about:
CERAMIC **TILES**

#06 vol.2

The AGROB BUCHTAL
architectural ceramics magazine

For sustainable change

Statement by the “Architects for Future” campaign group as a challenge for everyone active in the building sector

01 Question the need for demolition
02 Select materials that are healthy and positive for the climate
03 Design for an open society
04 Design for a circular economy
05 Avoid downcycling
06 Exploit urban mining
07 Preserve and create biodiverse habitats

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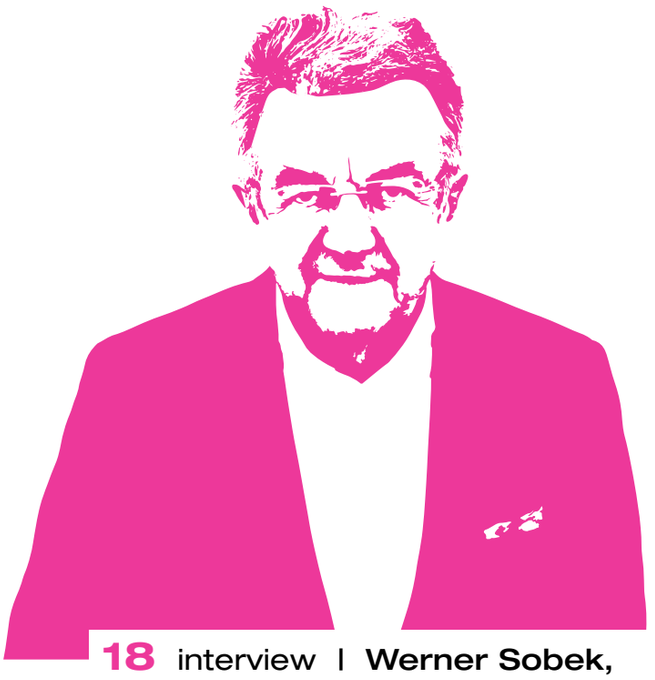
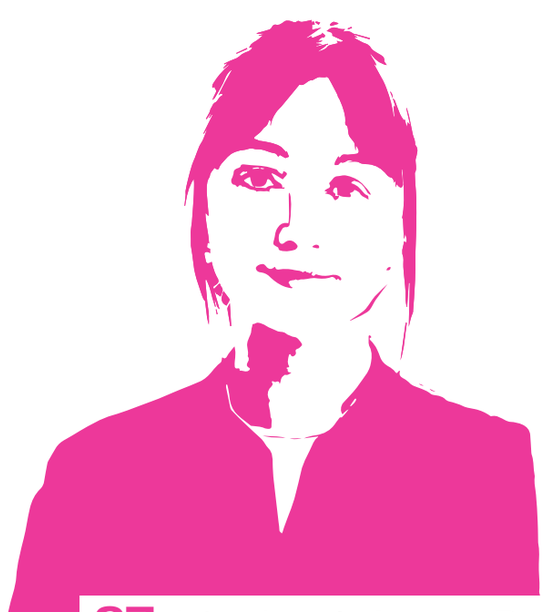




Contents

Resilient city

Text: Roland Pawlitschko

Resilience is often described as the ability to return to an original state – no matter whether it's about individual persons or society, individual companies, the economy of a country or natural ecosystems. The resilient city plays a very special role as the physical setting for all these individual aspects.

City as an organism

Green lungs, traffic arteries, urban bodies and tissues – there are countless analogies to living organisms for describing cities: cities can be vibrant or sleepy, open or closed, integrating or repelling. These comparisons are hardly surprising, because cities are the product of the people who live in them and who, as organisms, are in turn part of the natural environment. Resilient cities are therefore often talked about in the context of the impact of climate change on **megacities**. The responses to such stress factors range from the use of artificial intelligence to the forecast of extreme weather events and to calls for more and smarter urban greenery to improve the microclimate and reduce the heat build-up. However, recalling again the picture of the city as an organism, it quickly becomes clear that a resilient city must do much more than this.

Page 14

Creating spaces of opportunity

Whether in Berlin, New York or Tokyo, cities are usually perceived as particularly pleasant if they are urban, multifaceted, full of history and stories and if they provide space for the most diverse peoples, cultures, uses and building typologies. “The city is a **space of opportunity** for many things and many people, and that is why it has been a model of success since the earliest times of mankind,” said the urban researcher Ida Pirstinger in an interview with the Austrian trade magazine “Architektur” about a year ago. And she continued: “The openness to new and unknown things is what distinguishes it, just like its density. The density of people, of buildings, of offers and interactions [...]. All this leads to a certain heterogeneity, which is important for its functioning.” This diversity is not only an essential feature of any contemporary urban utopia and of a **city worth living** in for all. It also is the key to its

Page 22

Page 30

Page 14

resilience. Because the more **multifaceted and diverse** it is, the more resilient it is to the social, ecological and economic shocks of our time. By way of illustration, resilient cities have the healthy (bio)diversity of a primeval forest, whereas the functionally separated cities of the modern age can be more likened to an agricultural monoculture and are therefore correspondingly vulnerable to stress factors.

“We shape our buildings and afterwards our buildings shape us.”
Winston Churchill

Hybrid concepts of use

It would be hard to express more aptly than these words of Winston Churchill how great an influence the built environment has on people. However, it is also clear that this influence takes place over very long periods of time and that only much later does any rethinking have a concrete effect. In view of this fact, there is no time to lose when it comes to counteracting social change and climate change with **architecture and urban development**. In this context, new types of floor plan that really correspond to today’s forms of living and working are indispensable, as is the overlapping of uses – for example, with the help of hybrid concepts of use. This can mean that ground floors house shops, restaurants and service companies, while the upper floors serve as mixed work and living spaces. However, a small-scale mix of uses is also achieved when a residential building offers a wide **variety of housing**. In other words, when shared flats for pensioners or students are located next to and above privately financed and publicly

Page 18

Page 24

subsidised flats for singles or families which can be enlarged or reduced in size without great effort through the use of extra, flexible spaces and rooms.

Ceramics as a material for architecture and urban spaces

It is important to understand that cities are made up of building blocks that do not simply lie next to each other, instead have to intertwine – taking into account the truism that the outer walls of the houses are at the same time the inner walls of the city. If what happens in the houses is also perceptible in the surrounding area, this not only contributes to the vitalisation of the urban space. It also ensures that people better understand the essence of the city. Therefore, architectural concepts expressing this continuity are in demand. What is more obvious, for example, than cladding the facade of a swimming pool – whose **bathing, wellness and relaxation areas** are mainly characterised by the sensuous interplay of a wide variety of ceramic tiles – with facade ceramics? Ceramics is one of the few materials that can be easily customised in terms of shape, colour, size and surface finish and can be used at any scale in interior and exterior spaces: on high-rise building facades as well as in open access areas and bathrooms designed as puristic retreats.

Page 56

New aesthetics in the sense of the circular economy

In a resilient city, there are no spaces perfectly tailored to only one aspect or type of use, as perfection always aims at a static state that cannot exist in a time of constant change. Similarly, there is also no room for **aesthetics** geared to glamour and perfection. What we need instead, in the sense of a cradle-to-cradle principle, are products made from regionally abundant raw materials that ideally remain in place for a very long time without suffering damage or being harmful. This is the case with ceramics. Ceramic tiles, for example, are often used at heavily frequented airports and **underground stations**

Page 36

Page 70

because of their long-lasting robustness – places that usually make huge demands on both the cleanability of surfaces and the quality of the design and quality of the location. To ensure that, if necessary, products can be relocated and reused in the case of modifications, they must be non-destructive and easy to remove. Only when all potential in this area has been exhausted can worn-out **product components** be recycled. In the ideal conception of the circular economy, there is no such thing as waste, just as there is no such thing as composite materials whose bonds cannot be broken again, or can only be broken again with great effort.

Page 40

Especially in the case of materials that cannot be recycled indefinitely (such as glass or steel) in a consistent quality, novel **material properties** often emerge in the recycling process. These are usually attractive precisely because of their imperfection. An example for this are windows made of recycled plastic, whose irregular, finely structured surfaces paradoxically create a somehow natural-looking appearance. Products like these will one day have a decisive influence on our everyday lives – namely, when all products not made from renewable raw materials are recycled products because there are no more “fresh” raw materials. Uniform European or even **global standards** as well as digital tools will be indispensable in this future. On the one hand, to manufacture and recycle products efficiently and, on the other, to make the **material compositions** of buildings available in online platforms such as Madaster, turning those buildings into valuable raw material depots.

Page 64

Page 42

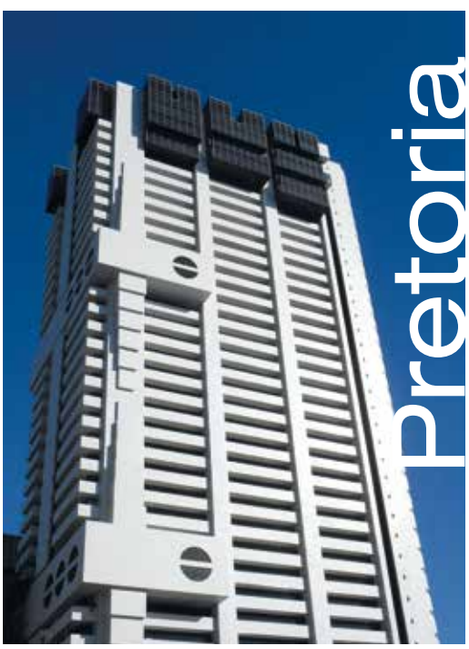
Page 64

The resilient city has the big picture in mind

It doesn't matter on which level we choose to look at resilience. In the end, the same point of reference always applies: "The most resilient system is life itself: nature, evolution, planet Earth," writes the Zukunftsinstitut, founded by Matthias Horx, in its study "Zukunftskraft Resilienz". "The 'natural order of things' is a great disorder in reality. Living systems are 'fragilely stable' and 'messy', they are based on fault tolerances and constantly generate adaptations. Thus, natural resilience is not a higher kind of effectiveness, but rather a 'wild' abundance that builds reserves." So when resilience is mentioned, ultimately, the big picture is always meant. "Resilience is an active and dynamic process," says the Leibniz Institute for Resilience Research. This process must be cultivated in the city in particular, because the resilient city is, as it were, the common denominator for people, the environment, society and the economy. What is needed here are those spaces of opportunity, that heterogeneity, that great disorder from which we humans can draw in a similar way to the system of life from the cycles of nature.


Manchester


Berlin


Pretoria


Jakarta


Vienna


Montreal

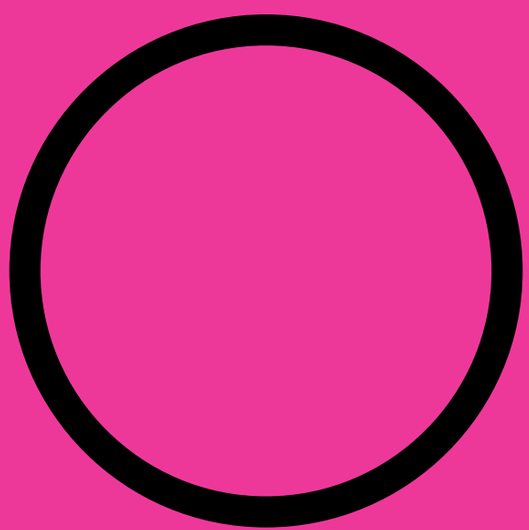
Worth seeing

Worldwide

→ Cities have many facets and countless landmarks. Whether maritime or continental, green, yellow or blue, historical or modern, ceramic facades present solutions and transport us to the most wondrous corners of the world. ←

Why retro can be right, can be good

Recognising the appeal and value in second-hand – whether clothing, design, furniture or buildings. Are we overlooking the essentials on our way to a sustainable (consumer) society? That seems to be easy for a younger generation. Indeed: For them, reuse belongs to their new image of themselves. The creative imperative of a glossy aesthetic is crumbling for new-build projects, or at least needs to be questioned. Refurbishing the building stock – also prominent facades from the 1970s – and reusing building materials are both necessary and appealing. Retro has a coolness factor and is not only popular among the young. Our built aesthetic needs a new responsibility.



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Werner Sobek founded the “Institut für Leichtbau Entwerfen und Konstruieren” (ILEK, Institute for Lightweight Design and Construction) at the University of Stuttgart in 2000. After almost three decades of teaching and research at the University of Stuttgart, he will give his farewell lecture on 25 May 2023. He is also the founder of a design office with global operations and more than 350 employees.

Less for more

The future of architecture

Interview: Kristina Simons · Photo: Rene Mueller

Which part does the building industry play in the climate change? And what are the prospects for the future? The architect and engineer Werner Sobek explores these questions in his trilogy “non nobis – über das Bauen in der Zukunft (non nobis – about building in the future)”. The first volume, “Ausgehen muss man von dem, was ist (We have to start with what we have)”, was published in 2022, volume 2 will follow in early summer 2023. We talked to Werner Sobek about his motivations and findings.

→ To what does the title of your trilogy – “non nobis”, Latin for not we – refer?

This abbreviated quotation from the Latin author Cicero stands for the fact that we do not act for ourselves alone. What we decide and do as a society today reaches far beyond our own horizon and has an impact far into the future. What I want to do here is to show the interaction between what is happening in the world and the building industry.

→ You say that building influences global warming and vice versa. What do you mean by that?

Owing to climate change impacts such as heat and crop failures, certain regions of our planet will become uninhabitable in the foreseeable future; many millions of people will therefore begin to migrate. But then they will need to build a new home elsewhere – housing, clean water, schools, hospitals. How many billions of tons of building materials will be needed for this? What does that mean in turn for resource consumption, emissions and our environment?

→ What is your main finding?

If we continue to build the way we do today, it will be a disaster for the climate. I wanted to back up this insight with facts and communicate it to the general public. Many people are simply not aware of the essential facts, which leads to wrong conclusions again and again. It was therefore important for me to create a general understanding, to define the terms clearly and to show the connections.

The building industry is stuck in the dilemma of having to build more and, at the same time, accelerate processes that are harmful to the climate. The only chance is to get by with less material, to use lightweight construction techniques, to build walls and floors thinner again.

Werner Sobek

→ Which inaccuracies and false conclusions did you come across in your research?

For example, the energy efficiency measures called for in the building industry always only refer to reducing energy consumption during the utilisation phase of the buildings. The question of how much energy is consumed to extract the raw materials required for construction, to process them and, finally, to assemble them into a building is simply ignored. Further, the fact that about 50 per cent of the emissions of a new building are caused before the actual utilisation phase is disregarded in the German government's targets for the buildings sector. Nor has energy consumption during the deconstruction phase played a role so far.

→ What makes it so difficult to account for energy consumption during the construction of a building?

The energy consumption and emissions that are not directly related to the operation of the building are usually externalised, in other words, are not attributed to the buildings sector. For example, cement production falls under the industry sector, and transporting the cement to the concrete plant is recorded under mobility. Thus, a large part of the emissions caused by the building industry disappears into other sectors. In this way, effects are covered up – and the great leverage that architects and engineers have is undervalued.

→ You address the blurred distinction between energy efficiency and emissions.

I think it's very problematic that there are calls, above all, for increasing energy efficiency and reducing the energy demand again and again. We don't have an energy problem, we have an emissions problem. The sun radiates more than 10,000 times more energy onto the earth than we humans need. The problem is the climate-damaging emissions that result from combustion processes for providing energy, be they due to oil, coal, lignite, gas or wood.

→ How can architects build as emissions-free as possible?

We have to proceed more cautiously, in a more differentiated way. Architects must be aware of which building materials emit what (and how much). The second question concerns the distances over which the building materials are transported. If you drive precast concrete elements from Poland to Munich, the transport causes more emissions than the concrete itself. It gets even more insane when you obtain granite from China or marble from Italy. Even if it sounds romantic, we have to use local building materials. Building with clay also only makes sense if the clay does not have to be transported hundreds of kilometres on trucks. We always need to look at the whole picture.

→ What else is important besides the regional supply aspect?

The building industry is stuck in the dilemma of having to build more and at the same time accelerating processes that are harmful to the climate. The only chance is to get by with less material, to use lightweight construction techniques, to build walls and floors thinner again, even if that means they are less soundproof. We may also have to make concessions with regard to fire protection. These things alone can quickly reduce emissions by 20 to 30 per cent. We have to build in a way that encourages recycling, so we don't have huge quantities of hazardous waste, instead valuable recycled materials.

→ Building with wood has been quite popular for some time. But you consider that as problematic as well.

I don't want to condemn timber construction. But we are currently experiencing a situation in which the correlations are presented in an unclear way. Firstly, we don't have enough wood to really do without other materials such as concrete on a large scale. Secondly, by cutting down a tree, we are depriving the forest of a part of its capacity to bind CO_2. When the needles, leaves, twigs and roots of this tree decay, CO_2 is released again. And a considerable part – we are talking about up to 50 per cent – of the trunk removed from the forest – in the form of production waste in the sawmills and wood-processing plants – is incinerated to produce energy. This means that we find 50 per cent or more of the carbon contained in a felled tree back in the atmosphere as carbon dioxide in the relatively short-term. A tree seedling cannot compensate for these emissions by 2045 – that is the point in time from which Germany wants to be carbon neutral. For this to happen, a tree must live for more than 50 years.

→ Could public procurement legislation play a more important role in making construction more climate-friendly?

For me, public procurement legislation is a disaster. This has to do with the concept of legal certainty. Today, nothing is approved unless the public entity to which one submits an application or makes a request feels absolutely legally secure. This slows down quick action and thus innovation. Our society is chasing its own tail with its "fully comprehensive cover" mentality.

A longer version of this interview first appeared on competitionline.com.

Three peaks

Ecological, social, radical

Architects: MVRDV, Rotterdam, The Netherlands · Co-architects: ALL, Rennes, France
Photos: Ossip Architectuurfotografie, Rotterdam, The Netherlands

A new and imposing “mountain landscape” has appeared on the edge of the city centre of Rennes, the capital of the Brittany region of France. Three housing blocks, designed according to the four pillars of the sustainability strategy of architectural practice MVRDV, rise like rock formations above their surroundings. The ceramic facade supplied by Agrob Buchtal implements perfectly the impression of a range of mountains for the Ascension Paysagère – now known as Ascension Paysagère – housing complex. Seen from the city, this “landscape” creates a striking silhouette.

Throughout the three blocks there is a systematic mix of publicly assisted and privately owned apartments – large and small, with views in two and three directions. Ascension Paysagère is inviting. It has the living quality of a village in which the occupants can experience their natural surroundings in various ways as part of their residential environment.

Densification only works when it comes with additional qualities. That is our aim for the residents of Ascension Paysagère.

Nathalie de Vries, partner, MVRDV

With its conservatories, loggias and terraces, the multifunctional envelope optimises the comfort and convenience of both interior and exterior spaces. In addition, it provides shade and shields against noise and wind.

→ Ascension Paysagère marks both the end of an urban planning axis, which begins in the centre of Rennes, and the start of the city centre. On a green-field site near the city centre, there are now three buildings containing 136 apartments designed to the passive house standard.

The heart of this district is an inviting public open space bordering a long, stepped embankment alongside the river which offers views of the floating garden, the Jardin de Confluence, on the opposite bank. Engaging in a dialogue with the surrounding buildings, a new cultural living space has been formed which links the location with its history.

In the Ascension Paysagère housing complex, we are invited to enjoy nature in different ways. This is revealed in the idea of placing a coherent, defined block in an urban setting instead of using smaller units, also in the variety of vegetation on the buildings with their stepped, terraced outline. Vertical openings amplify the height that has been created and allow the complex to be visible from afar. It is really the thousands of vertically mounted KeraTwin® panels, a ceramic system supplied by Agrob Buchtal, that round off the design concept. From a distance, the blocks are transformed into a scene of imposing mountain peaks penetrated by Alpine meadows and glacier fields.

From the ground up, the colour gradient from grey to white and the change in texture from matt to gloss reinforces the mountain peak impression. The outer facades curve and the inner facades are designed to form as many terraces as possible. That presents no problems for a ceramic facade system made up of panels that can be mounted both horizontally and vertically. Another benefit of the building envelope is that ceramic is an ecological material that achieves a cooling effect for the whole district.

It is hoped that the conscious use of green resources and an urban planning concept that promotes a social mix will act as a model for the entire urban region. Ascension Paysagère is intended to set standards, to be more than just an imposing silhouette on the Rennes skyline after nightfall. ←

In each of the three buildings of Ascension Paysagère, using ceramics on the facades reveals the quality with which the complex was designed and built in order to do justice to the demands of excellent sustainability criteria.

MVRDV DNA

The four pillars of sustainability

Interview: May-Britt Frank-Grosse

When it comes to the visual appearance of a building and how sustainable the design is, it is true to say that architects are only as good as the building owners let them be. Nevertheless, architectural practices must sound out their room for manoeuvre in times of change in the building industry. The Dutch architectural practice MVRDV has developed its own sustainability criteria that it applies to its own projects – time after time, and the remarkable results are truly convincing.

→ MVRDV projects are very diverse in their appearance. What is it that distinguishes the architecture of MVRDV?

Lennaart: Our goal is to configure every building intelligently and give it a significance. The architecture can lend an astonishing charisma. However, it can also define a unique merger between uses and moods.

→ So at MVRDV, sustainability is not just about using the right materials, but about finding the right architectural solutions through an intense involvement with the location, the uses and the form of construction. Is that right?

Lennaart: Exactly. By really defining and presenting the significance of the building by way of this process, it is given a special quality and is per se already sustainable.

Jasmin: It is no longer just about building at any price. We realise now that the most sustainable approach is not to build at all, instead to reuse the building stock and upgrade it in such a way that it regains its identity. One example of this is our Expo Pavilion in Hanover. But, of course, we can also do the same on a smaller scale. We work extensively with how to reuse materials, but also research the use of new products.

→ How does MVRDV go about finding out about new materials and developments?

Jasmin: The MVRDV NEXT research team is constantly studying sustainable forms of construction and materials and provides input for all our projects. In addition, computer-aided studies show how new findings can be implemented in construction. Let me give you an example: In Munich we are currently working with reused clay bricks. Using a program we wrote ourselves, we are able to match the different bricks to the appearance of the facade with its high architectural demands.

→ To what extent does certification play a role in your planning?

Jasmin: It is usually the building owner who expresses a wish for some kind of certification. There are marketing reasons for that. But the interesting point here is that it makes the building calculable. The standards we apply to all our projects generally lie higher than the requirements for certification.

→ Which standards are they?

Jasmin: We call that our MVRDV DNA. It consists of four pillars. The first goal is to save as much energy as possible and generate further energy sustainably. The second pillar concerns the embodied CO_2. In other words: Where do the materials come from? What do we want to use? Do we want to use it or do we want to avoid using it? The third pillar is the circular economy. This is an especially important topic that plays a role in every project. The fourth pillar concerns the biodiversity and positive climatic effects that our building should achieve. Roofscapes are therefore one of our special features. These do not simply employ extensive vegetation, instead are places of constant action.

→ At what phase of the project does the sustainability of a building become clear?

Jasmin: The big decisions are made right at the start of the draft design phase. And if the right decisions are made, then all the subsequent steps follow.

→ Your project partner for Ilot Queyries in Bordeaux or Ascension Paysagère in Rennes was Agrob Buchtal, a specialist in ceramic facades. Why did you choose this manufacturer?

Lennaart: Agrob Buchtal provided support right from a relatively early phase of these projects. For example, there were difficult three-dimensional corners that required special solutions. We asked ourselves: How will that work? Can we do it with ceramics? Right from the concept phase, we had the necessary technical support and were able to see whether the design demands we had set ourselves really would work.

→ Were all the ceramic panels prefabricated or was a lot of work carried out on site?

Lennaart: The good thing about ceramics is that you do not have to prefabricate everything. Ceramic products can be cut to size as required, which means that architects do not have to be afraid of designing complicated geometries – final trimming is possible on site. Of course, as far as possible, the dimensions of the panels should be agreed during the planning stage so that factory production can be maximised.

→ How do you rate ceramic surfaces generally in terms of their sustainability?

Lennaart: This is a situation where reusability really plays a major role. Although this aspect is not always so critical for the certification considerations, it is still an important aspect of the material for us.

→ Does MVRDV often use ceramics?

Lennaart: Personally, I love using ceramics because of their great robustness. Of course, we use other materials as well. But in our view, there are no products that can match the durability of ceramics. Dig below the desert sands of Iraq and you'll find ceramic materials 5,000 years old which are still intact! Not many other materials can match that.

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Jasmin Dieterle-Proesel is an architect and project manager at MVRDV in Berlin, where she has been since January 2022. Prior to that she spent many years as a project manager coordinating numerous large projects at home and abroad. Sustainability is one of the key aspects of her work. She is a DGNB consultant and LEED Accredited Professional, with a special focus on the circular economy and minimising carbon footprints. Jasmin Dieterle-Proesel studied architecture at HTWG Konstanz University of Applied Sciences and at the Royal College of Art in London.

Photo: Birgit Kaulfuss

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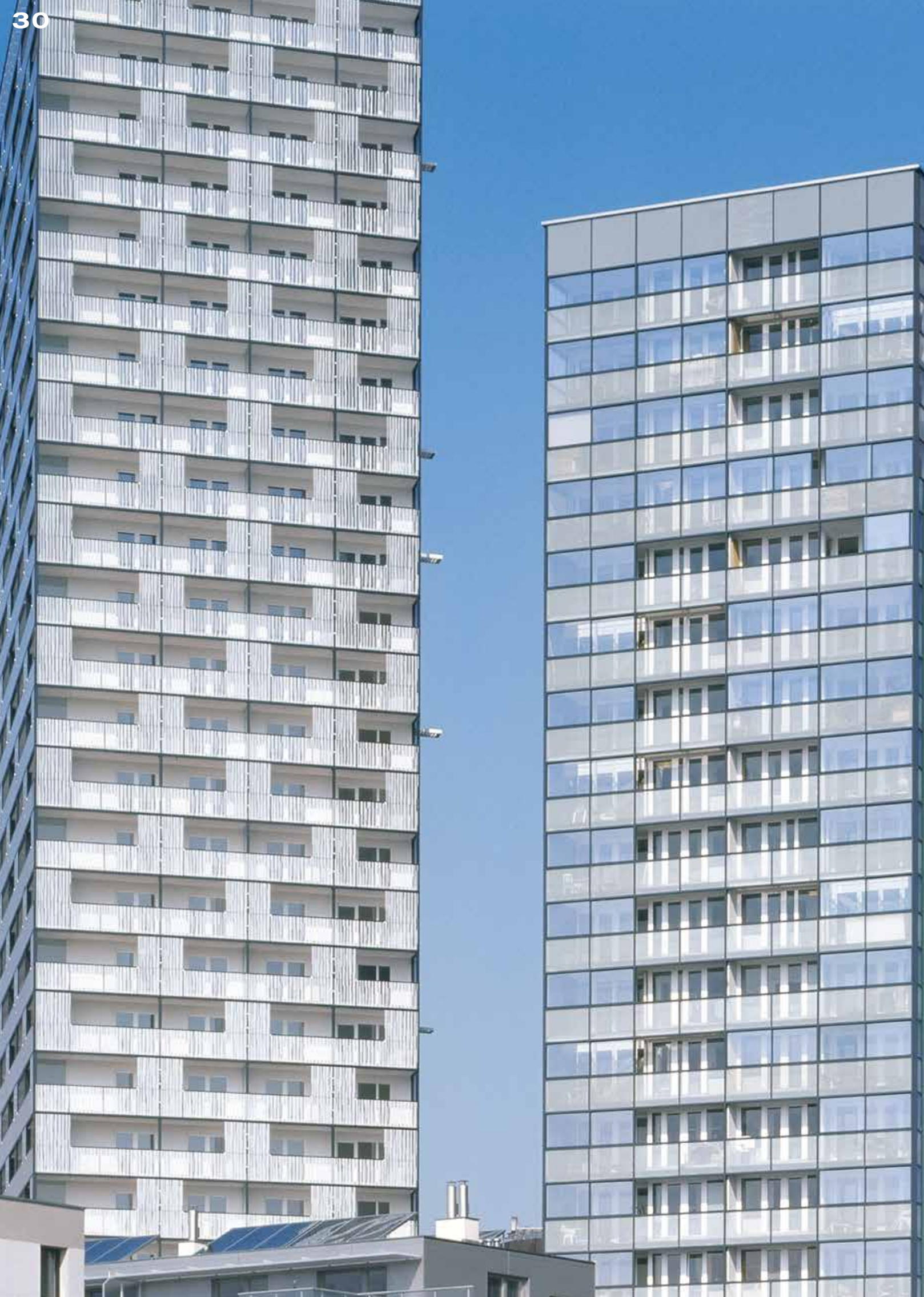
Lennaart Sirag has 20 years of experience gained in the Netherlands and Germany. During his career he has worked on many large inner-city, mixed-use projects, from initial concept to final realisation. Over the years he gained profound expertise in architectural design, general planning and technical due diligence. Up until February 2023, as the manager of MVRDV's Berlin office, he was responsible for all phases of design and construction in the practice's projects in the German-speaking countries.



Monte Verde

A story of sustainability

Architects: AWZT, Vienna, Austria · Photos: Pez Hejduk, Vienna, Austria

Wienerberg City is a relatively new district in Austria's capital characterised by modern skyscrapers. One of those is Monte Verde (Italian for "green mountain"), a high-rise apartment block. The ceramic finish to the longer sides lends it a certain presence, a certain look. The building was completed back in 2004, but the reason why it has become a topic of conversation again in this heavily built-up area is the exemplary quality of life and the sustainability still achieved after 18 years in an urban setting due to the ecological building material used on the facades.

→ Monte Verde is an intense green edifice that rises 77 m into the sky. Its 27 storeys are located at one of Vienna's highest points, in the Wienerberg City district very close to the recreational area of the same name. This residential tower with its 188 apartments was completed in 2004. The striking appearance of the longer sides facing east and west is due to the ceramic facades supplied by Agrob Buchtal in a bespoke green colour specially produced by the ceramic specialist for the architects. "The colour stands for nature, freshness and life, and has a calming, positive effect," says the tower's architect, Albert Wimmer. "Seen in the context of the high-rise ensemble at this location, it adopts an elegant posture." That ensemble includes the glass Twin Towers 127 and 138 m high. Albert Wimmer incorporated their transparency by designing the narrow north and south sides of the Monte Verde tower as double-skin glass facades with loggias and balconies.

Those ceramic tiles are still in excellent condition. Cleaning requirements are minimal, only occasional special cleaning being necessary.

Benedikt Hartmann, "Wien-Süd" housing cooperative

The owner, the "Wien-Süd" housing cooperative, only has to clean the narrow glass facades. The ceramic panels from Agrob Buchtal employ Hytect technology, which not only reduces the operating costs, but is also ecological and sustainable, because chemical cleaners are not needed to keep the ceramic panels clean. That works as follows: Nanoparticles of titanium oxide are burned into the ceramic surface at high temperatures. The titanium oxide functions like a catalyser that initiates a reaction between light, oxygen and the moisture in the air as soon as the tiles are exposed to sunlight. The

oxygen activated in this way decomposes micro-organisms such as bacteria, mould, algae, moss or germs and hinders their growth. And because Hytect tiles are also hydrophilic, dust, dirt and other particles are washed off the facade every time it rains. So they clean themselves. In addition, photocatalysis reduces nitrogen oxides and other pollutants emitted by traffic or industry. This is good for the urban climate, particularly in a heavily built-up city such as Vienna.

"Even after 20 years, the green facade looks like new, is still fresh and clean and lends the entire structure a high-class look," says Albert Wimmer. Benedikt Hartmann from the "Wien-Süd" housing cooperative confirms this: "The ceramic tiles are still in an excellent condition. Cleaning requirements are minimal, only occasional special cleaning being necessary." For example, an overflow from the flat roof led to limescale deposits, which were then easily cleaned off following the installation of a rainwater downpipe. The colour has not changed either. "Over the years, one or other ceramic panel has had to be renewed," says Mr Hartmann. "The replacement panels, which are stored in a dark basement room, cannot be distinguished from the original ones."

By the way, the colour scheme inside the building is also green. "The residential tower is permeated by green inner spaces in the form of atria," explains Albert Wimmer. And within this structure there are also gardens to enjoy. Besides the communal amenities, which in some cases extend over more than one storey, there are also several leisure areas – including a solar-heated swimming pool on the roof, from where there are views to the wide expanses of the Vienna Basin. ←

In the middle of a dynamic city district, this elegant, green, high-rise apartment block radiates confidence.

The town hall of Prinzersdorf in Austria has a dark blue and yellow ceramic facade and is one part of a remarkable ensemble in the town square. Owing to its uniqueness, its identification potential and its material value, it has been very carefully restored.

Retro charm

through reuse

Interview: Kristina Simons · Photos: Konrad Neubauer, Weyer, Austria

→ Rudolf Schütz is the mayor of Prinzersdorf, Austria. In an interview he explains why the local authority decided in favour of restoration and the role played by sponges and washing-up liquid.

→ Mr Schütz, was it clear right from the start that the ceramic facade should not be replaced, instead preserved?

Initially, there were different opinions among the local councillors. Therefore, we arranged for a study to be carried out in which the architects prepared and compared the various scenarios with their respective pros and cons: a new town hall at a different location, demolition and rebuilding at the same location, complete gutting, careful restoration or extensive refurbishment with external insulation on the facade.

→ Why did you opt for careful restoration?

All those involved quickly realised that this would be the best solution. On the one hand, because of the short time needed for restoration and conversion – just six months – and the favourable costs, which at 1.35 million euros were below the agreed budget of 1.4 million. Complete gutting would have cost three times the amount we had budgeted for. On the other hand, restoration was the best option because the town hall is simply well designed for its job: external concrete columns and straight axes enable the room sizes to be easily altered and there is plenty of daylight in all areas. One special feature is the spa-

cious foyer, which we use for art exhibitions with up to 150 visitors, or Christmas markets, for example. With today's building costs, we would never have been able to afford such a spacious area in a new building.

→ What image does the town hall have among the citizens?

Prior to the restoration, younger people in particular were not particularly impressed. Buildings from the 1970s do not generally have a very good image and are often demolished.

→ And today?

Opinion has changed completely since the restoration. Many youngsters like the retro look, can identify with it. The coolness factor has risen sharply. Also the realisation that preserving existing buildings and reusing and recycling building materials are much better for the climate and protecting resources than demolition and building anew. It is precisely this aspect that we have communicated extensively – for example, in conjunction with the nomination for the 2022 Austrian Building Award.

→ You decided to leave the ceramic tiles on the facade.

Yes, removing them and attaching external insulation would have been far too much work, far too expensive. We therefore decided on internal insulation in the form of environmentally friendly foam glass slabs, which are only 10 cm thick and therefore do not reduce the interior space significantly.

→ Did some of the ceramic tiles have to be replaced?

No. Mind you, we do have a few spares in the basement because these tiles are no longer produced. All the tiles on the facade were fully intact, did not require any making good. Instead, we just arranged for them to be cleaned – by hand with sponges and everyday washing-up liquid. That cost less than 2,000 euros and the tiles look as good as new! It's simply a wonderful material. It was the high quality of the ceramic panels that made careful restoration possible in the first place.

→ What makes the panels so special for you?

The fact that they are all unique. The yellow speckle was achieved by spreading quartz into them by hand. Furthermore, the colouring of the tiles means they never look dirty.

→ Is the external colour scheme also reflected in the interior of the town hall?

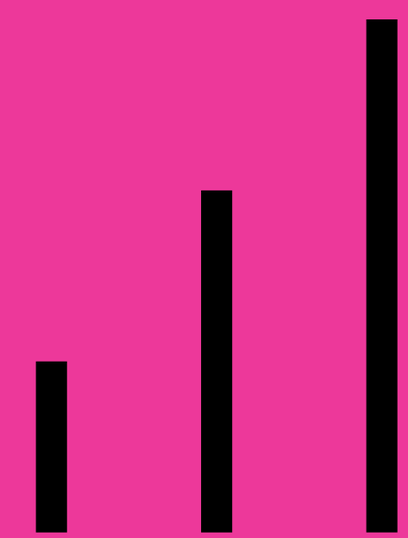
Originally, the floors, walls and furniture such as sofas and armchairs were also in yellow, beige and blue. However, during the 1990s the armchairs were simply reupholstered in a red material. Obviously, a certain sensitivity was lacking. The architects have now restored the original colour scheme very attractively in the interior as well. Carpets, and floor tiles in sanitary areas, are in blue, chairs and armchairs have yellow upholstery.

→ How would you sum up the project?

I am simply delighted that we restored our town hall. It has now risen in our esteem. It's a bit like restoring a vintage car. Even those who were sceptical at the start are now enthusiastic. The quality of the underlying building fabric is so good that the town hall could stand for hundreds of years if we let it.

Get data measured and build on it

Digitalised data create the basis for functioning processes and ensure transparency in companies. For the construction industry, architects and manufacturing companies, the provision of data is an important step towards a better life cycle assessment. Reliable figures in the form of EPDs provide information on the CO_2 footprints of individual materials, supply chains and services. Such Environmental Product Declarations enable objective comparisons and simplify the search for alternatives. To make sure this succeeds everywhere, we need uniform standards and tools for recording the data streams. Those manufacturers and planners who consider EPDs in good time will have an advantage.



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EPD – the stamp of approval

Rational sustainability

According to a representative YouGov survey, three out of four Germans care about environmental protection. Half of them even want climate protection to be included in the German Basic Law. This also applies to the building sector. But how should architects and planners recognise which products and raw materials are sustainable? There are three types of environmental label, also called eco-labels.

Environmental Product Declaration creates transparency. In the case of eco-label I, an environmental organisation evaluates the various products. With eco-label II, manufacturers guarantee that their products meet the requirements they themselves impose. However, when it comes to designing buildings in a consistently sustainable manner, these two labels are not enough. For example, raw materials can be sustainable in themselves, but an energy-intensive production chain or long transport routes throw a spanner in the works of a good eco-balance. Only eco-label III – the Environmental Product Declaration or EPD – ensures transparency. It gives all parties involved all the information they need about the properties and environmental impacts of building materials. This quantitative, objective and verified information considers the entire life cycle. This is the only way to prove and evaluate the sustainability of building materials and buildings.

In the past, it used to be that most of the CO_2 emissions (90 per cent) were due to the operation of buildings. However, according to a study by the DNGB (German Sustainable Building Council), only 50 per cent are now caused by certified new buildings. The other 50 per cent result from the production and transport of building materials. Therefore, reliable key figures are needed regarding the ecological footprints of individual materials. This information is provided by Environmental Product Declarations (EPD). For manufacturers as well as architects, planners, builders, investors and facility managers, EPDs form the basis for the holistic construction and evaluation of buildings – throughout their entire life cycle.

In contrast to eco-labels I and II, an EPD is not a certificate that imposes requirements on quality. EPDs are based on the international standards ISO 14025 and EN 15804, and make all relevant data available. ISO 14025 provides quantified environmental information about the life cycles of products, which enables comparisons between products with the same function. EN 15804 includes product rules that ensure that all EPDs for construction products, construction services and construction processes are derived, presented and verified in a consistent manner. This standard is the prerequisite for EPDs that are valid throughout Europe.

How is an EPD created? First of all, building material manufacturers, experts and the public are jointly involved in developing Product Category Rules (PCR), which define the requirements for an EPD and the data to be fulfilled for a building material group. On the basis of the PCR, the manufacturers determine all data as an eco-balance, from the extraction of raw materials to the demolition of the building. Based on this, an EPD is created for the respective product and handed over to independent third parties for verification. If everything is in order, the EPD is published by, for example, the Institut Bauen und Umwelt e.V. (IBU) or ECO Platform, and is available online.

Advantages of EPDs for the building industry, operators and manufacturers. EPDs enable the integral planning of buildings and form the basis for the subsequent life cycle assessment. An EPD is also recognised by certification schemes that award buildings the Green Building status. EPDs help architects choose the appropriate materials in order to design a building in a consistently sustainable manner. Environmental Product Declarations strengthen a manufacturer's position in the market, and EPDs are considered as role models for transparency and sustainability. In general, EPDs facilitate the access to publicly tendered construction projects.

ECO Platform collects data on a European level. The figures show that the building sector takes sustainability seriously: more than 350,000 EPDs were downloaded from the IBU website in 2021. There are also signs of success across Europe on the path to common quality standards in the construction industry. For example, ECO Platform has been campaigning since 2013 for a European core EPD system based on the EN 15804 standard. The data recorded on the platform make a valuable contribution to sustainable building: products labelled with the EPD seal of the ECO Platform guarantee the best possible comparability on a European level. The "ECO EPDs" of different categories are registered on the ECO Platform website and can be viewed.

Sources: DGNB, "Benchmark für Treibhausgasemission der Gebäudekonstruktion" (Benchmark for greenhouse gas emissions of the building construction), published by Deutsche Gesellschaft für Nachhaltiges Bauen DGNB e.V., August 2021; ECO Platform, www.eco-platform.org; Heinze EPD, www.heinze.de/epd; IBU Institut Bauen und Umwelt e.V., ibu-epd.com and epd-online.com ibu-epd.com/veroeffentlichte-epds; YouGov Climate protection survey; https://yougov.de/topics/politics/articles-reports/2022/06/02/hälfte-der-deutschen-würde-verankerung-des-klimasc

No management without measurement

Interview: Ute Latzke

ECO Platform, based in Brussels, acts as an umbrella organisation for EPD schemes. The aim is to standardise Environmental Product Declarations (EPDs) and to harmonise corresponding processes. The non-profit initiative is open to all those dealing with construction, the environment and life cycle assessments for products and buildings. ECO Platform informs, advises, helps with technical implementation and provides a data portal. In this interview, Christian Donath, Managing Director of ECO Platform, talks about the prospects for EPDs on a European level. He explains how important uniform systems and standards are and which risks and opportunities arise for manufacturers. The most important conclusion: nothing works without digitalisation and data collection.

→ The EU is preparing legislative initiatives for more sustainable economic processes. What is in store for the construction industry and manufacturers?

We are witnessing the simultaneous revision of laws of various kinds with the aim of complying with climate protection policy targets. For the buildings sector the most important of these are the EU Taxonomy, the EU Buildings Directive and certainly also the Construction Products Regulation (CPR). The new CPR is intended to ensure binding regulations for product information, which are urgently needed to make the environmental impacts measurable on the building level. In addition to topics such as circular economy and global warming potential, the legislative proposals also deal with the digitalisation of data.

→ What is ECO Platform's role and how does it support the process?

ECO Platform has made proposals for the implementation of the new Construction Products Regulation. As a transition phase from the old to the new regulation, there is the CPR Acquis. Here, we are advising the European Commission on how the whole thing can be implemented as smoothly as possible. Or which adjustments are still necessary, how certain technical problems can be solved, what can be automated, etc.

→ How far has the EU progressed with the legislation on the Construction Products Regulation (CPR) and from what date will EPDs be mandatory?

The European Commission published the legislative proposal on 30 March 2022 and submitted it to the European Council. After that, the proposal goes to the EU Parliament and must be written into national law within 18 months after adoption. There might then be another deadline for the final, binding implementation of the requirements of the Construction Products Regulation. By then at the latest, manufacturers will be obliged to draw up their Environmental Product Declarations. For the rapid transition to the new Construction Products Regulation, however, obligations based on the current regulation will take effect much earlier, and these will be introduced via delegated acts. It is precisely this transition that is the task of the CPR Acquis in which ECO Platform has a significant involvement.

EPDs will make the environmental impacts visible. The improved understanding of the impacts will be an essential basis for optimising products, production and purchasing. Thus, there is a lot in store for manufacturers. They should therefore deal with these issues now.

Christian Donath

→ What exactly does the Construction Products Regulation regulate?

The CPR regulates the information on products and which requirements they must meet in order to be offered on the European market. This concerns various indicators such as structural or building physics properties, constituents, etc. In the future, indicators for the environmental impacts of construction products, based on the EN 15804 standard (EPDs), will also be introduced as mandatory. This will regulate – uniformly throughout Europe – which product data must be communicated in the Declaration of Performance (DoP).

→ Which role does data collection play in this and how does it succeed?

We have to take the complexity out of the processes. After all, project participants such as architects and planners should not have to become LCA experts or "alchemists". For this purpose, easy-to-use tools are currently being developed which allow complex life cycle assessments to run in the background while the planner is informed in a comprehensible way about the environmental impacts of their actions. And these tools need reliable data that are freely available. This only works through uniform methodology, data formats and quality requirements. Manufacturers must adapt to this in the provision of product data.

The previous static provision of data – ready-made information for each product – no longer works. The data must be generated and provided dynamically.

Christian Donath

Owing to new requirements, the data offered must be much more granular and provided in many different formats. This can only be done on demand in real time, and thus requires a new data structure at the manufacturer plus automated data generation via configurators. This is what is meant by dynamic data provision. It sounds complex, but makes it easier for all involved. And it's the only way to react affordably and flexibly to the ever faster changing requirements.

→ Up to now, data collection has worked like this: The manufacturer draws up a list of constituents or an information sheet with product properties. The designer can load this into the BIM process. Why is that no longer sufficient?

Because products differ in many properties that were previously not queried. For example, whether a product was manufactured in factory A or factory B, where the primary products come from or which coating a product has can make big differences for the life cycle assessment, but also for the visualisation. This is what is meant by granularity: a product with many variants becomes many different products. This is a crucial difference. And, theoretically, the manufacturer can now choose whether, for example, they specify the environmental indicators for the worst case or whether they define the products in a more granular way.

→ How do you create the prerequisites for all project participants to be able to generate and use the data?

No one can do that alone. Nobody will come along and say: This is the ultimate tool now which everyone can use. There will always be various formats and tools, but the actual product data will always be the same. It is important that the manufacturers can react in time to requirements and new benchmarks. This can be achieved with a logical data structure. Companies will have to learn how to store data in a modular way so that the architect, for example, can compile their products accordingly. This is not a big investment for the manufacturer and can be implemented quickly. And they retain control over their data and can add to it at any time.

→ It sounds easy to generate and retrieve data. How does it work in practice?

To do this, the manufacturer needs a simple and modular data structure that allows automated data generation. We are not talking about elaborate long-term projects that cost millions of euros, but about an effective data structure that we call downstream-oriented. It is integrated into the manufacturer's existing IT architecture.

Data can be generated in all relevant target formats via so-called generators so that the data can be used in Autodesk Revit, ArchiCAD, AR, product platforms, tender text programs, declarations of performance, etc., for example. The user, maybe an architect, decides on the required data format, content and level of detail themselves – all with a few mouse clicks. This saves work and waiting times on all sides and is less prone to errors.

→ How does the process of EPD creation work?

Either the manufacturer has the competence in-house or they seek external advice from a life cycle assessment expert. That expert will help the manufacturer to collect data correctly and to model data streams: Which resources – materials, water, energy – go into the product, what is produced in terms of exhaust gases, waste water and waste, what are the delivery routes, etc.? This is recorded in the life cycle assessment, and an environmental product declaration (EPD) is generated from this for data transfer. For EPDs, verification by independent third parties is mandatory. The verification of the EPD is carried out via an EPD scheme.

→ What is an EPD going to cost manufacturers?

At present, this can be between 10,000 and 30,000 euros for manually prepared and verified EPDs. The lion's share is for data collection and the external life cycle assessment – at least if the EPD is produced in the old, manual, way. A smaller part has to be spent on verification. By using EPD tools, the work can be drastically reduced. Using pre-verified basic data and tools, EPDs can be generated in a few minutes.

→ How urgent is the EPD issue and will it be a competitive advantage for manufacturers?

Manufacturers should deal with EPDs as soon as possible. The legal obligation is coming. The necessary data collection, modelling of processes and data provision take time. I advise early action, also in order not to have to stand in line and pay absurdly high prices for service providers later on.

Those who take care of their data today, fill gaps and thus create transparency, have an advantage. The lever cannot simply be changed over just like that.

By the way: More and more voluntary requirements are already becoming the key criterion in projects. Building certification systems, lending criteria, grants, sustainability reporting and ESG criteria in the supply chain are just a few I could mention.

++

Christian Donath is Managing Director of ECO Platform and Managing Partner at BIM Sources. The goal of ECO Platform is to facilitate the provision of reliable product data for construction products. The initiative for standards recognised throughout Europe is very popular in the construction industry. BIM Sources is a software company that offers product manufacturers smart solutions for the automated generation of data and their digital communications.

From the time of the legal obligation, there will no longer be a competitive advantage for the mere provision of EPDs. At the latest then, competition will take place on the level of actual environmental performance. But product optimisation will only be possible through measurability: “No management without measurement!”

Christian Donath · Photo: ECO Platform

→ What is the next step and what is ECO Platform working on?

We cooperate with many international organisations and foundations to advance the generation and verification of data worldwide. We are also actively involved in the relevant standardisation processes. This is complementary to the EU’s activities. Some member states have received EU funding to prepare the data provision process at national level. All are interested in synergies and the fact that tools are compatible. ECO Platform invites all stakeholders to a round table. The goal is to make all data available worldwide and to provide it in an open source format. This will dramatically accelerate the development.

By the way: Manufacturers, associations, life cycle assessors, tool operators and planners can also receive information on current developments at an early stage through membership of ECO Platform. Members have access to an exclusive network of experts on the topic of sustainability for building products.

Abbreviations
CPR: Construction Products Regulation
EPD: Environmental Product Declaration
PCR: Product Category Rules


COHERENT

Full of confidence

Silicon Valley in Lübeck

Architects: Architekten Ingenieure PSP, Hamburg, Germany
Photos: Jochen Stüber, Hamburg, Germany

At its Lübeck location, Coherent Deutschland brings together administrative, development and production functions under one roof. Applying the concept of sustainable construction, only the very latest building materials and innovative building services have been used for the company's new building. Those materials included the Area Pro tile series from Agrob Buchtal.

→ Ceramic tiles are ecological, long-lasting, easy-care products, i.e. inherently sustainable. Furthermore, the Area Pro tile series from Agrob Buchtal, which is used in Coherent's new office complex, proves to be the versatile modular system architects look for: "Exactly the right answer in every situation."

A headquarters without a senior management floor – an overall concept that abandons some old customs.

Coherent LaserSystems, founded in 1966 in California's Silicon Valley, is one of the world's leading innovators and manufacturers in the field of photonics. This global company has nine branches in Germany, one of which is in Lübeck. Strategic considerations and continuous growth prompted a change of location. Coherent found a suitable site on the outskirts of Lübeck.

Hamburg-based Architekten Ingenieure PSP was appointed to design the new building. The design places the two-storey technical area in the centre of the new office and production complex. This is where high-precision lasers are developed and produced for manufacturing applications in the IT industry. Directly adjacent to the production building there is a 15 m wide, U-shaped wing that provides the ideal base for all the administrative activities.

A modern open-office concept spread over four storeys ensures the right setting for the meetings, exchanges and flexibility needed to promote innovative thinking and enable agile working practices. The communicative link between offices and production is in the form of a courtyard measuring about 400 m^2 in area.

New premises for Coherent, the laser specialist in Lübeck.

Openness is probably the best approach when configuring layouts that encourage communication and a creative team spirit. In this new Coherent branch, Area Pro tiles ensure that floors, lobby, lounge and catering areas have a common identity and allow unobstructed views into circulation zones so that concentration can be focused on the essentials.

As a “modular system”, this tiles series can serve any interior requirements in new buildings and supply systematic solutions and details, which the team at Architekten Ingenieure PSP exploited in order to achieve a holistic, rigorous design – also across storeys thanks to the special format of the 135 cm step riser.

What can, what should architecture do these days so that sustainability requirements are implemented in a verifiable way in practice? Maximum flexibility and interior layouts that can respond to changing demands easily and quickly.

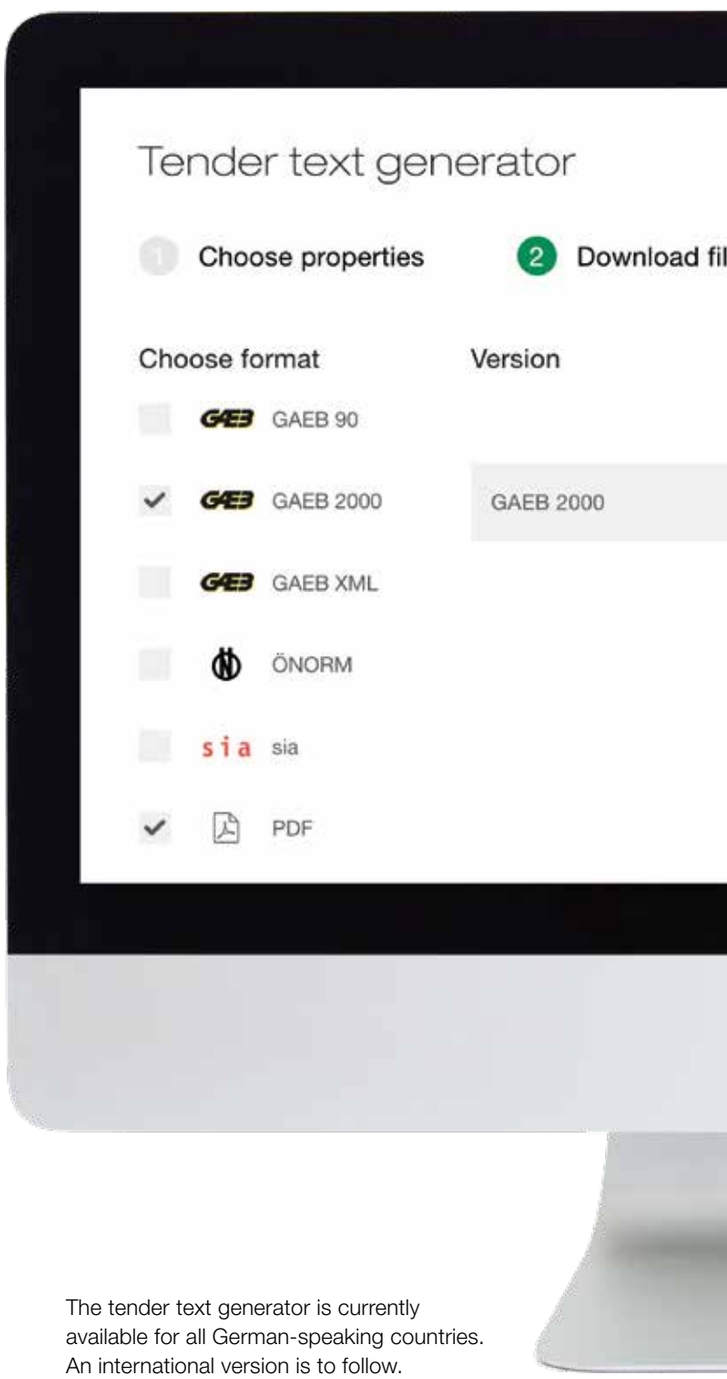
With their new building on the southern edge of Lübeck, Coherent Deutschland and Architekten Ingenieure PSP have produced a confident statement for the Lübeck location and created a modern working environment that embraces staff and visitors with a solid, clear architectural language. ←

Colour scheme and materials perfectly coordinated
to needs of new ways of working.

Texts for tenders

Simplify procurement

Specifications for works and products in conformity with the German Construction Contract Procedures (VOB) can be produced very quickly and easily. Agrob Buchtal demonstrates this with a practical, easy-to-use digital generator for tender texts. Depending on whether a discretionary award of contract or a public invitation to tender is involved, this smart tool from Agrob Buchtal provides those writing tenders, e.g. architects and planners, with manufacturer-specific and neutral texts for more than 4,500 of their own products in a fast, precise and easy format.



The tender text generator is currently available for all German-speaking countries. An international version is to follow.

Try it here

In a tender written in accordance with the German Construction Contract Procedures (VOB), all the factors that influence a particular price must be described fully and clearly. Drawing up appropriate specifications of works, which are normally key contract documents as part of a bill of quantities, can consume valuable time. To simplify the work, the experts at Agrob Buchtal have developed a digital procurement solution.

In-depth knowledge beats standard text blocks

Customary tendering tools make use of standardised text blocks that are inserted like large components. The information is often too superficial, not detailed enough. In some cases information, e.g. on formats, colours or surface finishes of ceramic products, has to be added by hand – a costly, time-consuming job. Agrob Buchtal's tender text generator is much easier to use. Based on the tile/panel selected, it generates a detailed tender text with a few clicks. Every relevant specification of the corresponding product, e.g. material standard, colour, nominal and production dimensions, surface finishes/treatments, etc., is described in detail in the tool. The intelligent software automatically assembles all the important details into one coherent tender text.

Available in many file formats

Users are given access to the online database so that they can generate high-quality specifications for more than 4,500 Agrob Buchtal products. The data can be subsequently downloaded in many standard and also special formats for use in, for example, AVA/BIM and other programs.

Service makes the difference

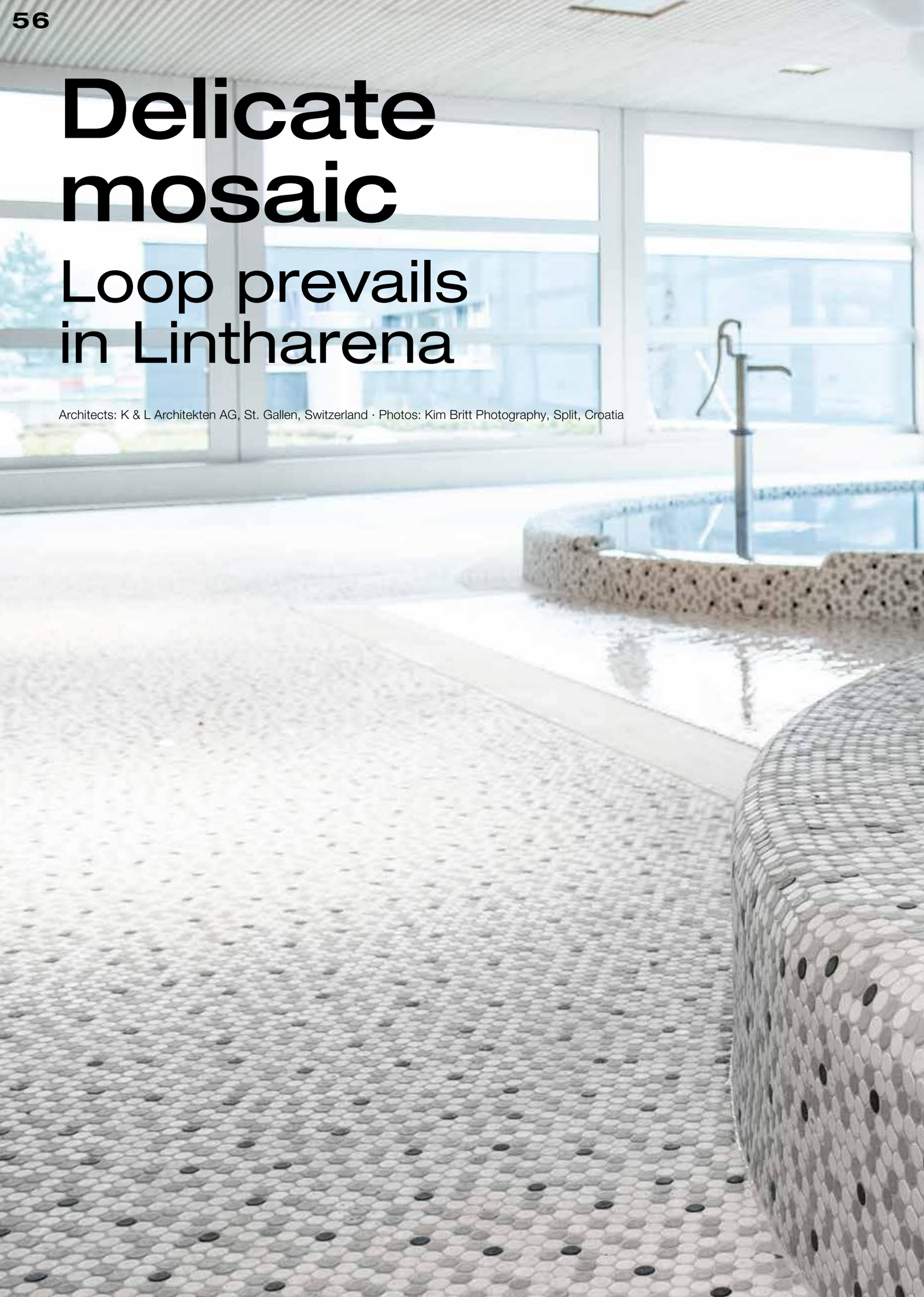
For planners, the tender texts generator is an important step on the road to simplifying the planning process through digitalisation. The tool was born out of a profound understanding of the services that Agrob Buchtal have been providing for architects for more than 70 years – help for professionals from professionals. Agrob Buchtal's experts provide support for routine tasks and can produce layout drawings, estimations of quantities and/or bills of quantities, for example. And of course, as in the past, also individual tender texts when, once again, too little time has been allocated for writing tenders, even when using the generator.

Besides the texts for tenders, it is also possible to obtain images of products, drawings for planning purposes and product data sheets from our website. All these factors help planners to compile tenders that are complete, technically up to date and legally sound – and hence in line with the German Construction Contract Procedures (VOB).

Delicate mosaic

Loop prevails in Lintharena

Architects: K & L Architekten AG, St. Gallen, Switzerland · Photos: Kim Britt Photography, Split, Croatia



→ It took about 20 months to complete the elaborate refurbishment of and extension to Lintharena in Näfels. But since then, this sports and leisure facility has been back in top form. The new pool area with paddling pool and spa amenities attracts many visitors – including many from outside the immediate region. The Loop series from Agrob Buchtal sets the scene here and ensures an up-to-date look and feel. Today, the facility's architect, Thomas Lehman, would certainly say that he wishes he'd had the Agrob Buchtal Mosaic Designer back then!

This sports centre in the Swiss Canton of Glarus was built in 1975 and has been refurbished and extended several times since then. However, the indoor pool and associated amenities had not been touched. Therefore, the operators and the local authority felt it was high time to modernise the whole centre, make it fit for the future.

Ideal for creative, modern, non-slip designs.

The Hytect treatment given to the tiles at the factory ensures that the surfaces are not a home to bacteria and can be easily cleaned.

The restaurant and the hotel bedrooms in the existing facility were given a facelift. The swimming pools, on the other hand, were completely renewed, and a pool for children was added. The central changing rooms area was also restructured. In the indoor swimming pool area there are spacious spa zones with a sauna, steam bath and relaxation rooms. The high-quality amenities offer magnificent views of the surrounding countryside so that relaxing and revitalising are once again possible here.

It is in the sports and maritime atmosphere of the arena that the Loop series really comes into its own. The trendy pattern of dots lends a dynamic to the floors, stairs and walls in the foyer, swimming pool, sanitary and changing areas. Round, alternating white, grey and black pixels guarantee a rhythmic pattern in the mosaic and define the various usage zones. In the spa area, embedded white particles create accents on the otherwise black mosaic walls. That results in an eye-catching contrast reminiscent of sparkling drops of water.

This fine mosaic is ideal for artistically creative, modern and colourful wet areas and showers. A total of 15 finely nuanced, high-gloss colours are available, and six of those are also available in a matt, non-slip finish. With this delicate format, it is even possible to clad rounded components, e.g. columns, benches or pool edges, right down to the smallest detail. The glaze fired into the natural clay material is abrasion-resistant and ensures that colours remain permanently vivid.

In this jewel in the Canton of Glarus, swimming, paddling, sports and visits to the sauna and restaurant are finally setting the mood again. ←

Creative particle accelerator

Free your mind

The new mosaic design tool from Agrob Buchtal expands the horizons for architects and interior designers by giving them an infinite number of solutions when it comes to form, colour and size.

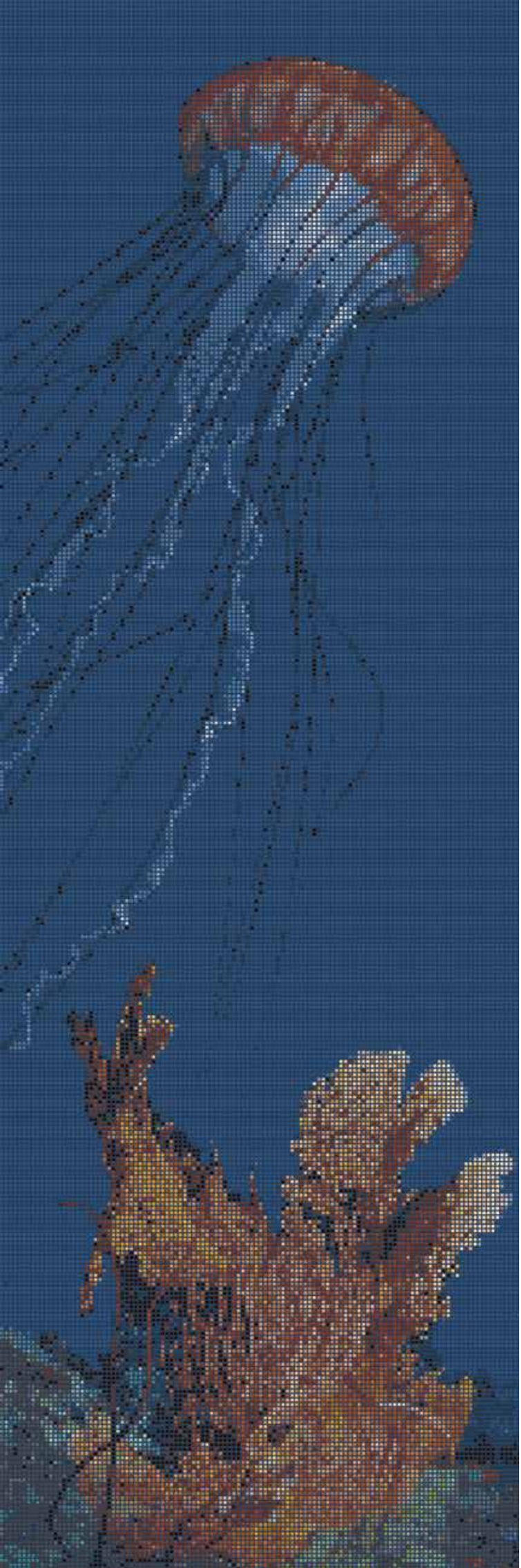
→ This digital service creates freedom for new ideas. With its intuitive, almost playful operation, this tool offers an excellent and convincing experience for users, enables Agrob Buchtal to revolutionise the ancient art of the mosaic and give it a new life.

The desired basic parameters such as the dimensions of the mosaic, choice of product series, tile format and grout colour are entered so that individual colour gradients or combinations can be generated automatically. The time taken to generate the design, which is then displayed on the screen, depends on the size of the mosaic.

For example, 103,968 mosaic pieces each measuring 1 x 1 cm are needed for an area measuring 3 x 6 m, and these are arranged digitally into the desired format at lightning speed. When it comes to size, there are no limits for the Agrob Buchtal Mosaic Designer, the “creative particle accelerator” as it were, especially when it comes to designing swimming pools, spa amenities, restaurants, hotels, schools and public areas such as underground stations. The first large project is already at the planning stage.

There is a choice of three mosaic series: Loop, Fresh and Plural. These three pure colour system series without wood, concrete, marble or other surface textures are ideal and simply waiting for designers to exploit their wide range of shades. Every design can be saved as a project or immediately sent to Agrob Buchtal as an enquiry.

Besides graphic gradients and mixed colours, it is also possible to incorporate individual motifs into the Mosaic Designer. Pictures and photographs can be uploaded directly using the upload function. ←

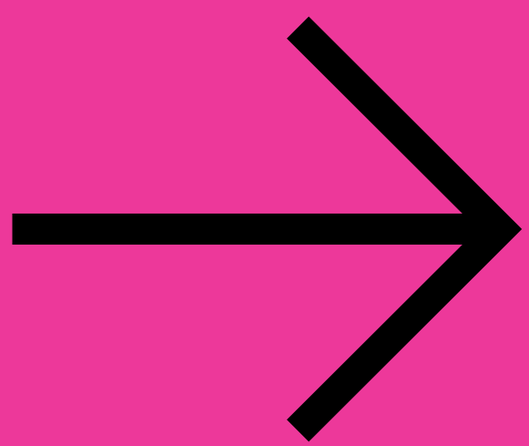


Digital Mosaic Designer

Try it here

A new set of values for the building sector

Once the neo-ecology of reuse is established, sustainability and climate protection will become the guiding principles for our society. Incorporating these values in the German Basic Law is not difficult to imagine. However, it might take some time before those guiding principles become reality. That currently applies to the construction industry as well. So far, recycling and the circular economy have played only a minor role in the new set of values. Measuring the materials in the building stock is an important initial step. That will tell us what we already have and show us that we can do more. So that those who want progress can have progress.



trans_it

Material needs an identity

Measuring the world

Interview: Roland Pawlitschko

Today, hardly anyone knows which materials are in a building, and usually no details are known about their quantities, life cycle assessments and recycling properties. Thus, when buildings are demolished, large quantities of building materials go to waste. The online platform Madaster sees itself as a material passport that can store all relevant information and thus close cycles. We talked to Franziska Albrecht, Business Development Manager, about the goals, possibilities and functionality of the platform, which has the potential to “measure the world”.

→ It is well known that the earth's resources are finite. What has to change for the idea of a circular economy to become more widespread in the building sector?

Franziska Albrecht: Above all, people need to think more long-term and consider all the impacts and properties of products, buildings and built structures until the end of their life cycle. If we do that, we make different decisions – no matter whether as product manufacturers, project developers or planners. For circular building, we need responsibly designed and manufactured products that can be easily disassembled and reused or also recycled at the end. Unfortunately, many owners and builders are often neither aware of the treasures that lie dormant in their buildings, nor the climate protection requirements they may soon have to fulfil.

→ Circular construction is increasingly coming into focus because environmental regulations are becoming more and more far-reaching. Which contribution can the online platform Madaster make here?

We give the materials an identity and understand them as a resource that we return to the cycle again and again. Madaster offers the possibility of creating digital twins of buildings and their inventory to provide a clear overview of the components and materials used. This is very helpful, for example, when drawing up and evaluating DGNB or BREEAM certifications. Or when it comes to mapping life cycle assessments or eco-financing. Or in the case of sustainability assessments within the framework of the EU Taxonomy, which forces banks to deal with truly "green" financing. Circularity values play a crucial role here. In the Netherlands, for example, banks now grant loans at reduced interest if buildings are demonstrably built according to circularity principles. Finally, the German government is planning the digital building resource passport, which is intended to promote the circular economy by identifying all building materials in a property and for which a digital twin will be essential.

→ "You only need to upload a BIM (IFC) or Excel document. Madaster automatically enhances these data into a complete passport." That is the Madaster promise on its homepage. Which requirements must this source data fulfil?

For circular construction, we need responsibly developed and manufactured products that can be easily dismantled and reused or recycled in the end.

Franziska Albrecht

The most suitable BIM models are those that comply with the common general standards – such as the material classification according to DIN 276. In addition, material information, geometric specifications and the IFC type must be stored.

→ Which information does the material passport provide?

The users, usually the building owners, receive a list and environmental analysis of all materials and products with information on their types, qualities and quantities as well as their circularity – in each case taking into account the entire life cycle. Where do the materials come from and how long do they last? Can they be removed and reused? Can they be recycled or do they have to be deposited when a building or parts of it are deconstructed? In addition, there are the environmental data: How much CO_2 and grey energy are in the materials and products? How much energy or freshwater was needed to produce them? Is there a toxicity potential? But we also make residual value calculations – broken down by building layer or material family. If this value is known, the value of the property may also increase. In the end, however, the material passport does not consist of a sheet of paper, because all the exported data is merely a snapshot. Rather, it is contained in the online platform itself. It serves as a kind of dynamic material passport that is automatically updated by every subsequent change.

The more comprehensive the information on components, products and materials, the more precise are the evaluations for the user and the better the usability of the building materials can be assessed upon deconstruction.

Franziska Albrecht

→ What are the advantages for planners working with Madaster?

If Madaster is used as a planning tool, architects and builders can use the analyses produced to achieve common planning goals more effectively and quickly, and to find and compare circular alternatives.

→ Are there certain building sizes and typologies that are particularly well suited to Madaster?

First and foremost, we record large-scale projects of major existing owners who are involved in circular construction. However, Madaster is also suitable for all other typologies up to detached houses. Our goal is a digital material register that provides a complete overview of the entire urban mine. For this reason, we also analyse infrastructure and open-space projects – including bridges, tunnels, roads and urban squares. Even in parks there are materials that have to be replaced regularly. Just think of floor coverings and furniture. We cannot keep on producing all these things anew. After all, the resources are only available in limited quantities in the closed system of our planet.

→ Which role do interior fittings and furnishings play in Madaster?

We look at buildings as a whole, and it is absolutely desirable to consider furnishings and interior fittings as well. Not least because this is exactly where the fastest conversion cycles occur, whereas the building structures usually last much longer. With precise knowledge of the material qualities, many wall and floor coverings could certainly be preserved longer in the case of conversions.

→ Ceramics are exceptionally robust, durable materials that pose no health risks. What results can be found on Madaster when searching for ceramic tiles and facade ceramics?

The generic database provides the information on ceramic tiles that, for example, they have a functional life of 50 years, that they are made of 100% non-renewable raw materials and that they are 80% recyclable.

→ How detailed are the material data of ceramics recorded?

The more comprehensive the information on components, products and materials, the more precise are the evaluations for the user and the better the recyclability of the building materials can be assessed

upon deconstruction. With regard to ceramics, for example, tile thicknesses, coatings or their mineral constituents are specified.

→ Where do you get the basics you need to analyse the data entered?

We receive the product-related data from the manufacturers. If users enter data for which no information is available, we calculate average values that might possibly result from the EPDs already collected. In addition, we cooperate with the operators of databases and database systems. The ÖKOBAUDAT, EPEA and Building Material Scout platforms, for example, provide us with environmental data. Of course, we also have our own knowledge base. Our interdisciplinary team is made up of specialists from the fields of planning, construction, IT and business administration. This enables us to evaluate and process information well, but also to answer the questions of users.

→ Is it possible to search the database to find out in which city or region a particular material has been used the most?

Madaster gives companies the opportunity to track and trace their products. For example, tile manufacturers can easily track where their products have been used and in which quantities. Our goal is also to make a part of the material register data publicly available in anonymised aggregated form. This means that certain values are only visible on a quarter-by-quarter basis. Account owners can also actively publish their data. For example: Heidelberg is on its way to becoming a “circular city” and has used Madaster to assess the Patrick Henry Village, which is to be partly renovated and partly demolished. In this context, the question arose as to how much of which material is actually in the buildings and how much waste do we have to expect? The precise analysis of all the existing buildings ultimately determined whether it was worth setting up a temporary cement plant there to process the demolition material.

→ Who are the owners of the data?

The owners of the project are also the owners of the data. They determine who may have access and can also grant read-only permissions – for example, when it comes to selling a property and informing interested parties about the building’s performance. In contrast, they can grant full access to architects commissioned for planning.

→ In which countries is Madaster currently represented and which future markets do you see?

We are currently represented in the Netherlands, Germany, Austria, Switzerland, Belgium and Norway. In Germany, we have been active for two years, but it has only been possible to register buildings for one year. In that one year we have already registered 1,000 buildings. In our international discussions, we very often feel an extreme sense of optimism, so we are confident that we will soon be able to gain a foothold in other countries in Europe and the world in the spirit of circular building.

Madaster is a digital register for materials in new buildings, existing buildings and infrastructures. It was founded in the Netherlands in 2017 by Pablo van den Bosch and Martijn Oostenrijk as a non-profit foundation – based on an idea of the architect Thomas Rau. The online platform is active in six European countries, each with innovation partners from different areas of the construction industry – including planners, consultants, project developers, property owners, investors and financial institutions, but also product manufacturers and demolition and deconstruction companies. Internationally, 16 million square metres are currently covered, which corresponds to approximately 4,000 buildings.

Within a year, we have already registered 1,000 buildings in Germany. In our international discussions, we very often feel an extreme sense of optimism, so we are confident that we will soon be able to gain a foothold in other countries in Europe and the world in the spirit of circular construction.

Franziska Albrecht · Photo: Isabella Sinnesbichler

During her studies of social and economic communication as well as landscape architecture, Franziska Albrecht dealt intensively with the different facets of sustainable action. Following her studies, she gained experience in planning and construction processes at various landscape architecture offices. Since 2022, she has been the person to contact for architecture and public sector issues at Madaster Germany.

Vitamin pixels in pastel

Retro look in Plural

Architects: Schuberth und Schuberth, Vienna, Austria
Co-architects: Filgut – Retail Marketing & Brand Architecture, Vienna, Austria
Photos: Christoph Panzer, Vienna, Austria

In the juice bar, designed by the Vienna-based architecture and interior design practice of Schuberth und Schuberth, it is not only the juices that are colourful, but also the surroundings: More than 25 colours from Agrob Buchtal's Plural series are combined to form a pixel-like composition in the style of the 1950s.


Juice
Säfte & Smoothies Basic
Säfte & Smoothies Spec
Juice
Alkoholfreie Getränke

→ This is the stop-off point for commuters who fancy a juicy smoothie on their way to Karlsplatz underground station in the mornings, but a freshly made pizza on their way home in the evenings. “The Juizza” is a colourful mixture of the two – juice bar and pizzeria. Beneath Karlsplatz there is a shopping arcade protected by a conservation order, and this is the location of “The Juizza”, planned and converted together with designer Markus Filgut. This project won the 2021 Austrian Interior Design Award in the Interior Design/Restaurants, Hotels category.

In close consultation with the Heritage Authority, the design takes up the ideas of the 1950s. Tidy, clean, colourful – the attributes of the exuberant, optimistic lifestyle of that decade can be found here again in a mix of pastel shades, terrazzo, brass and oversized high-gloss fruits.

A banana-shaped bench invites visitors to stay.

A dynamic composition of tumbling vitamins, fruits, colours, materials and scales blended with a love of rich detail. More is more.

Johanna Schuberth

Wall and floor surfaces are tiled with a pixel painting entailing 25 different colours.

Agrob Buchtal's Plural tile series was the ideal starting point for the design. The range of colours embraces 50 coordinated shades. More than 25 of those have been used by the designer to create a colourful arrangement of pixel squares that bring to life a dynamic composition of vitamins, fruits, colours and materials. The 20 x 20 cm format is used throughout with joints just 3 mm wide. The result resembles a fruit basket – juicy colours reminiscent of cherries, mangoes and bananas, right up to fresh splashes of apple green, lime and mint.

It was primarily the amazingly broad collection of colours that made Plural the number one choice for the interior design of this juice bar. However, is not just the looks that make this series so popular. The tiles are available with various non-slip surfaces, and it was only this fact that allowed the series to be used on all surfaces from floor to ceiling to create a homogeneous look in "The Juizza". ←

FAQ
Good to know

→ What does EPD mean?
The abbreviation EPD is derived from the English term “Environmental Product Declaration”. In German, EPD is usually translated as “Umwelt-Produktdeklaration”.

→ Why an EPD?
An EPD contains information verified according to a uniform standard. This enables anyone who wants to construct a building to draw up a comparable life cycle assessment for the entire structure.

→ Is a product with an EPD a sustainable product?
An EPD does not provide information about the sustainability of a product, but serves the purpose of ecological building assessment. The EPD presents environmentally relevant information about a product in a document. This neutral and objective data offers experts such as architects and planners information about the impact the product can have on the environment in the various phases of a building’s life cycle.

→ What is the difference between an average EPD and a product-specific EPD?
In an average EPD, data from different companies are determined which reflect a typical cross-section of the industry. The average values collected from this are used in a common data pool. Agrob Buchtal has an EPD from the Bundesverband Keramische Fliese e.V. for its complete product range.

The preparation of a product-specific EPD, in which all data must be collected and evaluated on a company-specific basis, is more elaborate than the average EPD. However, the specific EPD enables a detailed and representative description of the respective product or system, in which special qualities for the life cycle can be described and emphasized, such as data on production, use of energy, supply chains, possibility of dismantling or particularly low maintenance. Agrob Buchtal currently is in the process of a product-specific EPD for the KeraTwin® ceramic facade system. KeraTwin® offers special technical solutions for curtain-type, rear-ventilated facades which go far beyond normal tiles in terms of their evaluation and contribute in a special way to the sustainability of a building.

For the benefit of our future.
En route to the circular economy.

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Energy and environment certifications:

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