



POLYFLEX®
POWDER COATINGS

DISCOVER THE VARIETY
OF POWDER COATING.



KARL BUBENHOFER AG

We are proud!

Our powder coating are used on many fields and for many applications.

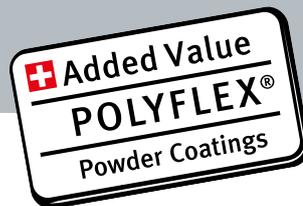
KABE powder coating is daily processed for refining, protection, as well as decorative purposes and much more. With the extensive range of powder coatings, we offer the optimal solution for every area of application.

This reference book shows the diversity of applications and possibilities.

Let yourself be inspired.



*Karl Bubenhofer AG
Roger Zeller
Marketing and sales
manager of powder coatings*



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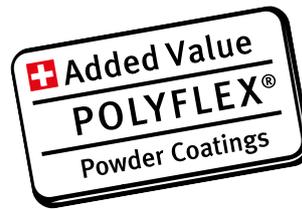
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Decades of experience

POLYFLEX® POWDER COATINGS



POLYFLEX® powder coatings - the best there is for you

Countless objects coated with our powder coatings from various application areas are proof of our skills in the powder coatings manufacture and the quality of our products. Powerful and modern systems ensure a continuous and undisturbed production process. The high delivery readiness is one of the top targets in the mission statement of KARL BUBENHOFER AG.

All new developments are checked for their suitability in our modern powder coating technical center. The tests include both the processability on the coating system and the verification of the required properties of the powder coating layer with help of a modern testing equipment. With the extensive range of powder and industrial wet coatings we offer an optimal solution for every area of application.

Innovation as a capital for the future

Determine your future with us. With our powder coating systems, we offer new perspectives for the coating of tomorrow. In our research and development laboratory, we are constantly developing powder coatings with unique properties. Many of our ground-breaking new developments were created in a close cooperation with our customers.

With the extensive range of powder and industrial wet paints, we offer the optimal solution for every area of application.



POLYFLEX® range overview

Indoor application

Functional powder coating base: Epoxid	EP-20
Functional powder coating base: Epoxid (NT)	EP-25 (NT)
Powder coating with high resistance to chemicals	PES-20
Powder paint highly resistant to chemicals (anti-graffiti)	PES-20-Power
Powder coating with improved abrasion resistance	PES-30
Powder coating with excellent all-round properties	PES-50
Ultra thin powder coating with excellent all-round properties	PES-50-UDS/DS
Powder coating with excellent all-round properties (NT)	PES-55 (NT)
Ultra thin powder coating with excellent all-round properties (NT)	PES-55-UDS/DS (NT)
Powder coating with good all-round properties (NT)	PES-75 (NT)

Exterior front

Front-polyester powder coating	 	PES-135
Front-polyester powder coating (NT)	 	PES-165 (NT)
Highly weather-resistant polyester powder coating front	 	PES-140-SD
Highly weather-resistant polyurethane powder coating front (anti-graffiti)		PUR-151
Deep matte powder coating system highly weatherproof and front quality		PAC-140-SD and PAC-135

Outdoor industry

Polyester powder coating for outgasing substrates		PES-125-GU
Industrial polyester powder coating		PES-136
Industrial polyester powder coating (NT)		PES-166 (NT)
Ultra thin layer industrial polyester powder coating (NT)		PES-166-UDS/DS (NT)
Polyurethane powder coating for outgasing substrates		PUR-125-GU
Polyurethane powder coating, optional with anti-graffiti properties		PUR-156

Degree of gloss versions

Gloss, silky-gloss, semi-gloss, matt (bluntly Matt)

Surfaces

Smooth-running, coarse structure, medium coarse structure, delicate structure

Shades

RAL, RAL-Design, NCS, MCS, Pantone, other color systems or according to your specifications

Special effects and surfaces

Hammer blow, metal effect, rustic effect, decorative effect, 3D effect, transparent, Soft Feel touch

Metallics

Pearl Metallics, Metallics, Pearl

Special versions with different technical characteristics of powder coatings

- Electrically conductive powder coatings (ESD)
- Heating value optimised powder coatings
- Antimicrobial powder coatings (STERIDURII)
- Anti-graffiti powder coatings
- Chemical resistant powder coating
- GU-versions for outgasing substrates
- Versions in ultra thin layer, thin layer, and special grinding for vertical systems
- No-slip versions for a good printability e.g. with screen printing
- Increased abrasion resistance and chemical resistance
- Many NT products (low temperature powder coatings)

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NT = low temperature powder coatings

Chemical resistant powder coating

MORE RESISTANT WITH HYBRID POWDER COATING

In the production of high-quality door fronts of kitchens, washing machines and refrigerators, a high chemical resistance to aggressive fluids is required.

Therefore to the production of his powder-coated metal kitchen, a Swiss kitchen manufacturer relies on a chemical-resistant hybrid powder coating.





The powder-coated metal kitchens of the AFP Küchen AG from Arbon are known in the Switzerland for their very long lifespan, because the door fronts of kitchen, washing machines and refrigerators withstand numerous tenant and owner change. Also a contact with a different food and drinks leaves an equipment relatively unspoiled. Apart from a persistent high degree of gloss and a perfect finish the applied powder coating convinces us with the high level of chemical resistance. "An onion juice belongs to the extremely aggressive fluids. The powder coating applied by us prevented from enduring traces or even caused damages", says the head of coating department at the AFP Küchen AG. It wasn't easy to find an ideal powder coating meeting the requirements. Various products of diverse manufacturers had to demonstrate in a standard test the chemical resistance according to DIN EN 12720. Coated samples came into a contact with a variety of liquids such as wine, ammonia water, pen inks, onion juice, olive oil, or cleaning solutions. The decision finally came in favour of powder coating POLYFLEX® PES-20 by Karl Bubenhofer AG. It has been already successfully applied as a standard powder coating by many users. The powder coating was further developed for the AFP Küchen AG in order to offer an even more stable chemical powder coating from the series product. Emil Alt, application technician at the KABE Farben: "The composition of the powder coating has been customised in accordance with the strict requirements and test specifications and finely adjusted. As the AFP applies the powder in a narrow range from 55 to 65 µm which almost corresponds to an application in the field of a thin layer, also a high covering power and an excellent adhesion had to be guaranteed in addition to the chemical resistance. The powder coating has itself both properties, the modification should not affect these qualities."

High thermal and pressure resistance

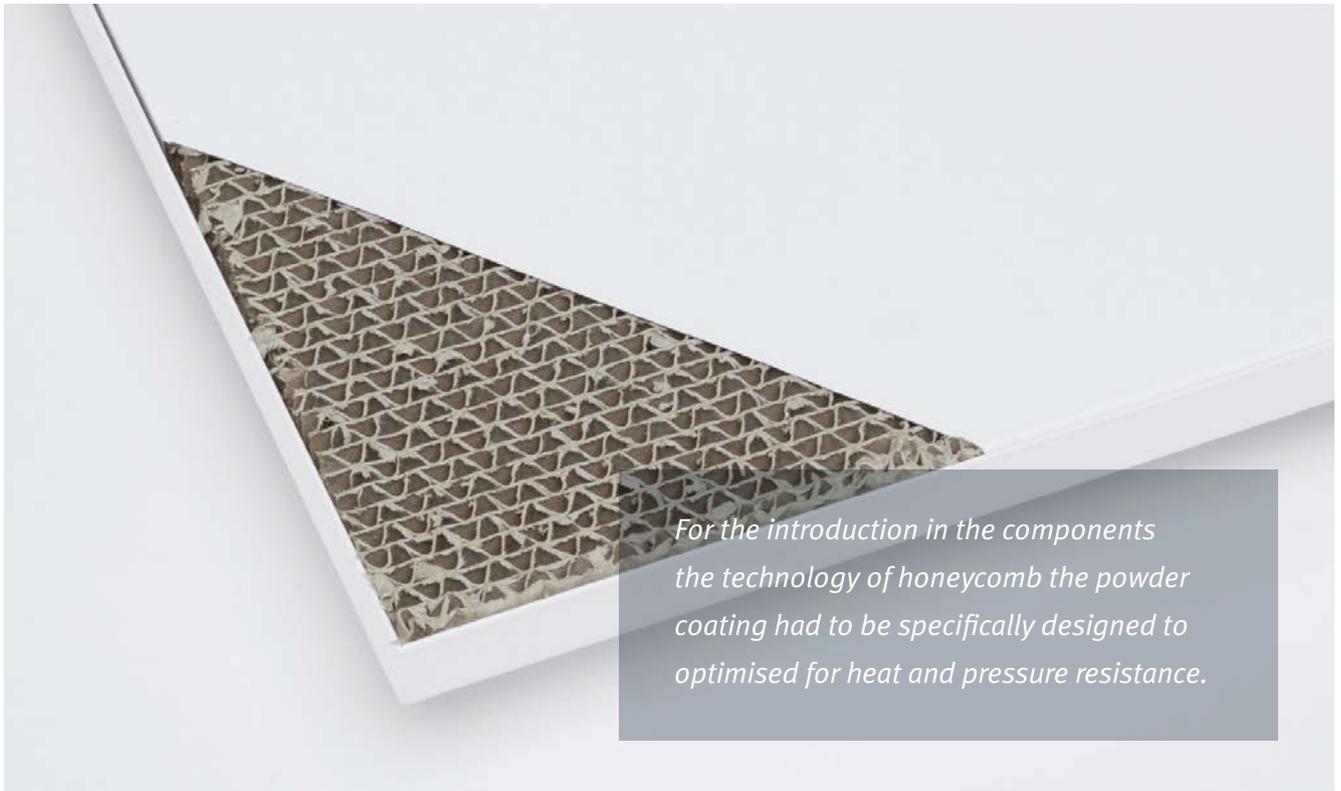
The excellent Finish is an essential feature and sells argument of the quality products by the AFP. Analogically accurate is the coating in Arbon. "Already during the application we ensure the most accurate compliance and control of all parameters. After coating, every surface is meticulously controlled, and even tiny, invisible to laics imperfection is for us an occasion for a new coat", explains a person responsible for coating.

However the combination of Finish and a chemical resistance was not the end, because in the subsequent processing the coated parts were exposed to a very high load. The coated metal parts consisting of two half shells were provided with a honeycomb structure and pressed by means of an adhesive connection at 60-70° C. Because the powder was severely burdened during a pressing process and by high temperatures, the composition of the powder had to be additionally adjusted. Then crucial was to ensure the heat and pressure resistance, as well as to prevent displaying the honeycomb structure on the paint layer.

Despite the modified powder coating composition, no other adjustments were necessary, as the head of the OT said: "We practically haven't changed any settings on the application system. Despite the special composition of the powder coating it behaves exactly the same as the standard version."

Screening for a consistent quality of the powder coating

The head of coating department reveals a small detail - the AFP Küchen AG uses during the processing an individual service from KABE Farben. In order to ensure the powder paint quality on the highest level, each batch is processed during production by



For the introduction in the components the technology of honeycomb the powder coating had to be specifically designed to optimised for heat and pressure resistance.

means of a specially developed printing technology. Therefore instead of a consistent quality, a layer thickness and high fineness is guaranteed for visually demanding parts.

This effort pays off a several times for AFP since the powder coating does not have to be screened again. This saves the purchase of special screeners on the one hand and on the other hand plenty of time. Otherwise the cost of production at AFP would be unbearable at intervals of 40 to 50 color changes per day. In favour of a high quality and reproducibility of the batches is the fact that the AFP Küchen AG introduces without hesitation and preliminary examination every carton of powder.

The AFP kitchens is very satisfied with the powder coating and the service from KABE Farben: "The powder coating impresses with its quality, a constant degree of gloss, a proper processing, a high chemical resistance and a very high stability of yellowing. Additionally, with special screening the KABE Farben offers us a reliable and lasting service."

The product of POLYFLEX® PES-20 in the design by the AFP Küchen AG is a powder coating for many different applications, the use of which pays off several times. For the further development of powder coating for an indoor use it is available in many degrees of gloss or structures as well as with an anti-graffiti properties.

Report produced on 02/2014

"The powder coating applied by us prevents arising of an enduring traces or damages."

Head of coating department
at the AFP Küchen AG



AFP KÜCHEN AG
ARBON

AFP Küchen AG stands for kitchen concepts that inspire. With the Piatti, Forster and Warendorf brands unite three brand philosophies under one roof. Where each kitchen brand stands for that certain Something in design, quality and material.



Successful transition at the bicycle manufacturer

HIGH QUALITY WITH ULTRA THIN LAYER OF POWDER COATING

Ultra thin layer-(UDS)-powder coating are used, among others, to the saving of powder coating. The benefits point out an example of a bicycle manufacturer's Derby Cycle. Since the change on UDS-powder coatings, the surface coating of bicycle frames have reached a new quality.



The bicycle manufacturer Derby Cycle could thanks to a switch on an ultra thin layer powder powder significantly reduce paint consumption in the coating process .



The Derby Cycle Holding GmbH from Cloppenburg (Germany) produces annually nearly 500'000 wheels of different type, which are sold under the brand names of Kalkhoff, Cervélo, Focus, Raleigh, Univega and Rixe. The top of the product lines are trendy, equipped with modern engine E-bikes and Pedelecs. But also competition racing bikes, mountain bikes, high-quality trekking, city, off-road and children's bikes are for everyday and travel to find cycle in the assortment of Derby.

Each bike reflects the individuality of the owner, and so it is logical that at Derby cycle there are over 80 standard colors in a program, which can be equipped with over 1000 patterns and embroidery orders. "Our offer is customised to the needs of customers. That is why the production must be organised flexibly", says Arne Sudhoff, communication manager at Derby Cycle.

The surface technology represents a key component of this flexible production. The bicycle frame are primed with powder coating, the coloring is carried out with water-based paints, and after an application of the decors, as well as the stickers, a protective layer is finished with acrylic powder coating. The results are extremely durable surfaces with a trendy design. "This work flow and application of coating is unique in the industry" said Heiner Memering, head of surface technology at Derby Cycle.

Successful test runs with UDS- powder coating

The step to the priming with powder coating was a milestone in the industry, this was commonly with a liquid paint. The powder coating foundation was executed until 2007 with a standard powder coating. Due to the high layer thickness, major repairs were required. "The current generations of the bicycle are technically advanced products, where various components must be carefully selected and matched. The result is that more and more demands are placed on the tolerances and a passing accuracy", so Memering. In order to

meet the tolerance specifications, all threads of the bicycle frame had to be filled with caps. A costly, time consuming and costly process.

At this time, the new generation of ultra thin powder coating was presented the Karl Bubenhofer AG. Herbert Lohmann, area sales manager of KABE Pulverlack Deutschland GmbH, offered Derby Cycle to check the new powder coating. "This took already persuasive efforts. Since Derby Cycle had made pioneered work with the bicycle frame powder coating priming. And UDS-powder coatings haven't been used to date on such products yet", says Lohmann.

Shortly afterwards different color shades were hand-held with devices tested, checked for compatibility with the topcoats and subjected to the compulsory salt spray tests. To really assess the usage, Derby Cycle ordered a pilot series of powder coating and tied it up on the automation system in production. "We had to know exactly how the new powder coating will behave in reality, that is to say in the production process", explains Heiner Memering.

Powder coating savings up to 35 percent

At Derby Cycle arranged the production lots in batches of 60 to 70 orders per day. The new priming powder was used for specially selected orders, which were persecuted and meticulously logged during the whole production. A first positive result came from an unexpected place - from the Department of construction. It has been found there, that assembling the components suddenly very quickly went out of hand and no adjustments were necessary. Thus, the first evidence was provided that it is possible to get a grip with the new UDS powder coating on the fit problems.

Further tests revealed equally positive results on the course and in the consumption. "My coaters wondered, that powder



coating supplies just doesn't want to end. The settings were continually shut down and the thickness from 30 to 40 µm reduced. A the bottom line we saved around 35% of powder coating", reported Heiner Memering .

The advantages in the application are in the significant reduction of consumption. At the same time also work effort was massively reduced, because less cover materials are necessary. Also the coating time is shortened, there is no formation of the bead, it is consumed less compressed air, and the hanger must not unzip despite so often are. Logos, labels and quality marks are clearly visible, and the amount of waste powder has decreased.

Rapid changeover

The was cycle on the new UDS powder Derby quickly. "I can rely on a great, highly qualified team, that has always eyes open during the coating process", says Heiner Memering, and adds: "My stuff is proud of the high quality products from our company and they work actively to maintain this standard and to improve. This includes the continuous monitoring of the coating process."

Can the result of Derby Cycle also be transmitted on other users? Herbert Lohmann is convinced: "I hear the argument that the parts were too complicated to insert the UDS powder frequently. Derby Cycle shows that UDS is the right solution, because includes bicycle frame with the most complex parts that go through the coating pro-



cess. The very good penetration capability on bottom bracket, seat tube and handlebar head, excellent opacity and the reduced faradaysche effect are the proof that UDS powder coating complies with all requirements."

Arne Sudhoff draws a positive conclusion from the perspective of Derby Cycle: "With the brands of Kalkhoff E-bikes and Raleigh we offer a viable and suitable E-mobility system for everyday use already in times of climate change and the trend towards sustainability." Under this aspect, the use of the UDS powder paint for the base coat is an essential building block for an energy-saving and resource-saving production process. Because it is more sustainable and resource-efficient to produce 30 to 40 percent less powder coating, transport, spray, paint, and dispose. *Report produced on 03/2013*

DERBY CYCLE HOLDING GMBH
CLOPPENBURG

The Derby Cycle GmbH measured by total sales, is the largest bicycle producer in Germany. With the brand Focus, Cervélo, Kalkhoff, Raleigh, Univega and Rixe, Derby Cycle is one of the leading manufacturers in Europe. This includes E-bikes and Pedelecs, in case of which the Derby Cycle is the market and innovation leader in Germany. But also competition racing bikes, mountain bikes, high-quality trekking, city, off-road and children's bikes for everyday use and travel are to find in the assortment of the Derby Cycle.

Images: www.kalkhoff-bikes.com



Less germs and bacteria

POWDER COATED SURFACES SHOULD PREVENT INFECTIONS

With a germicidal powder coating layer, you can reduce the number of germs and bacteria on metal furniture or doorknobs. In doctor's offices or hospitals, the antimicrobial powder coating layer should help to reduce the number of infections.

Each year approximately 700'000 people get infected in Germany through germs and bacteria in hospitals. The main carrier and trigger of the infections are secretions from mouth and nasal mucosa. An introduced germ and bacteria are a major hazard for patients with a decreased immune system. This group gets infected during a stay in hospital or a doctor visit easily and often with serious consequences. The company G. Heinemann Medizintechnik GmbH from Kaltenkirchen (Schleswig-Holstein) offers a solution to reduce this risk. The company manufactures treatment units for the NNE-(neck-nose-ears) area treatment and relies on a special type of surface treatment. "We cover all of our units by default with an antimicrobial powder coating. In addition to the long-lasting protection against corrosion, this type of surface treatment prevents persistent germ formation", says Jakob Hoffmann, product and marketing manager at Heinemann Medizintechnik GmbH.

The special powder coating layer acts preventively and kills germs 24 hours per day, where, a normal disinfection loses already their effect after four to five hours. The new powder coating layer offers to the patient a sustainable protection against infections.

Since 2011 the Heinemann has successfully focused on a medical technology on the antimicrobial powder called POLYFLEX® PES-STERIDUR II at Karl Bubenhofer AG. "The powder coating is successfully used in different applications like door handles, window handles, monitors in the operating room, metal ceiling, ventilation systems and HNO- furniture", so Herbert Lohmann, area sales manager of KABE Pulverlack Deutschland GmbH.

At the beginning these powder coatings had silver nanoparticles, the effectiveness of which but deteriorated after a relatively short time. Metal ionic compounds are used today, proven antimicrobial acting over a very long time. "The germ-killing effect works so long in principle as long the powder coating on the workpiece is liable", so Herbert Lohmann.

The application of powder coating by means of electrostatic guns. During the stoving process, the coating combines permanently with an underground. "In comparison to liquid painted workpieces powder coated parts are much less sensitive to hits and scratches. The powder coating is also long term colourfast and is easy to clean with many antiseptics", says Lohmann. Also no inactivation of the active substance takes place despite daily cleaning.

"In addition to the hygienic benefits the use of anti-microbial powder coating is also an important marketing tool. There are the so-called unique features of great importance especially for some international markets. For this reason detailed specifications for colors are already listed in the specifications", explains Jakob Hoffmann. The hygienic benefits prevail, due to the increased controls in the ENT practices from the Health Department in Germany.

The ENT units are coated with fine structured powder coatings. This slightly rough surface raised questions at the beginning of the users, because basically, a smooth lacquer is considered to be more cleaning-friendly than a structured coating. Herbert Lohmann can however allay these concerns: "The structure formation of the powder coat-



"In addition to the hygienic benefits the use of anti-microbial powder coating is also an important marketing tool."

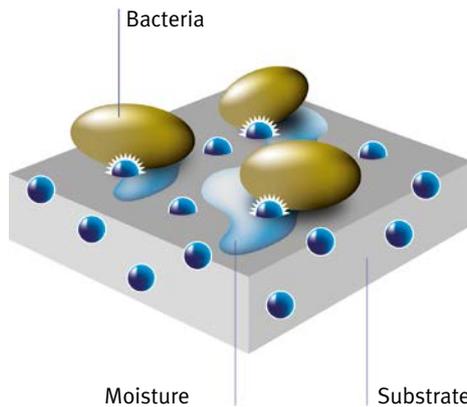
Jakob Hoffmann, product and marketing manager at Heinemann Medizintechnik

ing is reached with Teflon, the surface, in comparison to an object covered with smooth paint, can be much easier to clean." One can imagine to clean it like in a Teflon pan.

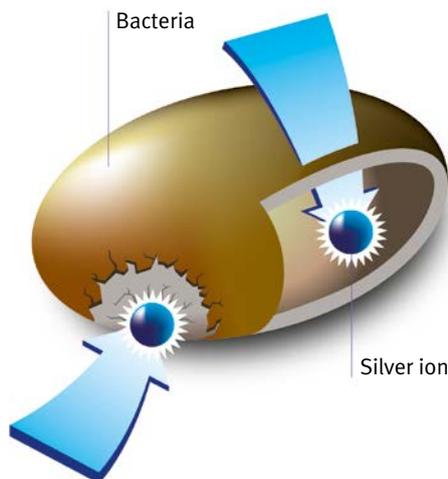
Does a coating with an antimicrobial powder coating requires a special technology or special method? Börger company, that performs as a certified powder coating company commissioned by Heinemann, the coatings of furniture parts, denies it. The parts are normally integrated in the working process of powder coating. First a primer is applied and then the layer of fine structure powder coating. This

guarantees the fulfilment of high demands on the appearance and quality of furniture by Heinemann.

Heinemann offers his ENT treatment units in various colour combinations. Highlight in a colour scheme is a special model "Modula Europe Harlequin", which components are designed in various colours. Jakob Hoffmann: "This beautiful piece was donated to the UKE children's clinic in Hamburg. The variety of colours will hopefully take the fear some children and make a visit at the doctors more pleasant for small patients." Report created 06/2013



Silver takes on moisture to dust mites and inactivates it.



So fights silver bacteria:

1. Destabilised cell membrane
2. Blocked breathing
3. Food intake prevented
4. Impossible cell division

Antimicrobial powder coatings

The applicable electrostatic powder coating is characterized by a broad spectrum of activity against bacteria. It inhibits the development of the germ, and ensures a high level of hygiene. At the same time it reduces the spread of bacterial-related odors. In a field experiment in the University Clinic Marburg a 46% higher germ killing has been stated, compared to the current wipe disinfection.

The active ingredient is a FDA compliant for all types of polymers in contact with food, including manufacturing equipment,

packaging materials, transport, and storage systems. It meets also the requirements of the EU-regulation no. 10/2011 relating to plastic materials and articles, designed for the food industry.

The powder-coated surfaces have a long-lasting protection. The anti-microbial powder is available as epoxy / polyester powder coating and polyester quality suitable for all common metallic surfaces in all shades and custom-oriented variants.

G. HEINEMANN MEDIZINTECHNIK GMBH
KALTENKIRCHEN

G. Heinemann Medizintechnik has been for years a leading provider for an ENT medical technology. The company sees itself not only as a producer of ENT treatment unit, but also as an expert consultants and sales partner of a practice planning up to the complete equipment in clinic and practice.



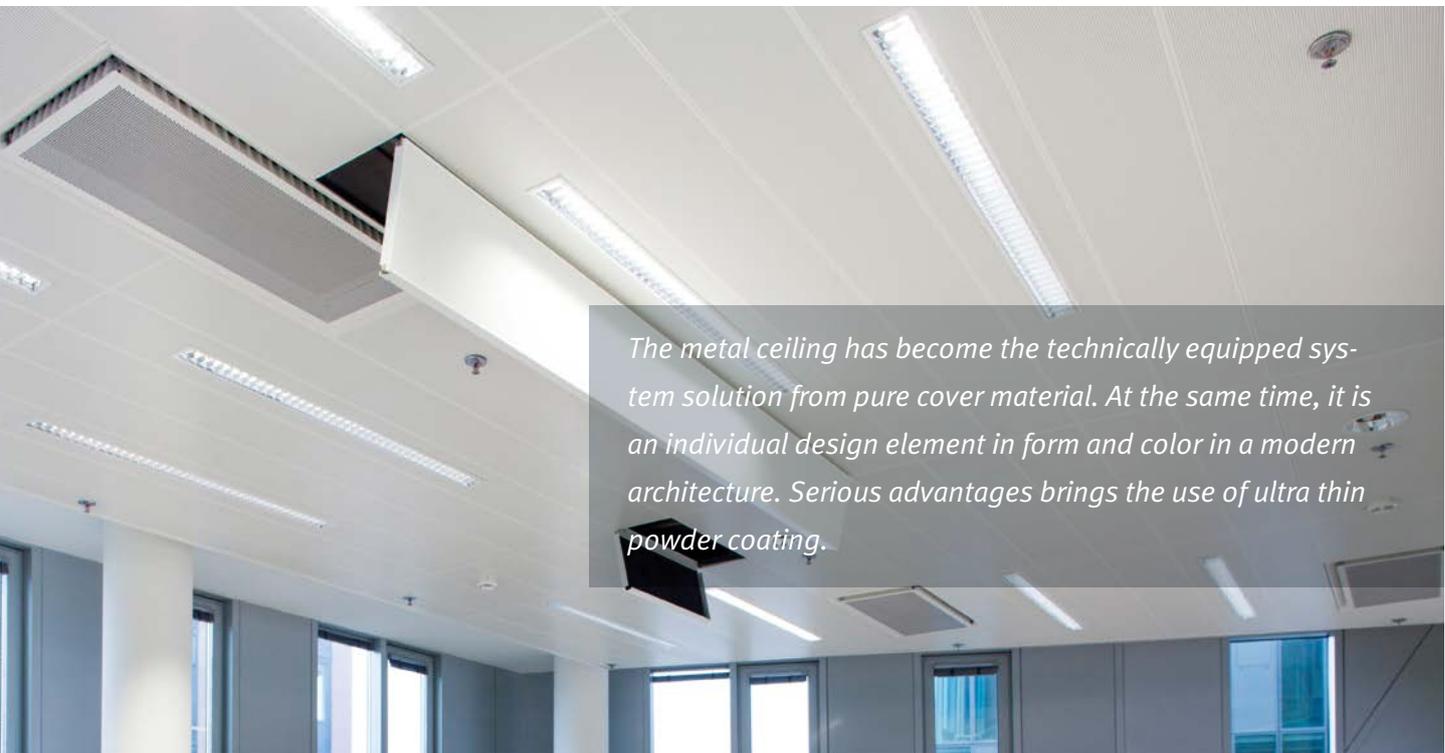
Material savings and quality improvement

THIS POWDER COATING IS USED FOR THE CEILINGS

M.C.I. Metaldecken GmbH from Austrian Neutal produces high quality multi function metal ceilings that are installed primarily in the German-speaking region and in the Benelux. "We don't produce standard ceilings, we leave it to the mass producers. Our system solutions are designed, manufactured and equipped completely with the required technology specifically for customers. Thanks to our involvement in the B + M Industries Gruppe we offer tested complete systems for the drywall only company", explains Hans Werner Wild, Operations Manager of M.C.I Neutal.

The experts at M.C.I. participate in the early stages of a planning of new constructions or construction modifications and together with the architects develop optimal solutions. These include advanced technologies for cooling, heating and lighting. The elements are cleverly applied in a modern concrete architecture for acoustic insulation.





The metal ceiling has become the technically equipped system solution from pure cover material. At the same time, it is an individual design element in form and color in a modern architecture. Serious advantages brings the use of ultra thin powder coating.



Varied areas of use include in one project several hundreds of different formats of metal cassettes. "The architects realise their design ideas for interiors more and more with help of ceiling and wall elements. We created for example 2000 different, shiny black cassettes individually drawn and manufactured for the adventure and shopping centre „Höfe am Brühl“ in Leipzig. At the same time we integrated entire systems such as lighting, ventilation, sound, heating and cooling and security components", says Hans Werner Wild.

Optimal solution for versatility

Different shapes, punched pattern and integrated systems require an optimum and versatile powder coating. Earlier, it has been required to maintain a thickness of at least 100 to 110 µm, because otherwise, they feared that the cover will be missing. Today, the cassettes at M.C.I. are coated with 55 to 70 µm. At the corners a value 90 µm is not exceeded thanks to an ultra thin powder coating (UDS), what prevents a build-up of edges, and has a positive effect on a quality.

As powder coating supplier, KABE Farben is particularly required, says Klaus Utz, sales representative Austria: "The architects use metal ceiling panels in all imaginable shapes and color combinations. So, it may happen that a specific Green will be required in a short term. As a medium-sized company, KABE Farben can the UDS powder quickly adapt to such special requests."

One was sceptical in case of M.C.I. as it was considered for economic reasons to switch from the proven wet coating to powder coating. Especially once pretty bad experiences had been made with different manufacturers at a plant in Hungary with mixed standard powder coatings.

Ceiling panels, ventilation systems and lighting units connect to an architectural work.



Ceiling tiles are not only design elements, but contain a complex heating, cooling and lighting technology.

"When we decided in Burgenland to equip the Nautal factory with a modern powder coating plant, from the beginning we were carrying out experiments with UDS powder coatings by KABE Farben. These powder coatings were very close to the smooth wet paint surfaces. During the attempts we realised that KABE Farbe as a flexible, medium-sized company is the right partner for us", says Hans Werner Wild.

Significantly better look

M.C.I. saves with UDS powder coatings material up to 30 percent. In addition to this main effect, a new powder coating brings further advantages. Experts from the industry know that despite continuous production and coating during installation, suddenly one or more ceiling panels can have a different optical look. A color of the plate and adjacent cassettes appear not equal to the Viewer. Often, this requires exchanging those parts associated with expenses and costs.

But not the color is wrong, but the surface of the coating to the surface of the perforation (hole portion, which is deposited with dark acoustic membrane). The more fined-mesh the arrangement and the smaller the holes, the coating is more problematic. Earlier a perforation of 2.5 to 3.0 mm was a standard, M.C.I. produces nowadays diameter of 1.0 to 1.5 mm, with very high open cross-sections (proportion of hole in the surface). The powder coating builds up more and more on the edges, multiplies and shrinks the hole diameter slightly. This shift of the surface proportions of powder paint surface (white) to the perforated surface deposited with acoustic fleece causes a visual color change of the cassettes from white to grey.

UDS powder coating can here fully display the advantage of reduced thickness. An establishing edge is reduced and lower optical changes occur. UDS powder saves at M.C.I. not only a material, but also significantly improves the quality of the surface.

Another advantage of the UDS powder coating is visible in a fire protection area, which must be fulfilled by metal cassettes in the architecture. "The calculation is simple. Less powder coating means less plastic on the cassettes, which in turn reduces the risk of fire and increases fire protection. With UDS powder coating we can today meet the highest fire class A1. That would not be possible with a standard powder coating", explains Hans Werner Wild.

Increasingly more functions are integrated in cassettes such as lighting, acoustics, air-conditioning and fire protection. The ultra thin powder coating produces a much better efficiency thanks to the reduced powder coating and allows a reduced energy consumption.

The ultra thin powder coating has proved at M.C.I. as a versatile solution that saves not only powder coating, but makes the functional systems more efficient, versatile and attractive. M.C.I. is able each so individual request of architects in objects form and color to fulfil.

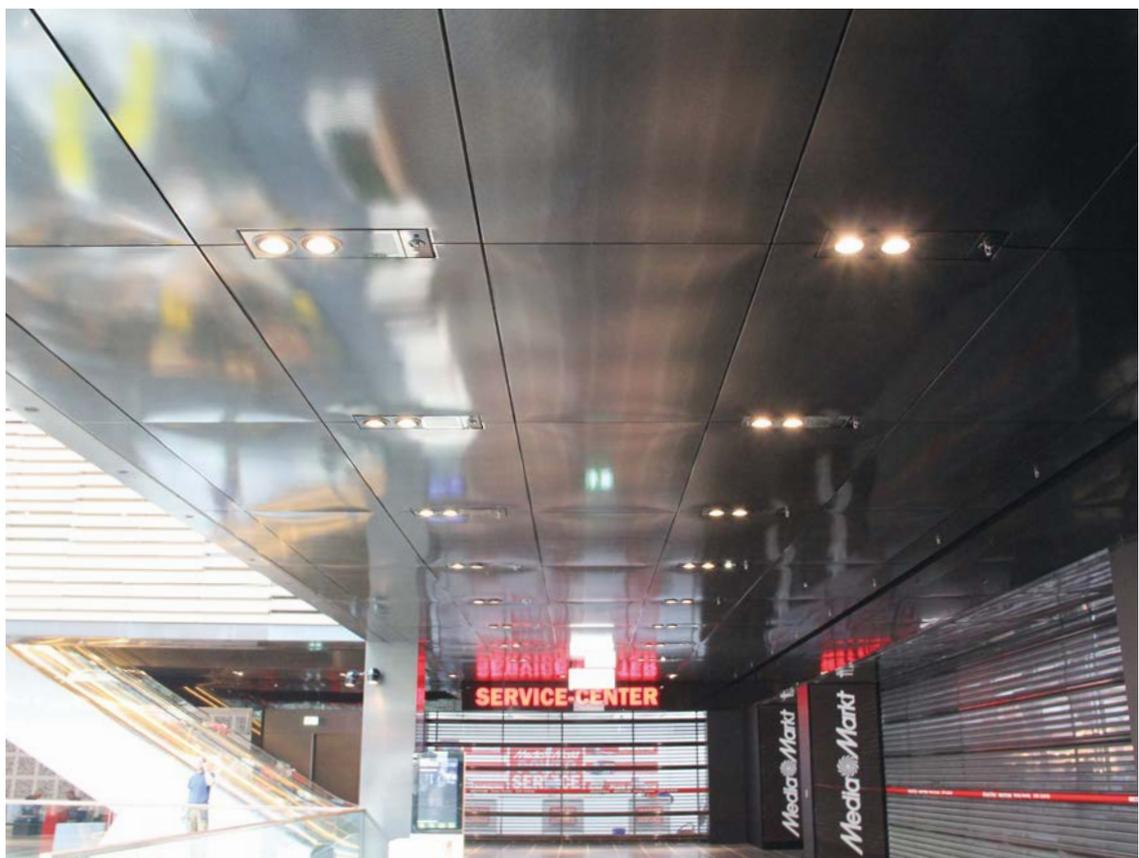
Report produced on 10/2014



Hans Werner Wild, plant manager M.C.I. Neutal (right) and Klaus Utz, KABE Farben powder coatings with a manufactured according to customer specifications and coated ceiling panel.

M.C.I. METALLDECKEN GMBH
NEUTAL

M.C.I. Metalldecken GmbH from Neutal is a 100% subsidiary of the Baustoff+Metall GmbH Vienna, a group of the family Kristinus. Baustoff+Metall Gruppe combines the power and the service thoughts of a family business evolved to the market leader in the dry construction specialist. With 86 locations in 17 countries in Europe, with the innovation-Turbo its own industry group, the B + M industries, the technically demanding products for the drywall developed and produced.



Duplex with low temperature powder coating

FASTER AND MORE ENERGY-EFFICIENT

On the site Bruchsal of trademark provider Voigt & Schweitzer, a low temperature powder coating is used on hot-dip galvanized substrates. Powder coating has therefore become more flexible and economic.

For 125 years, the Voigt & Schweitzer, is a term when it comes to hot dip galvanizing. With 2000 employees at 35 European locations, the company is a market leader in the field of corrosion protection to steel by zinc and offers individual solutions under the umbrella brand "Zinq", even for the most demanding applications.

The site Bruchsal is at the Voigt & Schweitzer group a competence center for coatings. There is a wide range of components coated with powder coating for the companies in the Group and as wage coaters for numerous customers in the area.

The main part of the diverse clientele comes from the construction industry, plant engineering and architecture. These customers demand a high quality, wide color variety and short delivery period.

Preferred partner for exceptional projects

The range of tasks to battle every day makes Voigt & Schweitzer a preferred partner for extraordinary projects . For example, when noble balconies for the wellness of the thermal baths in Erding should not only be galvanized and coated, but also transported to a customer in special pallets to the construction site. Another challenging project was the processing of components for a luxury sky garage in Singapore, where 116 carports were built on 29 floors. Each car is parked automatically so that the owners of the apartments at any time can have their luxury cars even at dizzying heights in sight.



Large and heavy galvanized parts are powder-coated at Voigt & Schweitzer in all colour variations.



Duplex against gas extraction

A main issue in the powder coating of surfaces of hot-dip galvanized steel is an outgassed surface.

A good surface coating with powder coating requires therefore a powder coating, which minimizes pores and bubbles. "We use the duplex powder coating system of Karl Bubenhofer AG for many years. No matter what color variations, this system is proven in use, because it reliably prevents the unwanted vapours", says Andreas Götz, Operations Manager of factory in Bruchsal.

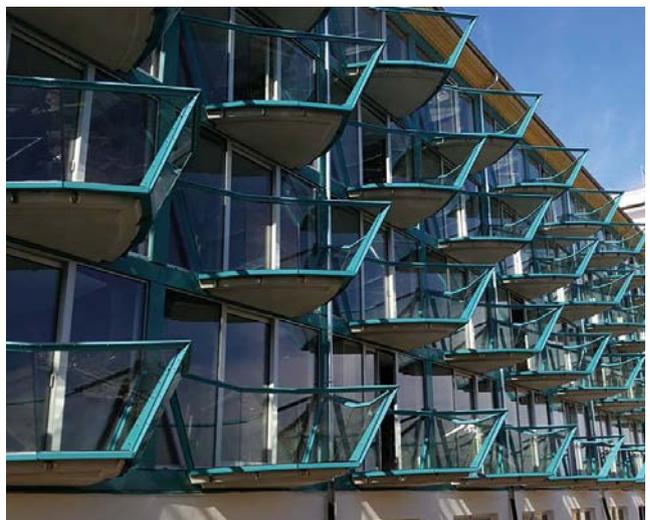
The duplex method is only a primer (KABE Farben EP-20-Korrofl-exprimer-GU) applied and captured in a second round of a coating with powder coating PES-125-GU. "The formulation of Karl Bubenhofer AG is designed so that the primer seamlessly blends with the zinc surface. The layer closes the pores of the zinc surface and prevents the effect of outgassing. The primer POLYFLEX® EP-20 has a very good flow, which compensates the rough surface of zinc, that produces a smooth surface texture of the topcoat" Marko Badi, Sales Manager, at KABE Pulverlack Deutschland explains advantages of the duplex system.

Bottle neck eliminates powder dryer

Voigt & Schweitzer in Bruchsal blast, galvanize and then coat with powder large parts up to 8 meters length, 2,5 meters height and a weight of 1200 kg. "Because the parts are very large and some have thick base plates by 40 mm, it takes up a lot of energy. This means that such components for the curing process must remain in the oven for up to 90 minutes", Götz explains one of the challenges of



One of many challenging projects at Voigt & Schweitzer: noble balconies for the wellness of thermal baths in Erding with hot-dip galvanized and powder coated elements.



the coating. This makes the oven to the bottle neck in production and hampers a continuous production process. As long as the hanging parts occupy the oven, no further orders can be handled in the coating system.

Voigt & Schweitzer searched at the KABE Farben a solution to this problem and set for some time for standard colours of powder coating of PES-125-NT-GU low temperature variation of the standard powder lacquer. The result convinced Götz in a short time: "The burn-in time of large parts has been reduced from 90 minutes to 60 minutes. The oven creates a much larger material throughput, and avoid material jams. With this time saving, we have sustainably optimized the work process, and a new, high-performance coating system can fully demonstrate its strengths. That explained to the Voigt & Schweitzer an added value in terms of efficiency, customer service and quality in the result. Based on this experience, continually more shades in NT quality are processed and efficiency of the coating is further improved.

For Voigt & Schweitzer in Bruchsal a high process and production flexibility is essential for success on the market. To help ensure this advantage, it needs partners who flexible, easily and quickly deliver products of the highest quality. "With Karl Bubenhofer AG we have a partner we can always count on and that provides us with the best combination of outgassed powder coatings in a low temperature quality for the powder coating. This brings benefits every day not only to us as a company, but also our customers", Götz is convinced.

Also Marko Badi of the K KABE Pulverlack Deutschland confirms this close relationship: "A company like Voigt & Schweitzer must comply with very short delivery times and meet whilst preserving the highest standards of quality. Since it happens, that a batch with specific color shades should be coated within two days. This requires us as powder coating suppliers. Because we are a very flexible company, we can react quickly and easily on our customers requests and deliver promptly even smaller quantities of the powder coating on time." The close partnership between the Voigt & Schweitzer and the powder coating manufacturers should guarantee best quality of hot-dip galvanized and powder coated components in the future for users in the construction industry.

Report produced on 08/2015



The low temperature powder coating is characterized by smooth design and uniform coating thickness.

VOIGT & SCHWEITZER BRUCHSAL GMBH & CO. KG
BRUCHSAL

Voigt & Schweitzer in Germany remains the only trademark supplier in the field of galvanizing and opens up new horizons for the galvanizing.

Since 2009, the Fontaine is Voigt & Schweitzer is a business unit of Fontaine Holdings NV, to hot-dip galvanizing activities in the Benelux and Eastern Europe and are bundled at 100 percent family-owned investments.



Office furniture manufacturer relies on ultra thin powder coating

REDUCED POWDER COATING CONSUMPTION, INCREASED SYSTEM PERFORMANCE

The company Bigla Swiss Emmental produces modernly and practically designed office facilities at the highest level. For quite some time, the company invested in the powder coating of ultra thin powder coating (UDS) and achieved a significant reduction in powder coating consumption and an increase in system capacity.



Excellent course, high coverage and evenly thin layer are reproducible at any time on the furniture parts.



"In addition to the functionality a look and feel are crucial for the purchase of office furniture. These are no longer just storage cabinets and desks, but the heart of an interior design", explains the head of marketing and communications at Bigla. To achieve an optimized quality through better course and lower accumulation of powder coating in the corners, Bigla introduced the UDS powder coating by KABE Farben. 25 percent more throughput should be increased in addition to the quality standards and the efficiency of the powder coating should save energy at the same time. "Green energy is a big issue at our company, which proves even our solar power plant. We are always looking for a optimization of potential, and powder coating also came to a great importance ", said the head of the coating department. The energy savings are significant with the UDS powder coating. Because the temperature of the NT powder coatings is lower about 20°C and an oven runs with the standard temperature, it increased the flow rate by 25 percent. The covering power and the course of the powder exceeded all expectations. Desired layer thickness were achieved just at the beginning. KABE Farben has employed the instrument "Covering capacity plate" colors for a test. It shows visually, in which layer of thickness range, the covering capacity is still sufficient, and it can point out where adjustments can be made immediately.

Another important criterion is the resistance and wear resistance of the UDS powder coating. The office furniture manufacturer faced the question of whether the thin layer can withstand the daily burden with folders, cassettes, or office supplies. A machine simulates the load in an office during a year with the coated parts of the equipment . The UDS powder by KABE Farben proved from the beginning the same resistance as standard powder coatings. But ultimately the most important is the powder coating saving, which is to be achieved in the usage of the UDS powder coating: "We achieve a proven savings of 45 percent", reported a visibly satisfied head of coating department. Crucial point for switch? Powder coaters often shun a switch to the UDS powder coating. Settings on systems must be adapted, and the coaters must adjust their methods to the powder coating. The fact that it worked at Bigla easily, is caused by the following factors: "Application engineers from Karl Bubenhofer AG actively supported us



during the introduction phase and accompanied our production site. That helped us in establishing the correct application settings. At the same time the coaters must be given time to gain experience with the new powder. So now we know that a cloister of the object for an optimal coating is sufficient." The coating at the office furniture manufacturer had from the very beginning a positive and professional attitude towards the new powder coating. This is also the professionals at the facility who have a great know-how in coating technology. In

order to keep it this way, industrial painters are trained on a regular basis. A key success factor in the implementation of the project was the service of Karl Bubenhofer AG. All in all achieved Bigla achieved today around 45 percent of powder coating savings and 25 percent higher throughput in reproducible quality. A complete success and a stimulus for the users and suppliers of powder, was to expand the use of UDS powder coatings. Report produced on 08/2013



"With the UDS powder coatings we reach 25 percent more performance and 45 percent powder coating saving."

Equipment and Installation Manager
at Bigla Office

BIGLA OFFICE
BIGLEN

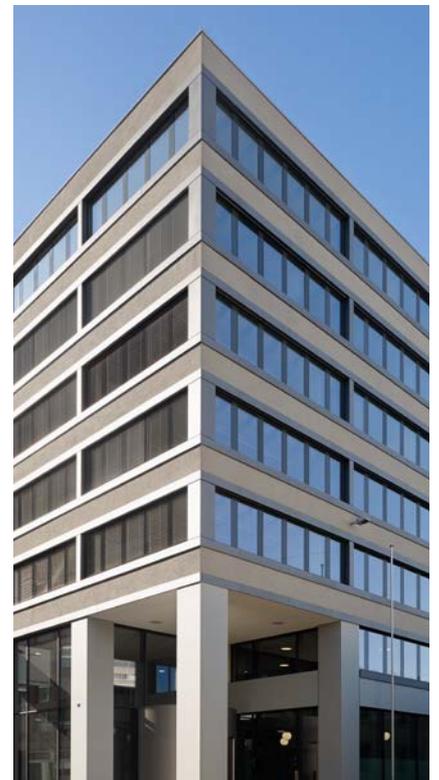
Furniture for an individual workplace, greater offices, meeting and conference rooms, cafeteria, lounge and the reception one can get from one source at Bigla Office.



New urban accents

SUPERBLOCK WINTERTHUR

Planned by the renowned Viennese architectural firm Krischanitz and the AXA life as an investment built the super block sets new urban accents on the former Sulzerareal Winterthur. Centre of the super block build a public landscaped courtyard, which is surrounded by elongated six-storey buildings. The window profiles have been coated with POLYFLEX® facade powder coatings PES-135 and the highly weather-resistant facade powder PES-140-SD by KABE coated colors.



The wheel need new colors

RONAL-RÄDER MCR (MULTI COLOR RIM)

Silver painted alloy wheels. As an exception even in black. But in color? Unimaginable! Ronal, one of the biggest bicycle factors worldwide, sees one of the biggest manufacturers of wheel things. The MCR-line is not only one, but the same multicolored. A novel powder by KABE Farben and a new processing technology make an unthinkable possible!



Thin layer plus NT technology

POWDER COATINGS AS A CRUCIAL PRODUCTION FACTORS

Sophisticated logistics systems are needed for high product availability and quick delivery. SSI Schäfer is the world market leader in this area and puts in the manufacturing process a combination of thin and low temperature powder coating, to obtain a permanently high quality of coating.



"In the field of logistics the shelves and facilities are exposed to heavy loads. SSI Schäfer, world market leader in the field of logistics systems, relies on a thin layer of low temperature powder coating.





High-bay warehouses are more in demand than ever, because warehouse space is expensive, and it can be built more or less only in the height. Customers such as Volkswagen, Porsche, BMW, Daimler, Zalando oder Amazon stands for a state of the art equipment by SSI Schäfer. The company is a prime example of a highly efficient production process. Coil from which components are made, to installation on site production - each step is closely connected with the next production step. "The plant components of hundreds orders come together only at the construction site, either in Europe, Siberia or Australia. A precise just-in-time delivery of components is essential", explains Jörg Kassel, plant manager of SSI Schäfer in Neunkirchen. To make this close integration working properly, all internal and external participants must ensure at all times the required amount of product in the same quality. So under the direction of Jörg Kassel an automatic welding machine has been developed, that automatically adds an enormous variety of carriers in highest precision and speed. This high output is continuously processed by the subsequent powder coating layers. To keep the quality of the coating and the thickness of the layer permanently at the highest level, the POLYFLEX® UDS ultra thin powder coating PES-55-NT-UDS-S of Karl Bubenhofer AG (KABE Farben) is used. This powder coating combines the advantages of ultra-thin-layer technology (UDS) and low temperature (NT).

Usage under high loads

"In the field of logistics the shelves and bodies are exposed heavy loads", explains Jörg Kassel. Therefore, for ecological reasons SSI Schäfer decided in 2000 to switch from wet to powder coating. As the native supplier led no powder in the range, Karl Bubenhofer AG as a powder coating supplier caught the wind. Shortly after the changeover, KABE Farben worked on a special finely ground powder coating for the ap-

plication with standard equipment, resulted in the ultra thin layer powder coating. As with many other new technologies, assumed a pioneering role SSI Schäfer and was one of the first users on this new powder coating. Norbert Siefke, leader for the powder coating in the FGW system at SSI Schäfer, explains the motives: "Here in he factory in Neunkirchen we annually process 120'000 tonnes of steel." The reduction of the layer thickness in the powder coating doesn't huge financial savings for these quantities. At the same time, less compressed air is required for the application, and there are just 10 to 15 kg powder coating in use in a facility with 24 guns. This reduces the powder paint loss at intervals and reduces costs.

In 2008, SSI Schäfer made spot welded folding corners to create on a product line. The pre-treatment medium remained in it and resigned when baking at 180 to 200 ° C again. It had as a result a very high reject rates and costs. The technicians at KABE Farben analyzed the problem and found the solution through a significant reduction in the oven temperatures. The problem has been eliminated with the specially designed, fast reactive NT powder coating in UDS quality. "The support on the part of KABE Farben was very good and extremely valuable. The developers put it about, to get the problem to the bottom and to find a solution with the help of the powder coating formulation", Jörg Kassel recalls. A reliable partner is crucial to ensure networked production processes for SSI Schäfer. "I can sometimes forget that we have the right powder coating in top quality in the home. And if once a powder coating is missing, KABE Farben is not afraid of colours to deliver it the next day by truck directly from the Switzerland. This is a relationship that goes far beyond a normal business relationship", so Jörg Kassel.



With ultra thin layer NT powder coating one can obtain a high covering power and smooth surfaces with 16 µm layer thickness.

UDS powder coating as a key factor of a process optimization

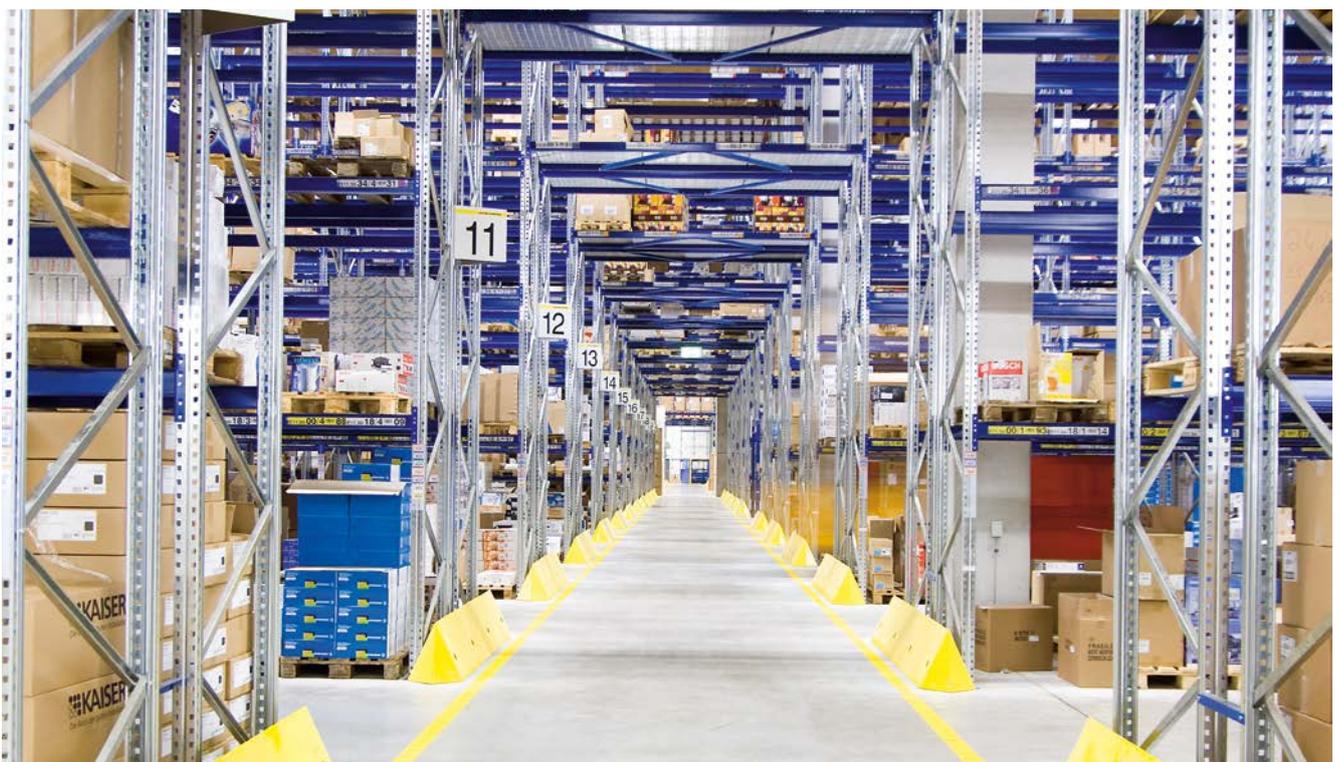
The quality of the powder paint order with a thin powder layer of is very high and must not be compared with liquid coatings. "Thanks to optimized formulations and a special production technology we can offer an ultra thin layer powder coating, depending on shade, already at 20 µm thickness shows a properly running and opaque paint film", says Marko Badi, KABE powder coating Germany Sales Manager. SSI Schäfer scored with a series of optimisation measures, including powder coating, a sustainable increase in production. Where earlier once every hour, 170 to 190 travers happened, today are processed 340 to 380 units per day. Also the use of the new powder coating contributed to this performance, which brands for ten minutes at 160°C. Jörg Kassel explains another saving effect: "Due to the reduced edge structure parts with high accuracy can be assembled much better. This has substantially reduced the preparation and postprocessing of the parts."

Stable production processes

SSI Schäfer processed the powder coating of PES-55-NT-UDS-S in more than 50 different colors. It is a thin-layer, it is baked at low temperatures and is also available with metallic paint. Such a powder

coating can be processed normally. "We were no special cleaning or adjustments are needed. During the application of ultra thin powder coating it behaves a as a conventional powder coating."

"It is important to make familiar with the circumstances and to dare to move on the thickness border" says Norbert Siefke. "The epoxy-polyester powder coating processed by us shows already 16-17 µm and good covering power. However one should approach these values by its own way. Once it's done, they remain stable over the entire production process." SSI Schäfer processed in Neunkirchen seven days a week in three shifts up to 400 tons of steel per day. They use for years UDS - and NT-powder coatings by KABE Farben on each application system, regardless of the device manufacturer, and the layer thickness can be reached at any time easily and reproducibly. Is with the ultra thin powder coatings layer it is possible to coat at least 100 percent more space with an equal amount of powder paint. The NT-powder coatings reduce also baking times, increasing the throughput. Report produced on 04/2014



FRITZ SCHÄFER GMBH
SSI SCHÄFER
NEUNKIRCHEN

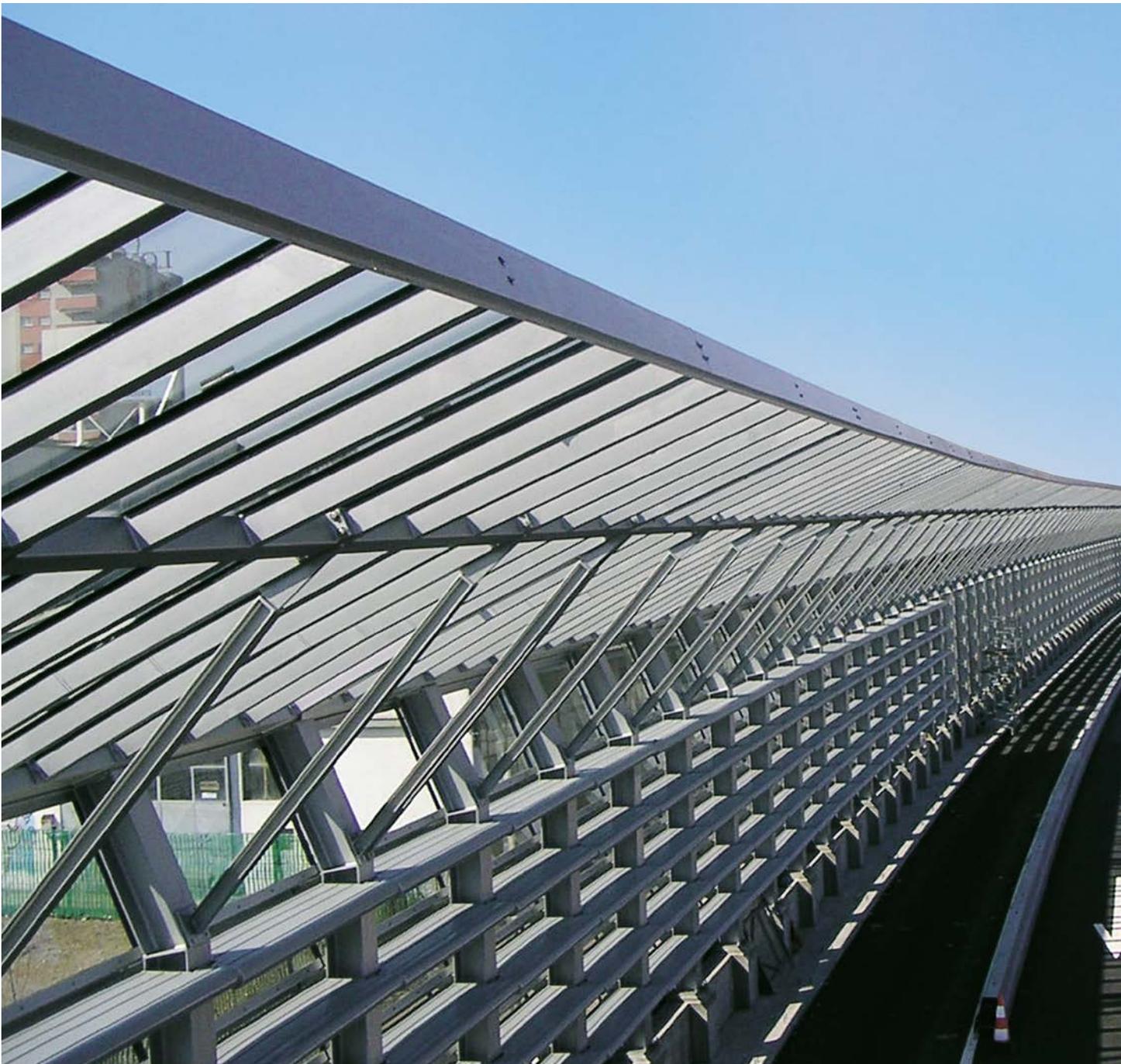
Fritz Schäfer GmbH products are everywhere in use: from industry, craft, services, municipalities, research centres and management up to an end-consumer. SSI SCHÄFER is a market-leading company in the area of planning and implementation of integrated logistics systems and a significant provider of modern concepts in waste management is integrated in the of market leader. In both areas, we stand for innovative solutions from a single source - all over the world.



Hot-dip galvanising plus powder coating primer and powder coat

ALSO HEAVY A CORROSION PROTECTION CAN BE AESTHETIC

Under a term "severe corrosion we imagine thick applied and rough surfaces - not just that which pleases an eye. Also heavy a corrosion protection can be aesthetic. This makes possible a combination of primer and powder coating, which is applied to hot-dip galvanised surfaces.





"Very few things in life are so durable as Galvaswiss." This slogan embodies the claim of the Swiss surface company, to combine aesthetics and value preservation of steel and metal objects. In four modern galvanizing and painting factories at Galvaswiss, 20 meters long and 3 meters high parts are coated with hot-dip galvanized and coated. This guarantees up to 45 years of maintenance free service life, which can be achieved only with best quality procedures. In addition to the classic hot dip galvanizing we also use the Thermoplex-2 method, explains Martin Matter head of F+E at Galvaswiss surface technology: "The Thermoplex-2 procedure a dip galvanized surface is also covered with a powder coating primer and powder coating. This combination creates a perfect corrosion protection, because from the outside no corrosive influences can interfere with the basic material. On the other hand parts are treated for Thermoplex already in the galvanizing process so it results in a less rough, galvanised surface. Together with the powder coating, this approach guarantees a smooth, aesthetically very attractive surface. We offer our clients an optimum combination of corrosion protection and aesthetics."

Outgassing resistance as a key factor

Galvaswiss prefers in Aarberg factory Thermoplex-2-coating opts for products of Karl Bubenhofer AG. Specially for an application of hot-dip galvanized surfaces the company developed a primer (POLYFLEX® EP-20 Korroexprimer) that with the powder topcoat (POLYFLEX® PES-125-GU) makes a strong and diverse combination. The powder coating process can cause vapours from the zinc surface. The reason lies in the partially porous zinc layer, in which moisture can be stored. This moisture evaporates after the coating in a curing oven in the form of vapours and creates crater or inclusions on the surface. The system of Karl Bubenhofer AG prevents this unwanted vapours. "During the development of the corrosion protection system with Korroflex-primer and powder coating POLYFLEX® PES-125-GU it was emphasised that the powder coating offers the best protection." The composition has been designed in a such way that the primer seamlessly blends with the zinc surface and it stripes. Thanks to this extreme liability, a primer closes the pores of the zinc surface and prevents the outgassing. At the same time during a development of Korroflexprimers a great value was put on a very good process. The primer leveled the rough zinc surface which suits the surface condition of the topcoat. A smooth curve is always guaranteed", explains Marco Capizzi, application engineer for the Karl Bubenhofer AG. Top priority was to achieve an optimal protection of the object but at the same time to enable a simple and economical processing of the system to the customer. The result of the entire structure convinces with an excellent weather resistance, good chemical resistance (acids/alkalis) and exquisite excess firing stability.



"The GSB certification provides users with increased process safety."

GSB certificate guarantees process security

The Swiss paint manufacturer has received the GSB certification for PES-125-GU Polyflexpulver (GSB No. 906a). "Thanks to the outgassing resistance result very smooth surfaces. GSB has granted the approval the powder coating due to the required properties, which is rare for a powder coating in terms of galvanizing. In this segment, only a limited selection of products is available to the users", says Roger Zeller, Sales and Marketing Director at Karl Bubenhofer AG. This certification helps the businesses, to fulfil the construction products regulation DIN EN 1090 coming in force on 1 July 2013. These demands a document proof of a corrosiveness category, the term of protection for every order and a complete documentation of the manufacturing process of the products. The Thermoplex-2 method is especially suitable for buildings and parts that are exposed to permanent heavy loads. These include, for example, noise barriers on highways and railway lines. Exhaust gases, rocks, deicing salt, chemical substances, but also pressure waves of passing trains or trucks use to strongly 24 hours the components on the day. "With the Thermoplex-2 method, we offer the longest protection. The system is stable against chips due to mechanical factors. In case

of paint damage the underlying zinc surface guarantees corrosion protection, and consequently the substrate steel does not rust", says Martin Matter. Thanks to the availability of the topcoat in all RAL colours including metallics, Galvaswiss meets diverse customer requirements for the colour scheme. Modern noise barriers should not only efficiently absorb a noise, but it should be invisibly integrated into the environment. Galvaswiss is convinced that only a combined layer with primer and top coat on galvanized steel coating provides a high-quality protection. "Simple coatings, so top coat on galvanizing, yield only limited corrosion protection from the point of view of the ISO 12944 standard. Especially near the ground, the surface can not resist increased moisture and increased mechanical stress. It can result in expensive claims. We avoid such cases, we consistently focus on the Thermoplex-2 process", says Matter. For years, Galvaswiss in Aarberg uses the method and is convinced by the results. The gassing stability of the primer guarantees a very high process reliability across the entire processing chain, and the overall package is characterized by high UV resistance. The latter it has been confirmed in various intensive tests. A very good course results in a smooth surface and fulfils the highest aesthetic demands. "It is this combination of a primer and topcoat is predestined for a use in the public sector, road transport and public transport. On the one hand parts are very durable, on the other hand, they need little maintenance and care. The Thermoplex-2 process with the combination of zinc and color is medium- and long-term the most economical and most sustainable solution", sums Matt up.

Report produced on 11/2013

GALVASWISS AG
AARBERG

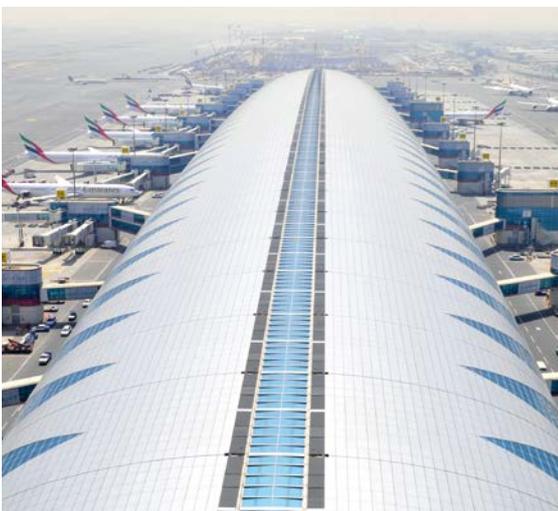
GALVASWISS is the embodiment of aesthetics and value preservation for steel and metal objects: with four modern galvanizing and painting factories, qualified and experienced personnel and innovative techniques and products, which guarantee up to 45 years of maintenance free lifetime.



A masterpiece of modern architecture

DUBAI INTERNATIONAL AIRPORT – TERMINAL 3

Exclusively used by the airline Emirates Terminal 3 offers as the first Terminal in the 21st century so many services in one like no other. High-quality metal ceiling panels of Armstrong metal ceilings AG were used at all levels, which have been coated with different powder coatings from the House Karl Bubenhofer AG. A total of 240'000 m² Swiss quality have been processed at the Dubai airport.



This economical coating system

ULTRA THIN - POWDER COATING (UDS)

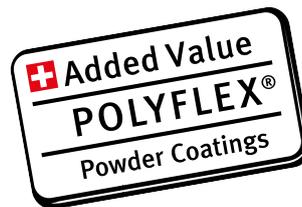
Modern ultra thin layer powder (UDS) are increasingly used in powder coating. When a manufacturer of fans (ebm-papst) allows such a powder coating a triple goal achievement. Thanks to low-temperature technology a production consumes less energy, the powder coating complies with the strict, internal environmental protection requirements, and can be used for outdoor applications.



It is very important to continue to develop and to optimize our products . Existing products are constantly optimized and new products are designed to be an innovative partner to our customers in the future.

Current topics

- ✓ Powder in powder (PIP)
- ✓ Low temperature powder coatings (NT)
- ✓ ultra thin (UDS)
- ✓ Deep mat systems (PAC)
- ✓ Resistance against chemicals and anti graffiti
(PES-20 / PUR / PES-138)
- ✓ MDF (wood coating)



KARL BUBENHOFER AG

IMPRINT

PUBLISHER

Karl Bubenhofer AG

EDITORS

Karl Bubenhofer AG
horber marketing

DESIGN

Berchtold Werbung GmbH

PRESSURE

Cavelti AG

Paper: Z-Offset FSC®

Edition: 2000 pieces

QMS: 2943/ version 01/04.2016

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