



SUSTAINABILITY REPORT

2023



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The year 2022 was a painful reminder our dependence on fossil fuels. The explosion in the price of energy was a shock and placed a high burden on the company's costs. But maybe it was helpful in the end. The crisis is becoming a driver for renewable energies. This applies to political action as well as to business management. The BIA Group significantly expanded its own photovoltaic capacity in 2022 and decided to expand it further for 2023. From an output of 700 kWp (end of 2021) to 3,300 kWp (end of 2023). These investments also contribute to our CO₂ balance.

At least as important has been a changing awareness within the company. Nurturing and intensifying this is the daily task of our management, especially the executive board.

The energy and sustainability team led by Claudia Becker and Johannes Knott needs the support of the entire

company in implementing ideas for energy and CO₂ savings emanating from all departments. In this respect we are on the right track.

In addition to the internal processes, we will particularly focus on the circularity of our products in the future. Our process technologists have made significant progress in this respect. BIA plated components are circular, which means that we recycle 100 % of internal scrap parts or product returns to the process at the "end of life". This is also a significant advantage over painted components. Despite sometimes difficult economic conditions, we do not see sustainability as a necessary evil, but as part of our corporate strategy and a prerequisite for future success

JÖRG PÜTTBACH

A handwritten signature in black ink, appearing to read 'J. Püttbach', written in a cursive style.

Proprietor BIA Kunststoff- und Galvanotechnik GmbH & Co. KG

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BIA 2023

IN THE MARKET FOR

27 YEARS

HEADQUARTERS IN

Solingen

5

PRODUCTION FACILITIES
WORLDWIDE

FOUR PRODUCTION AREAS

INJECTION MOULDING
ELECTROPLATING
FINAL INSPECTION
PAINTING SYSTEM

1.400

EMPLOYEES

45

NATIONS

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SUSTAINABILITY MANAGEMENT TEAM

For me, sustainability is the topic of the future because it affects everything and everyone,” explains Johannes Knott, BIA project engineer for process and energy management. Together with Claudia Becker, he forms the sustainability team at BIA. Both are intensively involved in the analysis and further optimization of all processes in the group of companies.

“We all have to think about the impact our actions have on the environment,” emphasizes BIA environmental coordinator Becker. As a mother, protecting ecosystems, especially for future generations, is a particular concern of hers. The two agree that the global economy must become more sustainable through green projects and process optimisation. All companies must make their contribution to this.

The **focus** is on the entire BIA Group.

The energy team provides the departments with intensive support on the topic of energy saving. This support means that ideas can be put into practice quickly, even with high demands on production. “Our goal is to significantly reduce energy consumption and thus CO₂ emissions at every location,” emphasizes Johannes Knott. The detailed information gained from examining all areas and processes leads to new ideas for increasing efficiency.



Benchmarking among the BIA Group locations makes it possible to discuss numerous approaches and rapidly implement the most beneficial ones. Best practice!

What stimulates the sustainability team is that the work is never finished, even though many projects have already been implemented. “The technologies are constantly evolving, so there are always new opportunities to become even more efficient,” explains Knott.

It is clear to both of them that they have to take their colleagues in the departments with them and provide support. This is because the topic is central for BIA and must be supported by everyone in the organisation. Sustainability is taken seriously at BIA! Everyone should participate on the path to climate neutrality and low resource consumption.

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SUSTAINABILITY IN THE BIA GROUP

The BIA Group is committed to sustainability at all locations.

Johannes Knott coordinates energy management between the individual locations. There are now regular group meetings on the topic of energy

BIA Slovakia

The close cooperation between Solingen and Nitra is paying off. Similarly to Solingen, the focus here is currently on optimizing electroplating. The focus is clearly on the main energy consumers, because this is where the greatest potential lies. The power generation of the BIA Group's largest photovoltaic system with 4,000 modules and 1,680 kWp will set new standards.



BIA Mexico

The photovoltaic system at BIA Mexico has been running since May 2023. With a capacity of 500 kWp, it will produce electricity relatively consistently all year round due to the geographical location in San Luis Potosí. The team in Mexico will be working on energy management for the future. The team on site is currently starting to calculate the CO₂ footprint.

BIA China

The first impulses on the subject of energy consumption have been given in China. To enable detailed analysis, electroplating benchmarking and monitoring as well as the list of main energy consumers were presented. BIA Wuxi will also become part of the BIA energy control loop.

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Impressions from within the BIA Group: What does sustainability mean?

”

We want to use renewable, reliable and environmentally friendly energy. This is an important step towards combating climate change and ensuring a more sustainable energy supply. I am pleased to be able to work on this project.

Adrian Nógely, BIA Slovakia



”

I am proud to be working on the photovoltaic project in Mexico and am pleased that BIA is making a contribution to climate protection. This has also changed my way of thinking and I am trying to minimize my ecological footprint with various measures.

Arian Perez, BIA Mexico



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Reducing emissions and costs through optimized processes is an important topic for WBIA. We are intensively involved in projects to save and generate energy.

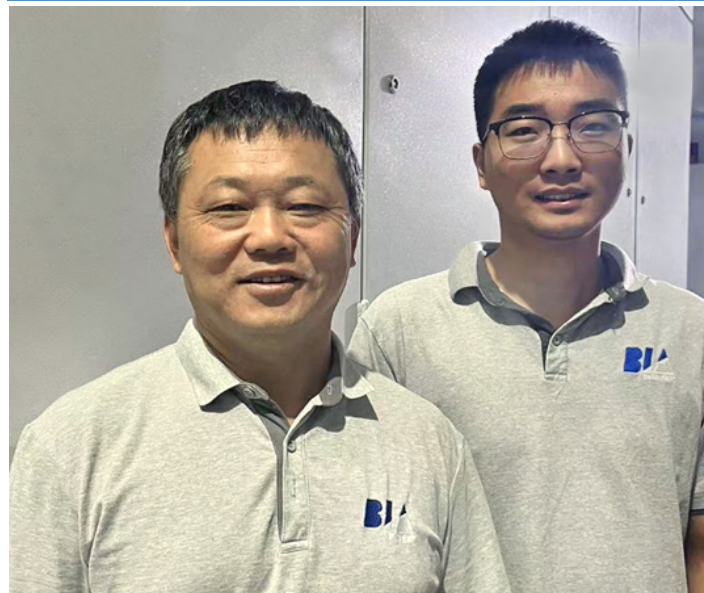
Wu Ren, BIA China



”

The goal of a sustainable and green future has long been anchored in our minds. That's why we as a team energetically examine all processes and seek to improve them, all the way to climate-neutral production.

Marc Piepenbrink, BIA Solingen



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Sustainability Strategy of the Trade Association

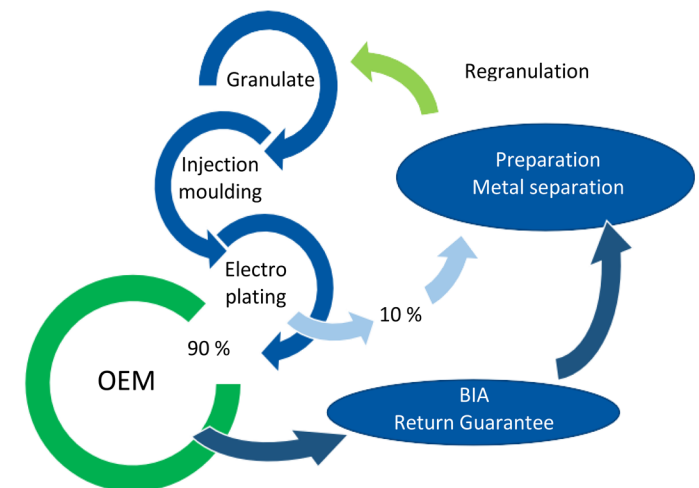
The topic of sustainability was also established as one of the central strategic goals in the Plating on Plastics Trade Association (FGK).

The member companies underscore their aspiration to proactively seek sustainable solutions for the current and future challenges of the industry. The FGK has defined three focal points for this.

1. With regard to REACH conformity and the substitution of chromium trioxide, the members undertake to create all the necessary conditions for complete conversion to trivalent chromium plating by 2025. This should be completed in cooperation with the customer by 2028 at the latest. The FGK has set a timeframe of 2022 to 2031 for the substitution of chromium (VI) in the pretreatment.

The time lag compared to chrome plating results from the active development of alternative processes for the conditioning of plastics, which has not yet been completed. However, positive developments in this area give reason to expect that individual companies, including BIA, will be able to implement completely chromium-free pretreatment within a much earlier timeframe.

2. Another pillar of the FGK sustainability strategy is the circular economy. The optimization and further development of all internal material cycles as well as the realisation of a total recycling of plated components are the focus of the member companies.



Due to the technical feasibility of separating all recyclable materials used in the manufacture of chrome-plated plastic components, these can be almost completely separated in the recycling process and then used to manufacture new products and surface finishes of similar value. As early as 2023, the FGK members guarantee that all components will be taken back completely after the product life cycle and that they will be fed into the recycling process.

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Sustainability Strategy of the Trade Association

3.

The third sustainability goal of the FGK and its members is climate neutrality. By 2030, all affiliated companies want to produce climate-neutrally according to Scope 1 and Scope 2.

BIA has already committed to this by 2025. In addition, an industry-specific database on the CO₂ footprints of purchased products will be created so that product-

Scope 1

Direct emissions from oil, gas und petroleum

Scope 2

Indirect emissions from energy generation

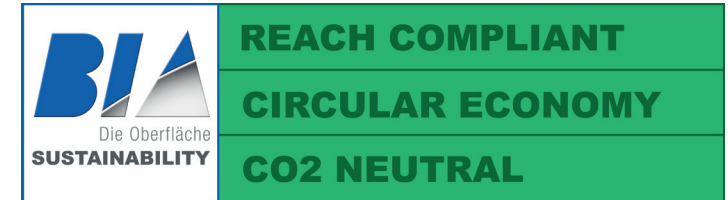
Scope 3

Indirect emissions in the supply chain

related CO₂ balances can also be provided from 2023 (Scope 3)

With its sustainability strategy, the FGK is sending out a clear message:

[Plated plastic parts are sustainable!](#)



In this light, the association can confidently counter the narrative of numerous manufacturers of alternative coating methods and surface finishes that these are superior to chrome in terms of sustainability.

On the contrary, the establishment of the sustainability goals shows that chrome-plated surface finishes will continue to have a firm place in countless everyday areas of application in the future

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Climate neutrality by 2025: projects and progress

Climate neutrality by 2025, based on Scope 1 and 2 - this is the goal that the company has set itself as part of the BIA climate and sustainability strategy.



In the future, BIA products will be labelled with a Product Carbon Footprint (PCF). Particular attention is being paid to reducing or compensating for fossil fuels and electricity. Sustainability management

is also increasingly taking Scope 3 emissions into account and examining emissions from supply chains.

All areas of the company have been and continue to be considered and the energy team advises and motivates

Scope 1

Direct emissions from oil, gas und petroleum

Scope 2

Indirect emissions from energy generation

Scope 3

Indirect emissions in the supply chain

the departments and the entire workforce to bring in new ideas and suggestions. “We are very happy about every impulse, and we have now made enormous progress, but we have to keep at it.

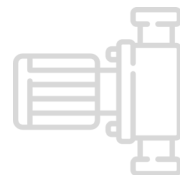
That’s why we in the energy team support those responsible in the departments at all locations where production is the focus „ emphasizes project engineer process/energy management Johannes Knott.

Projects currently being tackled, or which have recently been implemented are highlighted below as examples.

NEW COMPRESSED AIR SYSTEM

AA new compressed air system is currently being installed in Solingen. By switching from decentralized to centralized compressed air generation, some compressors can be eliminated.

By setting up a ring line with a buffer storage and intelligent control of the compressed air supply, around 100,000 kWh of electricity should be saved per year.



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PLASTIC DRYING AND DIGITIZATION

There are always innovations and new technologies that offer new savings potential. Investments in plastic drying in injection molding have reduced the types and sizes of dryers. Increasing the level of digitalization in injection molding production improves efficiency and also reduces energy consumption. These investments in injection molding should lead to a total annual saving of around 260,000 kWh.



TRANSPARENCY IN ELECTROPLATING

Electroplating is not only the heart of BIA, it is also where most of the energy is consumed. “In order to save further energy, a whole series of analyzes and measurements are currently being carried out.



We will soon know the breakdown of electricity and gas consumption in such detail that we can identify the adjustment tweaks needed for potential savings despite the complex electrochemical processes and the many interactions,” explains Johannes Knott. The aim is to use these very precise analyzes and comparisons to develop a benchmark for all BIA Group locations in order to be able to save electricity and gas everywhere.

PHOTOVOLTAICS AT BIA

BIA Solingen was a pioneer in green energy production in 2010 with the first photovoltaic system. A lot has happened since then. There are now seven systems in Solingen alone. During 2022, the BIA Group significantly expanded its own photovoltaic capacity and additional systems are currently being put into operation. In 2023, two more powerful systems were installed in Mexico and Slovakia. Whereas the BIA Group had an output of 700 kWp at the end of 2021, it will have an output of over 3,300 kWp by the end of 2023. These investments also contribute to our CO₂ balance.



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ENERGY PRODUCTION PHOTOVOLTAICS

BIA Kunststoff- und Galvanotechnik und Biacchessi, Solingen

- seven photovoltaic systems
- 1.140 kWp installed power

BIA Slovakia

- 4.044 module
- 1.637,82 kWp installed power

BIA Mexico

- 1.080 module
- 588,6 kWp installed power



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CIRCULARITY AND RECYCLING

BIA has made great strides in reducing waste. In the past five years, the total amount of waste has been reduced by around 400 t from 2,150 t to 1,750 t. Environmental coordinator Claudia Becker attributes these 20 % savings, among other things, to improvements in the internal recovery processes. At the same time, she reports that the recycling rate of the remaining waste has improved from 45 % to almost 60 %.

Circularity is very important at BIA and is at the heart of many processes

1. NICKEL
By returning the nickel rinses to the matt nickel baths, the use of nickel sulfate was reduced by 20 g/m². This also reduced the nickel monosulfide, which is recycled externally, by around 50 %.

2. PALLADIUM RECOVERY
BIA manages to recover around 90 % of the very valuable palladium. The palladium that ends up in the rinses is recovered using special resins. Within one year, around 1 kg of palladium was recovered from 325 m³ of rinsing water.

3. RECYCLATES
Compared to plastic parts with a painted surface, chrome-plated plastics have the great advantage that metal and plastic can be separated according to type. BIA has developed the necessary technology and further optimized recycling. In addition to nickel and copper, ABS plastic is now also being processed so that it can be used directly as recycle in production. The first components with a recycled content have already been successfully injection moulded. BIA is currently coordinating with customers the use of the recycle in production.

“In addition, we plan to offer our customers voluntary product take-back in order to promote the reuse of parts that have completed their first life cycle. In this way, BIA guarantees the complete circularity of components supplied in the future,” emphasizes Claudia Becker.

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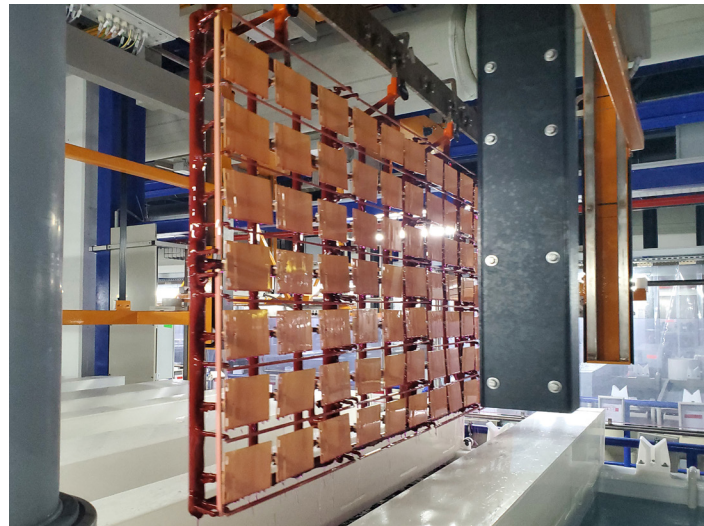
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IMPROVE PROCESSES - REDUCE POLLUTANTS

BIA continuously improves its processes by replacing toxic materials. Successful examples include the use of the ammonium-free chemical nickel bath and the methanol-free copper baths.

Major challenges arise from replacing chromium trioxide. The new BIA 2 electroplating system uses chromium-VI-free processes. Replacement with chromium-III processes is already standard for chromium plating baths, and BIA development and process technology is working intensively on changing the pre-treatment.



New processes using potassium permanganate are currently being tested. BIA received funding from the Federal Environment Ministry for the construction of

the facility for this development work. According to Marvin Wagner, a chemist from BIA Development and Process Technology, there are still a few challenges to



overcome before production use. To ensure deposit adhesion, and the processing of multi-component parts, a large number of pre-treatment steps is required leading to significantly increased complexity and additional costs in the systems and processes. According to Wagner, the first tests with the chrome-free pretreatment look promising.