



**NanoTechnology**  
for excellent  
surfaces

*NanoTechnology*  
*Made in Germany*



**Welcome**

to the heights of the  
Thuringian Forest



*We have a passion for coatings that are specially tailored to the needs of our customers. Our credo is: lasting benefits for our customers. Sustainability and ecological awareness are the cornerstones of our actions.*

**Dr. Hermann Knauer**  
Managing Director



GBneuhaus (GBn) is a leading supplier of individual coating solutions that are matched to the customers' needs. We distinguish ourselves from our competitors through continuous innovations. This brings us advantages on the market in terms of techniques and technology. We invest in the latest manufacturing facilities and a high level of automation. Our coating solutions are unique for the relevant customer application.

Since its foundation in 1991, the company has been producing at its location in Neuhaus am Rennweg, on the heights of the Thuringian Forest. Our region has been one of the most important glass regions in Europe since the 12th century. Traditionally there have been a number of companies operating in the field of glass production, glass processing and special glass applications. We see ourselves as part of this tradition and started out producing coatings for low-voltage halogen capsule bulbs and pre-cut technical glass. In the following years, our company won numerous renowned customers from the fields of automotive engineering, technical building systems and medical technology as well as the chemicals and glass processing industries.

We have developed our strength with great continuity: the combination of coating material and coating process on the basis of modern nanotechnology. This led to a specialisation in small parts in the glass and plastics sector. In the meantime, we have extended our coating abilities to other substrates such as ceramic materials or metal.

Our company is strategically aligned for growth – without losing sight of the sustainability of all processes. We take our bearings from attractive markets with a potential for the future.

GBn is a learning, knowledge-based company that develops and automates for specific projects and produces to the highest quality standards. We work in a team and share our successes with all involved. The joy of a success nurtures the motivation to “work in progressive change”.



## NanoTechnology

changes surface  
properties



*We ensure easy access to our company's competence for potential customers. We gladly welcome an early coordination with our customers in the innovation and development process so that we can help develop the best solution from the very outset.*

**Holger Wilde**

*Director of Marketing and Sales*

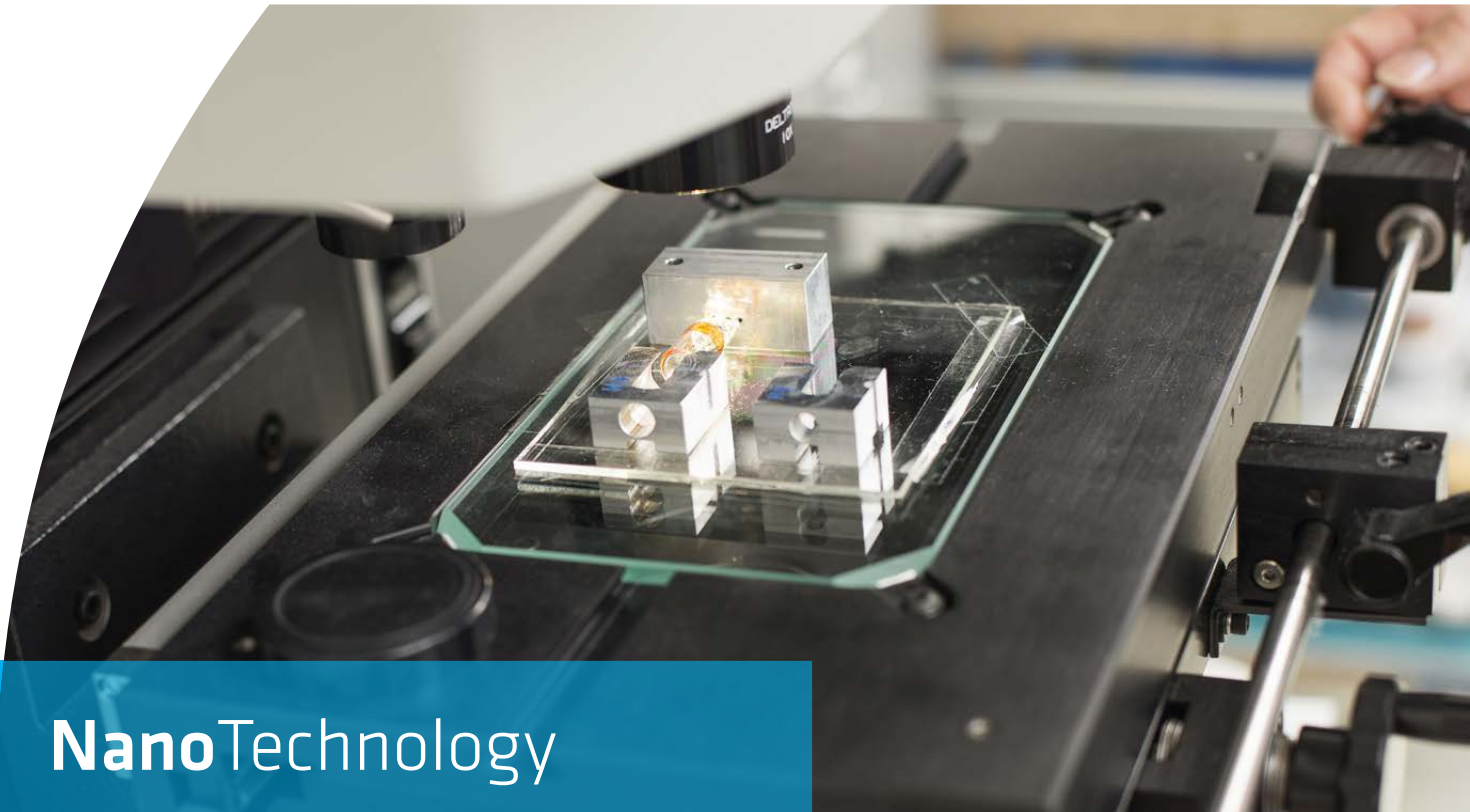


As a specialist for innovative coating solutions, our portfolio covers a wide spectrum of functional and decorative coating systems for a variety of possible applications.

These coatings allow our customers to finish their products in various ways according to their needs. Defined attributes are either created or significantly improved, whereby multiple effects can be combined in one single coating system.

The innovative solutions from GBneuhaus GmbH thus enable a significant improvement of defined criteria such as colour luminosity, colouring, scratch resistance, electrical conductivity, UV-resistance, IR-reflection, temperature stability or water-repellent, hydrophobic characteristics (non-stick effect – “easy to clean”).





# NanoTechnology

for constant  
improvements



*GBn is a learning, knowledge-based company that develops for specific projects. We use our own laboratory for this, but also work on new technologies with partners in scientific clusters. Our cutting edge R&D know-how guarantees the decisive advantage for our customers.*

**Dr. Markus an der Heiden**  
*Director of Research and Development*



## UV-block

Harmful UV-radiation can have a negative effect on both the substrate and its light-sensitive ingredients and lead to permanent damage. Plastic surfaces, for example, can be affected by UV light to such an extent that they consequently corrode and the pharmaceuticals or active agents contained therein are also affected.

UV barrier layers guarantee effective protection against UV light. This is achieved by reducing the UV transmission to a minimum through a reflective or absorbent layer in the UV-range.

- » effective protection against UV radiation
- » shielding of components and protection of light-sensitive contents
- » protection against plastic corrosion (porosity and brittleness)

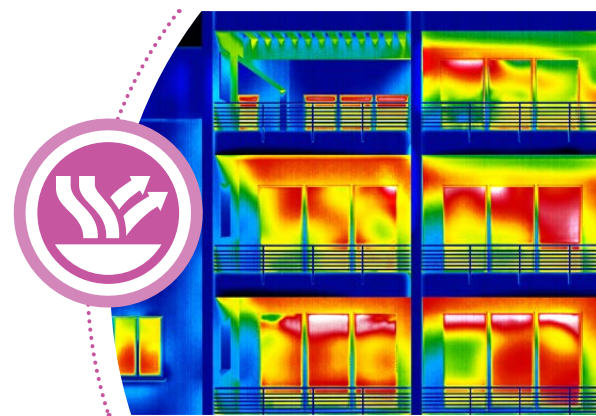


## Infrared reflex

The emission of infrared light, which is invisible to the human eye, from a warm body is called thermal radiation. The thermal radiation that is emitted transports energy so that the radiating body constantly loses heat, which has to be replenished to maintain its temperature. This heat loss consequently leads to rising energy costs.

A reflective layer in the infrared range greatly reduces the infrared transmission. The coating thus protects infrared-sensitive substrates and reflects the thermal radiation back into the body, therefore significantly improving the energy efficiency.

- » thermal protection
- » improvement of energy efficiency
- » infrared transmission greatly reduced





## Hydrophilic

Water droplets and water vapour condensation on smooth surfaces can lead to optical interference and impede the transparency or reflection. Evaporation causes annoying spotting that may also affect the optics and can entail increased cleaning work.

Our clear, transparent hydrophilic functional layer achieves an improved wetting behaviour of the surface so that fine precipitating water droplets spread to form a cohesive thin film. This creates an anti-fog effect and prevents optical interference. The thin film of water also facilitates evaporation and makes for a cooling effect (greater energy-saving potential).

- » improved transparency and no optical interference
- » cooling effect



## Anti-scratch

External influences and mechanical loads may have a negative effect on sensitive surfaces of substrates and destroy the surface structure. Scratches and cracks are detrimental to the aesthetics and functionality of a product and lower its value.

The anti-scratch coating counteracts these problems and produces a surface with a higher scratch-resistance than the substrate itself. The nanoparticles are bound into a network and form a permanent glass-like protective layer. This provides effective protection for plastics and soft metals.

- » lasting protection for the product's aesthetics and functionality
- » transparent protective layer increases surface hardness and greatly reduces friction



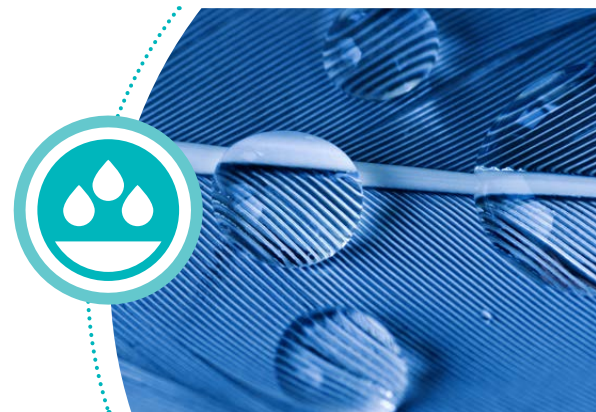


## Hydrophobic

Aggressive environmental influences and persistent dirt lead to permanent optical and functional impairments on sensitive substrates. This consequently leads to time-consuming and costly cleaning work.

Our hydrophobic coatings counteract these negative effects and create a permanent repellent and non-stick effect against aqueous and organic fluids. This makes it much harder for dirt particles to stick to the surface of the substrate. These substances are easier to wash off when the coated surface comes into contact with water. Cleaning work is reduced and surfaces are lastingly protected against aggressive environmental influences.

- » easy-to-clean effect (permanent repellent and non-stick effect)
- » anti-fingerprint for microstructured substrates
- » minimisation of costly and time-consuming cleaning work



## Anti-static

Electrostatic charges affect and complicate handling during numerous production processes. The build-up of an electric charge on non-conductive materials can lead to serious disturbances. The application of anti-static layers to reduce the surface resistance is a technological solution for a variety of special applications. Our coatings have a defined conductivity/low resistance and can be processed either transparent or coloured.

- » discharge by conductive coating
- » reduces the surface resistance of non-conductive materials
- » facilitates the handling of smaller amounts of substances
- » improves the complete emptying of containers





## Antimicrobial

The growth of bacteria and microorganisms on surfaces and their transmission to humans is a big risk in fields with special hygiene requirements. In this connection, even professional cleaning of the used materials is often not sufficient to effectively reduce the risk of infection.

Thanks to our antimicrobial solutions, surfaces are provided with a transparent, chemicals-resistant and abrasion-proof layer system with a lasting, antimicrobial effect. This permanently prevents the formation of new bacteria and stems the continued growth of existing bacteria.

- » minimisation of the infection risk and antimicrobial effect
- » prevents the formation of new and growth of existing bacteria



## Pigments

The suitable combination of colour effects and a specific colour temperature in one coating poses a particular challenge. We offer a tenable concept to satisfy high decorative and design demands.

Both individual decorative effects as well as special colour temperatures can be realised for coatings that are abrasion-proof and have a high temperature resistance. Absorption and interference layers realise almost any chromaticity coordinate.

- » brilliant colour layers / decorative effects / high-gloss colour values
- » adjustment of the colour temperature
- » abrasion-proof coatings that are resistant to high temperatures
- » almost any transmission/reflection spectrum possible





## Barrier protection

Unwanted chemical interactions take place on substrates through use or environmental influences. Substances can leach out of the substrate and jeopardise both the stability and resistance of the active agents.

The permeation of gases and liquids in or through solids can also have a significant effect on their properties. Corrosion or other effects, for example, can lead to a considerable deterioration of the aesthetics, transparency and functionality. The application of a high-density, accurate functional barrier layer can counteract these negative processes and guarantee effective protection. The blocking effect suppresses the unwanted chemical interaction, thus improving the chemical resistance. Ingredients can be stored for longer periods and an adsorption of the active agents on the surfaces of the substrate is reduced. This effectively prevents substances from penetrating the surface into and out of the substrate.



- » barrier to protect against unwanted chemical interactions
- » effective protection against the leaching of components from the substrate
- » improved chemical resistance and stability of the substrate
- » reduced adsorption of substances on the surface and longer storage periods possible
- » protection against surface clouding and loss of transparency
- » protection of components and their functionality against chemical influences
- » protection of aromas



# NanoTechnology

for different  
substrates



*We turn our customers' ideas into production practice. We hereby implement stable processes and technologies, right through to mass production, for our customers.*

**Ronny Wagner**

*Head of Technological Processes*



Our broad range of specific adapted coating solutions means that our customers can have the surfaces of the most varied materials coated in our company.

The know-how of our experienced specialists combined with a high flexibility in production means that we can support our customers during development and coat a small number of sample production parts, right through to a low-cost large-scale production run in 3D geometries.

Depending on the field of application, several products can therefore be provided with customised functional and decorative layer properties. The diversification of the process engineering and technology also allows the mass production of the coating systems with no loss of quality. Glass, plastics, metal and ceramic materials can be coated depending on the application.

Technological processes are organised in their own department in our company and are responsible for ensuring that development results and product specifications are implemented in the daily production work and that all set quality characteristics are achieved.





# NanoTechnology

Made in  
Germany



*Through the use of the latest automation technology and our own mechanical engineering workshop, we permanently improve our production processes and can therefore consistently provide our customers with cost benefits.*

**Torsten Müller Uri**  
*Director of Operations & Production*



We are constantly improving our strength: the combination of coating material and coating process. Our production ensures that customers can integrate the coated parts into their products and supply chain without any problems.

Our production lines are designed for an efficient coating of both individual samples as well as large-scale series. The automation and flexibilisation of production is an immanent part of the further development of GBn. This process is of fundamental importance for improving productivity and maintaining the high quality of the products. We avoid standstill with a continuous investment rate and aim to substantiate and expand our market leadership in this sector.

We secure our core know-how in the fields of materials and processes as well as in IT processes and plant engineering in the long term.

We involve our employees in the company's success and base their compensation, from workers in production right through to the managing director, on the achievement of our common goals.

In terms of techniques and technology, GBn has state-of-the-art production facilities with a high level of automation. It is almost impossible to obtain this technology from outside; after all, it's not a standard production process since we develop individual solutions for our customers. We plan, design and build a large share of our equipment and processes ourselves. A very sensitive field is climate control. Temperature and humidity have to be kept within very strict tolerances.

The production of the coating solutions is just as sensitive and is now carried out completely in our own plant. Thanks to our own production and the ability to adapt coating solutions, we do not depend on external suppliers. This makes adjustments at short notice and customer-based flexibility possible without excessive extra costs.

We care for not only the coating but also the development and adaptation of the layer design of new products for our customers. This means that they save considerable external costs and their development capacities are not bound outside their actual core competences.



## NanoTechnology

Our concept  
of quality



*Our quality policy is characterised by a clear and distinct customer orientation and an appreciation of their specifications paired with the self-conception of our region for innovation and tradition.*

**Mario Unger**  
Quality Manager





GBn has been certified pursuant to DIN EN ISO 9000 ff. since 1997, currently according to DIN EN ISO 9001:2008. We naturally guarantee accurate process monitoring and sustainable efficiency tests for our customers and partners.

The quality manager with his special field of responsibility reports directly to the Board. Our sensitised and specially trained technical staff perform not only visual checks but also use various specific measured values from pre-treatment, production, right through to the final inspection. Our OEM products are 100 % tested according to our customers' specifications. Customer audits are common and confirm the consistency and transparency of our processes.

Trustful purchasing relationships exist with suppliers of materials (chemicals, metals, solutions, pigments). On account of the systematic assessment and monitoring of our suppliers as well as our internal quality management system, we are able to maintain a high level of consistency for our production solutions. This is a sound basis for excellent production results.

We are well aware of our responsibility to the environment. It is our concern to encourage an in-plant environmental policy, to pursue ecological goals and to establish a corresponding environmental management system in accordance with ISO 14001. This also includes our internal energy management. Numerous resources have already been saved and the environmental impact therefore reduced, for example through heat recovery.

Since some of our customers are integrated in the supply chain of the automotive industry, we also work on the basis of ISO/TS 16949. A large share of our process organisation is aligned to this.

Our goal is to meet the requirements for certification in this field as well as in environmental management.

We use state-of-the-art measurement technology to check our products' conformance to specified quality criteria, e.g.

- » various spectrometers to measure photometric values in integrating spheres
- » measuring microscopes and profile projectors to measure geometries with an accuracy of 1/100 mm
- » reflection and transmission spectrometers in the range from 200–1100 nm
- » rheometers to measure the viscosity of coating solutions
- » tensiometers for contact angle measurements in order to assess surface tensions



## Sustainability

and responsibility  
for our region



*Our HR policy is based on an appreciative, trusting and tolerant handling of all employees. The creation of family- and age-based jobs is becoming increasingly important for us.*

**Michael Petry**  
Managing Director



## Living and working on top – a special feeling

Life on the crest of the Thuringian Slate Mountains, 835 metres above mean sea level, is special in both summer and winter. The charming landscape around the medium-sized regional centre of Neuhaus am Rennweg and Lauscha is characterised by forests and mountain pastures, though also romantic valleys that have been cut deep into the countryside by clear streams that pour from the mountain springs and form unique biotopes.

We work in an interesting and diversified business location that combines traditional and innovative companies and production methods.

Microelectronics, the glass industry, producers of chemical-pharmaceutical glassware, craftsmen's trades and service providers along with companies with tourist offers dominate the region. We feel a bond to this region and its people and see ourselves as part of it. We assume responsibility above and beyond our company and support clubs, schools, public institutions and social projects.

We always offer a wide range of apprenticeships and jobs in our company and have clear criteria for a compensation that is based on the company's success, from workers in production right through to the managing director. We think in the long term, for the sustainable further development and safeguarding of our company and its employees.



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