology called "liquid coating." This extends the lifetime to more than 10

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Laser and Color Print, continued from page 23

years, as the application is already done in the course of the printing process of high-quality (security) features with no additional costs. Furthermore, design and security features, such as personalization, watermark, relief, ultraviolet (UV) or forensic markers, can be individually added without limiting the existing technologies and features (like CLI, UV print). By using special translucent inks, even embedded holograms remain visible "through" the picture. If the laser technology is not required for the picture and only used for textual and other laser features (e.g. CLI or MLI), high throughputs of 6,000+ units per hour (uph) can be realized. For example, in health card projects, the bottle neck, however, is the laser-time of the picture's black-and-white part during which up to eight parallel laser systems offer a speed of up to 2,000 uph. It is only a matter of time until we will also see systems in the market that offer forensically identical processes for the mid-range sector, even for mixed central and decentral personalization projects. In these cases, the technology's higher price can (in most cases) easily be compensated with the significantly lower consumable costs (only about 10-20 percent of the costs of a patch (even when taking into consideration all of the costs for machine consumables such as lasers and printing heads)).

Laser and Color Inkjet for Banking and Industrial Use

These newly-developed core technologies, especially the inkjet printing in combination with liquid coating, are used for government projects and for financial and industrial projects due to their high speed and low consumable costs. In addition, these technologies enable printing of the complete card surface (edge to edge), as well as the so-called "masking and cropping" where card elements like magstripe, signature panel or chip can be excluded from the print even with position change from card to card.

The digital printing of the card body in the course of personalization has already been put into practice in many projects. The advantages are substantial cost savings with regard to logistics and stock management, the possibility of personalizing small batches or even the simple reproduction of cards. The liquid coating technology is commonly used for marketing purposes in order to create structures on the card surface. For example, water drops and other kinds of structures can be created. These were only previously possible during additional process steps, such as screen-printing. With regard to the future of laser and color printing, it will be exciting to see which sophisticated technologies and processes will make our smart cards and passports safer and more durable for a longer time, as well as more individually unique and attractive.

About the Author: *Peter Bach is senior product manager at Mühlbauer GmbH & Co. KG. He completed his studies in physics and chemistry at the Technical University in Munich and has been with Mühlbauer for more than 20 years. He is responsible for the practical implementation of projects at the customer's site, which is why he is familiar with smart card customers' requirements.*

New inks have boosted the picture's lifetime to 6+ years, but the real breakthrough was achieved by a special varnish technology called "liquid coating." This extends the lifetime to more than 10 years, as the application is already done in the course of the printing process of high-quality (security) features with no additional costs.

IS YOUR COMPANY LISTED IN ICMA'S ONLINE MEMBER DIRECTORY?

Anyone searching the web for card products and services can easily find an ICMA member company that meets the specific needs of their project.

The Member Directory at ICMA.com is our No. 1 visited webpage. Visitors can quickly search it for card manufacturers, personalizers, issuers and suppliers. Adding your company's information to the directory can help attract new business.

Member Directory listings are offered to ICMA members free as an additional member benefit. To provide ICMA with information to populate your profile page, email info@icma.com or call ICMA headquarters at 1-609-799-4900 for instructions.

EXPLORING NEW FEATURES IN MODULAR CARD PERSONALIZATION SYSTEMS

Christy Viveros – Business Developer,
Pittsburgh Embossing Services Inc.

Most personalization bureaus are familiar with embossing, encoding and thermal printing. Until now, it was usually only the larger, secure sites that had laser engraving and quality assurance modules. As these modules start to enter the resale market and become more affordable, more service bureaus are adding them to their line-up.

A quality assurance module is a must-have for shops running thermal jobs. Installing this module on your system will increase productivity and help ensure your customer receives top-quality printing. This module, at its most basic level, can verify thermal printing, graphics, color printing, laser engraving and embossed characters on the front and back of the card. Add-on kits are available to check topping and the magnetic stripe. A smartcard module can be added to check the data on the chip.

The biggest benefit our operators have noticed is the amount of time saved on thermal printing jobs. Operator productivity has increased a total of 25 percent, mostly attributed to a 75 percent decrease in post-production card handling time. This allows a single operator to handle more systems at one time. Previously, operators were manually checking each card to ensure there was no dropped printing due to a smudge on the card and then manually entering the remakes. This was extremely time consuming and left room for human error and subjectivity. The quality assurance module eliminates this step.

When speaking with a quality manager of a card service bureau about these processes, we learned thermal printing is being used less for gift and membership cards due to the cost, time and amount of work it requires one person to do, as well as general quality concerns. One person has to run five to six machines and, while encoding is automatically verified, visually checks aesthetics by quickly fanning through all of the cards. Human visual inspection alone cannot detect all problems. The biggest field complaint came as a result of thermal imaging on cards with barcodes that affected functionality. For example, if a thermal print head developed any burnt pixels, a barcode printed with bars parallel to the travel direction may not work and could result in field failures. Running test patterns at certain intervals can help the operator identify problems, but typically only after they happen. This bureau also uses a barcode verifier upon startup and at certain intervals to ensure acceptable International Standards Organization (ISO) grading is met. However, this is a separate quality assurance operation completed offline for a very small portion of the job.

These testing measures, while necessary, take extra time, so do other types of standalone verification equipment available on the market. A quality assurance module allows this same checking process to be done in-line without slowdowns in production.

The quality manager we interviewed said, "Getting burned is the hard way, we'd prefer not to." His bureau has converted many of its thermal customers to drop on demand (DoD) printing. DoD systems have multiple cameras that check cards during the personalization process. However, depending on where the error is caught, the system throws away all of the cards in the stream to remake the bad card and put it in the correct order. This could mean one or two cards are thrown away or, if it's further down the line, the system may throw away up to 18 cards, which results in a high scrap rate. A second option with the DoD machine is to discard the rejects and run the replacement cards at the end. Again, there is a risk of human error as the operator has to manually place the remakes in the correct spot in the sleeve. A person might put the

first 200 cards in correctly, but one could end up in the wrong place and cause an out-of-sequence situation.

A quality assurance module could resolve this issue. Utilizing a buffer to hold the good cards in their correct positions, the system produces a remake of the rejected card. The system then sends this remake down the line and the buffer inserts it into its correct position, all while continuing to produce other cards in the file. There is no slowdown in production for remakes. The quality assurance module can be followed by either a buffer module or a smartcard module if chip verification is necessary. The module will work with no buffer installed; however, in this scenario the system will reject all cards in the tracks to push the remake through to the correct position, which is similar to the DoD systems used today.

Installation of the quality assurance module is simple. The module is added to the configuration and software is installed on the controller. Setting up a new job is completed in a matter of minutes by selecting whether or not you want to check each data field and the sensitivity threshold you desire. The sensitivity threshold is a number from 20 to 100. While the default is set to 40, operators have found an optimal outcome for thermal printing at 75. Setting a sensitivity threshold too low will miss mistakes. Setting it too high will reject too many cards, those with imperceptible errors. You can also select if you want the auto remake feature turned on. If you have cards printing in order for attaching or mailing, turn this feature on so the buffer can keep the cards in the correct order. If you are printing identical, generic cards, keep it off and just print the missing cards at the end.

The quality assurance module has a camera that takes a photo of the front and back of the card. You can save all of the photos for auditing or to validate a customer's complaint. You can also choose to only save photos of the rejects, allowing you to quickly see the remakes if you've turned auto remake off. You can also adjust the frequency setting for automatic deletion of the photo files. When processing secure cards, you may not want data sitting on your system for any length of time.

A quality assurance module is virtually maintenance free. There are no consumable parts on it, and nothing outside of standard system maintenance is required.

Another important module to consider adding to your fleet is a laser module. Banks and governments continue to increase the number of security features on cards to outsmart fraudsters and other

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establishments are seeking exclusive card features for their top clients. Lasering can meet all of these needs. In the future, we may also receive requests for laser personalization in the non-secure market for high-end membership cards or unique loyalty cards.

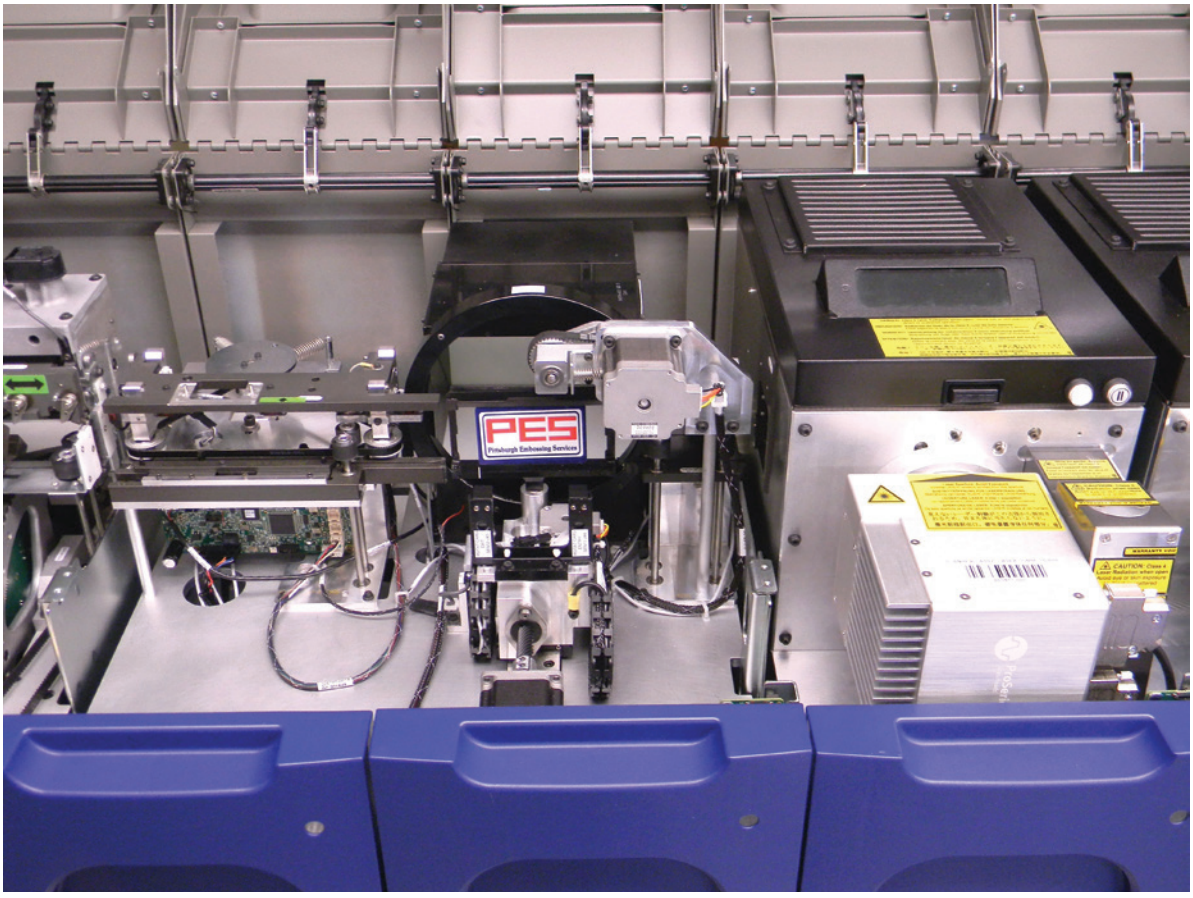
Certain laser modules can engrave grayscale photos, text, graphics, barcodes and even security features like fingerprints, signatures, micro-engraving and tilted or ghost images. Add-on kits are available for horizontal tilt and vision registration. These provide multiple laser image capabilities and verify where the printing is in relation to the features in the background (cardstock). You can check the data in each field, and have the option to turn the verification for each field on or off. You can also adjust the verification's sensitivity threshold.

Installing the laser module is fairly simple. You just need to install software on the controller. However, setting up the laser for individual card runs can be tricky, according to Ashraf Khan, the technician at Pittsburgh Embossing Services who has achieved ICMA's ACE-P designation. There are several parameters that will need to be adjusted based on the effect you want to produce and the material of the card. There are some default profiles preloaded that you can use for testing, but you will need to adjust them for each card run. "I highly recommend starting with one of the default profiles and adjusting up or down from there, rather than starting a new template from scratch," Khan said.

If a setting is wrong, the plastic on the card will bubble or melt. The laser module does have an exhaust fan and you can purchase a kit to vent the smell of burnt plastic outside. You can also go to your local hardware store and buy venting to attach to it. Operators highly recommend a ventilation system of some type when using these.

In a modular personalization system a card spends more time in the laser module than it does in, by comparison, an emboss or encode module. The production speed (cards per hour) can be improved by inserting two, three or even four laser modules into the same system.

This module requires little maintenance and is becoming more affordable as it

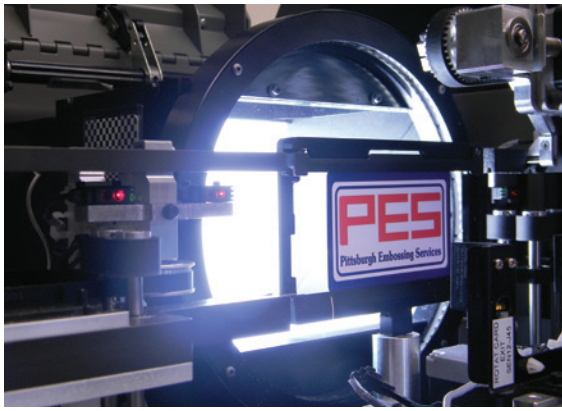


A quality assurance and laser module installed in a Datacard MX6100 system.

reaches the resale market. The only consumable is the laser diode and it is rated for more than 100,000 hours of production and is very easy to replace.

The preferred card material for laser personalization is polycarbonate, but certain types of PVC can be used as well. The substrate typically has a carbon layer and the laser beam brings that carbon layer to the top of the card, producing a black or gray result. Some companies are experimenting with color substrates and setting the laser to go to the depth of those colors to produce color lasered photos. You will need to work with your card manufacturer to determine what you need to produce your client's desired result.

About the Author: *Christy Viveros is the business developer at Pittsburgh Embossing Services Inc. (PES). PES has been in business for 30 years and is considered the leading global expert in refurbishment and support services for Datacard brand card personalization equipment. PES offers refurbished Datacard systems and modules (MX6100, MX6000, 9000, Maxsys), security consulting, parts, supplies, service and training. PES has developed an extensive parts program to provide a new PES brand of parts for the Datacard MX and 9000 systems. PES is also a United States dealer for Matica Technologies new card personalization equipment and services. For more information, email pes@pittsburghembossing.com.*



A card passes in front of the camera of the quality assurance module.

HAS THE SUN SET ON THE RFID CARD MARKET?

Jay Jiang – RSID Solutions, Vice President
and Tiger Fu, RealSmart, Vice President

The Internet of Things (IoT), radio-frequency identification (RFID) and sensors are hot topics these days. A new age is unraveling in which various everyday things are connected to sensors and the internet.

RFID, which was invented decades ago, has been in use since World War II. RFID pertains to the use of radio waves to read and capture information stored on a tag attached to an object. The technology has evolved in the past 20 years and today is mainly used for contactless cards.

RFID card usage has matured in European and Asian countries and continues to grow throughout the world with 1 billion shipped annually. However, given the recent introduction of various e-payment, e-ID and bio-recognition technologies, are there any opportunities left for RFID in the card industry? The answer is yes.

The rapid production of RFID cards has put enormous demands on the sheet inlay and other card manufacturing support industries. Today's market is calling for pre-laminated inlays.

In Japan, the Suica transportation card is flatter and has superior surface finishing when compared to other cards. A pre-laminated inlay is the key technology used to accomplish these card characteristics.

Few card manufacturers can make 125 KHz RFID proximity cards flat enough for ideal printing. When designing the printed area of these cards, the chip and antenna location have to be avoided.

Another challenge for the card industry is reducing inlay thickness. The International Standards Organization (ISO) has set a card thickness limitation of .84 mm. When applying additional foil or another functional material layer for an anti-counterfeiting application, it's hard to make pre-laminates under .30 mm.

To find a solution to these issues, let's analyze the common structure of a card inlay.

The four-layer formula, which is mainly used for high-frequency (HF) 13.56 MHz inlay production for banking and MIFARE cards, means one small and one large hole are punched into the card before the chip is inserted.

After laminating the chip area, the inlay surface is not flat due to defective melting and cooling and shrinkage in the chip and surrounding areas. In general, such pre-laminated inlays measure 380-420 microns and it is difficult to make them thinner due to current chip encapsulation technology.

The three-layer formula is also commonly used for HF card inlay production. A hole is punched in the middle of the plastic layer for chip insertion before collating the top and bottom plastic layers together for lamination. This allows for the hot-melted material to fill in the gaps between the plastic and the chip encapsulation. After laminating the chip area, the inlay surface is not flat due to defective melting and cooling shrinkage in the chip and surrounding areas. In general, such pre-laminated inlays measure 380-420 microns and it is difficult to make them thinner due to current chip encapsulation technology.

The two-layer formula is popular for 125 KHz card inlay production. The transponder is placed on the bottom plastic layer, which is collated to the top layer for lamination. The gap between the transponder and plastic will be filled by the heated material, but the inlay surface will not be flat due to cooling shrinkage during the lamination process.

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Most manufacturers can't find a cost-effective way to produce high-quality, flat low-frequency (LF) pre-laminates. Due to thickness limitations on LF coils and chip encapsulation, pre-laminate inlays are typically 500-550 microns. With such inlays, it's not difficult to end up with a card thickness of 800 microns or more than 840 microns. And there's no way to apply an anti-counterfeiting layer or other application materials.

There's another way of applying etching-aluminum or copper-etched antenna—with flip-chip bonding (dry inlay) in the middle layer. Put the dry inlay layer between the top and bottom plastic layers and then laminate them together. This technology produces pre-laminated inlays that measure 330-350 microns. However, the antenna is on polyester (PET) film, which is hard to glue to the top and bottom plastic layers due to different properties of the materials. This also produces a ripple effect on a glossy card finish. Aluminum on PET film will cause defects after card lamination.

Now, let's consider the RFID chip and encapsulation. Making thinner chip encapsulations would reduce LF or HF card thickness. However, no one in the industry has been able to make chip packaging with a thickness less than 200 microns.

Another way to reduce card thickness would be to manufacture inlays with materials other than PVC, such as PET, PETG, polycarbonate or Teslin.

When it comes to pre-laminated inlay trends in the near future, we may see:

- **Super-thin:** If manufacturers could create pre-laminate inlays that measure less than 200 microns, there would be room to add features such as anti-forgery film or laser-engravable polycarbonate.
- **Ultra-flat:** Pre-laminate inlays must be flat for printing to give the card a quality appearance. This would also overcome the current ID card printing challenges.
- **Directly printable:** There is a market demand for flat and thin plastic sheets that can be printed on directly with offset or digital printing.
- **Test prior to punch:** It's possible to test RF function prior to punching the card. With super thin and ultra-flat pre-laminates that can be printed on directly, RF performance and encoding can be tested prior to punching into a card.

Thinner, flatter inlays would benefit many players in the card industry:

- **Card issuers** could offer public transportation and/or e-purse cards with new applications, such as LED lights. ID cards and e-passports could have more security features such as an anti-counterfeit layer. RFID access control cards would be flatter, which is ideal for ID printing.
- **Card and ID document manufacturers** could upgrade their portfolios and gain advantage over the competition with advanced inlay tech cards.
- **Card personalization bureaus** would also welcome these cards as they would produce great personalization results for customers seeking top-quality cards.
- **Inlay manufacturers** with these technology upgrades would have more business opportunities, which would give them an advantage over the competition and increase profits.
- **Chip suppliers and packaging manufacturers** could embrace future trends toward thinner chip encapsulation to enhance their products, improve market competitiveness and increase profits.
- **Material manufacturers** could meet the demand for more eco-friendly materials and would have better production adaptability for wire embedding, lamination, card punching and various visual personalization.

The current methods of pre-laminate inlay testing are manual reading, semi-automatic and fully automatic. Manual reading is a primitive means of testing that requires handling a reader with an alarm. Sometimes, microcracks in chips cannot be detected, which leads to personalization and use problems. The semi-automatic testing method means manually putting the sheet inlay onto the platform of a testing machine that will automatically scan and recognize defective transponders. The fully

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automatic method means testing the inlay/transponder after soldering or pre-laminating the inlay on an auto-inlay testing machine. This means having the ability to encode chips for initialization, change keys or write specific data.

Future testing methods could utilize the cloud platform to upload relevant data during production and testing. Companies could use the data as they wish. Future testing methods should also include intelligent production and automation, which means with the click of a mouse all testing and production tasks could easily be done with an automated system.

The recent introduction of a pre-laminated inlay with a minimum thickness of 200 microns and unparalleled super-thin and ultra-flat features means the future of card manufacturing has arrived. Regardless of the chip, layout or materials used or whether the card is printed directly or made into an ID card with super finish, this inlay overcomes the challenges of ideal printing and creates opportunities for those who want to print freely with great results. ID card and security document manufacturers have more space to apply more functional materials. The newly-introduced inlay can also be used for ID card printer applications and it supports PVC, polycarbonate and Teslin.

While the first generation of these inlays are currently being shipped to millions of customers, an optimized version is currently in the works that should be more attractive to card industry players who aim to stay ahead of their competition.

About the Author: *Jay Jiang is vice president of RSID Solutions Co. Ltd., a new associate member of ICMA. The China-based company provides turnkey manufacturing, personalization and related ID solutions for plastic/smartcard and RFID products. Tiger Fu is the vice president of RealSmart, which is RSID Solutions' parent company. For more information, visit rsid-solutions.com.*

Meet the Global Card Industry's New ACEs

Jennifer Kohlhepp – Managing Editor, ICMA

cpi card group®

ICMA is excited to announce that 11 employees at CPI Card Group in Littleton, Colorado recently earned Advanced Card Education-Manufacturing (ACE-M) designations.

Through hard work and dedication, the individuals listed below successfully passed their exams. Congratulations to the new ACE designees!

Chris Chamberlain • Shane Gamet • David Garcia • Nima Ghazvini • Lauren Kirschler
Jasmin Locke • Jonathan Platt • Katie Potter • Bill Powell • Jerry Somerville • Jeremy Witte

BE THE NEXT PERSON IN YOUR COMPANY TO 'ACE' IT

Set yourself apart from the competition by earning an ACE designation. Each ACE designation is standalone and does not require another designation as a precedent. Consequently, card professionals can build upon their ACE-M with ACE-P or ACE-A or seek a particular designation separately.

ACE validates expertise and is a mark of distinction in the card manufacturing industry. Those who earn a designation can use it after their name on business cards and other marketing materials.

Applicants must work for an ICMA member company and have a minimum two years of experience in the card industry. The exam fee is $249 per person. Confirmed exam registrants receive a comprehensive study guide and are eligible to sign up for an in-person training session with David Tushie, ICMA's standards and technical representative.

The next ACE training and exam sessions will take place during the 2019 ICMA EXPO at the Omni Orlando Resort at ChampionsGate in Florida.

2019 ICMA EXPO ACE TRAINING SCHEDULE

ACE-M training will take place from noon to 6 p.m. on Sunday, March 31
ACE-P training will take place from noon to 6 p.m. on Tuesday, April 2
ACE-A training will take place from noon to 6 p.m. on Wednesday, April 3

2019 ICMA EXPO ACE EXAM SCHEDULE

The ACE-M exam will take place from 1-4 p.m. on Wednesday, April 3
The ACE-P exam will take place from 1-4 p.m. on Wednesday, April 3
The ACE-A exam will take place from 8-11 a.m. on Thursday, April 4

Pre-registration is required. To register, visit ICMA.com/ace-accreditation. For more information about the ACE program, email **info@icma.com** or call ICMA headquarters at **609-799-4900.**

Allcard, Zwipe Launch Battery-Less Biometric Card

Allcard Inc. and Zwipe have partnered to launch battery-less dual-interface biometric payment cards in the Philippines. Working together, the companies will seek to secure the first trials with leading banks in the Philippines in the first quarter of 2019 and are optimistic that they will start receiving commercial orders in the second quarter of 2019.

For more information, visit allcard.com.

Barnes Smart Solutions Licenses P3 Technology from Thales

Barnes Smart Solutions has entered into an exclusive license for P3 EMV data preparation software from Thales and has committed to onward development and support of the P3 product family. P3 allows credit and debit card issuers to generate EMV data for a wide range of card personalization systems, either in-house or in card production bureaus.

P3 is a turnkey data preparation solution, consisting of dedicated tamper-resistant cryptographic hardware (FIPS 140-2 Level 3 certified) and Windows-based software. It integrates seamlessly with host systems, enabling card issuers to create EMV smart card data and keys with minimal impact on existing systems and at minimal cost.

For more information, visit barnestest.com.

CompoSecure Survey Reveals Interest in Metal Cards

CompoSecure LLC released the findings of a survey of 6,000 people around the globe that showed interest in metal payment cards. The most striking piece of data emerging from the survey was that the majority (59 percent) of consumers surveyed indicated that they would prefer metal or metal hybrid cards over plastic, if all other things were equal. This number was more than 50 percent in almost every market surveyed and in Brazil it reached 82 percent.

For more information, visit composecure.com.

CPI Card Group to Sell Canadian Subsidiary to Allcard Limited

CPI Card Group Inc. announced that it has entered into a definitive agreement to sell its Canadian subsidiary to **Allcard Ltd.**

The transaction is expected to close within the first several months of 2019, subject to customary approval and other closing conditions. Some portion of the Canadian secure card business is expected to transition to the company's operations in the United States, and the remaining secure card business will transition out of the company before the completion of the transaction.

For more information, visit cpicardgroup.com or allcard.com.

Entrust Datacard Champions Academy of Science and Technology

Entrust Datacard has agreed to champion the Shakopee Public Schools Academy of Science and Technology. The Academies of Shakopee are small learning communities of students and teachers organized around areas of interest. Academy champions mentor students and help give them the competitive edge necessary to help ensure they are college and career ready.

For more information, visit entrustdatacard.com.

Feitian Teams with Fingerprint Cards for Biometric Sensor Tech

Feitian and **Fingerprint Cards** have teamed up on biometric cards, announcing that Fingerprint Cards' T-Shape fingerprint sensor module will be incorporated into Feitian's contactless payment cards.

In a statement announcing the collaboration, Feitian Vice President Yan Yan said, "We chose biometric technology from Fingerprints as they have the leading power consumption solution on the market and proven cutting-edge biometric performance."

For more information, visit ftsafe.com or fingerprints.com.

Gemalto Unveils Cloud Access Management, Single Sign-On Solution

Gemalto announced the launch of an industry-first solution that will enable organizations that have invested in public key infrastructure (PKI) security applications to leverage their investment without compromising on security or user experience when moving to the cloud. Through SafeNet Trusted Access, security-sensitive organizations' employees who log into enterprise resources with smart cards can use those same credentials to access cloud and web-based apps and benefit from single sign on.

In addition, Gemalto will also help users access PKI applications from new environments, including mobile devices and virtualized desktop environments and use PKI credentials for security applications including digital signing and email encryption.

For more information, visit gemalto.com.

Goldpac Launches ACE301 AI Terminal

Goldpac recently launched the artificial intelligence (AI) self-service, card-making and card-receipt terminal, ACE301. This marks a firm step toward the expansion of AI financial self-service kiosks and solutions and means that Goldpac has entered the fast-track phase of development in this field.

The ACE301 AI makes full use of artificial intelligence, biometrics, facial recognition and natural language processing technology, as well as other technologies to provide a simple, integrated and scenario-based approach to banking services. The terminal handles the off-line processing of online card-making services to provide a variety of instant card preparation and collection services. At the same time, this terminal supports batch mode self-service card pickup and utilizes an efficient card management system to greatly reduce daily bank teller card management workloads. It can also simplify card search, storage, inventory, accounting and other card management processes to help branches improve management efficiency. Furthermore, it has attained the 3C compulsory certification, and has been piloted by a number of card issuing institutions.

For more information, visit goldpac.com.

IDEMIA Delivers First Smart National Identity Card in Nepal

IDEMIA has delivered the first e-ID cards in Nepal. The new e-ID cards will contribute to improving access to government services and social security benefits. The cards will be delivered to all citizens over the age of 16 in a process expected to take approximately five years.

The cards can be used as an electronic authorization for e-services, cross-border security documentation and for the delivery of health care and welfare services. The national identity card is a multi-purpose machine-readable biometric smart card. The card is laser-engraved and made of polycarbonate. The card features a chip, which contains the cardholder's photograph, fingerprint and signature.

For more information, visit IDEMIA.com.

Mastercard, Microsoft Aim to Advance Digital Identity Innovations

Mastercard and Microsoft announced a strategic collaboration to improve how people manage and use their digital identity. They aim to provide a service that would allow individuals to enter, control and share their identity data on the devices they use every day.

Access to a universally-recognized digital identity could unlock new and enhanced experiences for people as they interact

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with businesses, service providers and their community online, including:

- Improving the applicant identification process for establishing a new bank account, loan or payment service account.
- Enabling a more personalized and efficient shopping experience online and in stores, regardless of the payment type, device or service provider.
- Simplifying interactions with government agencies and services such as filing taxes, applying for passports or securing support payments.
- Streamlining and providing easier use of email, social media, movie/music streaming services and rideshare platforms.

This digital identity initiative could also help solve common challenges associated with identity inclusion, identity verification and fraud prevention. The initiative will serve as the foundation for new Mastercard services powered by Microsoft Azure and will be built in collaboration with leaders in the banking, mobile network operator and government communities. Additional details on these efforts will be shared in the coming months.

For more information, visit mastercard.com.

Matica Contributes to Panel of Card Issuance Strategies

In collaboration with Banking Frontiers, **Matica** contributed to a recent study about the growth of card business and the use of card issuance in India. Since December 2016, for example, India has increased the number of credit card holders to about 7.2 million and 80 million for debit card users. It's one of few countries that continues to see a relatively low usage of financial cards but it has the opportunity to expand new business that can enhance the customer experience. As card business increases in India, banks can gain a better understanding about the spending patterns of customers and refine their customer service so it becomes more efficient.

For more information, visit maticatech.com.

SPS Introduces Anti-Skimming Function

Smart Packaging Solutions has introduced Press & Pay, a patented, original and validated solution for financial institutions willing to reassure their hesitant customers when switching to contactless and dual-interface cards.

Press & Pay ensures the contactless card's communication is only activated when the card is touched by the user's finger on a given target, and not while it is stored in a wallet or in pants pockets. The system is triggered by touch and does not include biometrics.

For more information, visit smart-packaging-solutions.com.

TSYS on Canadians' Lingering Love for Credit Cards

TSYS has tracked Canadian consumers for five years and found they continue to embrace credit as their preferred means of payment.

The 2018 Canadian Consumer Payment Study asked more than 1,000 adults over the age of 18 about their use of credit cards, their enthusiasm about rewards points and programs and how they feel about new technologies and payment methodologies, such as person-to-person (P2P) transactions. Overall, payment cards were top of mind and top of wallet with the exceptions of coffee shops (where cash was the favorite) and payments sent to individuals.

Furthermore, 90 percent of respondents, TSYS found, selected rewards as a feature that causes them to use one credit card over another—no matter the age group, with redemptions for merchandise and cash back as the top-two favorites.

When it comes to security, 70 percent of those surveyed said they were "not very" or only "somewhat" concerned about the possibility of their data being stolen. TSYS suggested that this is because a majority of respondents believe the bank is responsible if their account or personal information is stolen, then used to make fraudulent purchases.

For more information, visit tsys.com.

Visa has More than 20M Contactless Cards in India

Visa announced that it has issued more than 20 million contactless cards in India. Continuing its push for contactless payments in India, Visa also revealed that the acceptance infrastructure for such cards has crossed one million terminals across the country.

The Indian government's push toward digital payments was further strengthened with a directive in July 2018 to consider adding contactless capabilities, in addition to the EMV chip feature, for all cards being upgraded as part of the mandate to replace all existing magstripe cards by December 2018. The tech, though introduced to Indians in early 2015, has gained massive traction in past three years—one of the fastest adoptions in terms of new tech.

For more information, visit visa.com.

91 Percent of Retailers Aren't PCI Compliant

With retailers struggling to get compliant with the Payment Card Industry Data Security Standard (PCI DSS), qualified security assessors are going to be in more demand and can offer tokenization as one way of achieving compliance.

A new analysis by SecurityScorecard that shows the alarming rate at which retailers aren't prepared. The study found, based on an analysis of 1,444 domains from October 2017 to March 2018, that about 91 percent of retailers did not comply with the PCI DSS, which puts them at risk from a data protection point of view. The higher percentage of retailers that aren't complying with the PCI DSS is likely the result of companies' inability to keep up with the changing regulations and cybercriminals that are constantly getting more sophisticated. As a result, it provides an opportunity for qualified security assessors (QSAs) to help companies identify vulnerabilities and gaps in compliance and at the same time recommend solutions and areas that the retailers can improve.

The company TokenEx released a statement saying tokenization is a solution known for its effectiveness with scope-reducing measures, but it operates differently from traditional compliance options such as segmentation and encryption.

Retail Gift Card Spend Averages $59 More Than Face Value

First Data's 2018 Prepaid Consumer Insights Study found that the average consumer is spending $59 more than the original value of their gift card, which is $21 more than they were spending over the face value in 2017.

According to First Data, 2018 marked the fifth year in a row that consumers overspent the amount of their gift cards and the increase was particularly profound when using gift cards for fine dining, fast and casual restaurants and drug stores. Spending beyond the gift card amount is also happening at supermarkets, with consumers spending an average of 94 percent more than the original value of the card.

The survey also shows that gift cards are still the preferred gift, with receivers increasingly favoring them over physical presents, and that consumers plan to spend 55 percent of their annual gifting budget on gift cards.

Wirecard Offers Digital Global Loyalty Solution

Wirecard's new digital platform facilitates loyalty programs throughout different countries and across currencies. Merchants' customers use their smartphones to redeem digital points, cards or vouchers across the globe, regardless of where they were originally issued or where the customer lives. The solution is available to companies worldwide in any industry and supports Wirecard's vision of enabling fully-digitalized, borderless payments.

The global loyalty management market is rapidly expanding. According to Orbis Research, it is expected to grow to $7.3 billion by the end of 2022. By partnering with Wirecard to launch a cross-border loyalty scheme, merchants can take advantage grow their businesses by attracting more international customers.

Nigeria Approves ECOWAS Biometric ID Card

The Nigerian government started the production and issuance of the Economic Community of West African States (ECOWAS) biometric identity cards for Nigerians in January.

The project is expected to cost about N14.7 billion and will span 10 years during which 13 million cards will be produced. The new identity card should help enhance security at all Nigerian borders, reduce the time spent at entry points and help the Interpol identify persons involved in cross-border criminal activities.

Delhi Metro Smart Cards Will Replenish Themselves

Delhi Metro Rail Corporation (DMRC) is ready to introduce new smart cards in mid-2019 that will automatically replenish themselves when a low balance is detected.

The new smart cards can be linked to a user's bank account and will automatically replenish themselves when a metro user taps it on the metro gate and the balance falls below a preset minimum value.

Currently, DMRC is trying to partner with agencies that can work as aggregators with all so that any person with an account in any bank can use the automatic replenish system.

NATO Forces Fuel Cards to Replace Fuel Coupons

The NATO Forces Fuel Coupons will officially be replaced with new NATO Forces Fuel Cards this year. The NATO Forces Fuel Cards will be more convenient for all Department of Defense/NATO personnel in Italy and add an increased level of security that will help to eliminate fraud.

Authorized personnel can sign up for the NATO Forces Fuel Card at the Army and Air Force Exchange Services in Vicenza, Del Din and Camp Darby. The card can be used at the fuel station by swiping or inserting it in the point-of-sale terminal and entering a secure PIN code.

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TAP: The New-Age Crypto Payment Card

While TAP offers a lot of convenience by offering an umbrella of services in one platform, its greatest utility is the provision of a payment system for crypto holders.

TAP's ability to facilitate real-world payments are done through an intuitive protocol. While the concept is simple, the technology providing the service is complex. TAP provides users with a wallet; whenever users want to transact their holdings, the highest bid on the largest crypto exchanges is filled to instantly access fiat for the merchant. While TAP is not the first card provider to the crypto community, it is providing the most advanced and community-centric service.

TAP will be launching with its physical cards ready-to-go to allow TAP users to transact at locations with point-of-sale systems that can support payment cards. Thus, TAP's users will be able to spend their crypto at all of the places Crypterium's users can and hundreds of thousands of other merchants support physical card payments.

TAP has partnered with the largest and most liquid crypto exchanges in the world—Binance, Kraken, BitMax and Bitfinex—to access the best possible bids in the crypto trading space at the time of a user's purchase. Thus, TAP users are assured their crypto gets sold at the best bid on the major exchanges.

Ebanx Integrates with Credit Cards in Argentina

Ebanx, a global fintech company that offers end-to-end local payment solutions from Latin America to global digital commerce merchants, recently announced an integration with local credit cards in Argentina.

Websites that sell cross-border to the country can rely on Ebanx solutions to reach all consumers who like to pay for online purchases using domestic credit cards. Besides accepting local cash payments and payments made with credit cards from international schemes in Argentina, Ebanx merchants will also be able to accept payments with credit cards from two major Argentinian local schemes—Cabal and Naranja.

Merchants that offer this option to their Argentinian consumers can see an increase in cross-border sales to the country. More than 80 percent of online consumers like to pay for their purchases using credit cards, according to the annual study conducted by the Argentinian Chamber of Electronic Commerce.

Sydney Extends Contactless Card Trial to Trains

The New South Wales government has announced the acceptance of debit and credit cards, in lieu of using an Opal card, across the Sydney trains network and on any Train Link Opal service.

Commuters can now "tap on-and-off" using their PayPass or PayWave-enabled Visa, Mastercard and American Express debit or credit cards, with the feature extended to mobile wallets on smartphones, tablets and wearable devices linked to those cards.

More than 235,000 trips have been taken in Sydney using contactless payments since the system was extended to all ferries and light rails in March 2018. Expansion to the bus network has been earmarked for mid-2019, and the minister also said transport for New South Whales is working with Eftpos to see if its technology is suitable.

Contactless Cards to Roll Out at Scale in the U.S.

In smaller markets, the shift to new payment standards is effectively mandated by common agreement between banks, with support from standard-setting bodies. The age, size and complexity of the U.S. market has been a barrier to the role out of contactless cards The U.S. industry muddled along with magnetic stripes and improvements to back-end technology.

Momentum appears to be building behind contactless in the U.S. market, however. The key catalyst has been JPMorgan Chase, which announced in November 2018 that all of its credit and debit card holders would be moved to contactless by the end of 2019. No other major bank has made a similar commitment, but Mastercard says it has agreements with its bank partners that will bring contactless cards to customers accounting for two-thirds of its total payment volumes within two years. Visa expects 100 million contactless Visa cards to be issued in the United States by the end of 2019.

An important catalyst for adoption will be rapid transit. New York's Metropolitan Transit Authority says it will start accepting contactless payments in 2019, using the same technology provider that built the system in London's Tube. Some 500 subway turnstiles and 600 buses will be upgraded in 2019.

The move comes to contactless at a crucial times for banks' card businesses. While consumer credit quality remains strong, hot competition is pressuring fee revenue and stoking a rewards war. Being first to offer a consumer contactless will confer a key advantage on issuers.

AT Kearney, a consultancy, has found that in developed markets the shift to contactless increases the number of transactions per card by 20-30 percent.

Group Says eID Cards Offer Brexit Alternative

The United Kingdom could address public concerns around immigration within existing free movement rules, according to a new report published by Global Future and backed by Lord Andrew Adonis.

The report says eID cards controlling the right to live, work, claim benefits and use public services should sit at the heart of a new system that includes a new turbo-charged Strengthening Communities Fund, new rules and tougher enforcement of labor standards and a renewed focus on integration and ensuring that newcomers speak English.

The report says eIDs in the United Kingdom would:

- Provide compulsory registration for anyone staying more than 90 days, giving government up-to-date information on who is living and working in the United Kingdom.
- Make a valid eID card a requirement to live, work and access public services and benefits and to release extra funding for public services in areas experiencing surges in migration.
- Allow proper enforcement squads to crack down on unscrupulous businesses and new protections for British workers.
- Introduce a new turbo-charged Strengthening Communities Fund underpinned with multi-billion pound investment to reflect the positive impact migrants make on the U.K. economy, as well as boost language and integration provision.

marketplace

PRINCIPAL MEMBERS

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ZHT SmartCard Co. Ltd. specializes in the research and development, production and sales of high-quality inlay (prelam) sheets with different layouts for the smartcard industry.

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Hengbao provides high-end smart products and solutions. The company's products include banking IC cards, telecommunication IC cards, mobile payment products, online payment terminals, magnetic cards, password cards, tickets, platform systems and information security services and solutions.

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RSID Solutions provides turnkey manufacturing, personalization and related ID solutions for plastic/smartcard and RFID products.

2019

March

Seamless Africa 2019
March 12-13, 2019
Cape Town, South Africa

ICMA 2019 Card Manufacturing & Personalization EXPO
March 31-April 3, 2019
Orlando, Florida

April

Seamless Middle East 2019
April 10-11, 2019
Dubai, United Arab Emirates

June

Seamless Asia 2019
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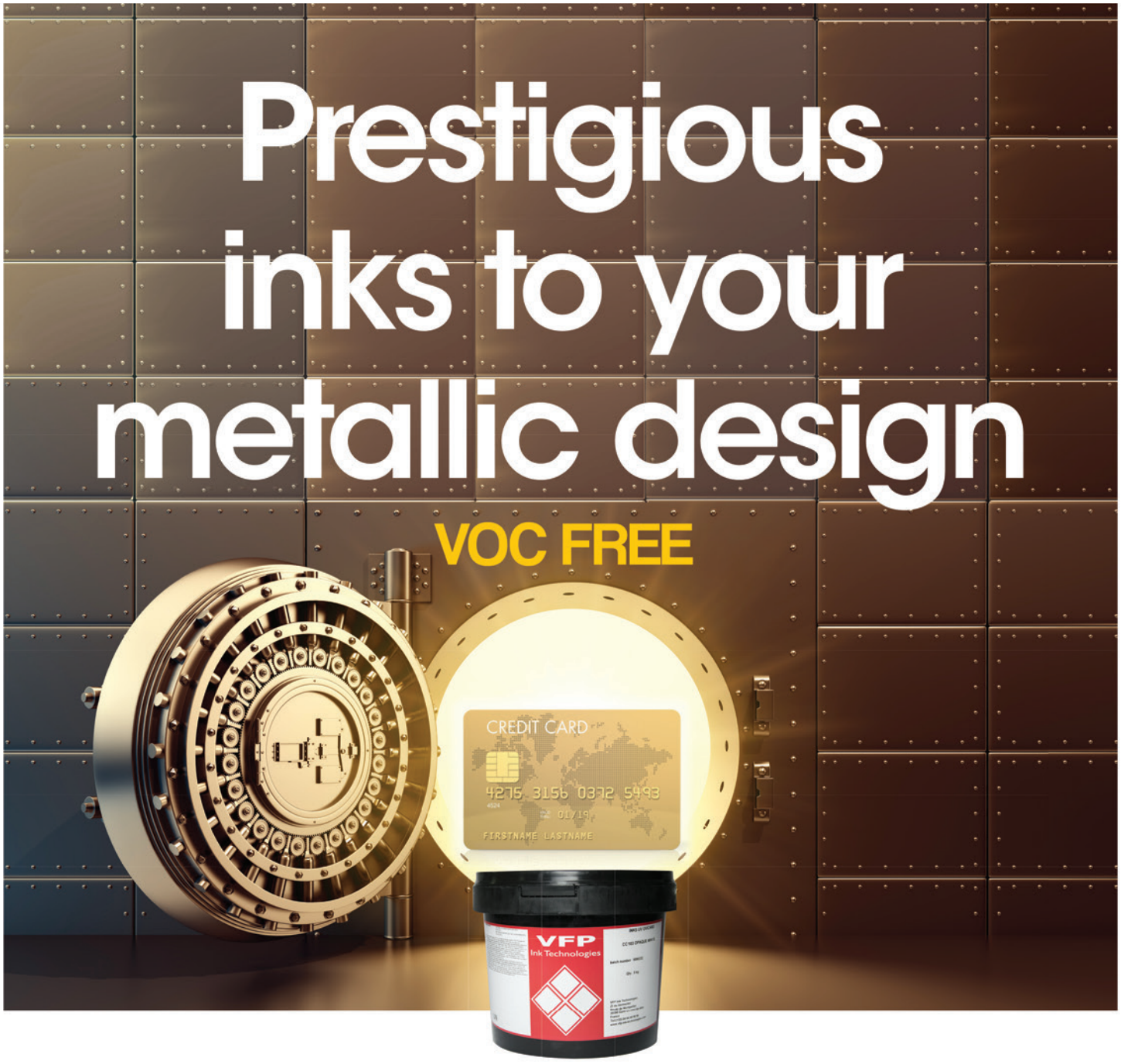

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