finish

INSIGHTS INTO THE WÖRWAG COMPANY

No limits

How Wörwag transcends boundaries around the world

WÖRWAG

Farbe. Beschichtung. Kompetenz.

MEXICO

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Scan the barcode to see how this issue of *finish* took shape.

Or visit: www.woerwag.com/video

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Photos by Toby Binder, Laurent Burst, Florian Imberger, and Petra Stockhausen; illustration by Bernd Schifferdecker

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EDITORIAL

¡Hola Mexico!

Dear Readers,

Wörwag has gained a foothold in Mexico. We've opened our offices there in record time, and are right in the thick of things: in San Luis Potosí, where we'll soon be part of the colorful action as well. Join us now as we form the new subsidiary—the first groundbreaking meeting with new customers, culinary adventures with fiery hot sauces, and a glimpse into the suitcases of our colleagues in International Project Management.

And speaking of color... In the future, we'll all be able to mix car paints ourselves—on a computer screen. Right now we're working together with car manufacturers so that one day customers will be able to easily select colors with a few clicks of the mouse. Simple as that may sound, that represents a lot of work, a huge pool of data, knowledge, and innovative spirit. And that is precisely what we want to promote even further at Wörwag. We are thinking not only of product improvements but also of the pioneering spirit that has carried us forward for nearly a century and that continues to unleash new potential: breaking new ground, trying things out, thinking outside the proverbial box. That is precisely what the household appliance maker V-Zug has been doing for over 100 years. One-tenth of the staff at this family-run Swiss company focuses strictly on innovations, and a constant flow of creative product ideas is the result. Have you heard of V-Zug's "Refresh-Butler"? And why do their dishwashers have a party button?

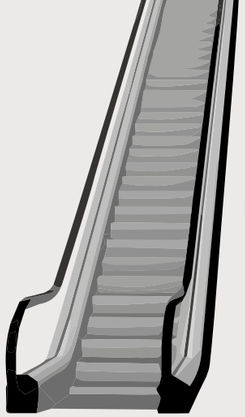
Enjoy the issue.
¡Hasta la vista!

DR. PETER MORITZ
MANAGING DIRECTOR
FOR SALES

FACTS AND FIGURES

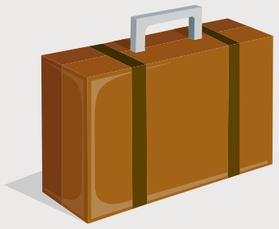
Going global

The world is growing closer together: Interesting facts about the megatrend of internationalization.



01 A STEEP CLIMB

The longest escalator in the world can be found in Hong Kong. The "central mid-levels escalator" has a length of 2,624 feet (800 meters) and ascends more than 440 feet (135 meters). A trip to the top takes 20 minutes.



02 A HIGH FLYER

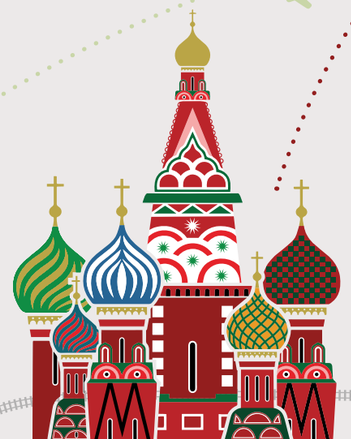
Hartsfield-Jackson Atlanta International Airport in the U.S. state of Georgia handles 104.4 million passengers and around 900,000 takeoffs and landings (2016), making it the world's largest aviation hub.

03 A POPULAR SAYING

English might be spoken in 53 countries across the world, but Chinese has the most speakers, accounting for 18 percent of the world's population.

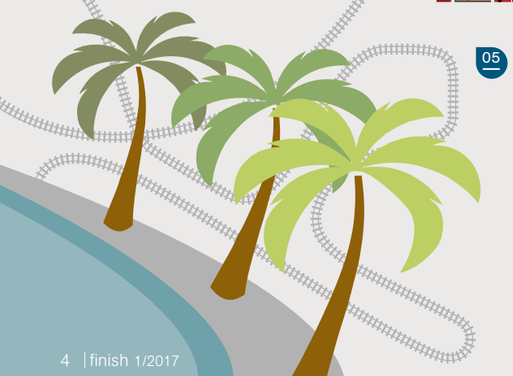
04 A VANISHING ACT

In 2015, 23.1 million items of luggage were reported missing following a flight. This is a relatively low rate given that there were 3.5 billion passengers in total—even if those affected might see things differently.



05 A DIRECT CONNECTION

The railway line connecting Moscow and Nice is more than 1,850 miles (3,000 km) long, making it the longest direct connection still operating in Europe. A trip takes around 50 hours.



06 A HOT AFFAIR

The Finns are the world's most enthusiastic coffee drinkers: per capita consumption totals 26 pounds (12 kg) per year. This figure is comparatively low in the USA (9.25 lb/4.2 kg) and Germany (14.1 lb/6.4 kg).

07 A HYGGELIG HOME

The Norwegians have reason to rejoice: according to the United Nations' World Happiness Report, Norway is home to the happiest people.

08 A POT OF GOLD

Rome's Fontana di Trevi is a major drawing card for tourists. Every day, they throw around €3,000 in the fountain—usually tossing the coins over their right shoulder. This is supposed to bring good luck.

09 A POPULAR READ

In France, there is a Victor Hugo Street in every single city. The French revere this 19th-century writer as the greatest author of them all.

10 A PRICE TO PAY

In Stuttgart, travelling one kilometer by taxi costs between €1.90 and €2.40. In comparison, passengers in Paris pay between €1.05 and €1.27, and in New York, the equivalent of €1.56.

13 A BOOMING BUSINESS

In 2015, companies in Germany spent €50.9 billion on business trips.

12 A CRITICAL CURVE

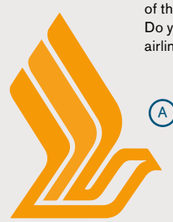
Windows in airplanes are usually round or oval in shape. Square windows led to crashes in the 1960s when planes first started flying higher. The reason: the pressure on the corners of the windows became so great that it made hairline cracks form, causing the window to shatter with time.

11 A TASTY BEVERAGE

Why do so many airplane passengers drink tomato juice? Because your sense of taste runs amok in the air! The low air pressure at cruising altitude reduces the oxygen partial pressure in the lungs. This, in turn, reduces activity by the taste buds. The taste of salt, for example, becomes 20 to 30 percent less apparent. This makes tomato juice a treat in an airplane, while most people shun it when on the ground.

14 AN EASY GAME

There are more than 700 airlines worldwide. We're looking for five of them in our logo quiz. Do you recognize which airline they represent?



A: Singapore Airlines (Singapore)
B: Hawaiian Airlines (USA)
C: Cathay Dragon (China)
D: Delta Air Lines (USA)
E: Vietnam Airlines (Vietnam)

Sources: **01** www.travelontoast.de; **02** www. de.wikipedia.org; **03** www.laenderdaten.info; **04** www.spiegel.de; **05** *The Travel Book*, 2011; **06** www.kaffee4life.de; **07** *World Happiness Report 2017*; **08** *The Travel Book*, 2011

Sources: **09** *The Travel Book*, 2011; **10** www.taxi-rechner.de; **11** *SWISS magazine, 2016;* **12** *The Travel Book*, 2016; **13** www.statista.de; **14** www.webdesignerdepot.com

MEXICO

Site in sight

Pioneers need to have a sense of adventure. And be fearless. Like the team that is breaking new ground in Mexico for Wörwag. One of its members is Project Manager Giuseppe Polito. His first trip to San Luis Potosí was a successful tour of discovery.

By Michael Thiem; photos by Toby Binder

New site: Project Manager Giuseppe Polito is in charge of setting up Wörwag's Mexican subsidiary in San Luis Potosí.

Flexibility: Mobile devices enable work to be done in many places, such as Café Pacific in the heart of San Luis Potosí.

Tour of discovery: there's a lot to explore in San Luis Potosí's lively city center, including its cathedral.

Mexico is colorful, lively, and fiery. So is its cuisine. Giuseppe Polito pauses for a moment. His thirst for adventure comes to a halt when his mouth is on fire. The El Pozole restaurant in San Luis Potosí serves not only the stew of that name, but also *antojitos*, or spicy snacks. Polito, a 37-year-old Italian with Sicilian roots, has come to Mexico for Wörwag to help set up a subsidiary in the country. He dips a taco into one of the four mole sauces. *Empieza la aventura*. And his adventure starts off on a fiery note. The dips, which consist of green jalapeños, ancho chilies, and a small, round, very old type of chili pepper called a chiltepin, are extremely hot. Nearly everything else is too. Even in the smallest doses. "Delicious, absolutely delicious, but make sure you don't dip too deeply," says Polito, who is about to gather many more new impressions over the next few days. He and Wörwag are entering new territory in Mexico. Its restaurants are not the only places with things you simply have to try.

Wörwag is founding a subsidiary in Mexico. The first office is opening in record time.

For his main dish, Polito selects enchiladas in a tamarind sauce that is almost sweet and not terribly hot. That minimizes risk. Rob Duncan, Wörwag's Commercial Manager North America, and Nahum García (28), Wörwag's Technical Customer Service Manager and first Mexican employee, are also at the table. García grins broadly as he sinks his taco deep into the mole. The three colleagues only met in person a few hours ago at the hotel. Before that they had communicated by e-mail, phone, and Skype. Networking is crucial when it comes to major international projects. Polito arrived in San Luis Potosí the previous evening after travelling more than 26 hours from Stuttgart via Paris and Mexico City. He, Duncan, and García are doing pioneer work here—with customers, with service providers, and with the launch of the subsidiary itself.

Still more outpost than control center

The first milestone in this project was to open a new office. It is located in a multi-story building on the extensive grounds of Integra Industrial Park near Eje (axis) 110, about 6 miles (10 km) southeast of the city center. Passing trucks stir up thick clouds of dust as they rush by. "Where do you want to go?" asks the surprised security guard on cracking open the big steel door. "To Wörwag? I'll have to check," he continues in a pleasant but firm tone. Wörwag's youngest subsidiary has had hardly any visitors thus far—although two company signs on the wall outside confirm that the guests are in the right place. And then they are ushered in.

Wörwag's office in San Luis Potosí opened at the beginning of the year. Measuring just 172 square feet (16 m^2), it is still more of an outpost than a control center. The corner desk seems to dominate the room, and the built-in cabinet is largely empty. There's a fax machine, telephone, network cable, and ➜

Good results: Polito's colleague Rob Duncan from the US (left) inspects the first painted mirror housing.

→ some office supplies. The new number has one extension, which belongs to General Manager José Saldivia. He is currently in Chile, however, attending to some bureaucratic matters where he used to work before moving to Mexico. There are many hurdles to surmount before the business is up and running. “The first step has been taken,” says Duncan. “We’re putting a lot of time into this new site, and that’s very exciting.” Yet it’s also clear to everyone that there’s still a lot to be done.

One key to success is having the right partners. And one of these is the Reis logistics company located just over four miles (7 km) from the Wörwag site. It handles distribution of the products that are still coming primarily from the Lafayette site in the US.

Wörwag is preparing for growth right from the start. For that it needs the right partners.

Founded in 2004, its 220 employees run nine warehouses in central Mexico. General Manager Alejandro Reynoso is happy to see the visitors from Wörwag. “We need this logistics service provider to distribute the products we’ll be making in Mexico,” says Polito. “Reis has a lot of experience,” adds Duncan, “including with our customers.” All signs point to growth for Wörwag in Mexico. The warehouse space can be expanded, also to accommodate materials for future production. The first delivery date can come. The team has done its homework.

Although not on the tourist trail, San Luis Potosí has a lot to offer—like these chocolates with their many delicious fillings.

Nahum García (left) is Wörwag’s first Mexican employee in San Luis Potosí. Managing Director José Saldivia is from Argentina.

Well planned: Details are discussed with the Reis logistics partner. The company will ensure that Wörwag’s locally made products reach customers on time.

Strong partners: The contract with Plastic Omnium is signed.

Forging contacts

Polito, too, is prepared. He is practiced in the role of pioneer. Back in 2008 he helped set up Wörwag’s factory in Langfang, China. A challenging experience, but one that advanced the career of this project manager who is also a qualified chemical worker, paint technician, foreman, and lab worker. He is now a key player in international projects. He was still a regional manager when he switched to the company’s International Technology Management in mid-2011, which led to his international project management responsibilities one and a half years ago. When he sets off on the drive to the Samvardhana Motherson Reflectec (SMR) automotive supplier, he takes a package of cookies along with his laptop, goggles, and safety shoes. “You never know how long it’s going to take,” he remarks. If you want to achieve great things, you also need to pay attention to details.

The paint shop facility can be seen behind the glass windows of SMR’s conference room. Its conveyor belt is currently at rest. The results of recent tests, however, are positive. Polito and Duncan carefully inspect the first outer mirror housings coated in Mountain Gray. “It looks very good,” Polito comments. Thanks to close contact with the German manufacturer, the substrate was already tested in Stuttgart, so some of the parameters could already be set there. The more precise these talks and processes can be, the more satisfied the car maker will be, which ultimately benefits both Wörwag and SMR. “Here in Mexico, the only thing we want to deal with are the details,” Polito explains.

A smoothly running partnership is essential for a large-scale order like this one. But Polito accomplishes even more. →

Wörwag's first locally made products await delivery. Duncan, Polito, and García (from right) are satisfied.

→ Over the course of final talks, SMR Manager Manuel García names one of his employees to be the direct contact for the Wörwag partnership. "The visit was worth it because connections like that are indispensable," says Polito. "Ultimately, this is a matter of people working together. Which is why you need a direct line to the decision makers. And sometimes we have to meet them on-site."

Decisions are made by people. So it's important to have strong contacts with customers.

At breakfast the next day it's clear that an especially important meeting is on the agenda. The Wörwag colleagues appear in white shirts and dark trousers, with fully charged laptops, notes, and a checklist. In the interest of keeping their shirts in perfect shape, they decline the pancakes drip- →

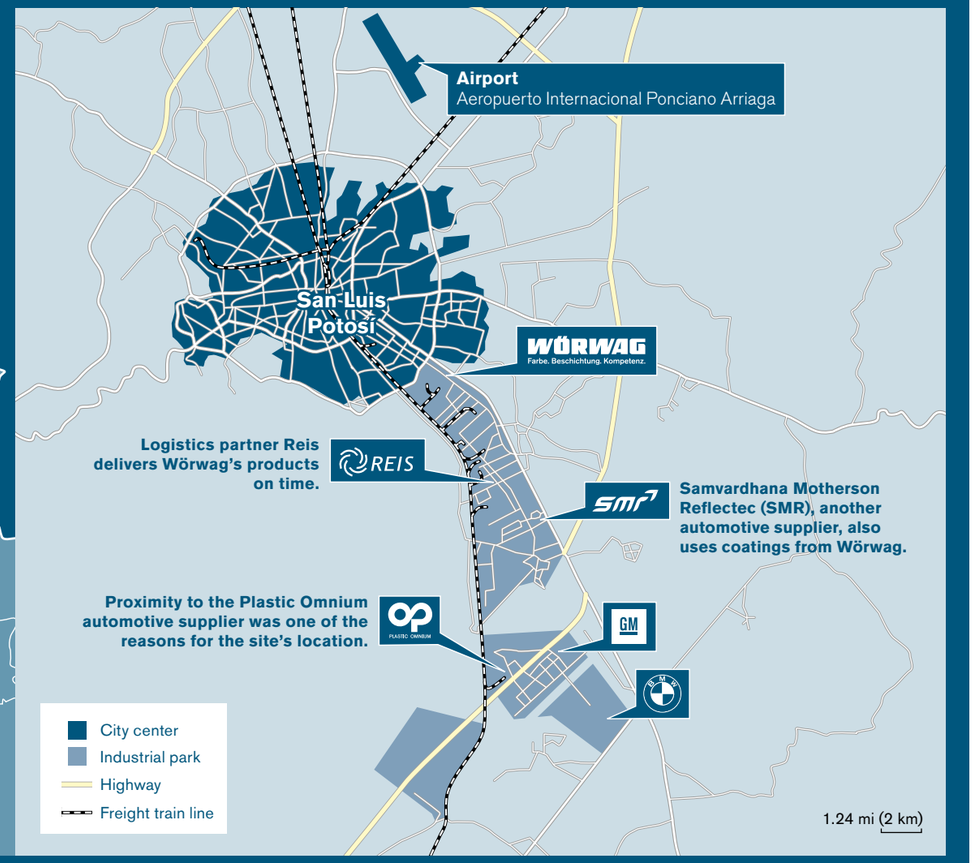
SAN LUIS POTOSÍ

A desert blooms

Hotels usually have flyers and maps that highlight nearby tourist attractions. San Luis Potosí is different. It offers brochures that describe its industrial parks—currently numbering 18. High demand means that they can hardly be printed fast enough. Located around 250 miles (400 km) north of Mexico City at an altitude of around 6,000 feet (1,850 m), this desert city is a veritable magnet. With a favorable location in the "Golden Triangle" defined by the capital Mexico City, Monterrey, and Guadalajara, it has been attracting companies from all over the world for a number of years now, especially car makers and their suppliers. Around 600 companies are prospering in the San Luis Potosí metropolitan region, which has a population of around 1 million. They include ThyssenKrupp, Daimler, Continental, Audi, and BMW. The latter expects to build 150,000 cars a year at a new plant starting in 2019.

Mexico is now the seventh-largest automobile producer in the world. Numerous free trade agreements, low labor costs, and proximity to the huge U.S. market are some of the contributing factors. San Luis Potosí is located just 450 miles (730 km) from Laredo, Texas.

San Luis Potosí is not on the tourist trail. Traces of its silver-mining past can still be found in its historic center. The city was named for the French king Louis IX, canonized as Saint Louis, and the silver city Potosí in today's Bolivia. The economic upswing has brought improvements to the infrastructure. Aeropuerto Internacional Ponciano Arriaga is being expanded, and innumerable residential units as well as shopping malls like those in the United States are under construction.



Thriving industrial city: San Luis Potosí attracts businesses from around the world. More than a million people live in its metropolitan region.

Familiar sight: these distinctive color panels are used in Mexico too. The first test coatings are going well.

➜ ping with maple syrup and the scrambled eggs with sausages in tomato sauce.

Polito and Duncan have planned a two-hour cushion to make sure they arrive on time at their trip's most important appointment. Nahum García takes the wheel. He knows the way to Plastic Omnium like the back of his hand. After joining Wörwag in mid-March, he has been spending most of his time with the customer. On-site support is part of the service for this job. He moved from Calvillo, which is a two-hour drive away, to San Luis Potosí for that reason alone. "I started a new life here," he says with his ready smile. "I really feel at home at Wörwag. It's a family company. I don't have to wear a uniform, my co-workers are all very friendly, and I learn new things every day."

A matter of teamwork

García heads straight for the waiting room at Plastic Omnium. The team is too early, of course. There are still one and one half hours to go before the final contract negotiations. The conference room on the second floor has been darkened so Polito's presentation can be viewed more easily on the wall. It's cool inside, just 68°F (20°C). Yet the atmosphere is friendly. The tension quickly eases. Nearly 80 items are discussed: excepted quantities, legal requirements, conditions, timing, certifications, contact partners. Everything possible is finalized in advance. "Here too it's a matter of teamwork," concludes Polito amid nods of agreement. He and Duncan have been able ➜

Nahum García is Wörwag's first Mexican employee. A new life is starting for him.

INTERVIEW

"It's very appealing to start from scratch"

New projects, new customers, new challenges—José Saldivia's mission in Mexico is growth. Moreover, the general manager of Wörwag's new subsidiary in San Luis Potosí has no wish to occupy his office by himself.

Interview by Michael Thiem

Mr. Saldivia, you're married, you're the father of three children, and you spent the past 15 years working around the world for a major chemical corporation. Why did you seek a new challenge?
I wasn't looking for a new job. But when Wörwag approached me, I was completely sold. I was impressed by the company's enthusiasm, professionalism, and focus on setting up a new site. It was obvious right from the start that this would be exciting.

So it was easy to make up your mind?
Yes, it's extremely appealing to start from scratch here. I would like to be part of this team and its success.

Work has just begun on setting up the site. Do you feel like an adventurer—like you're discovering new things every day?
It was certainly like that at first. But I feel very good here. Mexico is the first country where I—as an Argentine—have felt at home from the start. That's because of the language and the similar culture. Mexicans and Argentines have a lot in common, but there are differences as well. That makes the relationship so interesting.

So you'd describe yourself instead as a pioneer?
Possibly, but I'm not the only one setting this up. The support from my colleagues in Germany and the United States is fantastic.

How were you received by the Wörwag family?
For one thing, I spent three weeks in Stuttgart and was welcomed very warmly there. I never felt like a newcomer. Everyone was friendly and helpful. That's where I became thoroughly familiar with the strategic goals and the processes. Every company has its own distinctive features, and that's especially true of the family-run ones. Wörwag places a high priority on trust and a sense of belonging. Each and every employee is important.

What were the first steps you took as General Manager in San Luis Potosí?
Mexico is the most important market in Latin America. Although we're breaking new ground here, our international project management had already done a lot of preliminary work. It was important to clarify the legal situation as promptly as possible. We also had to find a development engineer right away to maintain contact with our customers. And our U.S. colleagues Mike Grandy and Rob Duncan have been a big help to me in finding new customers as well as our International Business Director Dewi Paino, who takes care of our customer Plastic Omnium in France.

So your assessment is positive?
Absolutely. Everyone knows that growth is the only way for us to make our mark in Mexico. With hard work and a clear strategy we'll accomplish a lot.

And what's the main focus of your work?
We know how good our products are. And our service. We want our customers to realize that too, because that will generate the best recommendations for us. That's why we have to find suppliers who'll work with us to provide unparalleled quality. We also have to expand our team.

"Growth is the only way for us to make our mark in Mexico. We also have to expand our team."

Does that mean you won't be the only person at the office for long?
Right—I'm sure I'll soon be in very good company.

Extended trip: After a week in Mexico, Polito flies to the site in Lafayette, Indiana, instead of returning home.

Relaxing with a view: Giuseppe Polito, Rob Duncan, and Nahum García at a bar.

➜ to answer all the questions to the customer's satisfaction.

Just two hours later, Brian Crawford, Head Buyer for Plastic Omnium in North America, adds his signature to the document that had already been signed by Wörwag Managing Directors Dr. Peter Moritz and Dr. Achim Gast in Germany. Polito draws a deep breath. "This contract is a milestone in the development of our subsidiary in Mexico," he says. A successful day for both parties draws to a close with a shared dinner of steak, fish, and beer at La Mansion. Shortly before turning in for the night, Polito sends an e-mail from his hotel room to Germany with news of the mission accomplished. Then he turns off the light. *¡Buenas noches!*

Mission accomplished

The next day Polito takes a taxi to San Luis Potosí's city center. He still has a little free time before his flight to the production site in Lafayette, Indiana. He looks for small souvenirs for his two sons and settles on two hats. Afterwards he meets Duncan and García at La Agustina, a second-floor bar with a view over the Plaza del Carmen, the vibrant heart of the city. All three are in good spirits. The project team from Mexico, Germany, and the United States has proved its worth. "It's a great feeling when you can help the company grow," says a visibly pleased Duncan as he raises his glass to his colleagues. "We are starting a new branch of the Wörwag family here." Their gazes turn toward the setting sun. The sounds of music, children playing, and honking cars drift up from the streets. Moles and tacos are on the table once again. Polito digs in with gusto. Some things are really easy to get used to. ■

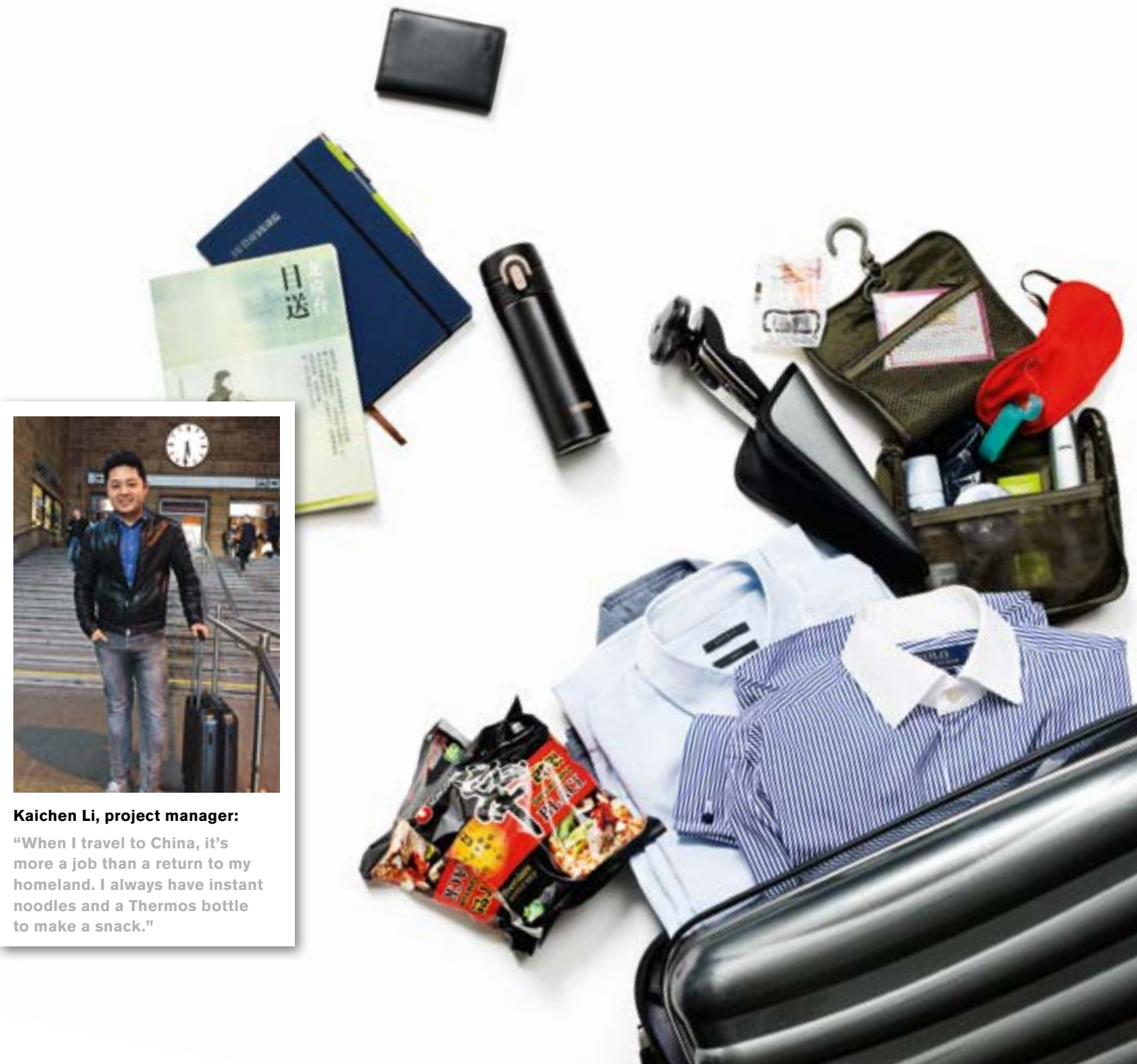
Polito buys souvenirs for his boys, then enjoys the evening with his colleagues.

INTERNATIONAL PROJECT MANAGEMENT

Travelling light

Crossing borders, and yet never losing sight of the big picture: when Wörwag opens up new markets, our colleagues from International Project Management are needed on-site. Living out of a suitcase—between improvisation and detailed planning.

By Michael Thiem; photos by Rafael Krötz



Kaichen Li, project manager:

"When I travel to China, it's more a job than a return to my homeland. I always have instant noodles and a Thermos bottle to make a snack."

A man needs three things. In this case, the man is Georg Bussmann, and the things he needs are a wet razor, a credit card, and headphones that cancel out outside noise when on a plane. The head of international project management at Wörwag has often been bailed out by his hand luggage: he has been able to shave, pay for his hotel and meals, and relax—even if his checked luggage does not turn up at his destination airport. If you pack well, you can fit eight shirts, two suits, and underwear into your carry-on. At least according to Bussmann. To travel is to improvise. Almost 20 years of experience and more than a million miles flown help. "Nearly every new project is uncharted territory for us, but we can shape the territory ourselves. That makes each task unique and exciting in its own way," according to the forty-three-year-old, who spends around ten weeks of the year flying around the world for Wörwag. By now, he could write a book on the subject, or take on a part-time job at a travel agency. Recently, he put together his own ideal itinerary of eight flights on seven days stopping off in Stuttgart, Paris, Detroit, Spartanburg, Dallas, San Luis Potosí, Mexico City, Paris, and Stuttgart. "Travelling for work means living out of your suitcase," Bussmann says with a smirk.

Travelling is part of his job description. Whenever Wörwag has opened up new markets in years past, Bussmann has been involved on location. And, in the last 20 years, Wörwag has grown enormously on an international level, has put down roots all over the world, but is still at home in Zuffenhausen. In 2000, Wörwag opened a U.S. location in Lafayette, Indiana, and three years later in Langfang, China. Bussmann provided instructions in the laboratory, operated the bead mills, and visited customers. The focus was largely on conveying Wörwag know-how. Whether it is in China, the United States, South Africa, Spain, or Poland—the subsidiaries are now fully fledged and fulfill the same standards as in Germany. Wörwag reacted to this fact at the beginning of 2016. International Technology Management became International Project Management (IPM), something of a control center for future large projects.

The background behind this change to the structure was the observation that the operative tasks had become less complex, while planning ones were becoming ever more so. "In many areas, we are entering uncharted territory for Wörwag. We can design processes that are more efficient and successful than the existing ones," says Bussmann. Lab coats and spray guns have been replaced with software tools such as Sharepoint and Excel. It was not for nothing that all department members were trained to become certified project managers. "Without these new structures and framework conditions, I am sure that we would not have been able to handle some recent projects as well." This also applies to opening up the new market in Mexico. The footprint, according to Bussmann, was put in place in record time with just a small squad. Now he says it is time to start detailed planning. Primarily, this consists of coordinating all customers, suppliers, and colleagues involved in implementation at the Wörwag locations. "Functioning project management is essential for the tasks that we will be faced with," Bussmann can say from experience. "Customers are located less and less centrally, the requirements are becoming more and more complex, and we need someone in charge who can maintain an overview."

> "If your family isn't behind you, you can't do a job like this."
>
> Sigurd Tetz

One of these people is Giuseppe Polito. Among other tasks, the thirty-seven-year old looks after an existing customer who ex- ➜

Sigurd Tetz, project management:

"Two days here, three days there. When packing your case, you also have to remember that you may be passing through different climates."

Petra Holzhüter, project support:

"I always have a book and some chocolate to relax with in the evenings. And a small talisman that my daughter gave me."

➜ panded into Central America. In realizing this international project, the IPM forms the interface between the Wörwag plant in Lafayette, the automobile manufacturer in Germany and Mexico, the customer in Mexico, and the Wörwag headquarters in Zuffenhausen. “The important thing is that we get the products to the customers,” according to Polito. “At IPM, therefore, we evaluate every step that goes into the implementation of the projects.”

Sigurd Tetz, who has worked at Wörwag since 1989 and helped to shape the founding days of the subsidiaries, can also bring his experience into play. “I was always a pioneer,” the fifty-five-year-old remembers. First the USA, then Spain, China, and South Africa. “I always had to visit countries where I didn’t know what to expect, either linguistically or culturally,” says Tetz, who often had to fly off at a day’s notice. “If your family isn’t behind you, you can’t do a job like this,” Tetz recalls. After all, it was not uncommon for a planned 14-day trip to the States to turn into four weeks. Planning always meant being spontaneous. When Tetz was needed, he was there.

> “Travelling for business means living out of a suitcase.”
>
> Georg Bussmann

Unlike his colleagues, Kaichen Li, who has worked at Wörwag since November 2014, needs to handle two additional challenges: understanding the Swabian dialect and learning the language of paint. Originally from China, Li is a newcomer from another sector. Now 30, he came to Germany at the age of 14 and studied economics in Essen. At the Chinese Talent Days event in Cologne, he met the Wörwag CEO Dr. Achim Gast. “He was surprised that I could speak German so well,” says Li, who came to Stuttgart soon after to start as a trainee and intern. Within a very brief period, he not only learned the basics of Swabian, but also started getting to grips with the language of paint. “As a young person, I can learn a lot at Wörwag,” says Li; “I feel very comfortable here.” He was particularly impressed by the support he received from all his colleagues—both in the laboratory and in production. As a native speaker of Chinese, Li is an important factor in the development of the Chinese market. He is currently looking after a technical project with the aim of making current formulas using raw materials from China. At the moment, these materials are usually imported from Germany. Li has also made collaboration with Wörwag colleagues in Langfang less complicated.

Petra Holzhüter is also a member of the IPM team. The sixty-two-year-old supports her colleagues with planning and organization. Although she packs her suitcase a lot less frequently, the chemical engineer does have a lot to do with internationalization. Drawing up formulas and datasheets as well as maintaining the model database are among her tasks. The centrally stored data means that the locations in the USA and China, for example, can access up-to-date formulas at any time. “I support my colleagues in providing or researching data and, thanks to my laboratory experience, with development issues,” says Petra Holzhüter.

There is no lack of new challenges at the moment. In addition to Mexico, Wörwag has its sights on new markets. Bussmann will soon, once again, pack his suitcase. And as long as he remembers three things, nothing should go wrong in his next destination. ■

Georg Bussmann, head of international project management:

“Before I travel to a new country, I find out about culture, transportation, security, and tips on etiquette.”

Giuseppe Polito, project management:

“Sometimes I need to bring technical equipment in my luggage—such as an insulated cup to test viscosity.”

GRAFITTI ARTIST

President of the Banana Republic

Anyone who attains fame by spraying bananas is bound to be an original. Having a banana with Cologne-based graffiti artist Thomas Baumgärtel.

By Michael Thiem; photos by Petra Stockhausen

Color panels used to test new paints are mass products. After use, they are disposed of. Thomas Baumgärtel is transforming one such panel into a valuable work of art. The graffiti artist patiently positions the stencil until the cutout sits precisely where he wants it. Millimeter by millimeter. He weighs down the template with large nuts and bolts. Then he puts on his protective mask, switches on the exhaust unit, and grabs the spray can. RAL color tone 1021—Cadmium Yellow is the name on the can. A proposal to rename the color Banana Sprayer Yellow was rejected by the manufacturer for what it deemed technical reasons. Baumgärtel chuckles.

Then he shakes the can and makes a couple of test movements with his wrist. As soon as he feels limbered up, he sprays. Once, twice, three times. First short bursts, then a long one. With multiple sweeping gestures he transforms the white surface into a vibrant yellow. “I don’t need a cleanroom,” says Baumgärtel. “For me, there has to be dust floating in the air. I want texture. It can’t look lacquered.” The first step on the way to the Wörwag banana has been taken. Baumgärtel closely observes the reaction. He still detects a trace of skepticism. “Art has to have an effect,” he remarks. “It’s neither beautiful nor ugly. It’s all about the impact.” ➜

→ We're standing in Baumgärtel's studio in Leskan Park in the Dellbrück district of Cologne. In an old factory, he has converted a 6,458-square-foot (600 m²) space behind a historic façade into his own little banana republic—ample space for art projects and tropical fruit in myriad variations. Bananas on canvases, stencils, prints, a banana sprayed on a sofa. Between canvas stretchers and behind shelves, the visitor discovers one banana after another.

Talk of the town

No, says Baumgärtel, it's not all about bananas with him. He knows all the plays on words surrounding the sweet fruit. And he finds almost all of them tired, hackneyed, banana'd out. He's careful not to give the impression that he finds it too tiresome. After all, the striking effect of the southern fruit has been his recipe for success for 30 years. He calls himself the banana sprayer, propagates banana pointillism, and makes good money with his famous *Volksbanane*—the people's banana. Perhaps it would have worked with other fruits as well, but ultimately the banana is a good that even politicians can't keep →

Banana Republic in a 6,458-square-foot (600 m²) space in Leskan Park in Cologne.

Yellow rules Thomas Baumgärtel's world. In his studio in Cologne, he has created his own little banana cosmos.

Anti-graffiti paint

It's not a new product, but demand is always strong: Wörwag's anti-graffiti paint. The coating powder, a polyurethane, was developed almost 20 years ago. "The product has established itself on the market and proved its quality as a product," says Michael Fiedler, head of powder coating development.

The special quality of this protective paint is its resistance both to spray paints and to chemical cleaning agents. It prevents paint from penetrating the protected surface and damaging it. The same applies to the cleaning agents with which graffiti is removed.

In 2016 alone, the German railway Deutsche Bahn spent some 8.6 million euros on graffiti removal. Perpetrators are particularly fond of tagging commuter trains, regional and freight trains, bridge posts, and noise protection barriers. Having their graffiti art roll through the country burnishes taggers' fame. To counteract this, Deutsche Bahn removes the graffiti within 24 to 72 hours. It's a tedious, costly task and was the original motivation behind the request to Wörwag. The product that was then jointly developed by the two companies—a powder coating for the interior of the train cars—proved robust and easy to clean.

MICHAEL FIEDLER
has headed Wörwag's powder coating development division since 2010. To test the anti-graffiti paint, his team used spray paint, markers, and felt-tip pens. "Of course we have to test our paint in real-life scenarios," says Fiedler. The "works of art" were promptly removed.

Banana for Wörwag: Baumgärtel sprays a “metamorphosis” of his original banana on a color panel.

Thomas Baumgärtel

Biography
Thomas Baumgärtel was born in Rheinberg in Germany’s Ruhr Valley in 1960. From 1985 to 1995 he studied fine arts at the Cologne University of Applied Sciences and psychology at the University of Cologne. Baumgärtel has two children.

Emergence of the banana
During his civilian service at a Catholic hospital, Baumgärtel noticed that the Jesus figure was missing from a crucifix. He substituted a crucified banana peel instead. He’s been enthralled by the fruit ever since.

Projects
Baumgärtel visits two cities each year to honor places of art with his banana. Yet the 56-year-old artist is celebrated in other artistic disciplines as well. He exhibits his paintings, graphic art, and sculptures in forty galleries a year.

Contact
www.bananensprayer.de
www.volksbanane.de

→ their hands off of. EU Commission regulation 2257/94 sets forth standards regarding the color, size, and thickness of the fruit. “Apparently the banana is so important that it has to be regulated,” he says with a sly grin. While his trademark does strictly conform to the standard, which only specifies minimum dimensions, at 15.75 inches (40 cm) long and an average thickness of 3.14 inches (8 cm), it undoubtedly exceeds what the Eurocrats in Brussels had in mind.

The second round of spraying is the decisive one. It’s the black contours that really lend the work its striking appearance. Baumgärtel carefully places a template on the yellow, picks up the can again, shakes it and again sprays in short bursts, and then longer ones. The paint is dried with hot air and impregnated. “Almost like car paint, right?”, says Baumgärtel. He waits, impatiently, to be able to remove the stencil: “That’s the greatest moment, because that’s when you first see the banana.” But that won’t be for another half hour. Just to be sure. So nothing gets smeared.

In the early years, things had to go a bit quicker. As befits the lifestyle of a graffiti artist, Baumgärtel was frequently on the run. After all, many of his spraying activities were illegal. Once he even spent a night in jail. Baumgärtel no longer knows for sure when and where he sprayed his first banana. Cologne’s Museum Ludwig was among the first, in 1987. He was captured in a major sweep that very night. “I heard them call off the search on police radio. To this day I can’t help chuckling when I think of their announcement that it was just a painted banana.” The Cologne art temple, by contrast, found the matter less amusing. Baumgärtel was forced to pay a fine. Years later, the museum director officially requested a banana. “This was one of the first times my stamp was recognized as a distinction that elevates a place to the stature of being a place of art,” says Baumgärtel. The transition from property-damaging menace to cult sprayer was a fluid one.

His trademark has become an art icon and a distinction that has to be earned.

Not for sale

By now, Baumgärtel has honored almost 5,000 museums, galleries, and exhibitions with his fruity quality seal—from London and Paris to Zurich and Moscow. He has even left his mark on the Guggenheim Museum in New York. Many people inquire about receiving bananas. “But they’re not for sale. You have to earn them,” emphasizes Baumgärtel. “The project is a psychological projection test in the world of art. The way galleries and museums treat the banana is how they treat art.”

The distinction can be traced back to a non-commercial project from his days as a psychology student. As in the Rorschach test, in which the observer’s reaction to inkblots is analyzed, Baumgärtel observed the looks, gestures, and statements that a banana can provoke. At the moment they represent amazement and joy. The artist carefully lifts the stencil; the piece for Wörwag is finished. It will have a place of honor in Stuttgart. Now for the signature. Perfect. This yellow speaks every language. Baumgärtel smiles. The beaming President of the Banana Republic. ■

Clever and smart

Industry 4.0, big data, artificial intelligence, and smart homes—the latest technological trends are also catching on in the paint and coating factory. Wörwag's product development experts are putting these innovations to use, and taking a look into the future for this issue of *finish*.

By Daniela Renzo

Will coatings soon be developed simply by clicking a mouse?

"We'll certainly be working at the screen more in the future. Nonetheless, designers always want to have something to hold in their hands and to touch. This is why my attitude to simulation is still a rather skeptical one. At least for the time being. In ten years' time, some things will still be the same as they are now. Simulations, however, will increase in importance. They will be a decisive tool when working on creating new products. You see, we already know the pigments and color effects. The computer can calculate an effects matrix in the color space for every conceivable combination of pigments.

Our knowledge of the individual shades of color and how they change when we mix two pigments is constantly growing. We know the quantities and their effects. When I feed this knowledge into the computer, then I can simulate the complete color development process and therefore virtualize it. Doing this with visual effects is most difficult of all. Our understanding of how our base formulations interact with color pastes and effect pigments is getting better and better. Virtual tools help us to keep optimizing the results. At the end of the day, it really will only require a few simple clicks of the mouse.

Nicole Hörner Head of the Design, Pigments and Pastes Team

Will car buyers be able to mix their favorite color on their own in the future?

Designing the color of the car will become a standard function of vehicle configuration programs. This will allow anyone to mix their preferred type of coating at home on their computer. The technical means will be ready in a few years' time. Online tools visualize the paint in 3D. In today's light booths, it's already possible to compare a coated component with a virtually coated counterpart on the screen. The real and virtual worlds are synchronized to the extent that each motion of the real workpiece is rendered on the screen. This allows the original and the likeness to be studied from every perspective.

We will have more shades of color, and production will speed up. The customer scrolls using the mouse, and can see the color shade straight away, look at the effect in a 3D simulation, press "save" and print out the formulation. This requires a huge pool of data. This data will also include information on which combination is technically viable, and which ones no longer function. We'll stop asking whether a paint is easier or more difficult to produce and apply, and instead only ask the best way to process it.

Jürgen Ortmeier Director Liquid Coatings Technologies

Dr. Alexander Gissel
Head of Process Technology, Materials Technology and Analysis

How do you teach a coating robot to think?

In the future, we won't just be selling paint in cans with a label, but rather adding a huge volume of data to every container: material, density, pigments, solids. This is what self-programming robots will be working with in the coating plants. The data are so detailed that the first coat of paint will be just right. We're homing in on a batch size of 1. Artificial intelligence will allow the robot to automatically identify the workpiece in front of it. The robot scans the part, determines which surfaces need coating, and coats it once virtually as a test before coating it for real and measuring the coating. If the coat thickness is correct, then the next component, which might be a completely different one, has its turn. To ensure all of this is possible, we've already started compiling databases. We are following all developments very closely and are also conducting fundamental research in this area.

Will clothing also end up being coated?

In principle, this is already being done to functional textiles. But there are other trends we consider more important. Natural fibers, for example, are increasingly being embedded in the matrix for fiber-reinforced synthetics. We need to be able to offer coating solutions specifically made for this. And with the increase in electromobility, the significance of lightweight construction will grow as well. Lightweight construction means a mix of materials. A vehicle body is no longer just made of aluminum or sheet steel, but rather of many different plastics with highly varying properties. Some are hard, others flexible. We need coating systems that cure at 140°F or 175°F (60°C or 80°C). We need to develop base coats or systems for hybrid vehicles bodies, ones which can do everything.

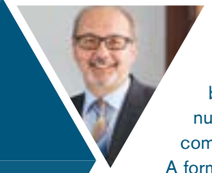
Dr. Markus Schmidtchen Head of Development of Functional Paint Systems

Will coating system driers soon be relegated to museum exhibits?

No. However, coatings that dry quickly at room temperature are a promising area of interest. Coatings that dry this way could have virtually the same properties as systems that dry conventionally do now. In principle, we're already able to formulate this kind of product. However, the products still have a few teething problems that we need to get under control. The greatest appeal isn't just the cost savings made possible by reducing the energy required for coating processes. There are also advantages for the workflow and in logistics. Above all, coatings like this would prove expedient when coating large items of agricultural and construction machinery. Coating a large roller compacter using today's coating systems in a cold factory hall where the temperature is just 50°F (10°C) is a huge amount of work. Once the drying process can be skipped, we'll be able to offer the customer a much larger process window. The customer will then be able to coat components to the same quality in much more flexible conditions.

Meike Kiraly Head of Clearcoats Development Team

Jürgen Ortmeier Director Liquid Coatings Technologies



Will the art of paint production soon be lost?

Quite the opposite: there will be a lot of changes. The manufacture of paints will become more demanding. A formula devised by virtual means tells me how much of each component I need, right down to the decimal place. To ensure everything works out correctly, we need to produce with extreme precision, calibrate all physical parameters exactly, adjust them optimally, and then check them. Ideally, the customer's production and our coating manufacture will be part of a network, allowing data to be exchanged in real time. Despite the interconnected technology, humans will retain a key role.

"We let our products speak for themselves. Quality doesn't need big words to make an impression. Another trump is our innovativeness."

Dr. Peter Moritz CEO

PRODUCTION

The Lord of the Colors

When Ralf Henkelmann gets involved, it's bound to be colorful: in pre-series development, he and his team are responsible for the coloring of base coats for automotive add-on parts. A look at the world of the color engineer.

By Thorsten Schönfeld; photos by Florian Imberger

Does he see things you can't see? Find out what Ralf Henkelmann is pointing to here and what's behind it on page 37.

Ralf Henkelmann sees it at a glance: "A bit too much blue," he says, tapping the leftmost of two yellow-painted color panels with his index finger. He holds it up at eye level. It appears slightly darker than the other one. "The panel on the right is the original sample from the manufacturer, and the left one is the test coating," he explains as he puts his glasses back on and grins. We're standing in the light cabinet in the light studio. Special lamps on the back create the perfect lighting. The matte grey upholstery on the opposite wall prevents reflections of any kind.

This is where Henkelmann checks the results of his work. He is the Lord of the Colors. Together with his eight-person team, the Wörwag color engineer creates base coats for automotive add-on parts in the pre-series phase. "We bring color to things," says Henkelmann. And how! Here, mixing is done on a production scale. The paint quantities are between 440 pounds (200 kilograms) and five metric tons. It begins with the formulation. "Once the preparation phase before us has set the viscosity, we can start with the coloring," elaborates the fifty-one-year-old.

Yet the beginning of this colorful process is grey theory. Every formulation has a batch card that contains the color specification. This is based on color values provided by the vehicle manufacturer. So the head of pre-series development withdraws to his office—affectionately known as the "shed"—and analyzes the data on the computer.

All a question of the ingredients

There he compares the values from the last batches—if any—and then determines the ingredients, i.e., which quantities of which color pastes need to be added to the formulation. He is aided in the process by a color tone navigator—software that calculates color tones. But because there is no data for most colors in the pre-series phase that could be used as a basis for calculation, the expertise of the color engineer is indispensable. Henkelmann assesses to what extent he needs to adjust the manufacturer's specification in order to achieve the perfect result.

For 882 pounds (400 kilograms) of "Black Ruby," for example, the specialist calculates: 6.6 pounds (3 kilos) of black, 14.3 pounds (6.5 kilos) of red, 8.4 ounces (240 grams) of blue, and 29.6 ounces (840 grams) of white. Although the quantities appear relatively large, every gram counts. In the end, it's nuances that decide whether the mix will deliver the desired result. The number of pastes also varies depending on the paint. "In the automotive field, we use up to eight color pastes per color; the average is five or six."

Henkelmann notes the quantity specifications on the color chart and passes it along to colleagues. They then start mixing. Every paste is weighed precisely, filled, and then thoroughly stirred in movable containers for a good 30 minutes. Then the first sample painting is carried out. For an optimal result, Wörwag simulates the customer application—i.e., the ➜

In focus: color engineer Ralf Henkelmann knows what color values he has to store on his computer to achieve the result he wants to see later in the light studio.

Drop in the bucket: color pastes are added according to his calculations, precise to the gram.

cedure of coloring illustrates why. Some three hours after the first color panel was test-painted with the newly formulated color, it lands on Henkelmann's desk. Time for the BYK-mac-i.

On the trail of the color specification

Behind what appears to be an afternoon snack is actually a high-tech measuring device. Placed on the color panel, it determines the color values using six different angles, of which the plan view (45 degrees), sloping view (75 and 100 degrees), and gloss reading (15 and 25 degrees) are evaluated. The measurement procedure takes about a minute. Henkelmann then compares the actual values with the target values of the color specifications. To some extent, he's the Lord of the Numbers as well. Yet even when the figures are within the tolerances specified by the manufacturer, the goal has still not been achieved. Only when a color panel passes both the visual check and the quality check is it released for approval by the customer.

So Henkelmann makes his way back to the light cabinet. He moves around quite a bit in the plant. He likes to stay active in his private life as well. His favorite activity is to hike in the mountains with his wife. Their longest tour took the two of them from Munich ➜

"In the automotive field, we use up to eight color pastes per color; the average is five or six."

➜ manner in which the manufacturer coats its components.

You might think that once a color is determined, it could be used repeatedly thereafter. Not true! The reason: variations in the raw materials and applications ensure that in pre-series development every color and every batch has to be reconstituted from the ground up. "Chemistry is alive," sums up Henkelmann cogently. His job therefore requires a good deal of experience. And he has plenty of it. The trained painter has been working as a color engineer with Wörwag in Stuttgart-Zuffenhausen since 1989. The specialist remembers the early days well: "Daimler was the first carmaker to paint plastic components in colors. It started with just three or four colors back then." Now some 15 to 20 paints go through his department every day.

Color lovers and team players

Color has always been his passion. And it's apparent. His enthusiasm is infectious, and colleagues seek his advice with some regularity. On his way through the production halls, several employees grab his attention: "Ralf, quick question …" Although he's usually under deadline pressure, he takes the time to help colleagues. Henkelmann has excellent instincts—for colors as well as for people. Important prerequisites for a man in his position. "More important than the formal prerequisites," as he says.

For starters, a color engineer has to be able to recognize all colors. Ishihara color perception tests, which rule out red-green color deficiencies, among other things, are an integral part of the suitability test. Moreover, all color engineers have to take the Munsell test (see box on page 37). It's a serious challenge. Yet Henkelmann says this: "Good color perception doesn't make you a good color engineer," he says, and reiterates the importance of natural talent.

Many have tried their hands and failed. There isn't really a specific education for it. Special professional qualifications don't exist, either. Having worked as a painter or in chemicals really makes no difference—it's all about the talent. "When I notice that someone is a good fit for the job, I'm happy to pass on my knowledge about it," says Henkelmann.

Prospective color engineers follow the master in lockstep, observing, learning and trying themselves. It takes at least three years to master the subject. The further pro-

Stir it up: once all the pastes are in, the mixing begins. The pastes are stirred in large, moving containers for 30 minutes.

In detail: with the BYK-mac-i (bottom right), Henkelmann measures color values of the test-painted color panels.

→ across the Alps and the Dolomites to Venice. “22,000 meters in altitude just going up in four weeks—it was phenomenal!” Nature provides recuperation and inspiration. Nowhere, he says pointing his outstretched arm toward the window, are there more beautiful colors than in nature. “The evening sky … dawn … fall colors … I could sit on a hill for hours just gazing at the forest.”

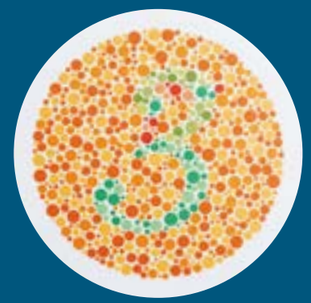
At the light cabinet, he inspects color panels and the original sample in the light studio. “After the first test paint, we’re generally about 80 percent of the way there,” he explains. On average, there are about four to five color steps per batch. Within ten working days, the paint color should be ready. In German, the light studio, Willingraum, is named for engineer Achim Willing, who developed the room for visual color evaluation for add-on parts together with Daimler. Because so many carmakers approve their painted components in this manner, visual inspection is extremely important in the field. There are also three light cabinets next door. The light cabinets make it possible to configure the different types of lighting and simulate the effect of a paint color during the day or under a streetlight.

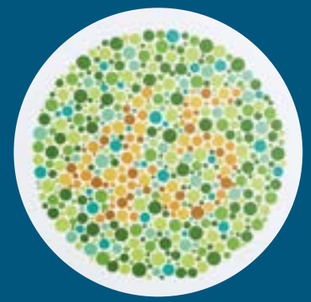
Like the BYK-mac-i, Henkelmann observes the panels in plan, sloping, and gloss views. “I never look at a color panel for more than 30 seconds,” he reveals, adding: “and I always check light colors first, and colors like red at the end. Doing it the other way around would falsify the results.” Then even he wouldn’t notice that he has to take a bit of blue out of the yellow. ■

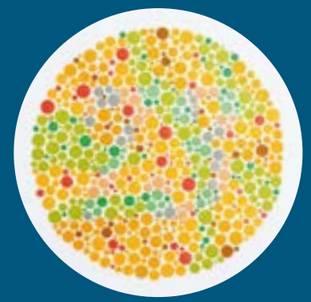
True colors: Do you have what it takes to be a color engineer?

Did you see the numbers in the color circles? It starts with the 29 on page 33. In the circles on the right side of this page, from top to bottom: 3, 26, 45 and—nothing. In the final circle, you shouldn’t see any number. These are Ishihara color charts. They are used to test whether someone suffers from a red-green deficiency, for example—an absolute disqualifier for a color engineer. To test this, the motifs are made up of different-colored and different-sized dots. People with normal color perception can see the numbers in them. People with color blindness have a hard time seeing them or do not see them at all. In western countries, 9% of men and 0.8% of women have a red-green deficiency. The test method was developed by the Japanese ophthalmologist Shinobu Ishihara. He developed the test images in 1917.

Over and above this, color engineers have to demonstrate their color-judging acumen through the Munsell test as well (image below). This consists of four rows with a total of 85 removable color chips. The object of the test is to arrange two rows of chips with the hues in the correct order. The test is administered upon hiring and must be repeated regularly. It has been used for 50 years in quality control measures in the industry, but is also used in public agencies and schools.







Get it all? We’re looking for color engineers—and others

For more information about the career of color engineer, contact Uwe Ortmann, e-mail: uwe.ortmann@woerwag.de. All open positions are listed on our website at www.woerwag.com/jobs

CUSTOMER PROFILE

Cherry on top

Wörwag has been supplying powder coatings to V-Zug, the leading Swiss household appliance maker, for around 30 years. The two companies enjoy a mutually beneficial partnership—and not just on the factory floor. An unusual meeting at V-Zug's kitchen studio produced a delicious meal that featured the cuisines of both Switzerland and Swabia.

By Michael Thiem
Photos by Laurent Burst

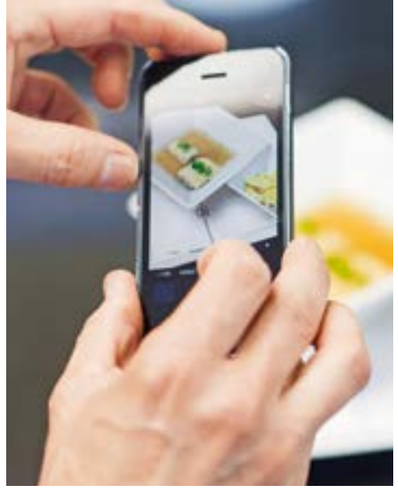
Reliable partners: Wörwag has supplied powder coatings to V-Zug for many years. Uwe Muster (left) from V-Zug and Daniel Seiler from Wörwag work closely together—also in the kitchen studio.

The most important ingredient—good cheer—is not listed on the recipe. But it is generated by the act of cooking itself. Uwe Muster is peeling and slicing potatoes. They are supposed to be half a centimeter thick. Some are thinner, but a good many are thicker. Muster, who heads the surfaces technology department at V-Zug, promptly attributes that to the unfamiliar knife. He is making a potato salad to go with the *Maultaschen*, a Swabian specialty that resembles large ravioli.

Next to him stands Daniel Seiler, the division head for Wörwag Switzerland. He has tackled the job of preparing the onions to be sautéed. "In Switzerland we can make all kinds of things with potatoes, like *Rösti* (a type of hashbrown)," says Muster. "Or distill them to make schnapps," adds Seiler. *Maultaschen* and potato salad are just the first course of this combined Swabian-Swiss meal. They will be followed by filet of perch prepared in the traditional way around Zug—and accompanied by a glass of Terroir Grand Cru Champenel 2016 white wine.

Martin Auf der Maur keeps an eye on the two cooks, offers advice, and occasionally suppresses a chuckle. "That's what happens when you put men in the kitchen—they hardly get started when they start to complain." Auf der Maur, who directs the Zugorama showroom and consulting center, has two tasks for this unusual summit meeting. He needs to guide the two novice chefs, and keep them entertained. Muster and Seiler usually meet at an office adjoining the paint shop, or at the quality control center for coated components. Their discussions generally focus on the optimum thickness of 60 to 120 micrometers for powder coatings, or the pros and cons of various surface characteristics. V-Zug and Wörwag can look back at three decades of fruitful collaboration, but today their partnership is being put to the test. Muster's potato slices measure nearly a centimeter, which is clearly too thick. And Seiler remarks, "I've never made my own *Maultaschen* before. I always get them from the supermarket. That saves time and people devour them quickly anyway." ➜

Putting teamwork to the test: Uwe Muster and Daniel Seiler work for the first time in the kitchen.



The reward comes at the end: after cooking, Uwe Muster and Daniel Seiler toast their jointly prepared three-course meal.

Expert craftsmanship lays the foundation for V-Zug's superb Swiss quality.

→ Muster and Seiler are enjoying themselves. Cooking together is a welcome change of pace, and it illustrates the friendly quality of relations between the two companies. V-Zug and Wörwag are both family-run businesses with similar values: tradition, innovation, an international orientation, and top-notch quality. Located in the heart of the town of Zug around 18.6 miles (30 kilometers) from Zürich, V-Zug's 914,932 sq ft (85,000 qm) production site makes a full range of kitchen and bathroom appliances. Founded in 1913 as Verzinkerei Zug ("Zug galvanizer"), it initially specialized in galvanized metal items for homes, farms, and construction companies. Trash cans in many parts of Switzerland still sport the striking V-Zug logo. In the early 1920s, the company produced its first washing machines with laundry drums, which were operated by hand. It added automatic washing machines, dryers, and dishwashers to its product range in the early 1960s. In 1976 Verzinkerei Zug merged with Metallwarenfabrik Zug ("Zug metal goods factory"), the leader on the market for stove tops and ovens. Today V-Zug has around 1,400 employees, and justifiably considers itself the high-end expert studio among appliance makers. Its staff still works by hand wherever possible, which accounts for the company's high level of Swiss quality valued the world over.

Paint products from Wörwag have been part of this focus on quality for around 30 years now. V-Zug's electrostatic powder-coating facility evokes a familiar sight in the Alps. Its conveyor chain, which carries the components, resembles a chairlift. It is 1,050 feet (320 meters) long, and runs at a speed of around six and a half to nearly ten feet (two to three meters) a minute. Hanging from it are the front panels of dryers and washing machines, or the edge guards of fitted kitchen appliances. Their first stop is a degreasing bath of around 140°F (60°C). After being cleaned, they enter one of three coating cabinets—black, grey, or white. Following the fully automated coating process, the components are oven-cured at 428°F (220°C) for 15 to 20 minutes. "One hundred percent of our powder coatings come from Wörwag," says Muster. "That has historically been the case, and we see no reason to change anything about it. We place a premium on quality, so we need a robust coating system and a partner like Wörwag." Before the coated components leave the conveyor chain for further processing, they undergo quality controls. Meticulous quality assurance is one of V-Zug's keys to success. Before its appliances are delivered to customers, they have to pass as many as 600 controls.

Strong commitment to the location

The company works on enhancing its quality every day. The motto of its shop-floor management is "Zug um Zug gemeinsam besser" ("Striving for improvement together step by step"). The production managers meet every morning for a status report. And they put continuous improvement into practice. "We don't just talk about problems," explains Muster. "We also highlight the things that are going really well." After all, motivation is crucial when it comes to making improvements. In addition, the company is clearly committed to its location. It has launched major expansion and restructuring projects that are expected to run until 2033. Although growth markets like Asia and North America are playing an ever more important role, V-Zug continues to be anchored in the most important economic region of Switzerland. It is working on making its production facilities, which feature very high →

Clear commitment to the location: V-Zug has its home town in its name—and will be investing heavily in its production site there until 2033.

V-ZUG AG

Founded: 1913
Employees: 1,400
Product groups: ovens, steamers, microwave ovens, stove tops, vapor hoods, dishwashers, refrigerators, washing machines, dryers, and fabric care cabinets
Locations: Zug (headquarters and production) and more than 16 service centers plus numerous showrooms worldwide.

→ vertical integration, fit for the future. In 2009 it opened a highly modern logistics complex with 5,297,200 cubic feet (150,000 cubic meters) of storage space, 21,000 pallet berths, and a 1,345.50 square-foot (125 square-meter) solar power system on the roof. Preparations are currently underway to expand production, which will take place on several floors instead of just one. This will shorten the distances that components have to travel, and make the overall system more effective.

Eleven-minute party program

As is the case for Wörwag, part of V-Zug's success derives from its power of innovation. The company listens carefully to its customers, and has 150 engineers working on product development alone. Their ideas frequently make waves. One example is the "Refresh-Butler" fabric care cabinet that needs just two hours to remove odors from clothing that has been exposed to smoke or greasy vapors. Or a dishwashing machine with an 11-minute party program. While guests are still enjoying their main course, it washes the appetizer dishes in preparation for dessert. It's always possible to improve on things, or to come up with original ideas. In early June V-Zug launched something like an innovation department, with offices in an industrial park in the city. It has hired mathematicians and physicians to help make innovations in its digital business processes. Lateral thinking with a dash of courage are additional elements of the company's quest to systematically expand its horizons.

Ideas arise while enjoying a meal

Muster and Seiler, who are painstakingly chopping herbs such as estragon and marjoram for the fish, are expanding their culinary horizons. V-Zug's "Combi-Steamer" needs just a few minutes to cook the potato salad and the perch. The two chefs are pleased with both the fish and the *Maultaschen*—as is Martin Auf der Maur. He has never combined Swabian and Swiss specialties in one meal before. He contributes a dessert consisting of vanilla creme with cherries—real *chriesi*, as they are called in Zug. The town and its 30,000 inhabitants are crazy about *chriesi*. They organize an annual *Chriesi* race, have a Cherry Cake Museum, and make Zug's famous *Kirsch*, a type of cherry schnapps, which was listed on the register of protected geographical indications in 2013. "But it's almost impossible to get cherry stains off a white shirt," says Seiler, which then prompts him to suggest an improvement. "You should add a *Chriesi* button to your washing machines, which activates a very intensive cleaning program." Muster grins and nods in agreement. There are so many improvements yet to be made. And it's best to tackle them together. ■

> The project even triggers the idea for an innovation: how about giving washing machines a *Chriesi* button?

Quality control: Uwe Muster (left) and Daniel Seiler carefully inspect the coated surface of a front panel.

Making the cut: the color chart for assessing adhesive strength is coated along with the components in the powder-coating cabinet.

CUSTOMER APPLICATIONS

Power Paints

Modern paint systems have to master a variety of challenges. Four examples underscore how Wörwag offers innovative products even for extreme requirements.

Photo by Hilti

Covered

Product: Hammer drill
Customer: Hilti (Schaan, Liechtenstein)
Coating: Powder base coat W896
Area of application: Cast-material motor case
Coating used since: 2004
Special features: Light-resistant; the combination of texture and matte color is unusual; high chemical resistance; optimized for outgassing due to cast substrate.

Pulled

Product: Construction and farm machinery
Customer: Manfred Linder, Director Powder Coatings and Painted Films Technology at Wörwag
Coating: Woerophen epoxide base W620, red-brown (prime coat), Woeropur high-solid top coat paint W750, RAL 3002 Carmine red, high-gloss
Area of application: engine and transmission holder, axles, structure, fenders, hood
Coating used since: 2006
Special features: Corrosion protection, weather stability, gloss, robust surface, easy application

Hauled

Product: Commercial vehicles
Customer: Daimler AG (Wörth)
Coating: Woeropur ultra-high-solid top coat paint, Nova gray
Area of application: Chassis with add-on parts such as the tank, pressure compensation tank, and axles
Coating used since: 2017
Special features: Due to its low solvent content and high solid content, the ultra-ultra-high-solid technology is environmentally friendly and has a wide processing window.

Photos by Manfred Linder and Daimler AG

Delivered

Product: Delivery vehicles
Customer: Daimler AG (Düsseldorf)
Coating: Hydro top coat E1648 from the W380 series
Area of application: Body components
Coating used since: 2007
Special features: Special color (Earth brown MB8410 for logistics service provider UPS)

Photo by IStock

ESSAY

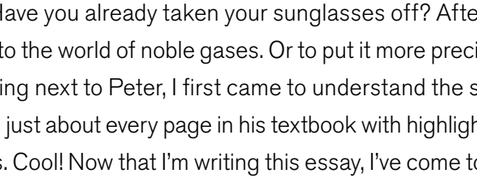
Neon

reminds our author, Thorsten Schönfeld, of chemistry classes

Congratulations! You're almost through. Have you been able to recover from this issue's cover? Neon, gaudy, shrill. Have you already taken your sunglasses off? After 49 pages, we'd now like to coax you back into the world of noble gases. Or to put it more precisely: back to 12th grade chemistry where, sitting next to Peter, I first came to understand the secrets of the element called neon. He'd marked just about every page in his textbook with highlighters. Yellow, green, blue—all of them neon colors. Cool! Now that I'm writing this essay, I've come to realize that it is just as difficult for me to put the fascination that emanates from neon into words as it was for Peter to distinguish what was important from what was unimportant in his chemistry book.

You should always have sunglasses with you in the event of contact with neon. Maybe you've put them on mentally. Imagine you're on the ski slopes back in the 1980s, before the advent of avalanche beepers. Back when analog safety precautions, like the ones fog-proof clothing provided, were more than just a fashion faux-pas. I'll never forget racing down the run on Brienzer Rothorn in Switzerland and how I followed the neon yellow full-body outfit my cousin was wearing for miles, only to find out upon arriving at the valley station that I wasn't actually related to the older man now standing in front of me.

You can admire neon at night without sunglasses. What would New York's Times Square be without neon signs? Or Las Vegas? Those are the lights of the big city. Bright, sparkling, fascinating, and accompanied by a soundtrack of Petula Clark singing, "When you're alone and life is making you lonely, you can always go… downtown. Linger on the sidewalk where the neon signs are pretty… downtown." Nonetheless, you should also know when enough is enough. Too much neon isn't good for you either. Peter always got a D in chemistry. So please, prepare yourself before turning the last page.



Close your eyes and go for it: neon causes a stir—and a sensation. The lights of the big city guide you to where life is pulsing. Neon isn't as much as color as it is a way of living.

Photos: Shutterstock (2), iStock

LOCATIONS

Wörwag worldwide

- Research and Development
- Production
- Service
- Sales

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