

SIKORAEXTRA

Your magazine for Inspection | Sorting | Analysis

Success Story Argus: Results in just one
minute

04

PURITY SCANNER ADVANCED:
Ideal solution for the XLPE market

08



Dear readers,

2024 is drawing to a close. In our last issue of the year, we are once again providing you with news from the world of quality control and process optimization in the plastics industry. Find out, for example, how the masterbatch manufacturer Argus relies on the PURITY CONCEPT V for quality control. We also report on why the system is also convincing for quality control of rPET materials across the entire process chain.

Dr. Christian Frank
CEO SIKORA AG



We also show how XLPE material can be successfully inspected and sorted using the PURITY SCANNER ADVANCED. Find out more about recent developments in our services.

We wish you a pleasant end to the year and all the best for the coming year.

Enjoy reading!

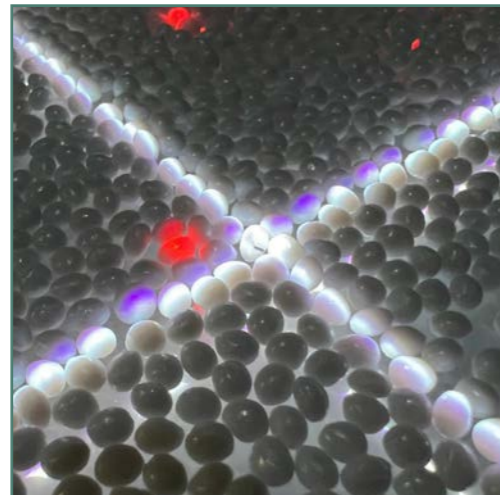
Sincerely,

Holger Lieder
Executive Board SIKORA AG

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with the PURITY CONCEPT V



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RESULTS IN JUST ONE MINUTE

Why the masterbatch manufacturer Argus relies on fast granule detection – excerpt from K-PROFI*

The time factor plays a major role in quality assurance. Recognising production errors at an early stage means having room to react in order to meet delivery deadlines. In addition, the time in which any production errors are avoided determines costs and rejects. Quality assurance is therefore a top priority at masterbatch and compound manufacturer Argus Additive Plastics GmbH. It begins with the incoming goods inspection and ends with application tests, laboratory checks and product data sheets for the customer. In Büren, quality can not only be ensured, but also proven. To this end, the granulate manufacturer recently invested in a semi-automated offline testing device that precisely analyses a random sample of around 100 g within just one minute and immediately issues a test certificate.

Around 28,000 tonnes of plastic pellets, mainly masterbatches but also compounds, leave the factory premises in Büren in the Paderborn district for customers worldwide. "We mainly supply customers in Europe, but we also have many customers in third countries who rely on our high quality," reports Verena Habig from the Sales & Marketing team at Argus. The company primarily processes polyolefins, mainly PE and PP, as well as various technical polymers and biopolymers. Whenever the plastic granules, whether masterbatch or finished compound, are



During the factory tour, Michael Luksin uses a granulate sample to show how quickly the measurement is completed with the PURITY CONCEPT V from SIKORA and what the result looks like.

intended for sensitive applications, special purity is essential. Spots, flaws, black specks or colour contamination are a no-go for light-coloured or even transparent products: if the raw materials are also used in film or filament production, flaws can cause production problems. In blown film production, for example, the smallest foreign bodies can cause the film bubble to burst, and in filament production for spunbonded nonwovens or artificial turf, they can cause the nozzles to clog and the filaments to break. "Under certain circumstances, this can lead to a production stoppage and production rejects, which every processor wants to avoid," says Michael Luksin.

Argus operates a small cast and blown film line, a nonwoven line and a small injection moulding machine in its technical centre in order to be able to test whether new recipes are suitable for the specific application when developing them. "We can test all the masterbatches and compounds we produce ourselves in the application." If the application tests are positive, the ordered quantity of granulate is produced. No product leaves the company without a test certificate. "For final acceptance, we carry out standard tests such as MFI, bulk density, density and – if possible – additive content determinations for each batch produced as part of constant production monitoring in the laboratory. We also determine specific quality parameters depending on the product," says Michael Luksin.

Regular monitoring also takes place during the processing of a production order. Granulate samples are sent to the laboratory at regular intervals, where they are first subjected to a visual inspection. For around two years now, the

semi-automatic PURITY CONCEPT V laboratory testing device from SIKORA in Bremen has supplemented the visual inspection. "The device can do everything the human eye can do, only better and more precisely," explains Felix Wendt, Area Sales Manager at SIKORA.

It is extremely easy to use: 100 g of granulate from production are placed on the sample table, the start button is pressed and off you go. The material is scanned, analysed and all impurities,

The data material can even be read in again afterwards and each analysis can be repeated as often as required. Specific sample routines can be stored in the system, which further facilitates quality assurance and ensures comparability. "For our customers, the new analysis option means a high degree of security, as we naturally only release and deliver material that passes our strict checks," reports Michael Luksin.

Felix Wendt adds an advantage of the random sample analyser: "The PURITY CONCEPT V can not only test granulates, but also flakes, films, sample test plates or test rods for impurities, which makes its use very flexible." When asked about the limits of the system, Michael Luksin replies: "Due to the measuring principle with optical cameras, defects in crystalline materials are only recognised on the surface. This limitation does not apply to transparent products." Felix Wendt adds: "Customers ask us for a near-infrared option in the system in order to recognise which foreign contamination is involved. The system does not yet cover this at present."

Michael Luksin, Argus: "We are so flexible that we can react quickly and easily if a customer requires different configuration or a different colour of masterbatch."



such as black specks, are detected. "After just one minute, we can see exactly how many defects of what sizes are present in our sample," Michael Luksin demonstrates a test run during a tour of the plant. With just one click, he then receives a test certificate with all the information about the size and number of contaminants as well as a picture gallery of all detected contaminants. "All detected contaminants are marked on the scan image and at the same time highlighted in colour on the sample carrier using a beamer," explains Felix Wendt. "Now the user can zoom in and out of the monitor image as required and click on individual contaminants. These can then be localised on the sample carrier using the crosshairs and, for example, separated with tweezers and subjected to a more detailed analysis."



Felix Wendt, SIKORA: "Our PURITY CONCEPT V can not only test granulates, but also flakes, films, sample test plates or test rods for impurities."

Verena Habig, Argus: "Every year, we produce around 28,000 tonnes of masterbatch and a smaller proportion of compounds for our customers, primarily from the EU."

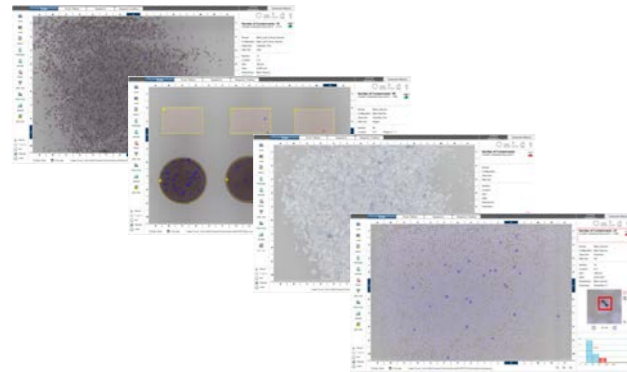


*This report is part of an article by Karin Regel, Dipl.-Ing. (FH) and editor at K-PROFI. The complete article appeared in K-PROFI International issue 3/2024, p. 12.

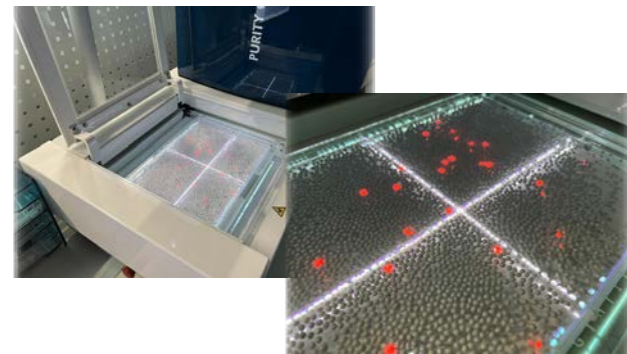
CLEVER RPET INSPECTION

SIKORA's PURITY CONCEPT V covers the entire process chain

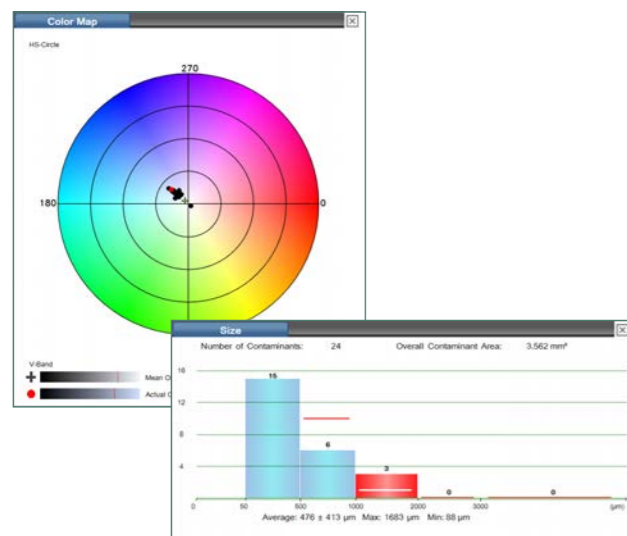
The proportion of recycled rPET material used in the production of beverage bottles is continuously increasing. More and more manufacturers are relying on a (preferably closed) bottle-to-bottle cycle. Continuous quality control during all process stages is essential to ensure that a high-quality beverage bottle that meets the strict requirements of the food industry is produced again at the end of the cycle.



SIKORA's PURITY CONCEPT V is a laboratory testing device that is perfectly suited for the analysis of rPET material across the entire process chain. Whether flakes, crystalline or amorphous pellets or test plates – the PURITY CONCEPT V reliably evaluates all rPET variants thanks to customized software algorithms.



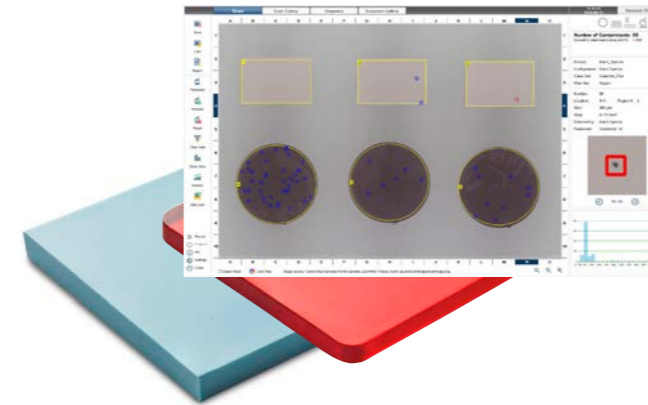
In a semi-automated analysis, the sample material is placed on a sample carrier by the operator. This is then guided into the inspection area and analyzed there by a color camera within seconds. The integrated analysis software automatically detects and evaluates contamination from a size of 50 µm. The contaminated material on the sample carrier is marked in color by a projector and also highlighted in the camera image. This makes it possible to clearly identify the contamination at any time. All existing contamination can be individually clicked on the monitor. They are then visually highlighted on the sample carrier by cross-hairs. This separation makes it easier to remove them for further examination in the laboratory.



SIKORA color map and statistics: Individual specifications for size statistics can be considered.



The results are clearly summarized in a test report. With this, the manufacturer can fulfill his obligation to provide proof to his customers and, for example, demonstrate that the material meets the quality requirements. In addition to individual series tests, batch-related series tests can also be carried out, which are incorporated into an overall evaluation. The evaluations and tests are reproducible, and a subsequent reanalysis is possible at any time.



From placing the material to receiving the final report takes less than a minute. Furthermore, test panels that are frequently used in industry do not have to be analyzed individually. An algorithm has been developed especially for this application that defines certain regions on the test carrier to be analyzed. This means that several test panels, e.g. from the same batch, can be analyzed with a single click. This simplifies recurring tasks and saves a considerable amount of time.

Interesting facts about rPET

According to the study "Arising and Recycling of PET Beverage Bottles in Germany 2021" by the Gesellschaft für Verpackungsmarktforschung (GVM), the share of rPET in the production of beverage bottles in Germany rose to 44.8%¹ in 2021. At the same time, the recycling rate of PET beverage bottles was 94.8%. Two strong figures for a sustainable recycling loop!

Many manufacturers are independently and continuously increasing the proportion of rPET in beverage bottles. For example, every 0.5 l bottle of all brands of the Coca-Cola® Group in Germany is now made from 100% recycled plastic (excluding the cap and label); world-wide, the Group has set itself the goal that by 2030 at least half of its packaging be made of recycled material.² And Erema, a plastic recycling specialist, provides manufacturers with recycling technology that can increase the proportion of rPet in new bottles to 100%³, as is the case with the mineral water bottles of the German company "Share"⁴.

¹<https://www.kunststoffe.de/a/news/einsatz-von-rpet-steigt-auf-448-prozent-3514484>
²https://www.coca-cola.com/de/de/sustainability/einweggaaq_source=1&gclid=EA1aIQobChMlu8D_g6fThwMVNJKDBx2VVQEPEAAyASAAEgIA7vD_BwE&gclid=aw.ds
³https://www.erima.com/assets/media_center/folder/vacunite_vacurema_b2b_2024_02_de.pdf S. 6-7
⁴<https://erima-group.com/flaschen-aus-100-rpet>

THE IDEAL SORTING SOLUTION FOR XLPE PELLETS

Why the PURITY SCANNER ADVANCED has established itself worldwide on the XLPE market

Since plastics are so diverse due to their properties and applications and each market has its own requirements, the sorting requirements are also very individual. The requirements in the XLPE market differ significantly from standard plastics. It is not just a matter of identifying different materials, cross-contamination or coarse impurities. Find out below what additional requirements exist.



In addition to the targeted detection and sorting out of the smallest black specks and yellowing, the seamless detection and sorting out of the smallest metal particles is also indispensable. Furthermore, it is essential that the material transport and the type of sorting itself do not introduce any additional external contamination into the material flow.

Another criterion is the space in the production environment. The material flow of XLPE runs by gravity directly from the dust removal on one floor to the sorting on the next floor. Space is limited and a cost factor here. Accordingly, the sorting of optical and metallic impurities should be carried out directly on one floor.

Furthermore, the sorting should be carried out in a way that as little as possible of the good, i.e. clean material, is sorted out. Exactly these requirements were brought to the SIKORA development team by XLPE experts from the industry more than ten years ago. Meanwhile, the fourth generation of the PURITY SCANNER ADVANCED is used by numerous customers worldwide.

Experts in the XLPE market are aware of the advantages of the PURITY SCANNER ADVANCED with regard to the precise sorting of the smallest impurities in the range of 25 µm as well as the sorting of metal particles of 50 µm in size in a single material pass. Likewise, the numerous users of the PURITY SCANNER ADVANCED know that only a material transport system with a stainless steel channel will not bring any impurities with it and that a targeted blowing out with cleaned compressed air using an intelligent approach will cause the least possible ejection of clean material.

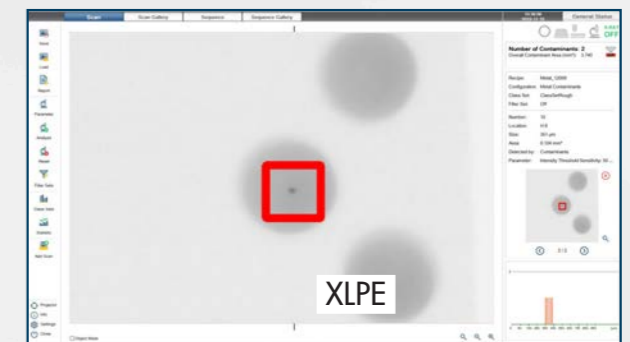
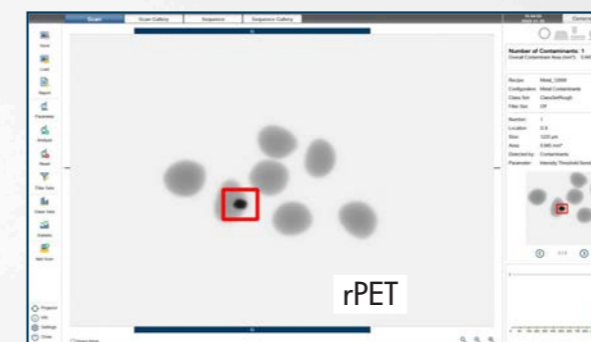
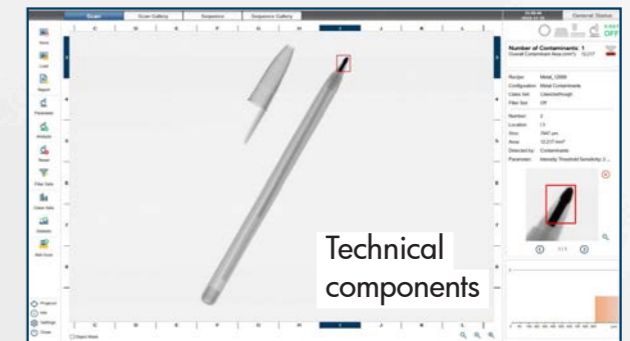
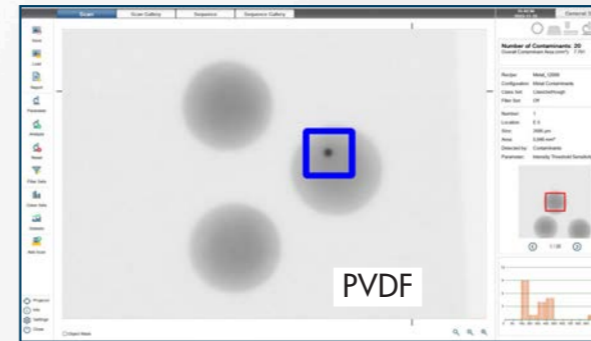
This further optimizes production processes, ensures the quality of the XLPE material and, thanks to reduced ejection, contributes to cost-efficient and sustainable production.

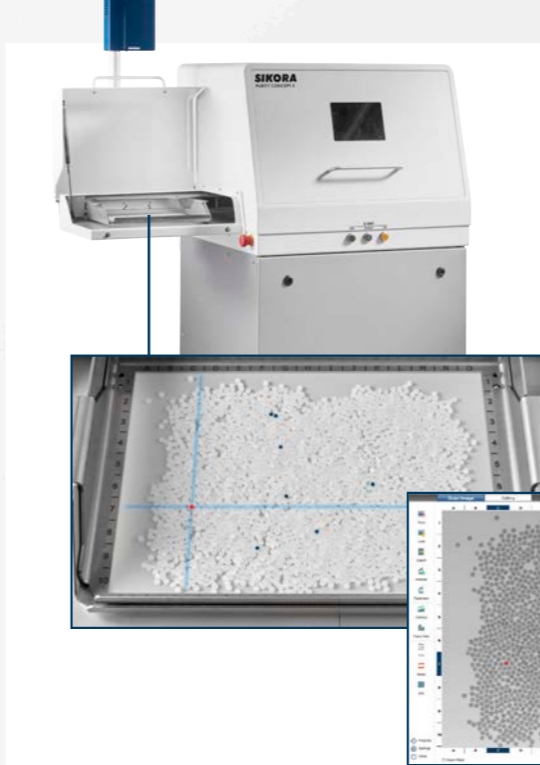


ANALYSE YOUR MATERIAL SAMPLES

With the PURITY CONCEPT X

Monitor images of different samples with detected metallic contamination:

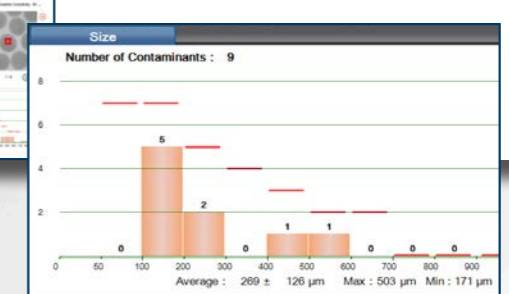




PURITY CONCEPT X

Reproducible X-ray laboratory testing

- **Quick analysis** in less than a minute – including detailed test certificate
- **Automated analysis** and easy handling due to separation function



SIKORA SERVICE: FURTHER DEVELOPMENT FOR OUR CUSTOMERS

New concepts – consistently high quality

SIKORA devices and services have always stood for quality and reliability. Increasing technical requirements and a growing global team constantly pose new challenges. In order to offer all customers the best advice, the best service and consistent quality, SIKORA is continuously developing.

In the course of a comprehensive restructuring of the SIKORA service, many of the established services have been scrutinized in recent weeks and months. The aim of this measure is to proactively respond to increasing demands and to anticipate fluctuations in the world market. Specifically, this means, among other things, further expanding supply chains in order to counteract possible bottlenecks at an early stage. Intensive knowledge transfer in the handling of SIKORA devices – both in our own worldwide service network and with our customers. Modernized workflows as well as the optimization of our offer preparation in order to shorten reaction and lead times.

Challenges and solutions in the supply chain

Natural forces, political conflicts, lack of raw materials and many other reasons influence supply chains worldwide every day. SIKORA prevents limited availability of some (spare) parts with a complex stocking and purchasing strategy. Spare and wear parts are thus quickly available for all customers.

Expansion of the worldwide service network

The strong expansion of the worldwide SIKORA service network requires an intensive exchange of knowledge. Customers can continue to rely on the excellent training of all SIKORA service engineers and their access to the broad expertise of all international colleagues. The transfer of knowledge in the daily handling of SIKORA devices in the production facilities has been modernized. Customers can look forward to a wide range of training opportunities – read more about this in the upcoming SIKORA EXTRA edition.

Outlook

Of course, all services will continue to be regularly reviewed and new areas developed. Our customers can be sure that their needs will remain our focus in the future and that they can rely on the highest quality.

RAFFLE



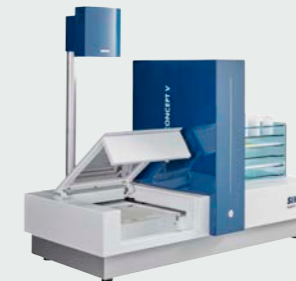
- 1 _____
- 2 _____
- 3 _____

At SIKORA's production

Match these terms and components with the corresponding SIKORA devices:

- Vibration chute
- Crosshair
- Color map
- Projector
- X-ray camera
- Clean room

- 1 _____
- 2 _____
- 3 _____



Send us your solution by January 31, 2025, to: extra@sikora.net

Win one of three daylight alarm clocks/bedside lamps with inductive charging station.



Your contact details will not be passed on to third parties. Every entry will be entered into the prize draw. Unfortunately, SIKORA employees and their relatives may not take part. Each person can only enter once. We will evaluate the first e-mail, all subsequent e-mails will be considered invalid. Legal recourse is excluded.

VIEL ERFOLG!

NEXT EVENTS



• ArabPlast | Jan 7-9 | Dubai, UAE



• Plástico Brasil | Mar 24-28 | São Paulo, Brazil



• Chinaplas | Apr 15-18 | Shenzhen, China

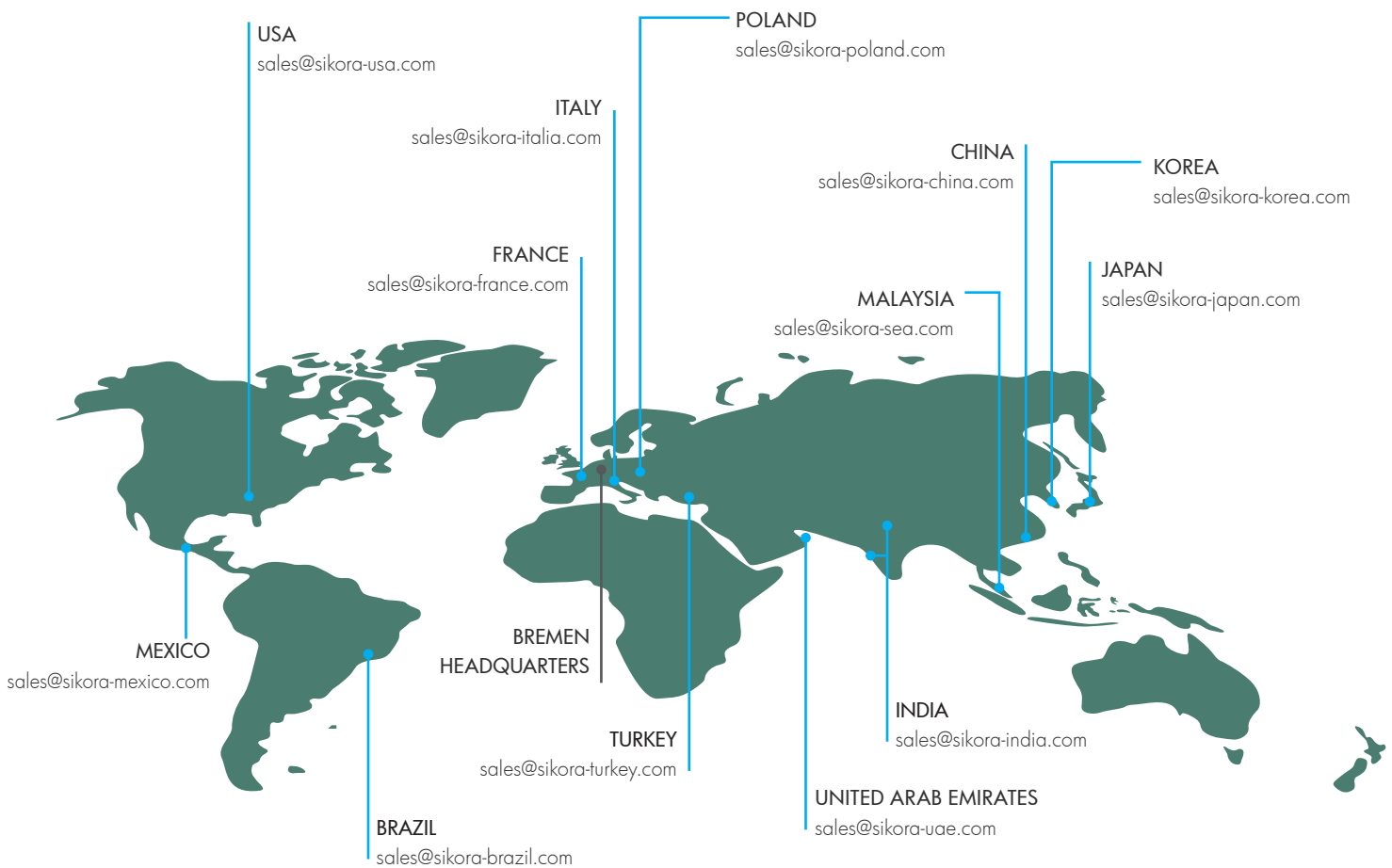
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