pulse

Movements in Architecture

01 | 2009

Living in an industrial monument

by Astoc Architects & Planners

Current housing trends

Potential energy saving with intelligent building management systems

Multi-generation house in Cologne

A breath of fresh air from Eastern Europe – a visit to Ofis Arhitekti

ABB

BKK-3 Architekten

Franz Sumnitsch from the architecture studio BKK-3 In Vienna champions the social aspects of living with innovative projects.

To the point: The future of living

pulse in conversation with Franz Sumnitsch of BKK-3 Architekten

Over the past few years which changes have been evident in the residential construction sector?
In addition to the so-called "mass apartment construction", two noticeable new forms of living have become established: "themed living" such as, for example, value-for money living, age-related living, integrative living – and the self-determined groups of developers. Ultimately, the neglect of the residential construction sector in Germany by the public authorities and the resulting frustration with the accommodation available led to the emergence of these groups of developers. For me this means the democratisation of living far removed from any residential policy.
How is architecture responding to the change in society reflected in changing types of household?
New demands are indeed being made of architecture: On the one hand there is a call for the long-term use of barrier-free apartments and on the other, given the splitting-up of, and thus decrease in household incomes, resizing of footprints is in demand. Only a small apartment is a cheap apartment. Architects need to be creative and design small, optimised apartments with sophisticated footprints. In this context, it seems important to me to create some form of compensation for being huddled closer together, be it large windows, balconies or additional communal facilities.
Your "Miss Sargfabrik" project is one example of communal living. What are its special features in comparison with more traditional concepts?
For me the special feature is the social aspect of the architecture. What was created here was not a residential building, but a way of life. Many of the residents moved in because they no longer wanted to live in anonymity, they wanted to live their life in a community. Single mothers and fathers, for example can make full use of the entire range of facilities, from the kindergarten and swimming pool to the events room.
What, for you, is the ideal apartment?
A free room, lots of glass, an undefined cubature, which I can treat sculpturally on the inside. If new requirements emerge, the light-weight walls are simply removed and redesigned.
Where do you actually live?
I live in the first part of the "Sargfabrik" in an 8 x 8 x 4.8 metre "box". In terms of structure it is a two-storey maisonette apartment, which had so much space that it was later possible to add an extra room and still have free space.

"The euphoria of urban living – exclusive apartment blocks are springing up in inner-city districts." > p. 04 An industrial monument with a view > p. 14 Above the rooftops of Berlin > p. 20 Two-family residence > p. 24 New concepts – future living > p. 28 "Working for a private client is like being married to him for two or three years." > p. 32

Cover illustration: Christa Lachenmaier
Picture editing: Raphael Pohland / stilradar

Mikael Colville-Andersen, Jens Lindhe

Innovative housing construction in Copenhagen – Mountain dwellings, Bjarke Ingels Group. The terraced balconies guarantee privacy and are not overlooked by neighbors.

Current housing trends

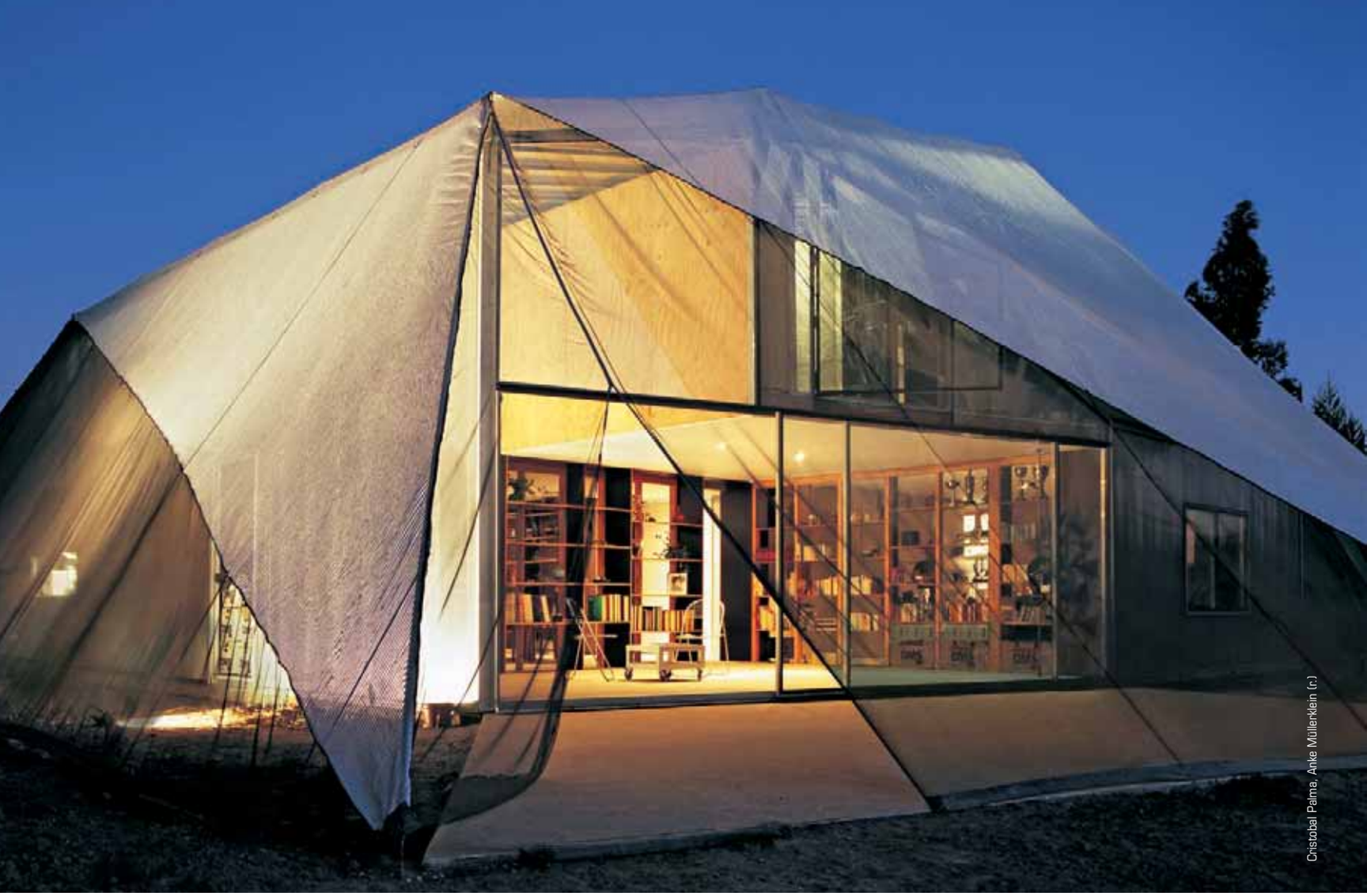
Housing construction is currently experiencing a renaissance. Demand is varied – individual projects impress us with well-conceived concepts geared towards the target group. Here, the author provides an overview, from inner-city living in townhouses, luxurious detached houses to 'Housing Co-ops' experimental living.

By **Gerd Kuhn**

For several years now, housing construction has once again been attracting a level of interest the likes of which it has not seen for some time. Investors and municipalities woo economically strong prospective homeowners such as the "creative class" and "new urbanites" with new types of housing, such as townhouses and various types of loft apartments. What is characteristic here is that, in the context of the new euphoria surrounding "city living", it is primarily luxury housing construction that has captured architects' attention, and to a far lesser extent the increasing misery at the lower end of the housing market.

Expensive, luxurious living

At present, for example, construction is underway on a high-profile, exclusive residential high-rise in HafenCity Hamburg designed by Behnisch Architekten. Not only is it surprising on account of its extraordinary location and prices, but also its concept. The luxury apartments in the 55-metre-high Marco Polo Tower are being offered on the basis of a "design-ready" concept, in order to allow the wealthy buyers the greatest possible leeway in conceiving the interior design of their home. Complex ceiling and floor designs facilitate extensive spatial freedom, intended to guarantee flexible layout and use of space. However, in order to prevent affluent clients being overawed with too much creative freedom, studios such as Graft; Behnisch Architekten and Davide Rizzo have provided guideline design options as a precautionary measure. The Marco Polo Tower stands for a particularly contemporary trend in luxury apartment construction, but one that has become widespread in good city locations. Nowadays, exclusive apartment buildings are no longer only being built in villa complexes in upmarket suburban districts or embedded in extraordinary landscapes, but also in inner-city districts up and down the country. "Live like a king", for example, is the slogan being used to advertise the "Lenbachgärten" urban development project in the centre of Munich. The new high-end community residential building was planned by Hilmer & Sattler und Albrecht and the studio Steidle und Partner. However, spacious loft apartments with a surface area of 189 square metres and a price tag of 1,567,000 euros no longer have anything in common with the alternative-lifestyle lofts in converted factories of previous decades. The newly built, exclusive lofts are advertised as "oases of calm", have high design standards, such as floor-to-ceiling windows, walls at least 3 metres high, and integrated sur-



Cristobal Palma, Anke Müllerklein (r.)

veillance systems for residents' security. Stuttgart has a counterpart, a former university institute which has been converted into an exclusive building. In the "Quant", formerly an inconspicuous laboratory building, Wilford Schupp Architekten designed 23 upmarket loft apartments, gallery and garden studios with a communal roof terrace. As in the Marco Polo Tower, in the Quant, high-quality show apartments were also designed, by the ippolito fleitz group, among others. However, with prices of up to 6,000 euros per square metre it would appear that, with regard to Stuttgart and this location at least, the limit has been reached or even surpassed, as many of the apartments are still empty.

The distinctiveness of the location

At present it is becoming even clearer than before that in the upmarket housing segment the location of a residential building is of pivotal importance. As such, knowledge of the fact that locations can be recreated, reinterpreted, and given a new cultural orientation, and how this can be done, is becoming ever more important. As an example, the last city villas on a pier on the River Main in the Westhafen area of Frankfurt, in the direct vicinity of a coal-fired power station, have just been completed. The distinctiveness of the location or a raw urban charm can definitely also become brands.

Gated residential areas

Generally speaking, expensive, luxurious living simultaneously stimulates security requirements. Living in gated communities is assuming an ever greater role worldwide. While living behind walls and fences in the USA, China, Russia, much of the Third World and also some parts of Europe has long been part of everyday (upmarket) life, the first German projects, such as the "Potsdamer Arkadien" and the Prenzlauer Gärten in Berlin, as well as the "Barbarossapark" residential project in the inner-city Pontstrasse district of Aachen, still provoke very conflicting and controversial reactions.

Experimental detached house by Frohn & Rojas, Santiago de Chile. The tent-like roof creates a transition zone between the inside and outside (left). Inner-city living in HafenCity Hamburg – a new, attractive district is under construction. Residential building by love architecture, Graz (right).

Increasing differentiation

At present, the new forms of luxury living are a keenly observed expression of the increasing differentiation in home living. So it would appear that forms of home living, from the maxi to the mini apartment, from excessive to informal living, are moving further and further apart. Whereas in October 2008 the specialist magazine "Die Wohnungswirtschaft" was still talking about a boom in luxury living, at the same time we can also talk of increasing housing shortages and displacement of lower income groups from central locations. Social interest groups and tenant organisations are warning of a new rise in numbers of homeless. The fact that social housing is featuring less and less in fixed-rent and reserved-occupation schemes is having a fatal effect. In Stuttgart, for example, reserved housing has halved since the early 1990s. Hardly any cities are compensating for this reduction by commissioning adequate new social housing construction projects. Even in Munich, which is attempting to adhere strictly to its self-imposed obligation to build at least 30% subsidised housing in all planning fields, even increasing to 50% on land within the city, the shortage of inexpensive rented apartments is getting worse. In addition, the deficits in the amount of "social" housing construction correspond with architectural deficits. In social housing construction, the social acceptance of which has suffered enormously, relevant experiments are currently more of an exception than ever before.

Innovative concepts

This is why, in 2008, the Bauhaus Dessau Foundation selected "Wohnungsnöte_housing shortages" as the theme for the Bauhaus Award. The first prize went to the project "Steps 'n Slabs" in Temuco, Chile by pasel.künzel architects from Rotterdam, which opens up perspectives on informal living. In Germany, innovative concepts in social housing construction, as realised, for example, by Lacaton & Vassal in 2005 in Mulhouse, France, and Ofis Arhitekti in the Izo-

NAP Architects, Daici Ano

Exclusive housing in Tokyo by Hiroshi Nakamura & NAP Architects. The building "Dancing Tree, Singing Birds" integrates the trees in the grounds into the architectural concept.

la Bay in Slovenia, feature hardly any more in this segment. It is more the case that new impulses for socially-oriented housing construction are coming from associations, as in the projects "Sargfabrik" and "Miss Sargfabrik" in Vienna by BKK3, or from the new cooperatives, as in Zurich and Hamburg.

Renaissance in home living

Thus, while the subject of housing is very worrying for poorer people, we can almost talk of a "renaissance", of revitalisation and innovative experiments in middle-class housing construction in recent years. The pluralisation of lifestyles, individual value systems and the wish to design one's "own life" have led to new architectural solutions. In contrast, standard products by major property developers generally no longer correspond to new housing needs, and have thus lost their appeal. In many cases they are being replaced by new forms of property developers made up of smaller components such as joint building ventures and small new cooperatives, which accommodate the desire for more self-determination and personal responsibility. While the first joint building ventures in Freiburg and Tübingen were still strongly linked to the world we live in, for example by emphatically pursuing ecological and common goals, we can identify a strengthened sense of pragmatism in today's architects' joint building projects. Largely unrelated in terms of ideology, they create impressive construction group buildings. As such, over the last three years in Berlin, gaps between existing buildings have been filled with residential buildings that represent a reinterpretation of the recognised qualities of Gründerzeit bourgeois apartment buildings. We often encounter contemporary, open-plan footprints, differentiated open spaces and architecturally complex façades. In addition, this communal form of construction assumes responsibility once again for social space.

Change in housing construction

In summary it can be said that home living has undergone significant change in recent years, both on the demand and supply side. This change has benefited aesthetic quality and sustainability in housing construction. And, housing construction has once again become an exciting task for architects.

Dr. Gerd Kuhn works as an architectural and housing sociologist at the Institut Wohnen und Entwerfen at the University of Stuttgart. He is co-editor of "Information zur Modernen Stadtgeschichte". He is a founder member of the Bundesverband Baugemeinschaften and has written various publications on housing construction and culture.

Ralf Grömminger / LBBW Immobilien

Zooey Braun / LBBW Immobilien

Above: Luxury housing in Stuttgart – Quant residential project by Wilford Schupp Architekten. The architects built upmarket apartments in a 1950s office and laboratory building. Below: Floral ornamentation by Studio M/Hajime Masubuchi – a tribute to a building covered with growing plants that had to make way for the new building in Tokyo.

Tatsuo Masubuchi

Networking individual fields lead to the creation of an intelligent overall system, with which the private householder can save energy.

Energy savings through intelligent building management systems

For many, building a property is an investment in the future. The fact that it involves the integration of modern furniture and appliances in the kitchen, bathroom and living room goes without saying. Alongside these things, many developers are increasingly thinking about intelligent building engineering. This simplifies operation, increases comfort and security, integrates multimedia devices into the overall concept and lowers energy consumption.

By **Enrico Löhrke**

With regard to energy savings, the potential of intelligent building management systems is often underestimated. With the help of modern building engineering, energy consumption in residential buildings can be significantly reduced. Energy can be saved by networking individual systems that at first glance appear to be independent. Individual building functions are also linked in an overall system. This way, for example, the heating system, controlled ventilation, air conditioning etc. are combined with the building's electrical installations and joint potential can be taken advantage of.

Intelligent building engineering

If we take a closer look at the everyday use of a building, we quickly discover that many different processes are not necessarily as energy-efficient as possible. We know that the more technical devices we have in our homes, the more standby consumption we have. This is where devices that have seemingly been switched off still permanently use electricity via transformers, a power supply. A good deal of IT equipment and kitchen appliances, as well as lamps, use energy in this standby mode and actually cost money. However, alongside energy used for lighting and standby mode, that used for heating makes up a significant portion of total energy consumption costs. And it is not only heating that increases consumption levels, even when a particular room is not in use, but also often incorrect heating in relation to the outside temperature. Alongside well-known architectural measures, such as insulation, intelligent building engineering systems can help lower energy consumption by up to 35%. Thus in hallways, for example, or in rooms that are not used much, the lights are only switched on when someone enters the room. A motion detector identifies the person coming in and automatically switches on the light, but only when there is insufficient daylight. If the room is bright enough, it detects the person, but does not switch on the light. Residents do not always want this kind of automation, such as when they need bright light to work. The automatic mode can be deactivated at the push of a button, for the resident must have first say, before technology.

Everyday life is no longer conceivable without small devices like DSL routers, modems, household appliances and DVD players, yet they consume electricity when not in use and generate unnecessary costs. In the planning phase of an intelligent building it is a good idea to identify possi-

Different temperature requirements in the living room and bathroom – setting individual heating profiles can lead to energy savings of up to 25%.

ble causes of such extra costs. Electricity consumption can be reduced by up to 18% by integrating plug sockets that can be switched off into the overall concept. Many devices can thus be switched off at once by pressing a single button. It is easy and convenient, for example, when leaving the house – akin to operating a car's central locking system.

Savings with heating profiles

Do you also always plod around lowering the temperature of every radiator before leaving the house? In heating control in particular, there is a great deal of potential for modern building engineering. With the help of single-room temperature control, each room can be heated individually, generating energy savings of up to 25%. Here, rooms are heated only when they are actually used. Residents can set the desired temperature down to the degree using the comfort button or the central touch screen. The energy savings can be significantly increased further with so-called heating profiles. Take the bathroom, for example. Many people use the bathroom at a certain time in the morning and evening and, moreover, for a limited amount of time only. By means of a heating profile, residents can increase the temperature to a desired level at the time of use, so that it is nice and warm in the morning. Subsequently, the temperature is automatically reduced again. The more exactly the heating profiles set correspond to actual use in the building, the greater the energy-saving potential.

Regulating the optimum room temperature

With a sensibly coordinated regulation regime, integrating the heating system, controlled ventilation and air conditioning into the electrical installations can achieve optimum room temperature and economical use of resources in terms of energy. One concrete example is the integration of a geothermal heat pump in the overall concept. Depending on the outside temperature, on cold days the underfloor heating is switched on. When it gets warmer again from spring onwards, the outside temperature determines the point when the geothermal heat pump is no longer used to heat, but to cool. The room control button or the touch-screen automatically shows residents the switch to cooling mode.

User-friendly

You do not need knowledge of software to set a heating profile, for example, nor even a PC. The desired temperature can easily be selected for the relevant days of the week and

times of day using the touch-screen. The rooms will then be heated to the specified temperatures.
It is increasingly the case that a building's energy consumption is no longer defined exclusively by energy used for heating, but more and more by cooling. Modern architecture contains large windows to make buildings appear bright and open. In winter they are ideally suited to using solar energy to support the heating system, while in summer they can lead to quite considerable increases in temperature where sunlight shines directly into them. This can only be corrected by a shading system. With the help of building engineering, automatic shading and temperature regulation can be activated depending on local weather conditions. The shades move into place automatically when the sun shines and a specified temperature is exceeded. This prevents any further temperature increase in the respective room and large cooling loads can be avoided.

Visualising electricity consumption
Knowledge of the breakdown of energy consumption is currently becoming increasingly interesting. Owing to the visualisation of electricity consumption, an awareness of use and the resulting behavioural adjustments alone can lead to electricity savings of approx. 7%. An intelligent building can measure electricity consumption. The data is then analysed and, for example, visualized for the user on a touch panel. It depicts the building's energy consumption and residents can use this to estimate consumption levels and the resulting costs way in advance of the annual meter read.

Summary
In summary we can say that intelligent building engineering systems significantly reduce energy consumption. We can save energy by networking individual systems which initially appear independent. This leads to an efficient overall system which, for example, links controlled ventilation and air conditioning systems to the electrical installations in the building and exploits joint potential. In order to be able to make full use of this potential of intelligent technology, a well-conceived plan and sensible realisation of the overall system's programming are imperative.

Enrico Löhrke is Managing Director of inHaus GmbH in Duisburg, offering planning, consulting and construction services revolving around system solutions for innovative building management (www.inhaus-gmbh.de).

Industrial monument with a view

There was a time when flywheels, conveyor belts and engines were all-dominant – in recent years the "Grube Carl" briquette factory in Frechen near Cologne was transformed into a distinctive residential landscape. In doing so the studio Astoc Architects & Planners decided not to simply do away with area's industrial past, but to skilfully integrate it into the architectural concept.

By **Christian Hümmeler** Photos **Christa Lachenmaier**

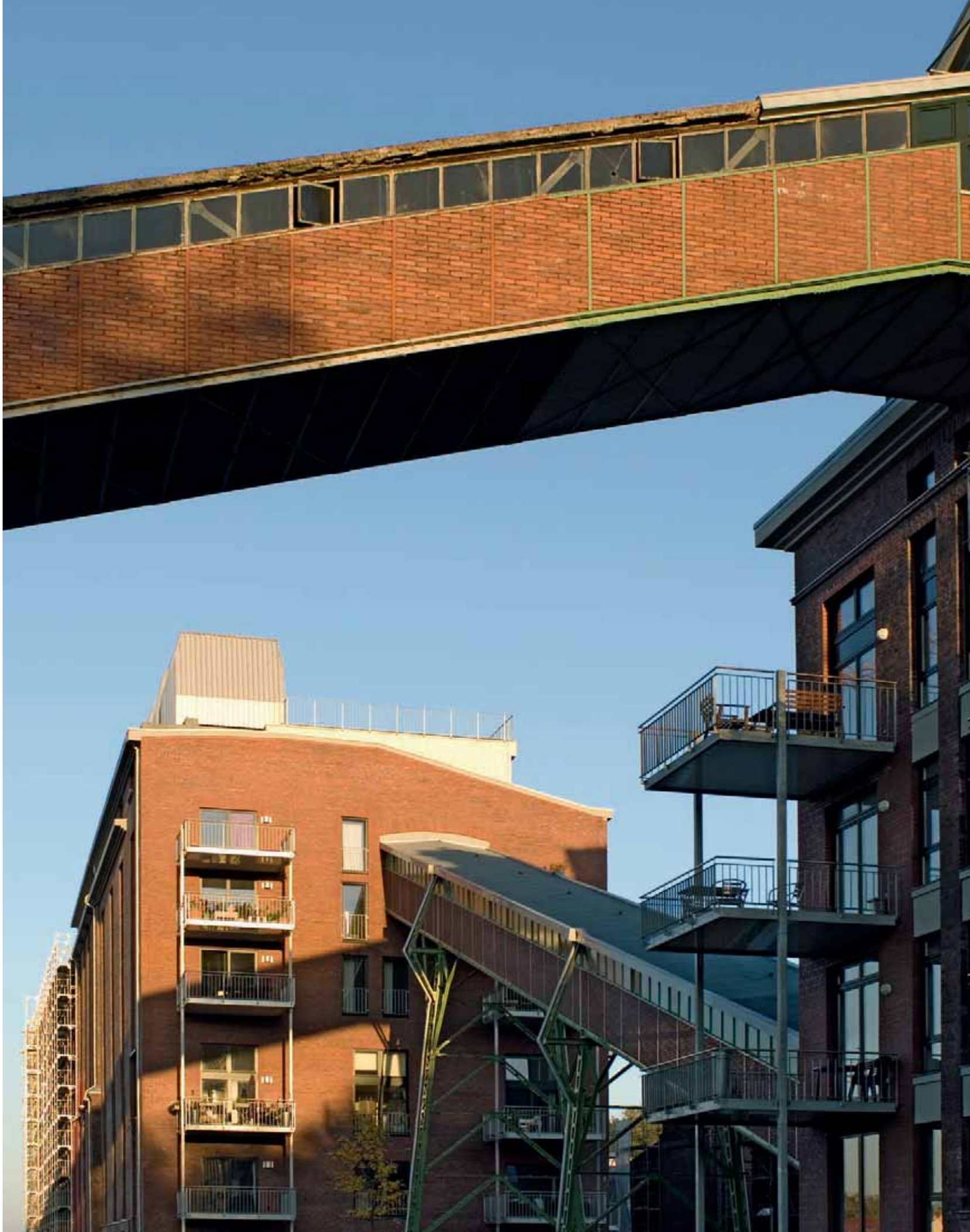
For some time now the people in the Rhenish area between Cologne, Aachen and Mönchengladbach have gathered experience in the renaturation and recultivation of former open-cast lignite mines. Areas in which resources have been exhausted are being turned into lakes, recreation areas for nearby urban areas, and new agricultural land. In Benzelrath, a district of Frechen, a town situated directly before the gates of the city of Cologne and once dominated by the former "Grube Carl" briquette factory, a mining-related industrial monument, was successfully transformed into an impressive residential area – an example of how important testimonies of a past industrial culture can be preserved for posterity by providing new uses.

Living with history

This was no easy task for the designers, the Cologne-based studio Astoc Architects & Planners. After all, the factory, which closed in 1995 but has been well preserved, was to become the centre of a new residential area on the former mine and serve as both the focal point and a source of identification. The latter was achieved precisely because the architects did not deny the site's former function, but instead largely preserved its historical appearance. The only visible signs of the transformation are the new balconies on the main building, the briquette factory's former "drying and pressing house". Here, where once wet coal dust was dried and pressed into briquettes, there are now 71 apartments of various sizes, as well as areas reserved for commercial and gastronomic use. The towering brick building with a total of seven storeys of differing heights has five separate stairwells. There was a sufficient number of windows, which are indispensable in residential buildings, and they had to be modified only slightly. The historical contours of the characteristic roofs, with their former iron cooling towers as defining elements, were recreated – albeit in aluminium. They conceal three-storey maisonette apartments with roof terraces and a panoramic view of the Cologne Bight and a view of Cologne Cathedral - no small matter in this region for marketing purposes.

However, the extensive complex not only scores points due to its proximity to the major city of Cologne, indeed, numerous legacies call to mind its industrial past, during which up to 230 tonnes of briquettes were produced here

Huge conveyor bridges, which once transported raw coal in large quantities, shape the new image of Grube Carl. Relicts of its industrial past are now part of a modern residential landscape.



The former drying and pressing house today accommodates three-storey maisonette apartments with roof terraces affording a view of the Cologne Bight not to be sniffed at.

per day. There are iron flywheels, machine components, conveyor belts and engines on a so-called "monument axis", which transects the complex and thus the middle of the drying and pressing house. The neighbouring building, the former "wet room", which was converted as early as 2004, is linked to the pressing house via a steep conveyor bridge. A second conveyor bridge used to deliver the raw coal was also preserved. It is precisely these historical elements that lend the entire complex, with its red-brick outer walls, an exciting atmosphere.

High-end fittings

The apartments in the drying and pressing house, each measuring between 56 and 191 square metres, have been fitted with high-end materials throughout. Thus there is parquet flooring in the living and dining areas and granite flooring in the bathrooms. The doors and windows are made of wood, the handles and mounts of stainless steel. The total of ten terraced "townhouses" currently under construction in the former "boiler and low-pressure house" next to the main building are to be fitted out in the same way. The architects envisage apartments measuring between 90 and 150 square metres here. The four-storey transverse building has another function however: in a large hall beneath the roof terraces there is a residents' garage with a total of 79 parking spaces. And just in front of it there is another reference to the past with a short stretch of narrow-gauge track from the former works railway laid into the newly paved floor.

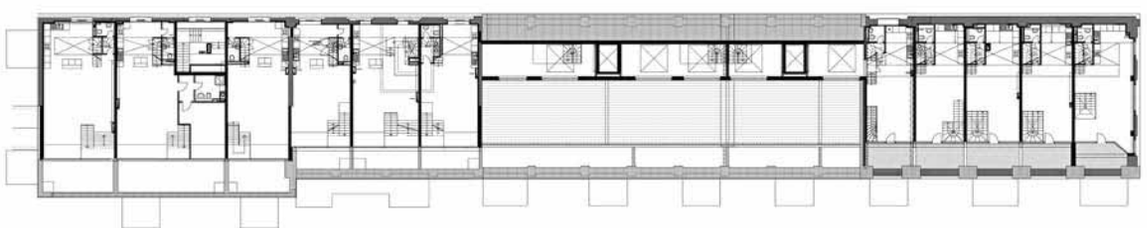
Focal point of the municipal district

The former "Bellerhammer" (the original name of the factory and the briquettes made there) influenced the region for an entire century. Initially, the raw coal came from a neighboring mine, and later by train. Having been processed in the "wet room" and the drying and pressing house, the finished briquettes were thoroughly dried in the surrounding fields, hand-packed, which was very time consuming, and loaded onto trains for transportation. The idea of making the historical building the focal point of a municipal district is not entirely new, for shortly after World War II the "Grube Carl" miners' estate sprang up near the mine.

Shops and restaurants enliven the area

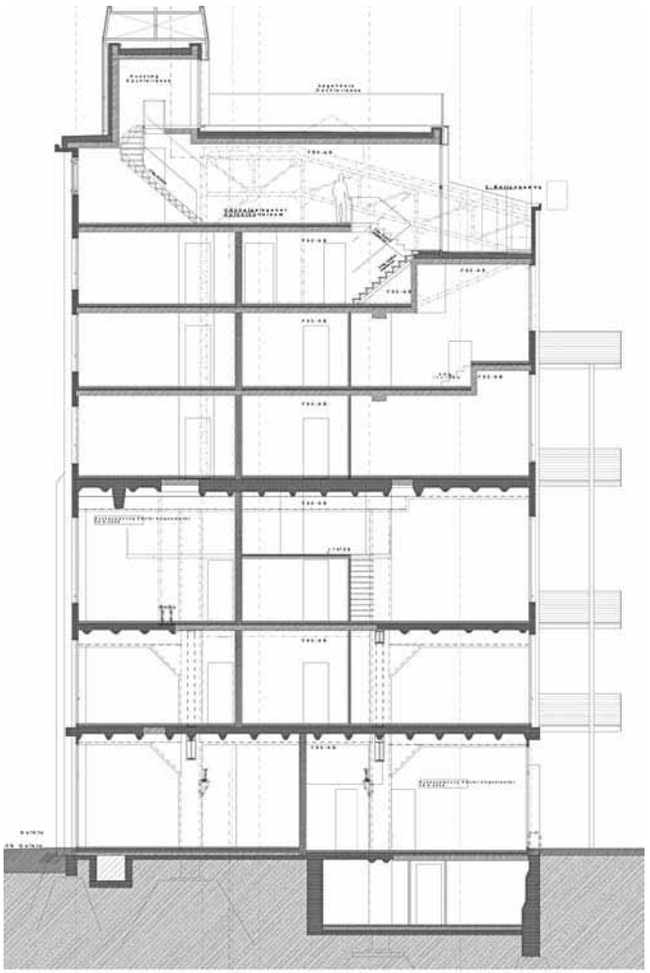
In the 1980s and 1990s, demand for briquettes continually decreased, which is why the complex's original function

Layout of ground floor



Layout of 6th storey

View from the west



Cross-section

New balconies are one of the few changes to the façade. Sun loungers and flower boxes bear witness to the new life in and around the industrial monument.

became increasingly unprofitable. That said, before it was shut down for good the briquette factory produced around 40 million tonnes of briquettes. Yet today too, "Grube Carl" will not just be a residential area; the industrial monument offers space for commercial interests even in its current, converted form. Especially towards the "Marktplatz" of the new municipal district, located to the north of the drying and pressing house, there are several commercial units in which small shops and restaurants enliven the area.

Nonetheless, it remains a "residential complex in an extraordinary location". Which was also the verdict of the Landesbauministerium and Architektenkammer Nordrhein-Westfalen – together they awarded the ambitious conversion project one of 12 awards last year, in the context of the campaign platform "NRW wohnt".

Project partners

Client
Treukontor AG, Wirtschaftsprüfungsgesellschaft, Cologne, Germany

Architects
ASTOC GmbH & CO.KG Architects & Planners, Cologne

Building technology
Integrated products by ABB/Busch-Jaeger: "Alpha Nea" switch series

Building volume
approx. 16,000 m^2 gross floor space

Above the rooftops of Berlin

Additional living space has been created in a corner house in the district of Charlottenburg in West Berlin: As part of a complete renovation, a roof extension with a large glass façade was added to the splendid Gründerzeit building. The attractive open-plan apartment with a roof terrace affords an unmatched view of Berlin.

By **Susanne Liehr** Photos **Mike Auerbach**

Stepping into the fifth-floor apartment and leaving behind the hallway, which is separated by a translucent glass pane, one is amazed by the spacious, expansive interior, which extends across two floors up to the roof. An unexpectedly loft-like character opens up in the West Berlin district of Charlottenburg, and the eye takes in the nearby Kurfürstendamm to the south, the "Funkturm" to the west and the distant "Fernsehturm" to the east. The long living area is divided in the centre by the supporting grid bearing the roof. The surrounding floor-to-ceiling windows, the windows inserted in the sloping roof and the roof terrace on top provide daylight from all directions. A steel staircase on the wall at the side leads to the gallery level, whose rooms can be reached via a long walkway.

Living space with open footprint

Throughout the whole interior, dark window frames and the smoked oak floorboards create effective contrasts to the smooth finishes of the white walls and ceiling as well as the mounts and covered supports of the steel frame. Various functional rooms and the private quarters, the bedroom, the dressing room and the bathroom flank the hall. The open footprint of the large main area enables a succession of living zones that flow into each other. The kitchen units and counter, the long dining table and chairs on a light carpet, the sofas grouped together on a dark carpet and the wall with the fireplace all match, thanks to carefully selected furniture and fittings.

Multifunctional fireplace wall

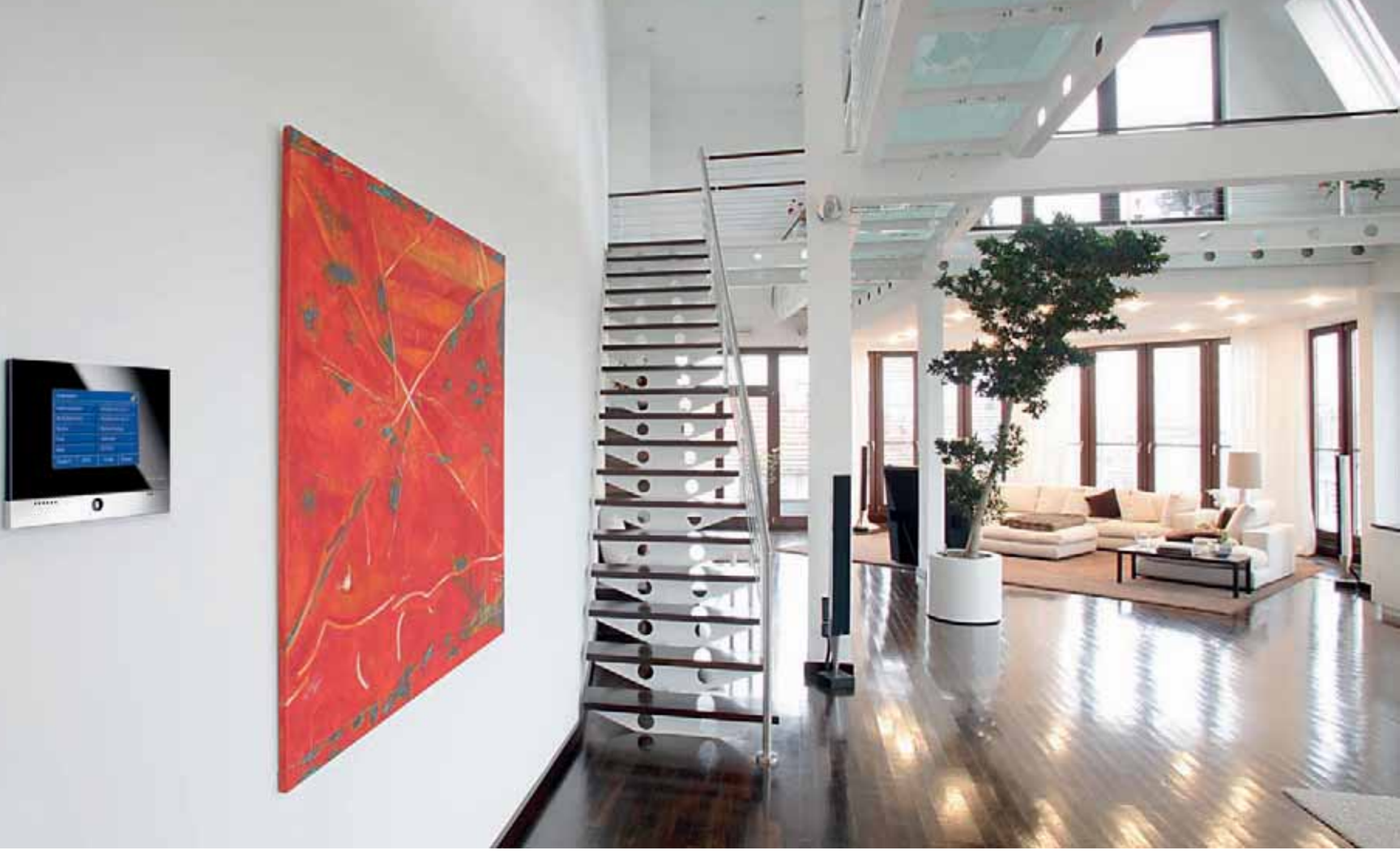
The wall with the fireplace, which unites several functions, deserves special attention. The open hearth, framed by natural stone casing, is positioned on a room-filling pedestal that offers plenty of space for cushions and storage. Above it, a wood-clad wall plate weighs down horizontally and, despite its size, appears to be floating. Where it projects at the side there is a wall cupboard containing two glass cabinets. Polished metal frames both the multimedia sound system and, hidden behind a small bronze torso, the telecommunications and Internet access point.

Intelligent installations

Since all the technical installations are concealed in the space beneath the flooring, behind wall facing and in low-

Design element multifunctional wall – the extended platform for the fireplace offers space for inviting cushions and the wood-clad glass cabinets contain a Bang & Olufsen sound system.


LORIOT



The loft apartment spread over two floors gives a light and spacious impression. The open footprint enables the individual living areas to overlap.

The natural stone-clad fireplace is the focal point of the living area. The dark wood of the fireplace wall and the dark parquet flooring create attractive contrasts to the otherwise light apartment, whose dominant colour is white.

ered ceilings, visible switches and plug sockets are reduced to a minimum. Floor boxes provide electricity for the hi-fi appliances, and indeed it was the Bang & Olufsen sound system that prompted the users to consider bundling various appliances in their application and controlling them via remote control. In terms of home comfort, this means establishing a combination of lighting, shadow, sound and room temperature suited to the users' personal needs and setting it up in the relevant zones. The networked information can be controlled using a shiny panel on the wall, the Busch-Jaeger Controlpanel, and the home is intelligently automated. A single touch activates the lamella control for all the blinds, halogen spotlights transform the walkway into a glass strip of light and the chandelier illuminates the dining table, with gentle music playing. The resident becomes the director, who can do (almost) anything at the touch of a button.

Project partners

Client
Detlef Maruhn, Berlin, Germany

Architect
Wolfgang Rautenbach, Berlin, Germany

Building technology
Maruhn Elektro-Installationen GmbH, Berlin
Integrated products by ABB/Busch-Jaeger:
KNX-System, Controlpanel and operating elements from the Busch-triton switch series

Two-family residence

The owners wanted a house in which several generations could live and which would have two sets of living quarters. The result is two apartments, with very similar footprints but nevertheless tailored precisely to the needs of the respective families. Both apartments stand out for clear architectural language, attention to detail and generously proportioned rooms with a good view outside and of the garden.

By **Britta Rohlfing** Photos **Ulrich Möres**

The Rohrig residence is located in the exclusive Hahnwald district of Cologne, 20 minutes drive south of the town centre. The district itself is characterised by villas and single-family homes, the road by Mercedes and Porsches. Residents here are not short of money, yet the area exudes restraint rather than showiness. The Rohrig family wanted a home in which the parents would be able to move in together with their son and his family and grandchildren-to-be, in other words a home for several generations. What they wanted was spatial proximity with sufficient private space for each family. The area available for building was an elongated narrow plot with its longitudinal side facing south. The brief required a single building with with two independent residential units.

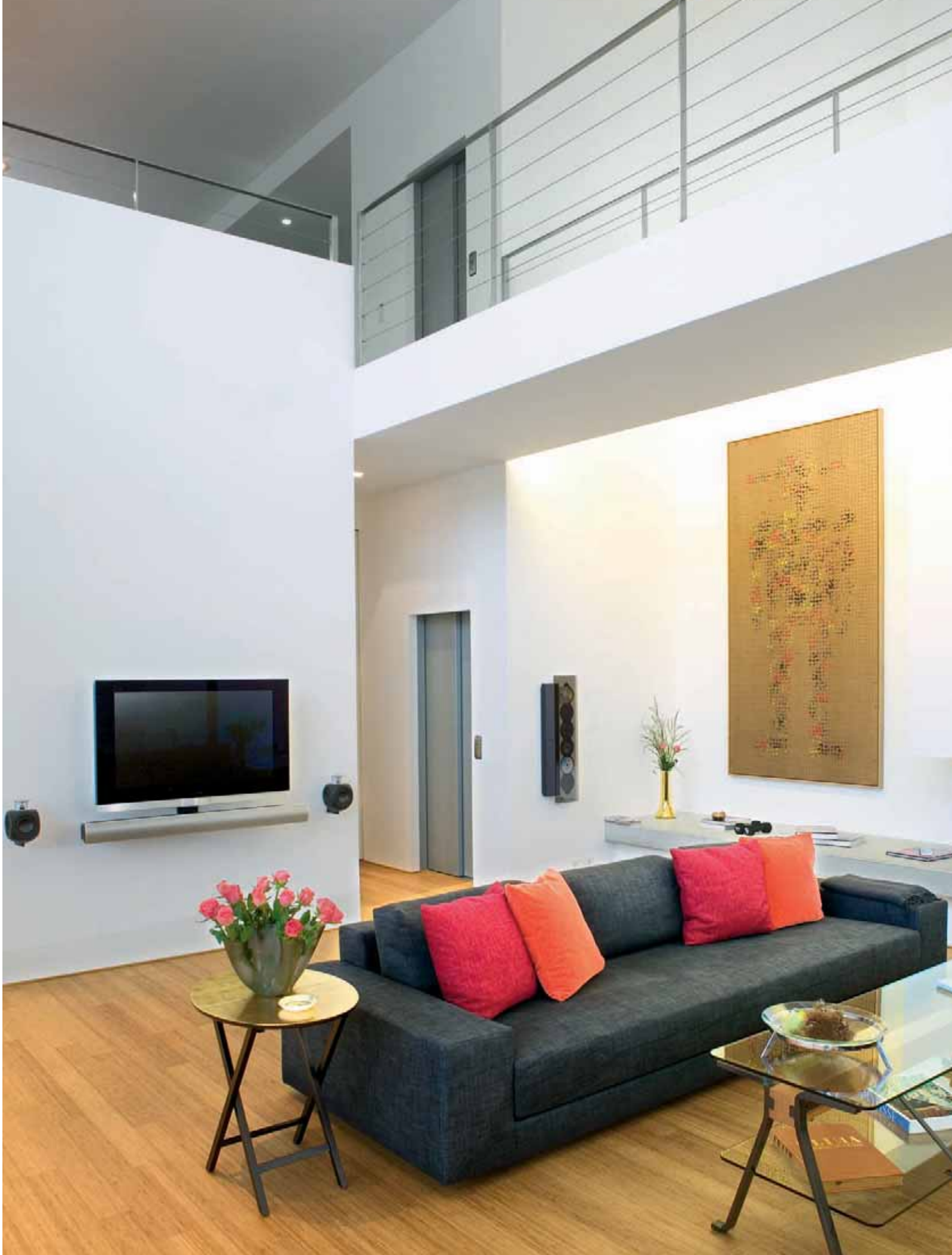
One building – three units

The house, which was completed in early 2007, comprises three structures in total: The parents' house, the son's house and, as a kind of spacer in between to increase the privacy of the two units, the son's atelier tract, which also integrates two double garages. The living units are connected via a pergola, with the atelier building "slotted" underneath.

Self-contained on the outside, light on the inside

If one enters the property via the long, generously proportioned driveway, the building appears eentirely self-contained, almost foreboding. The front doors look like entrances to a workshop and emphasise the desire for seclusion. On the inside, however, things are very different. Entering the parents' unit one encounters a light, airy room, an atrium, which is open to the first floor and boasting a floor-to-ceiling glass façade facing south to the garden. This room, which extends from the entrance area into the living room, is the focal point of the parents' unit. Two sofas invite to sit down; a large fireplace with a concrete pedestal flanks the seating. On the ground floor, the kitchen, the dining room and a library adjoin the living room. Like the living room, the latter two also feature a glass façade looking out over the garden, creating a terrace-like protected inner courtyard.

Clear lines and brilliant white walls characterize the interior of the apartment. The warm colour of the bamboo parquet flooring provides a warm and pleasant basic tone.



Identically built
Both units were conceived along to the same principle: The available space is spread over three floors offering a total of 320 square metres per unit. Both apartments open onto the garden, forming their own intimate courtyards. The footprints were planned such that both apartments function independently and could even be sold separately at a later date. The parents' apartment was planned with consideration of the elderly in mind, and a lift connects the basement, ground floor.

The layout
In both units the private areas are located on the upper floors: the bedrooms with dressing rooms and adjoining bathrooms. The focal point of the parents' bathroom is an oval bathtub with a gorgeous view into the garden, that of the son's a glass-walled sauna with an unobstructed view outside. On the upper floor of the parents' apartment, the gallery opens onto the living area, where there is a well-fitted billiard room with a bar, enticing you to have a game. And lastly, the working area of the house, an office with additional toilet, is reached via a walkway connecting the east and west parts of the apartment, creating an interesting spatial structure.

An apartment for art
The son's apartment is dominated by art. The layout corresponds to that of the parents, though small modifications were made to accommodate the respective requirements. On entering the apartment one enters the gallery, which is dominated by high walls and empty surfaces offering plenty of space for presenting the artist's large works. Receptions and private views take place here. The artist has ideal working conditions in his adjoining atelier with plenty of overhead light.

The parents' main living area with floor-to-ceiling glass façade opening onto the garden (left). Gallery in the son's house (middle). Gallery and billiard room in the parents' house (right).

Security and intelligent home automation
The client wanted to be able to control heating, lighting, blinds, garage doors and entrance door from one central place. All important functions can be set easily by touch-screen, using the Busch-Jaeger Controlpanel, which is installed in an easy-access position in the kitchen. This way individual lighting scenarios were pre-programmed – the "romance", "party" or "garden" moods ensure the right lighting in each case. Security was also an important issue for the client. A holiday-mode simulates the residents' habits in a 14-day cycle when they are away. And at the push of the alarm button, the entire property is lit up completely and instantly.

Project partners

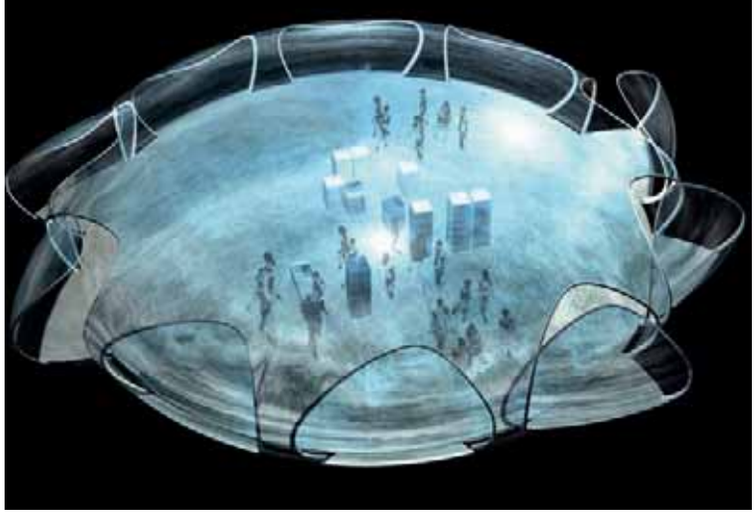
Client
Rohrig family, Cologne, Germany

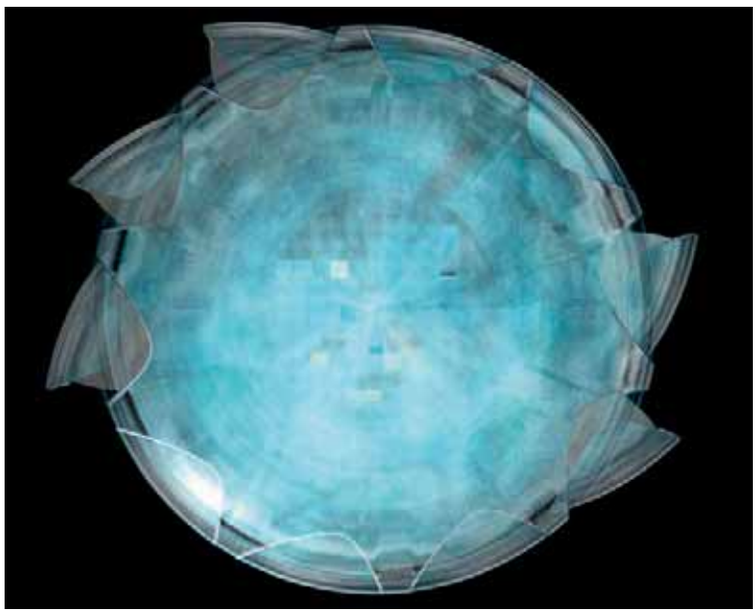
Garden planning
Stefan Schwarte, Münster, Germany

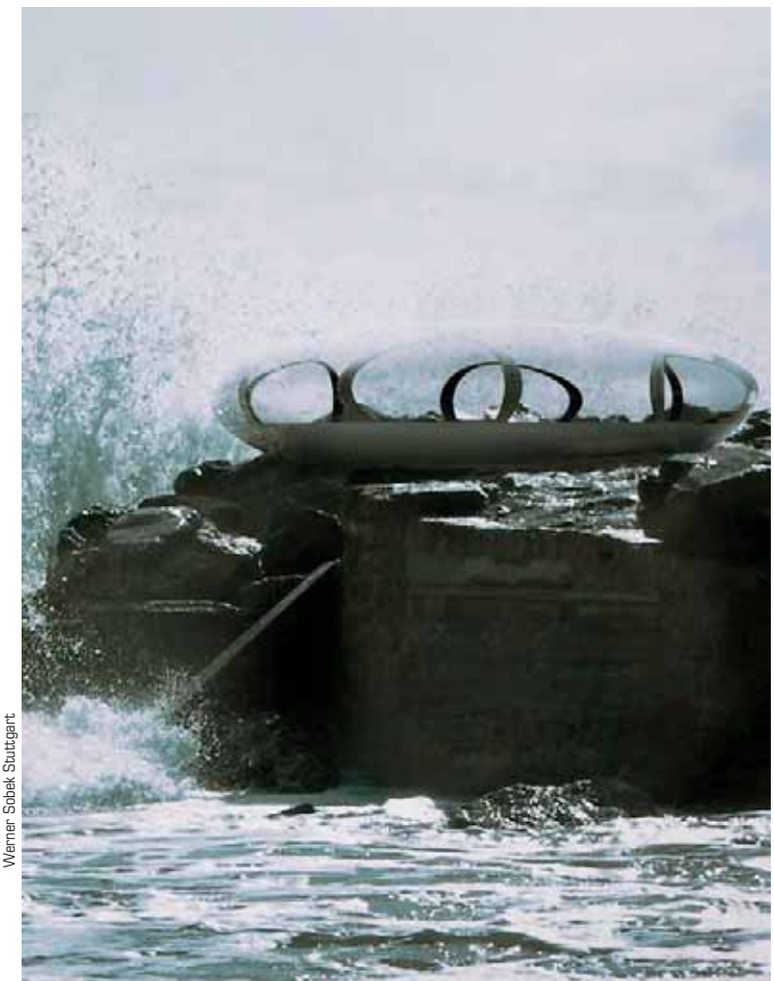
Building technology
Integrated products by ABB/Busch-Jaeger:
KNX-System, Controlpanel and operating elements from the future linear switch series

Living in the future – new concepts

In times of dwindling raw materials and growing environmental awareness, sustainable building is rapidly becoming more important. Current examples of private housing designs from the international architecture scene bear witness to this: In the future, without sophisticated energy concepts and a dialogue with nature, nothing will be possible.







Werner Sobek Stuttgart

Werner Sobek: R129

Living in a bubble – for the engineers working with Werner Sobek at his Stuttgart office this is an idea with future potential. In his design, a transparent plastic sheath supported by hollow carbon girders surrounds living space. Depending on how great the need for a private sphere is, instead of using curtains or blinds, the resident can darken part of or the entire sheath at the push of a button by means of the electro-chrome outer skin. As there are neither walls nor supports, the resident is free to configure his space as he desires. All that has to be planned is the space for the moveable kitchen block, which also houses the sanitary installation. The relatively detailed planning of sockets would suggest that this idea does not need to remain a future dream: A floor panel in the form of a carbon corpus conceals all the installations, such as underfloor heating, a technology floor, space for water, electricity, compressed air pipes and communication circuits. With this approach, the Stuttgart architects put conventional living functions in the background and suspend the visible separation between inside and outside, enabling the proximity to nature to be experienced.

MVRDV

MVRDV: Gwang Gyo Power Centre, South Korea

A man-made hilly landscape is to be constructed 35 kilometers south of the Korean metropolis Seoul. The competition entry submitted by the Rotterdam studio MVRDV embraces a wide range of different uses and is intended to create great urban density whilst supporting sustainable urban planning. The residential area alone totals 200,000 square metres, and there is just as much space available for parking and a mixture of commerce and culture. Multi-storey atria recessed into the façade form the market places of the future at dizzying heights. The ring-shaped structure of the towers creates space on each level for green areas. This natural climate control is intended to contribute to saving water and energy, and reconcile the "vertical city" ecologically with its environment.

Angelidakis: Menir House

The Greek architect Andreas Angelidakis has designed a mobile summer-house for the beach. The design resembles an inhabitable cliff, into whose double-walled plastic sheath sea water is pumped to make the house stable in the sand and cool the inner rooms. The roof terrace boasts dual-function sun protection. The umbrella's lamellas are fitted with photo-voltaic cells but can also be turned into a wind turbine. This way Menir House combines two methods of renewable energy supply in a highly innovative way and enables the modern nomad's dream abode with sea view, sand and the sound of waves.

Andreas Angelidakis

Piercy Conner Architects

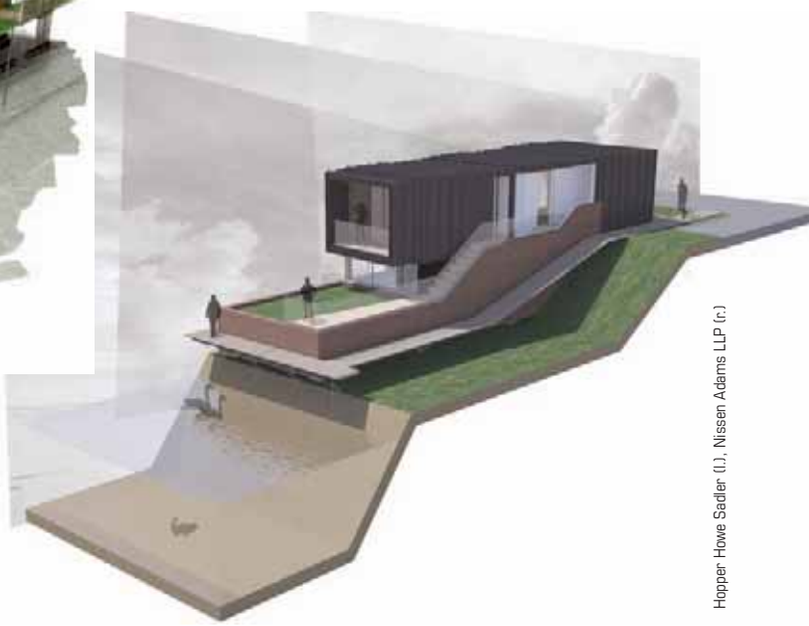
Piercy Conner Architects: SymHomes Mk1, Calcutta, India

These Indian residential units with a steel load-bearing structure prove that sustainability is on the rise not just in the Western world, but is also an extremely high priority on the subcontinent. With their perforated metal façade, the buildings designed by London studio Piercy Conner Architects, respond on the one hand to the subtropical climate and on the other to the design features of Calcutta. At the same time, the sheath, tempered by shading, allows air to circulate, such that air conditioning is only needed in the twelve apartments when the heat is extreme. A hybrid and thoroughly innovative system made possible through the multi-layered façade.

Graft

Graft: Zero-Energy Houses

The Graft architects in Berlin, described as "Junge Wilde" (wild young things) and "pop stars" by the German media, are currently drawing up plans in Kuala Lumpur, Malaysia, having previously won the competition for the exclusive Bird Island Park project there. The six luxury villas designed by Graft are characterised by sustainability and energy efficiency: the complex has its own solar energy system and the buildings are to be made entirely of environmentally friendly materials. The load-bearing sections will be made of recycled concrete or locally sourced renewable materials, the insulation is made of cellulose, the roof sheeting of recycled plastic and the teak decks are of course FSC-certified. The design also has something visionary about it: several cells integrated in the landscape are surrounded by a translucent silicon-coated fiberglass fabric, which serves cooling purposes and and is designed to represent the shadow play of the trees. The design was awarded the US LEED environmental standard and rated a 'platinum' building.



Hopper Howe Sadler (l.), Nissen Adams LLP (r.)

2008 RIBA flood design competition

A major English insurance company did not want to leave it to chance for architecture itself to come up with a building that can withstand flooding, and together with the Association of British Architects staged a competition. 85 participants from around the world submitted designs which respond to the predicted rise in groundwater level by being water-resistant or inexpensive to produce, and which can therefore guarantee some safety in the case of disaster. One of the four winning concepts comes from the London architecture studio Nissen Adams LLP and is based on the fundamentals of boat building: as water levels become critical, the building mutates into a floating body. Another prize-winning solution by Hopper Howe Sadler is convincing for the fact that its upper level can be modularly adjusted to become a temporary emergency dwelling.

Hugh Broughton: Halley VI Antarctic Research Station

Temperatures up to minus 56 degrees, with wind speeds reaching 160 km/hour – not exactly what one would consider optimal conditions for comfortable living. However, if, like the London architects Hugh Broughton, you are designing a South Pole research station, you have no choice but to address extreme conditions such as these. Turbines on the belly of the module transform the extreme wind power into electricity and, together with a photovoltaic system on the outer layer, supply enough energy for the permanent accommodation of up to 16 scientists. But in the winter months in the Antarctic, the sun is nowhere to be seen, so the architects responded that lights which imitate daylight. In order to realise their ideas without the need for large construction machines, lightweight steel frames and fiberglass-reinforced plastic panels were plant.

Hugh Broughton

Dynasty in Slovenian

Fresh thinking from Eastern Europe – since gaining its independence Slovenia has experienced an economic boom, which also bore fruit in architecture. One example of this is Ofis Arhitekti, an ambitious young studio in the capital Ljubljana that has drawn attention to itself on account of its unconventional design of residential buildings, and which is now slowly establishing itself internationally.

By **Britta Rohlfing** Photos **Tomaz Gregoric**

Ofis Arhitekti was founded in 1996 in Ljubljana by Spela Videcnik and Rok Oman. The two young architects, who have known each other since they were students, graduated from the Architectural Association in London, and then returned to Slovenia. There, they benefited from the collapse of the Eastern bloc and the emergence of capitalism in Slovenia in the late 1990s and succeeded in establishing themselves in a dynamic market and making a name for themselves with imaginative architecture far removed from standard norms.

Ms Videcnik, where do you see the differences between residential building in England and Slovenia?
We gained no experience of building in England – at our tender age and as foreigners it would have been difficult to land contracts there. It's easier for us in Slovenia. We try to build using regionally typical, traditional materials and at times you are forced to make improvisations here. Take our "Tetris Apartments" project, for example: two months before completion we ran out of façade panels. We had to order slabs, which turned out to be a different colour, and we were forced to blend these in with the others. It was funny though – at the end of the day it was precisely this "colour concept" that gave the project an added quality.

You have built single-family dwellings as well as multi-storey apartment blocks. What are the respective challenges?
Working for a private client is like being married to him for two, three years. You tend to catch a glimpse of his intimate cosmos, you have to understand his way of living and his family. The rooms and the house then emerge from this understanding. You put a lot of work and energy into single-family dwellings that is never paid for in terms of money, which is why we for example can only take one on every two years. It's a completely different story when it comes to social housing. You are not working for people you know personally, but for the market. As such we try to make the apartments as flexible as possible, so that they work for highly disparate groups of tenants, such as young families or older couples. It goes without saying that we have to keep costs as low as possible. At the same time, however, the building and its façade have to display an identity all of their own. And that is anything but simple.

But precisely that seems to be such a success in your "Izola" project. At first sight you would not expect this to be social housing...
At the time we won the competition because we had cal-

The spectacular staircase in Villa Bled serves as the building's main connecting and communication element. The client's brief: a staircase like that in Dynasty.

Spela Videcnik and Rok Oman founded Ofis Arhitekti in 1996 in Ljubljana. Both studied architecture at Ljubljana School of Architecture and the Architectural Association in London.

culated an extremely low construction cost index of 650 euros per square metre. During the actual construction we really struggled to stick to it. The apartments are straightforward in terms of design and materials. In return we put a bit more money into the façade – although it is simple in structure. But with the balconies and loggias we did actually succeed in giving the building an identity of its own.

Villa Bled is a different project altogether...
Indeed, a 19th century villa in the Alps with a splendid view of Lake Bled. Both the countryside and the building were listed - there were strict conditions to adhere to. The client wanted to add a spacious extension with very open space to the old building, which featured several small rooms. Our solution was a 900-square-metre glass annex beneath the ground floor, which melds complete transparency with the countryside.

And how did you manage to combine old and new on the inside of the villa?
We housed the more private areas, such as bedrooms and dressing rooms, in the old villa, with the extension intend-

Left: The glass extension to Villa Bled blends in with the old building beneath the ground floor. Right: Social housing construction in the Bay of Izola – optimistic and brightly colored.

ed for living and working. An imposing, curved spiral staircase serves as a central linking element, onto which all the rooms open. In Slovenia at the time we were watching all those American TV series such as Dynasty, in which you could often marvel at golden spiral staircases or suchlike in the middle of apartments. As a result anyone who came into money through the privatisation process in Slovenia dreamed of having an impressive staircase like this as the focal point of the building – our client wanted precisely that. To begin with, the idea seemed very kitschy to us, but then thought, why not? – and designed designed this staircase, which gives the house its special character and functions as a kind of "communication element". It goes without saying that we gave this particular staircase a more contemporary look.

Villa Oak is a new building that you refer to as an intelligent building. What do you mean by that?
The client is an IT specialist who develops software for all the major companies in Slovenia. On the one hand we tried to make the house intelligent in terms of its architecture: in the centre of the house there is a covered atrium, to which all the rooms are aligned. But one can also talk of an intelligent building in terms of the fittings: functional elements such as the heating, lighting, darkening features, and security can all be controlled centrally. And there is a choice of pre-programmed light and music scenarios.

In future, which factors are going to become more important in the residential building sector?
Environmental factors such as saving energy are becoming more and more important. In Slovenia, a new energy consumption law was recently enacted. In future, natural resources are meant to be given priority and artificial heating and cooling reduced to a minimum.

What building can we expect from Ofis in the near future?
At this very moment we are busy designing a high-rise as well as a large shopping center in Ljubljana, and we have a project going in Paris, which we are very happy about, as it's our first major project abroad. Last year we won a competition for student accommodation there.

The evolution of the light switch

When it was invented the electric light bulb had a great advantage over the gas light: it was easy to switch on with a simple hand movement when you entered a room. From then on, there was no longer any need to fumble in the dark trying to find the lamp and thus the history of the evolution of the light switch ran its course.

By **Prof. Horst A. Wessel**

The switches that made electric light sources easier to use originally came from telegraphy and telephony. Here, practicability and safety were clearly ranked higher than aesthetics. Initially, the cables were generally fixed to the walls, because electric lighting was installed in existing, older buildings. Visually, the systems were soon adapted to the equipment in the respective rooms. The cables, if they had not been installed under the plaster, were braided in the colour of the wallpaper, lamps and switches were made of brass, bronze and crystal. The very first switches were ordinary constructions, lever switches, rotary and toggle switches. Lever switches initially consisted of two separate brass rods that were drilled through at the points where they intersected, so that you could push in a pin to link the two rods together such that they conducted. When the switch had to be used more frequently, operating it was too complicated, which is why the lever was then constructed in such a way that it could be raised (non-conducting) or turned over (connecting). The rotary switches were smaller and more elegant. Here a metal bridge made or severed the connection to the electric current. The wing screw, which conducted the actual switch process, generally only worked rotating in a clockwise direction, i.e., anticlockwise was "lost motion". A switch that worked both clockwise and anticlockwise came onto the market in 1904. A few years earlier, F.W. Busch had significantly improved the rotary switch by integrating an eccentric disc. With this construction, the company gained international recognition. Toggle switches were likewise used in the early stages of electric lighting. A small lever connects or separates the conductive elements. The push-button switch works in a similar way, transferring the motion to a switching roller via a lever. A switch with a removable head (Zeta switch) and bracing spring binder, which was also suitable for installing recessed into the wall, was available from 1911. From 1913, the bad habit of hanging clothes on switch levers or toggles was effectively addressed by flattening the profile of the finished switch.

Today's intelligent building management systems no longer have much in common with these old constructions. For example, with a touch-panel based on KNX technology we can now control not only electric light but also window blinds, room temperature and air conditioning etc.

Wall-mounted rosette switch
1906

"Pear switch"
1915

Flush-mounted rotary switch with glass cover
1920

Tumbler switch
1936

1899
The Busch eccentric switch
Gave the company F.W. Busch
international recognition

1910
a watertight switch
b wall-mounted toggle switch
c lever off-switch, 3 pin

a

b

c

1933
Pull switch

1943
Toggle lever switch

In-wall rocker series switch Busch-Duro 2000
1953

Busch-Duro 2000 SI, still the top-selling switch series today
1983

Busch-priON, based on KNX technology

2009

1975
Switch series Busch-Duro 2000LX, successful market presence for 28 years

1993
Window blind control from the switch series alpha exclusive

2006
pur stainless steel

Aluminium

Materials are the soul of architecture. They lend character to buildings and atmosphere to rooms. But what do architects think of classic materials today? *pulse* sought their opinion.

Anwers by **René van Zuuk Architekten**

What attraction does aluminium hold for you and what in your opinion is the role of this material in architecture?
Aluminium is a material that it is easy to process, it is resilient, light and does not rust. All of which means it is highly suitable for use in buildings where working conditions are tough and a variety of different components are brought to bear. In the case of "Block 16" we really wanted to emphasise the building's shape, and therefore opted for aluminium panels of different colours.
With this kind of metallic sheet aluminium, the material changes colour depending on the light it reflects, and this kindles any number of interesting effects.

What surface finishing and processing techniques for aluminium do you think we will see in the future?
We have already used zinc-coated aluminium panels for the Architecture Institute in Amsterdam. This allowed us to combine the surface properties of zinc with the technical qualities of aluminium. I am convinced that in future we will see opportunities for coatings of other materials, too.

Aluminium is already a very versatile material. In which direction will its range of uses expand further?
I think things will go in the direction of computer-controlled design techniques and gluing technology for individual construction components. And combinations of aluminium and other materials are likewise conceivable, in this way profiting from the qualities of both the materials used.

Apartment Block 16 in Almere, Netherlands, by René van Zuuk Architekten.

Christian Richters (l.), raumprobe

The window detectors are available in black, white and stainless-steel look; the LED display for the **Busch-wireless control device** matches almost all switch programmes.

Feel safe with the Busch wireless security detector

Who is not familiar with that sinking feeling on leaving the house that they have forgotten something: did I remember to close the windows? Install the **Busch wireless detector** and you have no need to worry. The intelligent wireless detector system means every occupant can tell at a glance which window is open, on tilt or closed. Fitted between window handle and window frame, the battery-operated detector **WaveLINE** transmits data on the status of the window to the **WaveLINE** LED display. The system can replace an existing light switch, and should ideally be fitted close to the front door. The switch function continues to operate, there is no need for new wiring or installation work on the window.

Big sound that takes up little space

No space for a radio in the kitchen, bathroom or guest room? Solve your problem with the new **Busch-AudioWorld® Digital Radio,** flush mounted. The compact device can be flush-fitted into a power outlet. The flush mounted Stereo RDS Tuner can store up to eight preselected programmes, a digital amplifier and an integrated aerial. The loudspeaker is flush-fitted in another power outlet. One or two loudspeakers provide mono or stereo quality for resonant, powerful music and voice reproduction. Supply music to every room you wish, and customise both volume and radio station. Moreover, there are no messy wires to trip over or spoil the look of your room. Reception is either via an external or the built-in aerial. Featuring a programmable clock, alarm and sleep function the radio is operated intuitively using a rocker switch and can be switched on and off using an external switch or a movement sensor. All the components are available to match the design of the current ABB/Busch-Jaeger switch programmes. The compact digital radio can either be used as a stand-alone appliance or in combination with components of the **Busch-AudioWorld® System**. The latter's heart is the **Busch-AudioWorld®console** with integrated flush mounted Stereo RDS Tuner providing excellent reception and cable station compatibility. The **Busch-AudioWorld® System** is ideal for use both in home settings but also stores, offices, doctors' surgeries, lawyers' offices or larger residential complexes. An integrated intercom management can service up to 15 intercom zones; this includes relaying a message to all zones. A microphone console with gooseneck microphone was conceived for use in doctors' surgeries and lawyers' offices. The device also serves as a baby phone to ensure all is well in your child's bedroom. The **Busch-AudioWorld® system** is rounded off by a new MDRC mains adapter, an MDRC amplifier with booster function, a flush-fit audio input for connecting external audio devices such as CD, DVD or MP3 players, not to mention a 5" built-in loudspeaker for wet rooms.

Excellent music reproduction in confined spaces – the new **UP-DigitalRadio** for flush installation in any power socket and is available in all switch systems (left). The microphone console is a highly convenient device for use in doctors' surgeries and lawyers' offices (right).

How many structures make up the multi-generation house in the Hahnwald district of Cologne?

pulse asks a competition question in every new issue. The winners each receive a book.

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The multi-generation house in the Hahnwald district of Cologne is made up of ☐ structures.

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Ulrich Möres (l.), Taschen

The prizes:

All correct entries will be placed in a hat, from which ABB/Busch-Jaeger will draw two winners. Each winner will receive either a copy of **Architecture Now! Houses** by Taschen or **Strike a Pose** by Gestalten. The deadline for entries is 1 July 2009. The winners will be announced in the next issue of "pulse". The winners of the last competition are Friedrich Winter, Reutlingen and the architectural studio Leptien + Pfeifer, Bonn.

Preview pulse 02-2009:

Places of worship

From church and cathedral, to synagogue and mosque - pulse 02-2009 will take a look at places of worship and religious architecture.

Daniel Sigert / Fotolia.com

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