

# PARKRAUM

The newspaper for customers of WÖHR Autoparksysteme GmbH | No. 2 - 2019

AN INTERVIEW WITH...

Expert Dr Bernd Bienzeisler,  
Fraunhofer IAO, Stuttgart **pages 2-3**

TRENDS

WÖHR + BAUER  
gets involved **pages 4-5**



FOCUS  
**Future:  
City**

Graphic © Shutterstock.com/madla

## In our own space

The pressure on urban spaces is growing as they are forced to accommodate more and more people whilst remaining worthwhile places to live. This is a trend we are keen to get to investigate further in this second issue of PARKRAUM. After all, the future of the city also calls for cars to be parked intelligently in a bid to maximise space. This often necessitates underground solutions, such as those found beneath high-rise buildings, although this then means that attractive living space begins much higher. Learn more in our round-table discussion with Bernd Bienzeisler from Fraunhofer IAO Stuttgart and Boris Schade-Bünsow, Editor-in-Chief of bauwelt (pp. 2-3).

With kind regards, the management of WÖHR Autoparksysteme GmbH

# Mobility of tomorrow

We are still a few years away from sending people to Mars or having self-driving 'robocopters' fly through city centres without creating any noise pollution or emissions. Nevertheless, individual mobility is set to change considerably – and sooner than we might think.

Michael Specht

**L**ong traffic jams, busy cities and so much lost time – this is a daily reality for many people. After all, our dependence on private transport has been a pretty bumpy ride for quite some time. The number of cars around the globe currently stands at over a billion, and this figure is increasing by 80 to 100 million each year. According to a projection by Shell, the number of cars on the road will double to around two billion by 2035. Even today, it is clear that our mobility options are reaching their limits – particularly in the congested urban areas within large cities and metropolises. This is forcing politics, the economy and companies into sustainable action, intelligent

approaches and sometimes imaginative scenarios to make our basic need to be mobile sustainable in the long term. After all, if one thing's clear, it's that mobility is something no one could live without.

Various solutions are being developed around the world by the automotive industry, energy companies, the transport sector, and all those who feel affected by the topics of digitisation and connectivity. These developments are now very much in full swing, with huge strides being made each year. Leading car manufacturers such as Daimler, Audi, BMW and Toyota, for example, are making their mark with pilot projects designed to put automated vehicles through their paces. Ask any project manager what date they envision for their products to be ready for market and the answers are broadly the same: the first self-driving cars should be on the road by 2025, at least to level 4 standard. This is where drivers can hand over control to the vehicle in various situations, including on long stretches of motorway or when parking in tight car parks. Full attention is, however, still required when driving in built-up urban environments. The next level up, level 5, is where the vehicle is fully automated – no need to steer or use the pedals as the technology assumes complete control. Global consulting firm Roland Berger anticipates that these level 5 self-driving cars will be available on the market as standard by 2030. In industry-speak, these are

often referred to as 'Robo-Taxis'. The popularity of these cars is expected to go up, since they not only provide a unique form of mobility for children, young people and even adults without a driving licence, but also help older people – particularly those in rural areas – to maintain an active social life. It is thanks to modern technologies and the constant in-vehicle internet connection that the number of accidents is set to drop significantly, with researchers suggesting figures of up to 90 per cent.

But it is not just added security that the car of the future will offer – it will also be more comfortable than ever. Designers are already in the process of developing interiors complete with rotatable seats and a lounge-style ambience. On the way into the office, drivers can take care of emails in peace, relax with a book or even watch TV thanks to the new, time-saving technology.

**'The future of the city also calls for cars to be parked in a way that maximises space.'**

Valuable time can even be saved when searching for a parking space, which drivers spend 41 hours a year doing in Germany alone. This inconvenience is set to become a thing of the past as self-driving vehicles will soon be capable of finding parking spaces for themselves.

Not only is this feature convenient, but it also saves on space: drivers exit the vehicle prior to the parking manoeuvre meaning cars can be parked closer together than ever.

At the same time, most parking spaces will offer charging points, as the self-driving cars of the future will primarily be electrically operated to ensure a quiet, emissions-free drive through the city. Most experts agree that – sooner or later – the electric motor will almost entirely replace the combustion engine. By 2030, only around 40 per cent of all vehicles will be operated by a conventional diesel or petrol engine. Around 35 per cent will have a hybrid under the bonnet, with the rest running exclusively on electricity.

Another feature that is set to become a standard part of our everyday driving experience is Car-to-X communication. Vehicles are networked not only with each other, but also with the surrounding environment and infrastructure thanks to super-fast 5G cellular mobile communication. Drivers receive information – virtually in real time – regarding issues such as a broken-down vehicle around the next corner, or else black ice, roadworks or congestion up ahead. This information pops up on the display and is even projected directly onto the windscreen in some vehicles. Even details on traffic lights and car parks can be incorporated into the system with ease, allowing the car to find the most efficient route to the next available parking space every time.





Photo: Klaus Bueker, Fraunhofer on the Move

# Urbanisation, mobility and parking – a round-table discussion

For many years now, we have been experiencing immense pressure in cities around the world due to the influx of various communities. Cities are growing and becoming more dense, which is excellent news for the construction sector. On the other hand, however, this is putting pressure on the housing market and traffic situation. A round-table discussion between Dr Bernd Bienzeisler (Research Group Leader at the Fraunhofer IAO Stuttgart), Jens Niepelt (Managing Director of WÖHR Autoparksysteme GmbH) and Wolfgang Frölich (Technical Director of WÖHR Autoparksysteme GmbH). Questions were posed by Boris Schade-Bünsow, Editor-in-Chief of bauwelt.

**Mr Bienzeisler, could you talk to us about how you think cities in Germany, Europe and even around the world are set to change and what we can learn from this?**

BB: Cities will continue to grow and become more dense. The question is why are people moving to the cities? After all, these are areas overflowing with heavy traffic, congestion and frequently even crime. But above all, they are places with promise and potential, as cities offer space for opportunity. This is what adds to their

appeal in a multi-option society. It's a phenomenon that can be seen around the world. These growth processes are taking place noticeably more quickly – and problematically – than ever before on an international scale, but particularly in South America, Asia and Africa. In Europe, or more specifically in Germany, we mainly find ourselves dealing with the increasing densification of cities, since the development of new areas is politically controversial or at least not easy to enforce. This is why every last square metre is fiercely contested in these urban areas. Some people also talk about the concept of urban fracking, whereby available spaces are literally squeezed for all they're worth. And then, of course, we are experiencing an increase in the level of interest in city spaces and this is where the challenges of urban planning are to be found.

**More and more people are moving around within growing cities. Broadly speaking, what effect is this having on mobility?**

BB: Overall, the need for mobility is growing – not only in city centres but also further afield. The air traffic example demonstrates just how exorbitantly high our mobility needs really are. It wasn't so long ago that flying was still a real novelty, but now it's no more exciting than taking the bus. Interestingly enough, this need has remained extremely high in spite of digitisation. Surely the appeal of digitisation is that we no longer have to be as mobile as before, as now we can

do things like attend meetings virtually via video conferencing software. Nevertheless, this does not seem to have had a noticeable effect on the way we use our traffic infrastructures.

**'People are becoming less tolerant of cars as they take up space in urban environments.'**

Dr Bernd Bienzeisler, Research Group Leader Fraunhofer IAO Stuttgart

**But in spite of what political bodies may want, private transport is growing and we are having to contend with more and more cars on the road. What has to change?**

BB: Well we first introduced car-friendly cities back in the 60s and 70s. This was easy enough to do in Germany as the cities had all been destroyed in the war. Elsewhere in Europe, however, where unspoilt cities still feature their traditional structures, this is proving more difficult. In this respect, the conditions in this country are not bad at all; in fact, we actually benefit from the mobility advantages afforded by vehicles. But as the years go by, we are reaching our limits more and more in places like Munich, for example. People



are becoming less tolerant of cars as they take up space in urban environments. In future, driving and parking within the city is going to have to be managed differently.

**So – Mr Niepelt, Mr Frölich – this brings us to what can be done about the parking situation. The traffic – or rather the number of vehicles – is going to increase while acceptance is on the decline. Available space is being earmarked for residential accommodation. What innovative solutions are out there for parking facility management?**

JN: Something we already do with our systems is create compact parking solutions. In addition to the basic models, we also offer semi-automatic and fully-automatic systems. There are parking solutions that can stack up and park cars in compact spaces over multiple levels. The decision all comes down to the investor depending on their budget and spatial requirements. We are noticing a clear shift in the trend here away from the basic model – a simple double-stacker solution that also takes up a corresponding amount of room – in favour of more compact systems that exploit space more efficiently.

This trend is largely being seen internationally, in places like Mexico and Australia where the construction industry is really booming and huge apartment blocks are being built. These apartment blocks have a public space on the ground floor, which is designed to accommodate facilities such as shops, restaurants and bars. Beyond this, they also tend to have a large, podium-style area that traditionally houses the cars – in some cases we're talking several hundred at a time. Then there are the technical floors, and only then, above all of this, does the living space begin. And now there appears to have been a shift in the mindset of architects and planners with regard to the fact that the podium area can be used even more efficiently by automatic parking systems.

**So what exactly do you mean by automatic parking?**

JN: With automatic parking systems, gone are the days of traditional car parks with their ramps and driving lanes. Anyone who has a space in a particular car park simply drives their car into one of two or three transfer areas at ground level and leaves it there. Elevator-style conveyor technology then transports the cars to an upper storage area on the podium floor where they are then parked by an automatic stacking machine. As there is no need for ramps or driving lanes in this system, the storage area is significantly more compact. If the overground floors are too valuable to be used for parking, we also offer alternative solutions that can be built underground. This means I can save a huge amount of space and make the whole block far more efficient with a solution that ultimately creates more living space.

**To be honest, I've never seen a project like this in Germany before.**

JN: You're quite right. That comes down to the aftermath of the 90s, when Germany had around 37 suppliers of fully automatic parking systems. Not all of these were successful, and many investors lost money as a result of investing in the wrong technology. But with the pressure now building in cities like Munich, Frankfurt and Hamburg, people are now looking towards this technology once again with renewed vigour. One of these systems is, in fact, already operating successfully in Munich. It was built twelve years ago on Donnersbergerstrasse as part of a fantastic project that is still widely used and accepted to this day. Examples such as this prove that the technology is most definitely alive and well.

**So why are there so few imitations here in Germany?**

BB: I think that's something that could really change over the next few years. But a real problem with automatic parking systems is the time it takes to

park and retrieve a car, as the conveyor technology does take a while. If you've forgotten your sunglasses in the car, for example, the process of getting them out requires a lot more time and effort than in conventional car parks. So for day-to-day urban parking when you just need to pick up a few essentials, this has proven to be a bit of an issue.

Then there's the fact that the conveyor technology is relatively expensive and requires investment. That said, the rising cost of land is set to change how costs are calculated. The technology also has to be maintained, which requires expertise that is not always readily available in each town.

But in certain applications, it is definitely an interesting concept that is about to get a whole lot more interesting as far as living space is concerned. After all, residential areas are where cars are stored for longer and the processes of depositing and picking them up are often similar.

In public environments, there has to be a very clear distinction: public and automatic parking solutions are not appropriate for every environment. At event venues, for example, where larger groups of people all want to leave at once, and in places where you only need to park up for a moment, automatic parking is less than ideal. These environments are likely to continue to use traditional car parks rather than their automatic counterparts going forward.

**And yet we are all pushing for more diverse urban environments where we can live, work and relax all in one place. This is going to need various speeds for depositing cars.**

WF: Here in Germany, the 'pain threshold' isn't low enough yet for people to accept the waiting time imposed by these systems. In Israel, for example, there are various urban requirements in place that really restrict parking options. We are therefore developing special parking concepts for this market designed to fit in even the smallest spaces around buildings. These tailor-made solutions for our customers range from basic car stackers to automatic parking systems, but the level of stress must be high enough for customers to be prepared to accept the waiting time associated with these automatic systems. The market

**'I am convinced that autonomous driving will gain traction in car parks before it hits the streets.'**

Wolfgang Frölich, Technical Director, WÖHR Autoparksysteme GmbH

just isn't quite ready for this yet in Germany, although early signs seem to be showing in Munich.

**Do you think that the level of stress in Germany will become as high as it is in cities in Israel, Mexico or Australia? And will that be to the extent that we also end up with legal guidelines on how spaces may be used for parking cars?**

BB: Subjectively speaking, the pressure is sure to become as high – and that's if it isn't already. It is entirely conceivable that communities will take matters into their own hands more as time goes on; after all, we are already experiencing the first forays into inner-city driving bans. Going forward, I think we will see a rise in the number of underground and high-rise parking facilities. Street parking in city centres will decline, although it will be a very lengthy process – I'm sure of it. Stuttgart city council has even made the unprecedented decision to get rid of 170 parking spaces. That may not sound like much, but it at least demonstrates a change in the way people are thinking. Park and ride facilities are also set to play an even bigger role going forward, as is space sharing. Quite simply, there are going to be some really creative, space-saving approaches when it comes to parking cars.

**What long-term developments do you think we can expect when it comes to autonomous driving, for example?**

BB (laughing): Even self-driving cars have to park somewhere.

WF: Autonomous driving is certainly up and coming, but I think we will see a number of other developments come to light first. The digitisation of the parking chain in particular will play an increasingly major role, and processes that were once performed independently – such as finding a space, parking and paying – will then be combined. This will ensure much better use of existing data in order to optimise the use of parking spaces and improve how they are designed going forward.

I believe it is more likely that we will continue in this manner as opposed to seeing all cars become self-driving



overnight. To be completely honest, the problem is rolling it out on a larger scale. Many people believe that the self-driving concept will only work if it includes all cars, but if I were to buy a new car now, I would keep it for, say, ten years. This is why it would be better for us to focus on partially automated driving options, with car parks in particular offering the necessary scope in this regard. I am convinced that autonomous driving will gain traction in car parks before it hits the streets. These semi-public spaces are covered by insurance policies and also facilitate combined operation with space for both manual and autonomous driving.

**So if we combine this concept with electromobility, which is surely going to take hold far sooner than self-driving, what solutions are car parks offering in this regard?**



JN: Solutions for electric cars are already in use and have been on the market for some time. In fact, they are even rather mainstream in other European cities. If a new car park is to be built in London, for example, then 20 per cent of the new parking spaces must be designed with charging points for electric vehicles. In double stackers or semi-automatic parking systems, this requirement is relatively straightforward to meet, as a normal charging point can be installed on the platform. Customers simply park their car and activate the charging process. A fully automatic system is a little more exciting, as drivers park their car in a cabin and exit the vehicle. The conveyor technology then transports the car to a storage rack, which is where charging takes place. This is yet another concept that we have developed solutions for, and these are already being installed.

**So tell me what an electric charging solution looks like.**

JN: Well we have designed a connection point on the conveyor pallet where drivers park their cars to facilitate the subsequent charging process in

also calls for a parallel solution in the form of designated routes through the city, for example. But even these cars have to park somewhere.

**Everything we are building now will last for the next 30 to 50 years. That said, mobility and technology are sure to undergo some fundamental changes during this time. This is why we have to start designing buildings – and parking facilities – in a way that allows them to be modified down the line.**

JN (laughing): These are just the sort of questions our sales representatives field on a regular basis. There's a great deal of uncertainty amongst the investors and planners of today, as no one can see that far into the future. How much power do I have to request from my electricity supplier? Which supply line do I need for the building so that I can hook up five Teslas today? What

**Are there any political frameworks you would like to see introduced in a bid to speed up the process of reducing the number of cars parking in city centres?**

**'Something we already do with our systems is create compact parking solutions.'**

Jens Niepelt, Managing Director WÖHR Autoparksysteme GmbH

will happen in 15 years' time? These are just the sort of questions that come in from our customers, which is why we try to advise and educate them on the basics. Our planning phase might start with a parking system for 50 vehicles, for example, so we will set ten of these up for electric cars and make sure a further 20 spaces can be retrofitted with electric charging stations further down the line.

**So how flexible are your systems? Can these complex pieces of kit be retrofitted, downsized or extended?**

WF: Yes, all of these options are open. In fact, these are currently being implemented in the rejuvenation and renovation of historic buildings such as the Gründerzeit buildings, which date back to the late nineteenth century and have no garages or parking spaces. This is where we offer scope to incorporate parking facilities into former cellars and other available spaces.

We also face a different issue in the form of doubting investors who worry about problems such as what happens if we end up relying more on car-sharing schemes in 20 years'

time and therefore don't need as many parking spaces after all.

And then there's the matter of contending with today's architects, planners and even project developers who only factor in a single space. These incorporate traditional concrete surfaces into their plans and we then have to figure out how to turn these spaces into a parking system. In two to five years – or perhaps even longer – a single storey might ultimately be split into two levels for the space to be converted into offices or apartments. It is requests such as these that require us to come up with special solutions, as a steel rack (for example) is no longer possible. These might call for a technology that parks cars on a flat, concrete surface that can also be easily removed at a later stage if the space ends up being repurposed.

**Mr Bienzeisler, do you think that there will be new political frameworks introduced over the coming years?**

JN: We would be delighted to see communities creating greater motivation for public spaces within city zones to be used for other purposes. There are some fantastic urban areas where the streets are jam-packed with parked cars, so it seems only logical to make the decision easier for investors or project developers with regard to hiding these vehicles away underground. This would create more greenery and free space within the local environment and would also allow people to enjoy their surroundings so much more.

**Mr Bienzeisler, do you think that there will be new political frameworks introduced over the coming years?**

BB: Well it's not something that will happen overnight, that's for sure. Three years isn't a very long time as far as communities are concerned, as these operate on entirely different time scales that are closer to 20 years than three. That said, it would still be considered progress to achieve even small successes. Pilot projects would be beneficial in this regard, which is where joint ventures with large companies who want to invest in standard parking facilities or even a model car park come into play. I'm imagining a futuristic car park that features all of the latest modern conveniences and technologies – fully or even only partly automatic with the option of switching to other forms of mobility. Now that would be a political project I could get behind. It would even benefit trade and industry, too. In fact, everyone would benefit from it and we will have to reinvent mobility options anyway.





Current project: the underground car park beneath Thomas-Wimmer-Ring is part of the 'TOM and HILDE' project duo. These state-of-the-art, incredibly convenient parking spaces extend 140 metres long and 30 metres deep. Graphics: WÖHR + BAUER GmbH

## Individual solutions for more space

A visit to Munich-based project developers WÖHR + BAUER

We meet at the company's head office – the perfect inner-city location between the Hofbräuhaus and the Kammerspiele. But this is not the only reason that the building on Hildegardstrasse seems almost symbolic of WÖHR + BAUER's main areas of business; a multi-storey car park of all things forms the complex next to the office wing. And if that weren't enough, the conversation with Wolfgang Roeck and Oliver Vogt demonstrates just how close we are to their work.



A visit to Munich-based project developers WÖHR + BAUER. The company prides itself on its bespoke parking systems, which are now a hot topic for inner-city locations where space is tight. Oliver Vogt, Member of the Executive Board, is not one to shy away from a challenge: 'In a nutshell, the expertise we have at WÖHR + BAUER is so far reaching that we can achieve pretty much anything.' Photo: WÖHR + BAUER GmbH

discussion. Creating underground parking is very important in this respect and is a highly complex and

**'Achieving a high-quality underground parking solution with premium use of the overground space – now that's the ultimate goal.'**

Oliver Vogt, Member of the Executive Board, WÖHR + BAUER GmbH

demanding task, which is a common part of WÖHR+BAUER projects. The company was founded by its shareholders back in 1991, with the present-day Managing Director Wolfgang Roeck as its first employee. The idea was to combine the core competencies of the two eponymous firms: WÖHR as a manufacturer of automatic parking technology, and BAUER with its reputation for special civil engineering projects. The aim

of this joint venture was primarily to facilitate the design and construction of bespoke parking solutions. Just a few years later, but with plenty more experience to call upon, it became clear that it might be worthwhile investing this shared expertise in more comprehensive projects – particularly those relating to urban planning where space is at such a premium. The decision was made to focus on developing designs for underground public car parks, complete with minimal columns, comfortable dimensions for users, and bright, well-lit spaces instead of dark corners. But as



time has gone on, the flourishing project developer is now more interested in getting involved with designing the resulting free spaces left above ground.

To this day, the ideas behind the

parking solutions are all conceived in house. The employees are primarily architects and engineers, many of whom have been with the company for some time, and their combined skill sets form a crucial basis for the economic progress of the company. With its expertise in the parking sector, the consistently highly technical focus of its work, and a willingness to take on major risks at its own expense, the city of Munich in particular – but also Berlin, Stuttgart and other locations – is always keen to work on large-scale projects together. The company is committed to handling all aspects of a project itself from start to finish, which includes conducting cost-effectiveness and needs assessments prior to the acquisition of land, commissioning architectural firms to design the buildings, encouraging public participation and communication with local residents and communities, executing projects with companies as a single contract, and ultimately marketing and renting out the finished property. With the 'TOM and HILDE' project duo currently underway, WÖHR + BAUER is even going as far as tearing down the very building we are sitting in right now to create yet more space in its place for a better-quality urban environment.

## Project duo: TOM and HILDE

Two in one for Munich city centre

A public car park is currently under construction beneath a major road, with a further two exclusive facilities planned just a few hundred metres away. The two projects have been aptly named 'TOM and HILDE' after their respective locations on Munich's Thomas-Wimmer-Ring and Hildegardstrasse. But why have they been given such an affectionate joint name? Because one couldn't exist without the other.

Underground parking facilities are complex structures – especially when it comes to urban environments. After all, everything is so tightly packed together in these places that it seems virtually impossible to imagine digging away the very ground that holds it all together. At the same time, underground car parks open up new free spaces on the ground above, offering a better quality of life and alternative uses for the land. This is precisely the plan for the public car park beneath Thomas-Wimmer-Ring, which is currently under construction, and the two nearby projects set to follow soon after.

The city of Munich decided to auction off the trapezium-shaped plot of land on Hildegardstrasse back in 2007. It was already home to a car park from the 1960s, although it didn't seem worth renovating it as it was felt that this prime city-centre spot could be put to better use. One of the conditions of sale, however, was to create an underground car park offering at least as many spaces beneath Thomas-Wimmer-Ring prior to starting the demolition work. As a section of the city's inner ring road, which runs around the old centre with three lanes in each direction, this is one of the main thoroughfares of the Bavarian capital. WÖHR + BAUER decided to bid for the plot to demonstrate its expertise in special civil engineering projects and many years of experience in the parking sector. The facility now boasts state-of-the-art, incredibly convenient parking spaces extending 140 metres long and 30 metres deep. In fact, the new underground car park has plenty to offer in the form of permissible vehicle widths of up to 2.5 metres, designated spaces for extra-long cars of up to six metres, charging stations for electric vehicles, and even the option of hiring a bike. The rapid developments in the mobility market have also been considered, with enough electricity to facilitate the switch to new technologies.

**'Car parks are becoming a transport hub and this is something to be encouraged.'**

Wolfgang Roeck, Managing Director, WÖHR + BAUER GmbH

This is by no means a straightforward construction task. To carry out the project without affecting the flow of traffic, the excavation work has to be split into two sections. Narrowing the road by halving the lane widths

will initially only allow half of the underground car park to be created on the vacant side. Once this is complete, the traffic will be restored and the second part can then be worked on. The emphasis on premium-quality workmanship incorporates both technology and design elements. The somewhat neglected open spaces at the side of the road will soon become green city squares, and the overground entrances and access points will be tastefully decorated in bronze-coloured metal based on designs by landscape architect Stefanie Jühling. A new pedestrian underpass made of glass will run beneath the road through the brightly illuminated car park, both of which will exude an uncharacteristically pleasant atmosphere.

And what about the land on Hildegardstrasse? By relocating the parking spaces to the new facility, the expectation is that the roads running

through the heart of the city will be significantly quieter. In place of the single structure currently situated on the site, two new buildings are planned for commercial and residential use. Their basic shape will continue to fit the plot they share, although a small alleyway will be left between them so that each building can maintain a sense of independence. The alleyway will extend Falckenbergstrasse further south as it leads away from Maximilianstrasse to the north, opening up a view right through to a small city square. Featuring a number of restaurants and even an old hornbeam, which has become one of Munich's natural monuments on account of its size, this spot is expected to become a real attraction for passers-by and residents alike. The fundamental urban concept forming the basis of the call for designs for the new building was put

forward by architect Oliver Kühn of GKK+Architekten. Construction work on the new buildings is expected to start in around 2020 based on a design from architecture firm Hild und K. Their plans are designed to complement the surrounding environment, including in terms of height. While the western, larger building will have seven storeys and face the luxury Mandarin Oriental Munich hotel across the road, the second building will be one storey lower to correspond to the facade height on the eastern side of the plot. Both buildings will feature a sloping roof design, which is also representative of their urban environment. This project, too, calls for the expertise of WÖHR + BAUER when it comes to special civil engineering. In addition to residential parking facilities, the company will also create an underground spa area for guests of the luxury hotel to combine old and new.

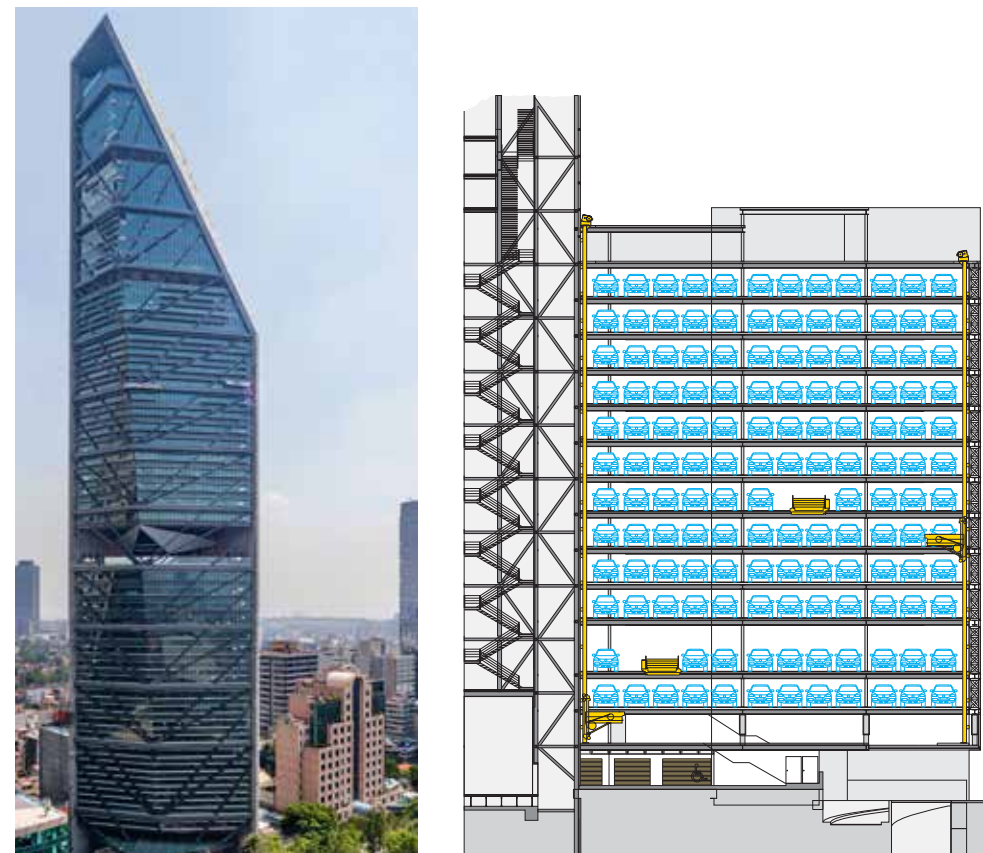


The two buildings to be developed by WÖHR + BAUER are set to offer a premium combination of facilities where people can live, relax and work in a space covering around 13,000 square metres both above and below ground. But first things first is the underground car park on Thomas-Wimmer-Ring. The urban concept was put forward by Oliver Kühn of GKK+Architekten. Construction work is set to begin in 2020 based on a design by architecture firm Hild und K. Their plans recognise the importance of preserving the existing listed buildings in the Old Town. Photo: WÖHR + BAUER GmbH



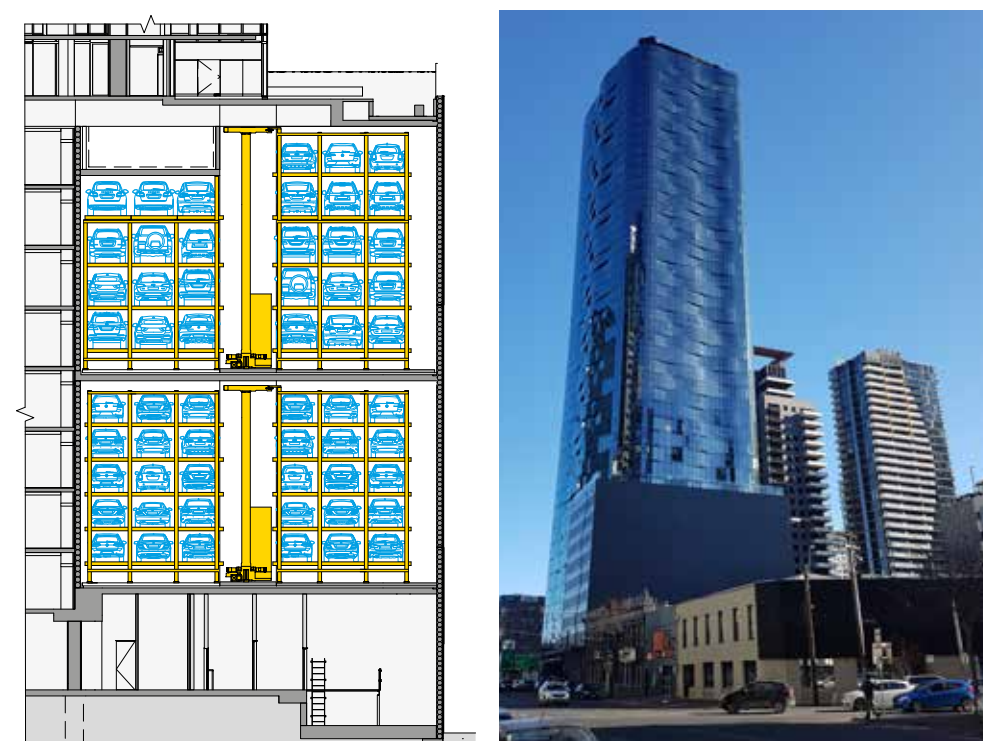
# Solutions for the City of Tomorrow

Space-saving parking across the world

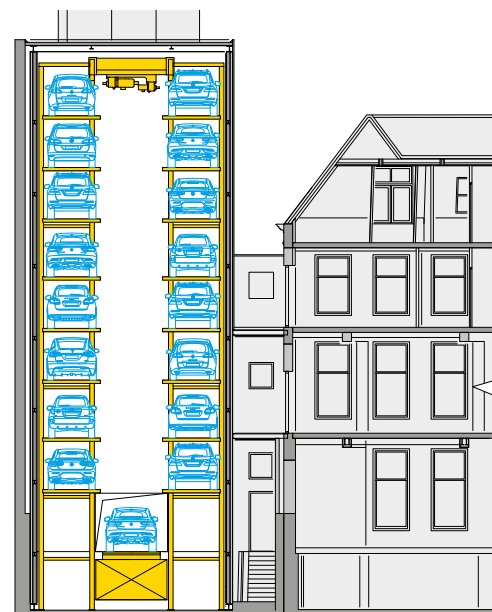


**Mexico | Mexico City**  
Torre Reforma | MULTIPARKER 750 |  
424 car parking spaces

State-of-the-art living combined with space-saving parking is a challenge architects and planners share all over the world. Exemplary international projects show how this could work. Parking space solutions by WÖHR Autoparksysteme GmbH played a key role in these projects. Among them: the world's most innovative skyscraper. The Torre Reforma in Mexico City has been awarded the International Highrise Award 2018.



**Australia | Melbourne**  
Shadow Play | MULTIPARKER 740 |  
150 car parking spaces



**Netherlands | The Hague**  
Kneuterdijk | PARKSAFE 583 | 52 car parking spaces



Based on solid data: all variants of a Parklift 450 model are supplied in a single file (including heights, depths, widths and vehicle load).

## WÖHR GOES BIM: A complete service for planners and architects

Building Information Modelling (BIM) is a planning method that uses a consistent digital building model to represent buildings along with all relevant information throughout their life cycle. Objectives can be achieved far more quickly and accurately if the scope for sharing information between all parties involved in planning a project is maximised. This is why WÖHR Autoparksysteme GmbH was so keen to share the value of this approach with its customers and partners throughout the project planning process.

of all planning and public projects. 'The call for a modern planning tool that enables architects and planners to incorporate parking systems into a 3D building model at virtually the touch of a button became impossible to ignore,' emphasises Marketing Director Ferhan Çökgezen, who launched the concept at WÖHR Autoparksysteme GmbH. 'By choosing BIM, we are taking yet another crucial step towards the future and digitisation as we offer first-class planning documents for our customers.'

Once it had been introduced at WÖHR, things started to move pretty quickly: the cooperation with DREICAD was established at the start of 2018, quickly followed by the launch of a shared pilot project. DREICAD converts the supplied data into BIM-compatible Revit files - a task that will be taken over by a specially appointed WÖHR employee in future. The first available models are the Parklift 450 and 405 along with the Combilift 551, 552, 542 and 543. These are the star products of the standard systems, which comprise the mechanical and semi-automatic parking systems. Going forward, the data will be made available to download from a cloud-based platform until such time, however, it can be downloaded from the website.

The download gives architects a parametric model that illustrates all possible configurations. The Parklift 450 model alone, for example, features 188 different variants. The model is entirely scalable, and there is no need to request any further data. It even includes a vehicle profile to test for potential collisions.

The benefits of BIM are clear to see. Instead of having each different business collect new information during the planning phase, which is the case in conventional planning methods, the data is built up constantly over the course of the entire project duration. This is clearly a bonus in the case of revisions, calculations and collision checks in particular. Specialist planners benefit from the information already accumulated by their project partners without having to enter this a second time or even from scratch. As a result, manual transfer errors are noticeably reduced. Data is managed in a central building model that is always kept up to date with the latest planning status. This allows all parties involved in a project to make informed decisions based on solid data.

### BIM glossary

**BIM execution plan (BEP)** - The execution plan governs the working relationships within the BIM project (such as the objectives, strategy, requirements, data exchange, provision of information, and modelling guidelines). It can also form part of the agreement between developers and contractors.

**Closed BIM** - A closed format of data exchange that is dependent on both software and manufacturers. The closed BIM method takes place within a software family, making it particularly suitable if work is always carried out by the same team.

**Level of detail** - This describes the information content and level of detail of the model at a certain phase of the project.

**Coordination model** - The composition of the individual business models during the planning phase to coordinate the disciplines. Not to be confused with the overall model, which contains all trades and information and serves for documentation purposes on completion of the project.

**Open BIM** - An open format of data exchange that is not dependent on software or manufacturers. It generally refers to the independent IFC format, which facilitates the cross-platform, multi-vendor exchange of building models. The standard is developed by the organisation 'buildingSMART e.V.'

**Cooperation** - BIM involves so much more than just 3D modelling or software. It is essentially about facilitating communication (based on a common model) and thus the overall level of cooperation within construction projects, thereby making them more economical and sustainable.





Photo: © dardjazov / Fotolia

## MIPIM trade fair

**12–15 March 2019, Cannes, France**

MIPIM is an international property market trade fair that welcomes experts from various sectors, including office, residential, retail, sport, logistics, industry and healthcare. WÖHR invites anyone who would like to know more to stop by the stand over the four days.

[www.mipim.com](http://www.mipim.com)

**66%**

of people find searching for parking spaces stressful

**40%**

of all car accidents take place while parking or manoeuvring

**45%**

of people would appreciate real-time information on available parking spaces

**€98**

overpaid at pay stations by German drivers each year to avoid a parking ticket



Photo: © Noppasirw / Fotolia

## EXPO REAL

**7–9 October 2019, Munich, Germany**

EXPO REAL is Europe's largest B2B trade fair for real estate and investment, representing the complete supply chain of the international real estate industry. This event will see WÖHR share a stand with the Stuttgart Region Economic Development Corporation (WRS GmbH).

[www.exporeal.net](http://www.exporeal.net)

**33 million**

self-driving vehicles worldwide by 2040



Photo: © eyestronic / Fotolia

## Bauwelt Conference

**5–6 December 2019, Berlin, Germany**

For the past six years now, this conference has been discussing the major issues affecting the latest urban developments. The Bauwelt editors join forces with international architects, town planners, developers, building industry representatives, sociologists, artists and critics to discover new road maps for the future.

[www.kongress.bauwelt.de](http://www.kongress.bauwelt.de)

**77%**

of people prefer off-street to on-street parking

**63%**

of German drivers are prepared to rely on a parking assist system

Sources: IHS Markit; INRIX Parking Pain Research; Allianz; Statista

### IMPRINT

**PARKRAUM**  
A customer newspaper from  
WÖHR Autoparksysteme GmbH

**Issued by**  
WÖHR Autoparksysteme GmbH  
Ölgrabenstraße 14, 71292 Fritolzhelm, Germany  
+49 (0)70 4446 185

**Head of Marketing**  
Ferhan Çokgezen

**Managing Directors**  
Wolfgang Frölich, Jens Niepelt

**Publisher**  
DICE@bauverlag  
Bauverlag BV GmbH,  
Avenwedder Straße 55,  
33311 Gütersloh, Germany  
[www.dice.bauverlag.de](http://www.dice.bauverlag.de)

**Editor in Chief**  
**Corporate Publishing**  
Christiane Fath  
Bauwelt, Schlüterstraße 42,  
10707 Berlin, Germany

**Project management and editing**  
Anne Meuer, Rebekka Bude  
DICE@bauverlag

**Layout and image editing**  
Stefan Wietfeld  
DICE@bauverlag

**Graphic concept**  
muehlhausmoers corporate communications, Berlin

**Authors**  
Anne Meuer, Michael Specht, Stephan Volpp,  
Franziska Weinz, Rebekka Bude

**Final editing**  
WIENERS+WIENERS GmbH, Ahrensburg

**Production | Printing**  
Bösmann Medien und Druck GmbH & Co. KG,  
Detmold



woehr.de