DREES & SOMMER GROUP

ANNUAL REPORT 2017

DREES & SOMMER

GROUP OPERATING RESULT 2017

380.1

Sales in
million euros

45.0

Operating
result in
million euros

36.0 %

Equity ratio

Approx.
2,840

employees

40

International
locations

CONTENTS

GROUP OPERATING RESULT 2017

PROFIT & LOSS STATEMENT

			(in euros)
1.	Revenues	309,094,214	
2.	Change in work in progress	66,950,419	
3.	Other operating income	4,018,892	380,063,525
4.	Expenditure for purchased services	59,847,443	
5.	Personnel expenses	208,027,716	
	a) Wages and salaries	183,945,115	
	b) Social security costs and pension fund	24,082,602	
6.	Depreciation	5,957,490	
7.	Other operating expenses	62,814,726	336,647,376
8.	Income from shareholdings	1,547,747	
9.	Income from other securities and from long-term loans	523,900	
10.	Interest and other expenses	462,214	1,609,434
11.	**Operating result**		**45,025,583**
12.	Taxes on income and earnings	15,649,088	
13.	Other taxes	188,099	15,837,187
14.	**Net income**		**29,188,395**
15.	Shares held by other shareholders		375,646
16.	Profit brought forward less dividends		–8,811,106
17.	Changes in equity as the result of purchase or sale of own shares		0
18.	**Group balance sheet profit**		**20,752,935**

BALANCE SHEET

ASSETS

			(in euros)
A.	**Fixed assets**		
I.	Intangible assets	14,781,377	
	1. EDP software, licenses	3,741,563	
	2. Good will resulting from capital consolidation	11,039,814	
II.	Tangible assets	21,020,776	
	1. Land, rights equivalent to real property rights, and buildings	6,307,213	
	2. Other assets, operating equipment, fixtures and fittings	13,778,260	
	3. Payments on account and tangible assets under construction	935,303	
III.	Financial assets	3,687,498	
	1. Shareholdings	1,371,704	
	2. Other securities lending	2,315,794	
B.	**Current assets**		
I.	Inventories	0	
	1. Work in progress	436,045,331	
	./. Advances received	–436,045,331	
II.	Receivables and other assets	70,519,896	
	1. Trade receivables	58,124,822	
	2. Receivables from shareholdings	113,429	
	3. Other assets	12,281,645	
III.	Securities	14,722,958	
	1. Other securities	14,722,958	
IV.	Checks, cash on hand, cash in banks	33,175,097	
C.	**Deferred income (other)**	1,462,923	
D.	**Prepaid taxes**	2,316,000	
E.	**Positive difference from asset allocation**	0	
	Balance sheet total	**161,686,524**	

LIABILITIES

			(in euros)
A.	**Equity**		
I.	Subscribed capital	13,222,286	
	less nominal value of treasury shares	–2,428	
II.	Capital reserves	23,311,093	
III.	Revenue reserves	3,350,289	
IV.	Net income	20,752,935	
V.	Change in equity due to exchange rate difference	–956,979	
VI.	Minority interests	–1,441,340	
		58,235,857	
B.	**Accruals**		
	1. Accruals for pensions	3,479,593	
	2. Provisions for taxation	7,219,611	
	3. Other accruals	53,356,629	
		64,055,834	
C.	**Liabilities**		
	1. Liabilities to financial institutions	14,812	
	2. Payments received on account of orders	7,373,815	
	3. Trade payables	15,150,809	
	4. Liabilities to shareholdings	1,785	
	5. Other liabilities	16,745,853	
		39,287,074	
D.	**Deferred income (other)**	107,759	
	Balance sheet total	**161,686,524**	

PROFIT & LOSS STATEMENT

Group sales grew by 45.3 million euros to 380.1 million euros (prior year 334.8 million euros). In the year under review, expenses rose 40.8 million euros to 336.6 million euros (prior year 295.8 million euros). The operating result increased by 3.3 million euros to 45.0 million euros. Net income totaled 29.2 million euros.

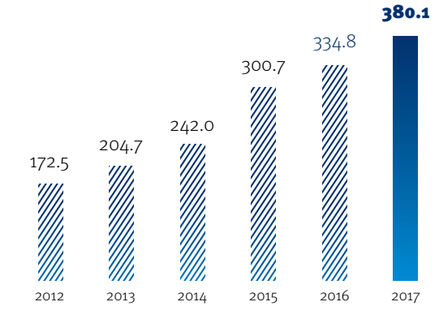
BALANCE SHEET

The transfer of the balance sheet profit of 20.8 million euros – together with subscribed capital, capital reserves and revenue reserves – results in equity of 58.2 million euros. The equity ratio is 36.0 percent.

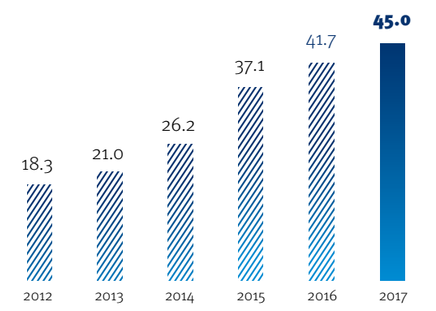
Accruals for pensions, taxes and variable remuneration declined by 6.9 million euros to 64.1 million euros. Liabilities such as trade payables to suppliers and subcontractors increased by 8.3 million euros to 31.9 million euros. Payments received on account of orders decreased by 20.3 million euros to 7.4 million euros for invoice-related reasons.

This results in a balance sheet total of 161.7 million euros for fiscal 2017 (prior year 172.2 million euros).

SALES IN MILLION EUROS



OPERATING RESULT IN MILLION EUROS



REPORT OF THE SUPERVISORY BOARD

› The company remains on course for success and is laying the foundations for the future. ‹

Despite all the gloomy predictions, the economy has continued to accelerate, particularly in the construction sector. But the impact has not been all positive. Although sales and earnings increased, many companies reached the limit of their capacity. Drees & Sommer also experienced these pressures as the result of higher prices and difficulty in making up for schedule delays.

So it is all the more remarkable that management was able – at the same time – to grapple intensively with the consequences of the foreseeable massive changes in planning and construction, and to develop appropriate solutions. The future has already begun at Drees & Sommer.

Supervisory Board

Prof. Dr. Hans Sommer
Chairman
Dr. Johannes Fritz
Deputy Chairman
Eva Dietl-Lenzner
Dr. Bernd Gaiser
Prof. Holger Hagge
Volker Mack

Continuous dialog with the Executive Board

In fiscal 2017, we fulfilled our Supervisory Board tasks in full compliance with statutory requirements, the Articles of Association and rules of procedure. At each meeting, we discussed the Executive Board reports, the development of the company, and strategic issues against the background of general economic conditions. We also received reports on any material risks reported to us, whereby no risks that threaten the continued existence of the company were identified.

At the meeting of *March 3, 2017* we noted that the situation in the Russian regional office has stabilized. This also applies to the Middle East hub. The updated Business Plan for 2017 was also approved, and the planned measures for the development of a future-oriented work structure were noted.

The meeting of *May 12, 2017* focused on the annual and consolidated financial statements 2016 and our proposed resolutions for the 2017 Annual General Meeting. During this meeting, the Supervisory Board satisfied itself of the required independence of the Auditor. The Auditor declared to the Audit Committee that there were no grounds to assume bias on its part. With the participation of the Auditor, the Supervisory Board discussed the annual and consolidated financial statements for 2016, including the auditor's reports, the proposal for the appropriation of net income, and the risk report, and prepared the appropriate resolutions for the Annual General Meeting. Moreover, the Supervisory Board made a recommendation to the Annual General Meeting regarding the appointment of the Auditor for 2017.

In its meeting of *October 10, 2017*, the Supervisory Board took note of the Executive Board proposal for the general positioning of Drees & Sommer in international business and approved a proposal for ongoing assessment of the desired effect of completed mergers.

The projections and business plan for fiscal 2018, as well as the 3-year plan, were the focus of our meeting on *December 12, 2017*. This mainly concerned future investments and further mergers to be undertaken in 2018. The Executive Board further reported that the business plan for 2017 will be met or slightly exceeded.

Annual and consolidated financial statements 2017, audit of annual accounts

The annual financial statements and the consolidated financial statements of Drees & Sommer SE were prepared by the Executive Board in accordance with the provisions of the German Commercial Code (HGB). Baker Tilly Roelfs – appointed by the Annual General Meeting as Auditor – has audited the 2017 annual financial statements and the consolidated financial statements, including the management reports. Baker Tilly Roelfs performed the audit in accordance with article 317 HGB (German Commercial Code) and in compliance with the auditing principles issued by the German Institute of Public Accountants (IDW). The annual and consolidated financial statements were approved without reservation.

The annual financial statement and management report, the consolidated financial statement and group management report, the Auditor's reports, and the Executive Board's proposal for the appropriation of net income of Drees & Sommer SE were made available to all members of the Supervisory Board in a timely manner. We examined these documents and discussed them at our meeting on May 14, 2018 in the presence of the Auditor. We duly approved the Auditor's reports.

At our meeting on *May 14, 2018*, we also approved the annual financial statement, the consolidated financial statement, and the management reports prepared by the Executive Board. We discussed and approved the Executive Board's proposal that the net income of Drees & Sommer SE be used to pay a dividend of €2.00 per share, and that the balance – and the amount allocatable to own shares held by the SE – be carried forward to new account. The financial and earnings position of the company, medium-term financial and investment planning, and the interests of shareholders were taken into account in making this decision. We also passed proposed resolutions for the Annual General Meeting.

Changes to the Executive Board

Peter Tzeschlock will leave the Executive Board on June 30, 2018. We would like to thank him for his dedicated service to Drees & Sommer SE and wish him all the best for the future.

Stuttgart, May 14, 2018

Hans Sommer

REPORT OF THE EXECUTIVE BOARD

We successfully completed numerous projects with our clients over the last financial year, and also got many new projects off to a good start. We would like to thank our customers for the trust they have placed in us and our employees for their outstanding commitment.

Executive Board and Partners
(from left to right)

Dierk Mutschler

Peter Tzeschlock
Chairman of the Executive Board until 30.06.2018

Steffen Szeidl

Strategic approaches to collaboration with customers

In addition to successful mergers, cooperative ventures are increasingly paying off. For example, with EPEA Internationale Umweltforschung GmbH, a company specializing in international environmental reseach. In 2017, we once again succeeded in securing expertise for the Group and integrating it into projects for the benefit of our clients. Digitization remains our key strategic and operational thrust. Our specialists were able to further advance digital planning and construction processes using Building Information Modeling (BIM) and the associated modularization of components and buildings. The digitization of our services is also increasingly influencing the services we offer and the types of buildings serviced. Smart Commercial Buildings, for example, are more and more focused on the needs and expectations of their users – and depend heavily on wireless communication technologies.

The 2017 financial year

In 2017, Group sales rose by 13.6 percent from €334.8 million to some €380.1 million, including subcontractor services. Operating profit increased by 7.9 percent from €41.74 million to around €45 million. The company's organic growth and the expansion of international offices in Switzerland, the United Kingdom and the Netherlands continued, with mergers again contributing to this positive development. These included Reso Partners AG, a company providing real estate and facility management consulting and services, and Procore, experts for work environments and property strategies.

Difficult capacity and price developments

Such promising developments currently face market limitations, which became clearer than ever in 2017. Increasingly, the lack of construction capacity proved to be an impediment to realizing clients' envisaged design. Rising construction prices are also a critical factor. To counteract these developments, Drees & Sommer has developed a strategic procurement approach for major and large-scale construction projects. Here, we combine our market knowledge (construction prices and processes, company capacities, tender behavior, etc.) with the procurement knowledge of experts from large industrial companies to create a new product.

Systematic development of industry competencies

Drees & Sommer has been able to deepen its expertise in various sectors in recent years through the establishment and expansion of specialized industry teams, allowing us to provide in-depth support to clients. The company continued this valuable tradition in 2017 – for example, with the establishment of the Sports and Entertainment Expert Team, which takes holistic approaches to designing and building successful sports facilities and stadiums. To this end, it develops concepts that go beyond the core use of sports arenas to include events, hospitality and gastronomy in the surrounding area.

A similar comprehensive approach has been taken to the logistics sector: Here, our experts advise their customers with services covering all aspects of modern logistics facilities, from strategic location selection and the design of intralogistics to the restructuring or further development of the property itself.

Focus on employees, systematic promotion of innovation

Such innovations are only possible because the Drees & Sommer Group is committed to the systematic development of its employees. In times of rapidly changing business areas and markets, and in view of growing demands, our employees continue to expand their qualifications – including in the field of digitization. In this way, we also open up interesting career and development opportunities for all colleagues.

We further strengthened our outstanding innovative strength in 2017 – and once again proved this through developments such as Building Material Scout (BMS), the first web-based platform for healthy construction products. Asset Check, a smart tool developed in cooperation with bulwiengesa, enables interested parties to make a quick and inexpensive initial assessment of a property.

Focus on quality rather than ‘orders at any price’

Just under half a century since its foundation, Drees & Sommer’s focus remains firmly on quality. It is not our aim to generate orders and growth at any price. Rather, Drees & Sommer is an independent company, influenced by content and values, which seeks to maximize benefits for its clients.

In 2017, we launched our Collaboration Model of the Future. This adapts our internal organizational structure, processes and methods to changing market conditions, while meeting challenges and increasing our overall investment in the future.

Stuttgart, May 14, 2018

Peter Tzeschlock Dierk Mutschler Steffen Szeidl

» We define clear strategies and establish appropriate processes for our customers, and implement them using digital technology. «

BACK TO THE FUTURE

The 1985 movie of this name was greeted with much enthusiasm. It was about traveling back into the past in a time machine and changing the future before it happened.

Teenager Marty McFly flies from the year 1985 back to 1955 in a time machine. When he gets there, he inadvertently prevents his parents from meeting and falling in love with each other – instead, his mother falls in love with him. This changes the timeline of the future. Marty realizes that he must ensure his parents meet, as he does not want to jeopardize his future birth – but this is not an easy job!

The movie provides a useful analogy with regard to the creation of our future. For example, supposing we could talk to time travelers from the year 2050, who could tell us how they live, and why. This would allow us to see not just one future, but different futures, depending on which paths we take today.

TIME TRAVELER A: 'A DEPRESSING FUTURE'

The first time traveler gets angry as he tells us about the condition of the earth in the year 2050. He implores us to do what we can to make people around the world change their behavior as urgently as possible. The picture he paints is indeed unbearably bleak.

Fig. 1:
The Earth in 2050

Dark Planet

Because the world community did not manage to induce United States President Donald Trump to comply with, let alone improve the Paris climate agreement in 2018, the temperature has risen by more than 4 degrees Celsius. The reason for the high level of warming, apart from the high CO2 content in the atmosphere, was the thawing of the permafrost in northern Russia and Canada, which allowed the trapped methane gas to escape into the atmosphere.

Many ecosystems have suffered hugely from global warming. The sensitive coral reefs and mangrove forests have been destroyed by the rise in ocean temperatures and in the sea level, and a large part of the Amazon basin has been transformed into a vast steppe. Many species of animals and plants have also become extinct. The areas to the north and south of the equator are plagued by drought, and they have less rainfall. As a result, 200 million people are on the move as climate refugees. Most are from central Asia and Africa and are seeking water.

At the other extreme, the greenhouse effect has transformed Siberia and northern Canada into muddy wastelands, and typhoons and storm surges in tropical countries have become more common. Island countries in particular are struggling with violent storms on their coasts and heavy rainfall on their hills. Despite the heavy rain there is a shortage of freshwater, because seawater has found its way into underground freshwater reserves and has also seeped into much valuable agricultural land. This means that additionally millions of refugees are on the move because of flooding or the loss of agricultural land.

More lignite and hard coal than ever is being burnt in very old power stations because of a failure to make necessary investments in renewable energies. This is causing further rises in the CO2 content in the atmosphere.

However, climate change has not had such negative consequences in all regions. So far, Canada and northern Europe have not been affected by weather extremes. In Scandinavia, many people are even pleased to have milder temperatures. In the north of the peninsula in particular, many areas are fit for agricultural use in 2050.

Dark City

The global population is now 9.5 billion people, of whom almost 7 billion are living in cities. However, in hot, lower-latitude countries, such as China, India and Brazil, huge urban agglomerations have formed, in which people have to live in an inhospitable environment. Anonymous high-rise buildings add to the apocalyptic mood.

Traffic is mostly at a standstill on the jam-packed streets. Most cities have not succeeded in developing the necessary electricity infrastructure and a sustainable energy supply. Additionally, the public transport system has been neglected as a result of the economic decline, so mobility is caught in a vicious cycle. It is very difficult to obtain almost any kind of vegetables or fruit – and when available, they are almost unaffordable.

Smart cities exist mainly as 'safe cities' – cities studded with sensors, fully monitored and completely commercialized. In addition to video surveillance with facial recognition, the street lamps have location beacons for position detection, Big Brother-style. Some people are not bothered by this, but the majority would rather switch off every form of digitization.

Fig. 2:
Drab cities
and gridlock
in 2050

Fig. 3:
Agriculture
in 2050

Dark Buildings

Everywhere in the large conurbations is dominated by forbidding high-rise buildings, which were built as quickly and simply as possible to accommodate the massive influx of migrants.

The digital controls for the buildings no longer work, or have been removed because there is nothing left to control. Power and water are only available sporadically in many of the world's cities. The mood is apocalyptic because no one has any energy for change.

This would be a high price for humankind in 2050 to pay. Yet to prevent climate change would actually not have cost much: Experts had calculated that countries would only have to give up a small percentage of their wealth. We therefore await eagerly the report of the second time traveler, from a different potential future:

TIME TRAVELER B: 'A LIVABLE FUTURE'

This second, very happy, time traveler reports from the kind of future that we all hope our descendants will live in.

The term 'Blue' is used by Drees & Sommer – both globally and regionally – to stand for this kind of attractive, liveable future. 'Blue' means sustainable in the sense of caring for the environment, resources and living creatures. But it also means digital and smart, though not in the sense of Big Brother-style surveillance, but to serve humankind.

Finally, 'Blue' also means economically viable, not in the sense of cutthroat competition, but fair and based on the division of labor, without oversupply at one end of the scale and poverty at the other. Not egalitarianism, but a holistic social approach.

Blue Planet

Global warming has been limited to 2 degrees Celsius. The fastest and most pronounced warming has affected the northern hemisphere. The North-west Passage has been freely passable in winter since 2020. Northern winters have become milder and growing seasons are longer. Countries around the Arctic Ocean, such as Russia, the United States of America, Canada, the northern European countries, and central Europe, have a temperate climate, an abundant water supply and many natural resources.

There is now an adequate water supply throughout the world, because water is being obtained, stored and used in an intelligent way for small and large-scale agriculture. This has enabled the exodus from rural areas to be arrested and in some cases even reversed.

The required power is harvested as solar, water and wind energy and stored. In areas where this was not possible for the local authorities to organize on their own, the global community helped, therefore also enabling new industries and trading partners to settle in those areas. Overall, in 2050 generally liveable conditions have been created everywhere on the planet.

Blue City

It has been possible to limit the world population to 8 billion people, of whom around 6 billion live in cities – almost twice as many as in 2018. Although very large urban agglomerations have formed in hot, low-latitude countries, such as China, India and Brazil, these areas offer acceptable living conditions thanks to innovative building methods and sustainable mobility. There are many more high-rise buildings in all cities, but very different ones from those built in the past. Many are planted, and they create a kind of luminous jungle. Where there used to be parking lots and concrete wasteland, now there are public spaces that are planted and framed by buildings for leisure, eating out, meeting people, and cultural activities, which also act as mobility hubs.

For those wanting to travel greater distances, mobility hubs with innovative elevators and escalators provide access to a networked system of tunnels, in which convenient, automatically controlled passenger trains with innovative, silent engines carry passengers at high speed to remote districts or places outside the city. Funicular railways are also increasingly being used as a feeder service, for instance to bring people from multistory park and ride parking garages in outlying areas of the city to the city center or to mobility hubs.

The street space is complemented by mobility axes at higher levels. Homely high-rise buildings line the streets, which are shared between private vehicles and the public transport system. Electric, driverless buses and taxis determine the streetscape, along with Car2Go rental cars – the number of privately owned vehicles is steadily decreasing. Drones and air taxis also have electric engines.

Fig. 4:
The City of the Future in 2050
© Vincent Callebaut
Architectures, Paris
© LAVA

Fig. 5:
Greenhouse of the Future in 2050
© Sasaki Associates

Fig. 6:
Blue Building ‘positive-energy towers’ in 2050
© Vincent Callebaut Architectures, Paris

Goods are transported into the city via a tunnel system deep underground with automatic container transporters. The containers are brought from selected loading points via hub systems to urban distribution centers and sorted there. The large delivery containers are loaded onto autonomous electric transporters and brought to the recipient. The majority of smaller parcels are brought by electric-powered drones along established corridors to local collection points. Recipients unable or unwilling to collect parcels have them delivered by bicycle courier.

Fruit and vegetables are harvested in large greenhouses all year round. The electricity for LED lighting and heating is provided by PV systems and waste heat from data centers. The combination of vertical farming and edge data centers has proved a success, as they supply waste heat 24 hours per day, 365 days per year.

No one talks about digitization any longer. The city and the buildings, the streets and the vehicles, the transport and the health system – everything is digitized and networked, but within the framework of clear and pragmatic data protection regulations.

Almost everyone knows how to use digital technologies in 2050: the fit senior citizens who were digital natives in their youth; the technology geeks who live completely in the virtual world; the descendants of the conservationists, as representatives of the shared economy; and the academic leaders. Almost all of them are proud of what has been achieved. However, around 20 percent of urban residents feel they have lost out: they see digitization not as an opportunity, but as a liability.

Blue Buildings

In the cities and the surrounding areas, the high-rise building is the dominant type of structure. The buildings are intelligent and networked with both their own components and with their users and the city. The lowest two to three floors are generally used for public or private sector institutions. That means retail, sport and culture, in addition to healthcare, transport institutions and urban agriculture. But ‘clean’ industrial companies also occupy these lower levels.

Some of the new residential buildings are merged with existing ones, or built on top of them, to avoid demolishing attractive old buildings. The Blue Buildings purify the environment through their façades, and control the space conditioning in the interior in line with the type of use. Together with other buildings they are energy self-sufficient. The façades are planted in a variety of ways.

Blue Buildings respond autonomously to the needs of their users, whom they learn to understand better all the time through the use of IoT technologies and artificial intelligence (AI): humans serve as the model and the architect’s plan. A targeted cybersecurity strategy ensures that Blue Buildings are safe from cyber attacks.

CREATING PATHS TO A LIVEABLE FUTURE

Both reports show clearly how different the future can look – depending on how we act today. Our governing philosophy therefore has to be ‘Creating positive paths to the future, and fighting for them‘. What are the paths to the future? A good example can be seen in the forecasts of the Intergovernmental Panel on Climate Change (IPCC).

The IPCC Report describes four possible scenarios, as well as one based on ‘business as usual’:

A1: A globalized world with a more economic focus and rapid technological change.
A2: A world with a purely economic focus and rapid, but regional, technological change.
B1: A globalized world with an ecological/economic focus (Blue World).
B2: A regionally oriented world with an environmental focus.
IS92A: ‘Business as usual’, based on an estimate in 1992.

The scenarios all start in 2000 with the same level of greenhouse gas concentration. After this point the different emissions paths diverge. The probability of the different scenarios becoming a reality depends on whether any measures are taken to reduce emissions and, if so, which measures are implemented, and when. Only if significantly stronger climate protection measures are implemented within the next few years than is currently the case, is there any realistic chance of a scenario close to A1 developing. If environmental efforts continue only to be made on a regional basis – and then only in a half-hearted way – we will head towards Scenario A2.

But we really need to do everything possible to get within range of Scenario B2 or even B1. The paths that we create today will determine the future – even if later generations try to make improvements. Figure 7 shows how strongly our efforts or failures today will impact on the future. For example, if we create a plan that will impact negatively on the future global climate (à la Donald Trump), later generations will find it practically impossible to achieve a positive outcome despite their best efforts.

Figure 8 shows how extremely today’s efforts and failures will affect the future. According to current research only a 4 °C limit on global warming could be achieved through the Paris Agreement. To reduce the limit to 2 °C, a much more ambitious path to the future would have to be taken. However, since after the departure of the USA even the logic of the Paris Agreement no longer applies, it is to be feared that the rise in temperature could even reach more than 6 °C. All reasonable parties must act against these developments.

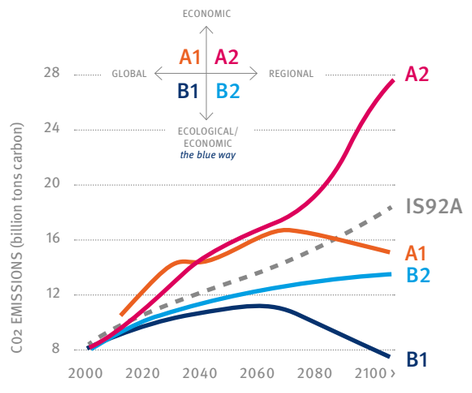


Fig. 7: Based on IPCC emissions scenarios
Source: Intergovernmental Panel on Climate Change

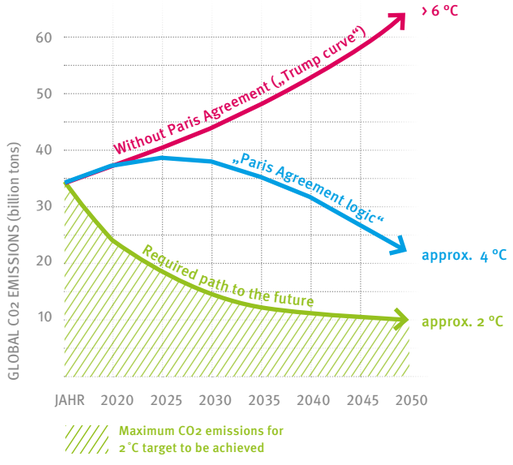


Fig. 8: Pathways to the future, and future possibilities
Source: Prof. Dr. Franz-Josef Radermacher

Fig. 9: Environmental problems today

The Starting Point

If, some time in the distant future, aliens investigate the history of the earth, they will find out that there have been radical changes in the miniscule period represented by the past 70 years. In 2008 scientists found convincing arguments for the theory that the Holocene (the interglacial period that began 11,500 years ago) has ended, along with stable climatic conditions, and our planet has entered a new geologic era, which they term the Anthropocene.

Since around 1950, when industrialization left its reasonably sustainable early phase and entered what is called the 'Great Acceleration', humankind has dug deep into the earth's geology for all time, like a meteorite impact.

A substantial role has been played in this process by the massive increase in greenhouse gases, and the landscape changes brought about by humans, the impact of which currently considerably exceeds annual natural sediment production. Ocean acidification and the ongoing destruction of biological life in combination with species extinction, global species migration and the widespread displacement of natural vegetation by monoculture farming practices, are also examples of significant interference in the ecosystem.

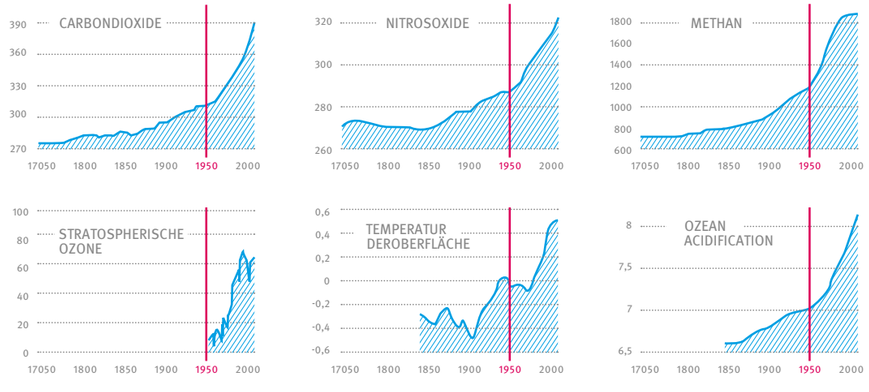


Fig. 10: The 'Great Acceleration'

Source: Degrowth

Whether innovative or destructive, everything is essentially the result of constant competition that goes far beyond basic needs, which is why some scientists are referring to this period as the Capitalocene. The current problems resulting from this development are summarized in figure 11.

The environmental limits of our planet are close to being reached in some areas, while in other areas they have already been irreversibly exceeded. Many of the problems are due to the strain placed on the environment by the construction and operation of buildings. Change is urgently called for in this sector, along with others such as the automotive sector.

Continued economic growth is therefore not possible. Instead, we probably have to enter 'Anthropocene 2.0' (through climate engineering, for example) – no longer only mitigating or adapting, but for instance removing the CO_2 from the earth's atmosphere by future technologies. Much could still be achieved today by an expanded Paris climate agreement. The industrialized countries would only have to invest a relatively small portion of their economic growth in the global 'rehabilitation' of the planet and convince the newly industrialized countries of the necessity for this rehabilitation.

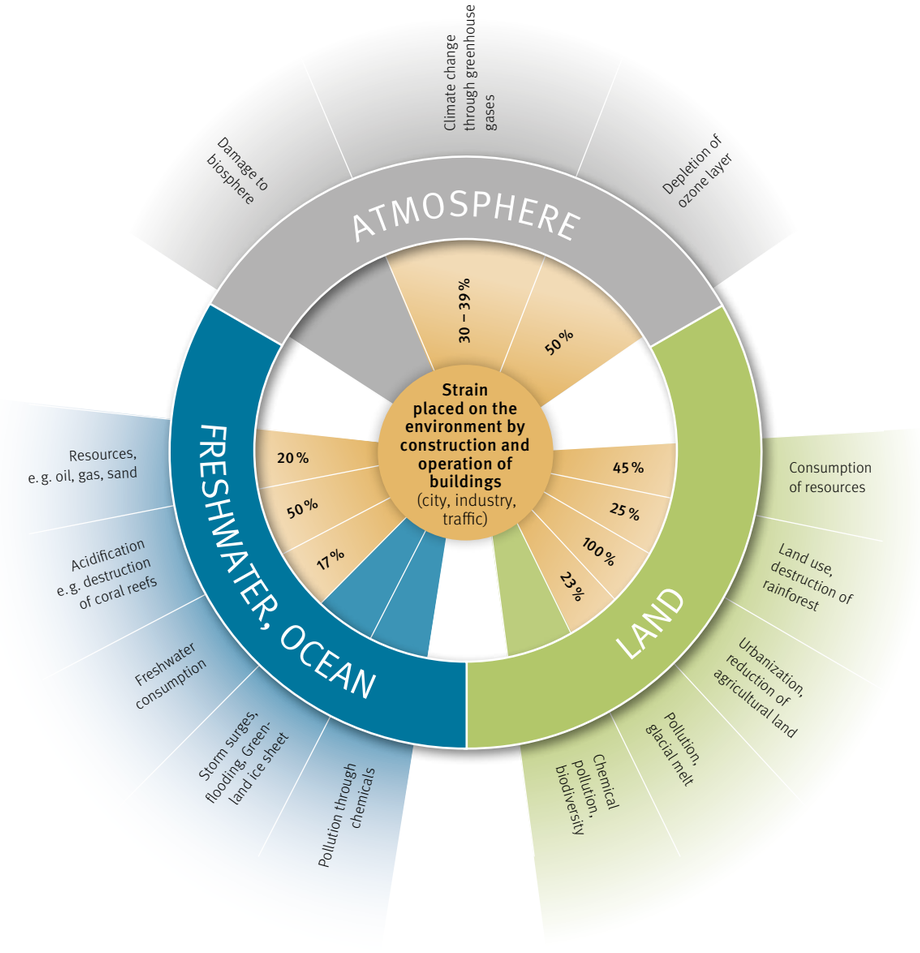


Fig. 11: Environmental strain on our planet

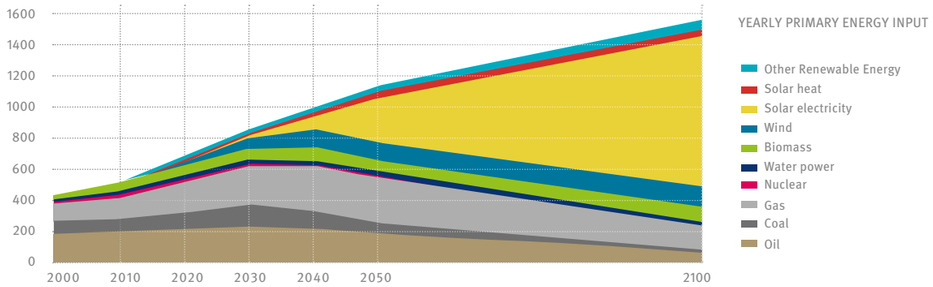


Fig. 12:
Energy mix forecast

Source:
solarwirtschaft.de

PATHWAYS TO THE FUTURE FOR A 'BLUE PLANET'

Population Growth

An issue generally presented as unalterable is that the world's population is forecast to grow to over 9 million people by the year 2050. Population growth compounds all the existing problems of planet Earth, because of the aspiration of human beings to steadily increase their wealth and claim more living space. At some point we will reach a stage when population growth and increasing wealth will begin to conflict with each other. There is a great risk that this will result in a mass movement of people across the globe as refugees in search of food and wealth.

Although it is a taboo subject, in the long run we will not be able to do without a global population policy. The problem is that the pressure for growth severely hinders global thinking about solutions to these problems.

Renewable Energies

What the pathways to the future described below all have in common is that their success is crucially dependent on global energy production from sunlight and environmentally friendly technologies. With regard to the future, the key issue is the generation of electricity from wind energy or solar panels, supplemented by hydroelectric power, biomass energy and geothermal energy. With the increase in renewable energy generation, the issue of sector coupling – in which this electricity is used in other sectors of the energy system (e. g. heating, mobility) – is gaining in importance. There has been steady growth in renewable energies in Germany (more than 30 percent in 2017), but this is not enough. The development must be accelerated, especially through network expansion and localized storage. On a global basis, renewable energies currently only account for 23.7 percent of the total, of which hydroelectric power makes up the largest share at 16.6 percent.

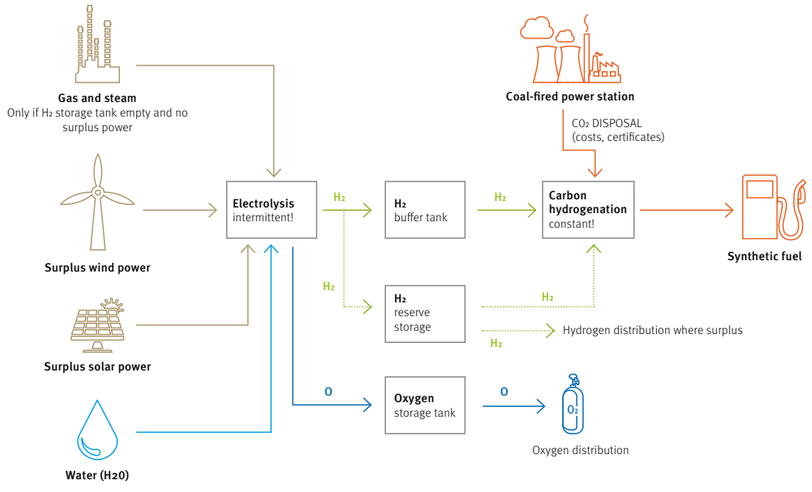


Fig. 13:
Technical photosynthesis

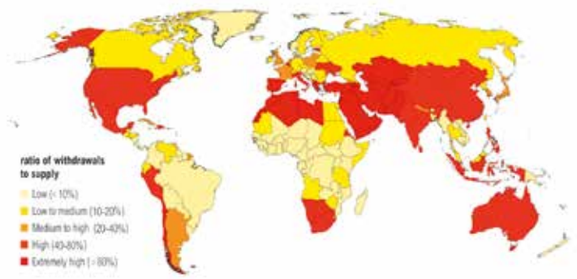


Fig. 14:
Regions at risk of future water shortages

Soure: World Resources Institute

See:
SQUARE Mannheim p. 94
Energy Special p. 98

The forecast illustrated in figure 13 shows that in global terms the share of energy produced from oil, coal and gas will remain constant until at least 2020, owing to increasing consumption. In view of the polluting impact of these energy sources, the shift will have to take place significantly earlier, and more aggressively. Solar technology has to be implemented where sunlight is abundant. The energy generated can then be used to produce storable energy or bring it to the consumers via high-voltage direct-current (HVDC) transmission lines.

Rapid action must be taken to increase this share significantly to more than 50 percent globally by 2030. This can be achieved by both energy saving measures and expansion of renewable energies. Drees & Sommer is very active in both directions.

In conjunction with various industrial companies, Drees & Sommer is also involved in hydrogen production through electrolysis using surplus electricity. The hydrogen produced is used for secondary applications such as synthetic fuel production or in fuel cells.

Water Supply and Agriculture

The second most important aspect of preparing for the future is ensuring the global availability of water. Consumers in industrialized nations are not sufficiently aware that water and energy are closely linked, as water is also needed in power stations, for instance, and to produce energy to run water supply systems.

Thirty-three countries are at risk of water shortages by the year 2040. A major task in the interest of peacekeeping – particularly in poorer countries in low-rainfall zones – and to avoid huge flows of refugees, will therefore be the production, transportation and storage of sufficient water to supply the population and agriculture in those areas.Conventional but effective measures include the (sustainable) construction of pumping stations and reservoirs.

One possibility is water reclamation from purification plants or larger housing complexes for general domestic use (example: New Gorengab Water Reclamation in Windhoek, Namibia). Another possibility is the storage of rainwater for general domestic use (example: Potsdamer Platz in Berlin, Germany).

Where sea water is available, it can be converted into drinking water using energy. This is the case in many of the 33 countries that will suffer from water shortages by 2040. There are two basic methods for desalination of sea water: evaporation and reverse osmosis.

Seawater evaporation is a costly method of obtaining drinking water, because large plants are needed, and most of them operate with fossil fuels such as oil.

A more economic solution is what is known as reverse osmosis. This basically involves a filter with very fine pores that withhold salt. When seawater is pushed through these membranes under pressure, drinking water can be obtained in a significantly more energy-saving way than by the evaporation method. Reverse osmosis requires electricity to create high pressure – instead of heat for the evaporation process. This means reverse osmosis can be operated well with renewable energies such as photovoltaics.

What is very important in general is the effective and environmentally friendly use of the available water, in combination with the intelligent use of fertilizers. Drip irrigation is particularly suited to vegetable growing and for permanent crops such as fruit, including grapes for wine, and olives. Unlike other irrigation types, it can be used on all gradients and the risk of salinization is low.

Flooding and High Water Levels

In any case, however much we reduce our greenhouse gas emissions, we are going to see a significant rise in sea levels while our planet slowly adjusts to the amount of carbon dioxide already in the atmosphere.

An ambitious coastal protection project has been in operation in the Netherlands since 1953: the dams and dykes of the Delta Works. With additional measures already planned, these will compensate for a potential rise in sea level of up to five meters.

It will be difficult for poorer countries to handle even a much slighter increase in the sea level. At some stage people will begin to move away from the coasts. However, in some regions there is no higher land for the inhabitants to move into. This means a variety of engineering and construction projects must be planned globally in advance in order to maintain the current status as far as possible.

Germany also has to prepare for a significant increase in flooding. For instance, the southern German federal state of Baden-Württemberg is carrying out an extensive flood control dam refurbishment program on the Rhine River to improve flood prevention.

Resource Consumption

The construction sector is responsible for almost 50 percent of resource consumption in Europe. But this trend can be countered. The magic formula is Cradle to Cradle® – as opposed to 'cradle to grave'. This differentiates between a biological cycle for non-durable products and a technical cycle for durable products. This brings us from a linear, industrial, economy (make-use-dispose) to a modern circular economy in which all products are developed as 'nutrients' for the next cycle of use.

Non-durable goods are biodegradable and return to the natural nutrient cycle. Durable consumer goods are broken down into separate raw materials after use and returned to a technical cycle (upcycling). The material quality is retained, unlike in the downcycling process. All ingredients are chemically safe and recyclable. Considerable economic and ecological advantages can be derived for building owners, users and manufacturers

Waste Avoidance, Utilization and Disposal

Waste avoidance and waste utilization are part of the circular economy. However, at present there are particularly big problems with plastic packaging and containers, in addition to microplastics. For every one of the world's inhabitants, there are currently around 700 pieces of plastic floating around in the ocean. Although it is clear that litter is severely harmful to marine life, there is no sign of this pollution ending. Governments are urged both to set clear guidelines governing the manufacturing of plastics, and to clean up the oceans (and the areas surrounding cities in developing countries). It will not be possible to avoid cleaning up at least the surface pollution with the aid of appropriate technologies. But almost more crucial is the issue of microplastics, the use of which must be banned immediately.

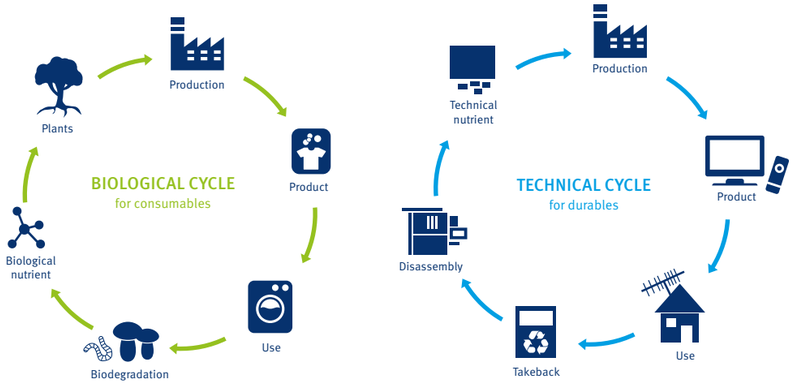


Fig. 15:
Biological and technical cycle

www.dreso.com/c2c

PATHWAYS TO THE FUTURE FOR 'BLUE CITIES'

Urban Planning

In contrast to Asian countries in particular, which have more or less authoritarian forms of government, European countries find it very hard to see beyond the existing 'European city' model in terms of urban planning for a future as outlined above. But we should not shy away from exploring ideas that seem utopian from today's perspective.

In modern times cities have ideally come into existence as systems with hierarchies and clearly defined functions. In the industrial age, due to the sharp increase in the population, the cities – then still designed on a two-dimensional basis – expanded considerably (City 2D).

Through the development of building technology (from the elevator to state-of-the-art construction methods), high-rise buildings made it possible for cities to reach an urbanity density previously unimaginable. City 3D was born. The second wave of international city growth had begun. Megacities developed, with huge problems that could not be solved merely by building even higher and more densely.

But, although the world has already changed dramatically, and faces significant change in the future, traditional development plans continue to be used. Also, the current approach to urban land use planning is no longer suited to today's needs. The stipulation regarding separation of uses dates from the distant past. In order to build a pathway to the future, much will have to change. You only have to look into the future to tackle the problems of the present from the point of view of sustainability. A city such as London, for instance, needs 125 times its own metropolitan area to cover its own resource requirements. City XD is defined by sustainable qualities and is no longer determined by building height restrictions or fixed axes.

Urbanization must be based on sustainable architecture and building technology. With the right planning, intelligent high-rise buildings can create urban spaces and ventilation corridors. However, if this is to be achieved, building legislation must adjust to future requirements and let go of short-term thinking.

A good example of urban planning for future generations is Maidar EcoCity, an exciting project in which Drees & Sommer is involved in all facets of potential pathways to the future.

A city which will set new ecological standards: Maidar EcoCity+

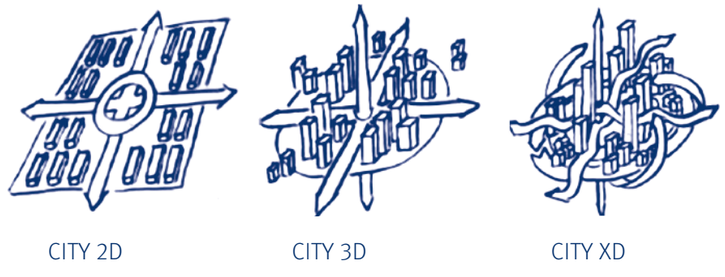


Fig. 16:
Progression from the 2D and 3D city to the X-dimensional city

Fig. 17:
Mobility Hub San Diego

Mobility and City

The principle of City XD must also be applied to mobility. Traffic generally happens at several levels.

Separate lanes are reserved for autonomous driving, in which the traffic keeps moving. A high-speed rail system connects inner cities with transport nodes such as airports and railroad stations. Pedestrians stroll along separate paths. For short and medium distances in the city, there are automatically controlled mobility vehicles. Funicular railways are increasingly used as a feeder service, for instance to bring people from multistory park and ride parking garages in outlying areas of the city to the city center or to mobility hubs.

These mobility hubs are thus associated with a 'mobility guarantee' in the collective consciousness, and influence both people's daily commuting behavior and the quality of time spent in the relevant district. In combination with attractive recreational areas and additional amenities (e. g. cafés, kiosks or bakeries), the mobility hubs become interesting spaces for urban living. But above all, the networking of urban spaces, along with the use of new technologies, is an essential component of a forward-looking networked mobility system.

To enable such a future to be created, urban planning must already include potential roadways, corridors and squares. The XD city must be virtually superimposed on the current city and taken into account in all planning. However, for this to happen, the XD city has to be planned today!

Digital and Energy Networking in the City

Without big data and artificial intelligence, the smart city is unimaginable. At the same time, big data creates the need for decentralized edge data centers (the link between cloud and edge) to ensure the huge storage demand of the smart city can be met. The linkage between edge data centers and the large network nodes creates a networked data center topology.

An important way for cities to prepare for the future would be to act as a neutral and secure platform for the digital community. The operation of this platform could even end up as a business model, and replace conventional tax and levy models. At the same time the city could offer greater security than was previously provided by private sector operators. Big Brother scenarios must not be allowed to develop. The protection of the urban community from cyber attacks and misuse of data could become the new 'city wall' for smart cities. In the future the city will only be supplied with renewable energies. All energy storage systems will be digitally controlled and efficiently networked with users of the city's buildings, while thoughtful architecture will support the natural climate in the best way possible.

Fig. 18:
Greenhouse of the future 'Vertical Harvest'
© Prugh Real Estate

Urban Agriculture

Increasingly, urban centers lack farmland for a local food supply. Also, production is seasonal. The future of urban agriculture is therefore in vertical farming.

This concept is a response to increasing urbanization. More and more people are going to live in cities. Supplying these people with information and food in the future will be a new challenge for city infrastructure. More transport means further increases in CO_2 emissions. Growing fish, fresh vegetables, fruit, herbs and other crops locally, with waste heat provided by data centers, should have a positive impact on the city's climate footprint.

PATHWAYS TO THE FUTURE FOR BLUE BUILDINGS

Smart Usability

Intelligent, networked buildings make companies more successful, as their processes are optimized by digitization. Data collection and analysis, increases in the value of the real estate, higher revenue from rental income, optimization of facility management, supply chain management, and energy optimization will all cause a positive change in business models for principals and investors.

The smart commercial building will be an intelligent building featuring Internet of Things (IoT) technologies. Communication with the building technology involving all trades will be realized through self-learning and self-optimizing artificial intelligence (AI) and sensor networks.

Smart Air Conditioning Systems

Building energy concepts of the future are to some extent based on the smart linking of existing potential with an intelligent overall concept, complemented by innovations. This can mean internal switching energy systems within multi-story buildings, or the use of geothermal probes in large-area buildings.

In general, cooling is a specific reversal of the heating process (using physical processes with the aid of an intelligent digitized control technology to avoid emissions).

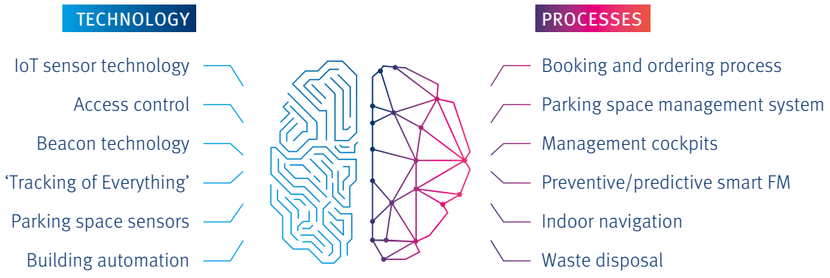


Fig. 19:
Integration of technology with processes through artificial intelligence

Building Products and Recycling

Rigorous experiments are currently being conducted in specific projects to test new building materials, and the use of existing building materials for new applications.

Wood is one of the oldest building materials in the world. But for a long time architects did not dare to build multi-story buildings out of wood. The reason was fire protection requirements, which usually restrict permits for timber houses to five floors because wood catches fire more quickly, even the burning rate of wood can be calculated better. The inflammability issue can be solved by timber-concrete composite slabs and a concrete building core.

However, this combination makes timber multi-story buildings around five to ten percent more expensive than houses built from conventional materials.

Membrane construction – the use of thin, pliable fabric or foil materials to build light, long-span structures – has seen a big renaissance in the last two decades in particular.

This method of construction is lighter, more flexible and – with the appropriate integrated planning – more cost-effective than conventional building shells made of glass, metal or rigid plastic elements. Because of its sparing use of materials, it offers new potential in terms of design and recycling.

Nanomaterials are construction materials whose special characteristics are based on their nanoscale components. The large surface area in relation to the volume of nanomaterials changes their physical and chemical properties. One way in which they can be used is for incorporation into construction materials such as concrete, which increases the stability of the material by up to ten times, resulting in thinner materials and less weight. The resulting material is also considerably more resistant to corrosion.

Nanotechnology is used particularly successfully in façade, roof and window construction. Structural damage can largely be avoided by nano-optimized building materials, paints and coatings. Coating with nanoscale titanium dioxide creates a surface that actively breaks down dirt. Roof tiles can also be kept clean in this way.

Fig. 20:
Design for a wooden multi-story building
© PENDA Studio, Beijing

Fig. 21:
Membrane façade
Source: ENERGIEWENDEBAUEN

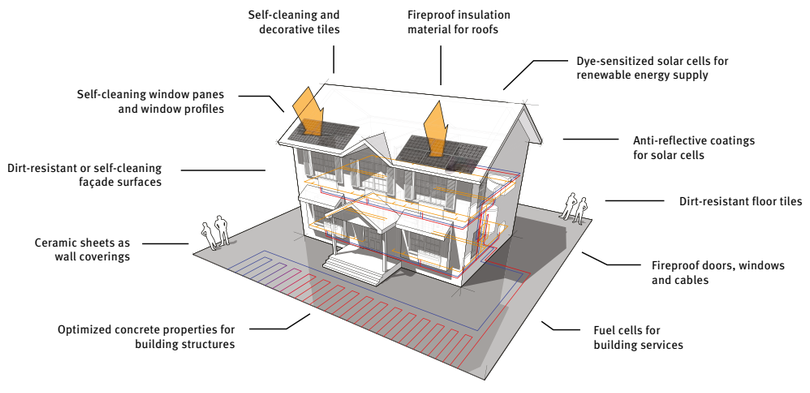


Fig. 22:
Use of nanotechnologies

DREES & SOMMER: SUSTAINABLE – COST-EFFICIENT – DIGITAL

When one realizes that the construction and operation of buildings alone cause almost 40 percent of CO_2 emissions and are responsible for 50 percent of the ozone depletion, it becomes clear that all activities in this area will have to be geared towards sustainability in the future. This is all the more true because this sector also plays a major role in the consumption of resources, the destruction of the rainforests, the reduction of green spaces, and in air pollution.

Sustainable does not necessarily mean expensive. Much expense can be avoided by intelligent action, and digitization can make a particularly big contribution in this respect. Our objective has to be to reconcile the apparently conflicting interests of economy and ecology by changing our way of thinking and using digital tools as appropriate. This is what '*the blue way*' is all about.

We are committed to this approach, and to the development of new business models using our innovation skills in the interests of our clients. Within the Group, we have already prepared for the future scenarios and are currently transforming the company into a 'partnership model for the future', with an innovation center and professional information sharing with our clients and their sectors.

Commitment Across the Board (Blue Planet)

However, this is not just about business models; it is primarily about spreading an idea. To do this, Drees & Sommer is involved in organizations and networks such as those concerned with building pathways to a positive future for humankind, including:

- Sustainable Development Goals (United Nations)
- 'Plant for the Planet' initiative (whose goal is to plant 1,000 billion trees by 2020)
- Cradle to Cradle® (technical and biological circular economy, with 'nutrients' instead of waste)
- German Sustainable Building Council (DGNB) (founder member)
- FIR at RWTH Aachen University, Germany – Industry 4.0 demonstration factory

Much can be achieved, including in real estate and industry associations, at municipal level and through specific projects.

Forward-Looking Urban Planning (Blue City)

The second wave of international urban growth has begun. Megacities are developing in Asia and the Americas, and metropolitan areas in Europe, with huge problems that cannot be solved just by building higher and to a greater density. For this reason, planning that covers multiple dimensions – 'XD' planning – is used in the Blue City.

Our XD urban planning is defined by liveable qualities and networked structures, not by building height restrictions or rigid grid layouts. The first approach is therefore an updated sustainability strategy for the future-proofing of a city or a district.

This involves smart city concepts for the digital networking of people, buildings, urban spaces, mobility service providers and facilities, in addition to forward-looking mobility concepts and innovative, integrated concepts for the utility supply infrastructure. Specifically, the approach involves simulations of amenities in outdoor areas, along with assessments of the microclimate, as a basis for energy and carbon neutral concepts and concepts for climate change adaptation in existing cities.

An element newly introduced is the dimension of time as a requirement, for instance reaching any given point in the city within an hour. The relevant question is no longer how long it takes to reach the different points given a certain design, but what must be done so that all points can be reached within one hour.

Our approach to urban planning is based on forward-looking goals. Urban development competitions are therefore not the first priority, but a substantial plan for the future.

Forward-Looking Building Design (Blue Buildings)

The starting point for our planning vision is the idea that the buildings should develop from a limited, fixed unit with a limited group of users into an active component of the Blue City – one that is useable by the community. However, this means planning a different type of buildings: Blue Buildings. These have to be comprehensively networked in order to obtain the maximum value added for users, the community and the environment. For instance, users no longer have to worry about the room functions; the buildings recognize the users and their preferred indoor climate, and implement appropriate measures to improve CO_2 performance using an artificial intelligence engine. However low-tech or even 'no-tech' would not conflict with high-tech digital networking; due to their new design language and multifunctional material quality, Blue Buildings have a significantly higher level of 'inner' intelligence.

Fig. 23:
building-material-scout.com

However, the emotional side of the Blue Building must not be neglected, in other words its architecture. What is possible in this area can be seen from a number of designs, such as those of Vincent Callebaut or Stefano Boeri:
vincent.callebaut.org, stefanoboeriarchitetti.net

To design buildings of this kind requires new planning processes and rules, including the full range of BIM and augmented/virtual reality tools. Spaces and places are created using planning technologies with which the quality to be expected is evident to everyone from the early stages of the design process. Principals, planners and users receive proof of success at an early stage as a basis for making decisions with regard to a project proposal.

If the construction and operation of the building are to have a positive impact on the global climate, some principles must be taken as laws:

- A professional (and economical) usage concept
- High degree of space efficiency
- Simplification of plans through modularization and digitization (BIM)
- Healthy and certified building materials
- Effective processes for manufacturing, logistics and assembly
- Emission-neutral operation of buildings

To promote the use of sustainable materials, we have set up a platform for healthy and certified building materials, called 'Building Material Scout', where manufacturers can have their products evaluated and certified. Principals, planners and construction companies can also find information and contact manufacturers through the site.

With our partners, we will be able to offer buildings of every kind to our clients in all sectors. These will be sustainably and economically built and operated using digitization and artificial intelligence for added value. A faulty pump will send a signal proactively before it breaks down, and order a replacement for itself. This is how smart, preventive facility management works.

SUMMARY

We believe that more and more people will understand the pathways to the future that we have described, and that they are prepared to think and act in a sustainable way in the interests of their children and grandchildren.

For this to happen, a change of thinking is needed in our competitive society, so that the maximizing (short-term) of financial success cannot be the only priority, but the sustainable yet cost-efficient result. And it will work.

There is much to do. We are creating the working worlds of the future, and reinventing ways of living. We are inventing the city of the future. We are creating a new energy infrastructure and a sustainable mobility concept. Digital health centers, data centers as heating plants, intelligent and sustainable logistics, state-of-the-art factory buildings. We also aim to achieve zero waste for the digital world.

At the same time we will ensure that the negative impact of the construction and operation of buildings is transformed into a positive one for our environment – buildings like trees, cities like forests. Let's sort it out!

›› Holistic solutions for unique projects can only be developed with vision. ‹‹

From left to right:
Markus Weigold
Steffen Sendler
(Partners in Berlin)

EXPERTISE FOR A NEW URBAN PRECINCT

MIX IT LIKE BERLIN
quartier HEIDESTRASSE

The development of a new precinct in the heart of Berlin's Europacity district poses major challenges for the parties involved. Drees & Sommer's role includes providing design and management expertise for the largest contiguous subproject, the Heidestrasse precinct.

›› For a demanding project on this huge scale, it is important for the project manager to know that they have a reliable partner and troubleshooter at their side that can handle all facets of the precinct. ‹‹

Thomas Bergander, Managing Director, Quartier Heidestraße GmbH

Scan the QR code to track project progress online.

Client:
Quartier Heidestraße GmbH, Berlin

Project duration:
December 2014 – 2023

Architects:
- RobertNeun Architekten, Berlin
- gmp Architekten, Berlin
- EM2N Architekten, Berlin
- Collignon Architektur, Berlin
- CKRS Architekten, Berlin

Key project data:
- Number of subprojects: 8
- Length of block: 500 m (currently the city's largest building pit and the largest contiguous urban development)
- GFA:
  - Above ground: Approx. 270,000 m²
  - Total: Approx. 350,000 m²
- Construction costs: Approx. € 800 million net

The basic parameters alone are impressive: The project will provide a gross floor area of some 175,000 square meters of commercial and retail space along Heidestrasse. There will also be nearly 1,000 apartments, one quarter of which will be rent-controlled housing.

The most important goal and – as a result of the sheer scale of the project, the greatest challenge – is to develop a vibrant and future-oriented Berlin neighborhood with all the features of modern urban living. "The project is without equal. We are not only developing new apartments and offices with the customer, but entire living environments that will shape the cityscape far into the future," says Markus Weigold, Partner at Drees & Sommer. The goal is to realize the mix of residential, living, working and services elements economically and within a very tight timeframe.

Since 2014, the Drees & Sommer project managers have been working closely with the customer, Quartier Heidestraße GmbH, on the development of the precinct. They have already revised the land-use plan, planned the local infrastructure, organized architectural competitions, and supported marketing of the real estate.

The professional advice provided was one of the reasons the customer decided early on to develop and realize the entire precinct with Drees & Sommer. More of the company's integrated expertise was called upon in the later stages of the project – including general specialist and logistics planning and DGNB district certification.

› Land-use plan development, planning, construction logistics, Lean Construction Management (LCM®), General Construction Management (GCM), architectural competitions, FM consulting, Integrated Urban Solutions, digitization consulting, marketing consulting, project management, General Technical Planning (GTP), energy consulting, DGNB district certification ‹

The project team quickly proved to be a reliable and effective problem solver. To date, the project managers have managed to meet or beat all budget specifications and deadlines. For example, the five architectural competitions were held in the space of one year. Ongoing cost tracking during planning (design to cost) made a substantial contribution to reducing investment costs. And energy and FM consulting by engineering experts during the preliminary stages will result in lower operating costs for the buildings.

The team also achieved added value for the customer on several fronts – in particular as the result of rational densification of the land-use plan from 210,000 to 270,000 square meters GFA, close contact to authorities, and comprehensive marketing support. The latter included the development of a striking logo and corporate design for the Heidestrasse district developed based on stakeholder analysis. An extensive digitization strategy and mobility concepts rounded out the innovative real estate product, ensuring that the precinct is fit for the future.

The specially created website informs interested parties about the development area around the airport.

READY FOR TAKEOFF

Client:
Wirtschaftsförderung Mecklenburgische Seenplatte GmbH, Demmin

Project duration:
June 2016 – December 2017

Key project data:
Development site:
Approx. 380 ha

›› Development of a marketing concept with comprehensive promotion measures. ‹‹

Following the end of its use as an air force station, new businesses had to be attracted to the commercial zones around Neubrandenburg-Trollenhagen airport. Drees & Sommer experts supported the project by developing a marketing concept that included comprehensive promotion measures.

After the discontinuation of military operations from Neubrandenburg-Trollenhagen airport in 2013, the adjacent air force barracks is now also expected to close in 2023. But the airport is overdimensioned for purely civilian use. For this reason, the Mecklenburgische Seenplatte Seenplatte Economic Development Corporation decided to support ongoing operation of the airport while at the same time making it economically viable.

To ensure continued operation, the Drees & Sommer experts were commissioned to undertake several key tasks: Attract companies from aviation-related industries thus generating air traffic, market the commercial and industrial zones in and around the airport, and search for investors as possible partners for airport operation.

› Strategic property consulting, public relations, brownfield & site development, sales & marketing support, requirements analysis, investor search ‹

Drees & Sommer focused on external conversion conditions, regional development goals and structures, as well as markets and the region's interests.

Special attention was paid to well-balanced stakeholder management, required in view of the large number of participants. The development management experts arranged regular management meetings that made decisions on upcoming milestones. These also served to maintain communication between participants, ensuring a successful process.

A specially created website (flughafenregion-neubrandenburg.de) kept prospects informed about connectivity, infrastructure provision and the potential of the area. Six investment areas of variable size are available – some for immediate use – to create an inspiring aerospace campus on the airport site, fully in keeping with the tradition of the region in which Otto Lilienthal undertook his first unpowered airplane flights in 1891, paving the way for the development of modern aviation.

MODERN CARE CENTER FOR SENIORS OPENED NEAR MOSCOW

In June 2017, the first seniors took up residence in the newly built care center in Malakhovka, near Moscow. The multifunctional complex features state-of-the-art residential quality and care for the elderly and is regarded as a showpiece project for Russia and Eastern Europe. Current BIM, modular and specially developed fitout system standards were used during realization of the project.

» BIM and modular construction used to create a showcase seniors' care facility. «

Drees & Sommer supported the Senior Group – the initiator and operator – with the project all the way from determination of basic design data and the conclusion of the investment contract to commissioning.

Following initial repurposing projects in other established buildings, this was the first investment plan property developed within this asset group. The Senior Group specializes in social services for seniors, develops and operates facilities in the Moscow area, and is planning further buildings as investment or PPP projects throughout Russia. The facility in Malakhovka is a new-generation residential and nursing facility. It is being built in response to the urgent need for senior citizens' care facilities and to meet the demand for new investment opportunities in an increasingly important real estate segment.

After an extensive examination of established properties, Drees & Sommer supported the Senior Group and a team of leading international and local experts with a concept for its development as an investment plan property. The project used Building Information Modeling (BIM), modular construction elements, tried and tested fitout solutions from the areas of senior care and hospitality, and carefully developed concepts for colors and surfaces.

The project management experts managed, coordinated and organized the project based on international standards and local requirements. They assisted the client as technical and economic consultant, manager and site supervisor. As a result, the Senior Group was able to realize the highly efficient property within budget, on schedule and at the specified quality level, while at the same time improving its design and functionality.

› Care facility based on BIM design, modular construction and specially developed fitout system solutions ‹

Client:
Senior Group, Moscow

Project duration:
November 2014 – May 2017

Architect:
Sev. R. Projekt LLC, Moscow

Key project data:
– GFA: 8,168 m²
– Construction costs: RUB 820 million

The care center comprises two buildings and features 70 spacious double rooms, 14 comfortable apartments and five special medical wards designed for up to 180 persons. The center also includes a day care centre, memory clinic, dental practice, beauty salon, and a park. 147 skilled workers operate the facility and care for the residents. The focus is on comfort and safety: The entire facility is wheelchair-accessible and features non-slip floors with ambient lighting, a special navigation system, and video surveillance.

Following its strong performance, Drees & Sommer is now working on other projects with the Senior Group and participating investors.

›› Market experience
and real estate expertise create
and maintain value. ‹‹

From left to right:
Klaus Hirt
Jürgen Brandstetter
Norbert Otten
Thomas Hofbauer
Marc Schömbs
Sascha Kilb
Sascha Hempel
(Partners in Frankfurt)

ON TOP OF THE WORLD WITH TOWER 185

Tower 185 soars skyward in the center of Frankfurt. At 200 meters, it is Germany's fourth-tallest office building. The skyscraper in the European Quarter has been the property of Deka Immobilien since the end of 2017. Drees & Sommer was one of the consultants that supported the client with the €775 million transaction.

›› One of Germany’s largest single transactions in 2017 completed in a short time thanks to competent expert support. ‹‹

Tower 185 has been part of Deka Immobilien’s portfolio since the end of 2017.

When Tower 185, well known as the German headquarters of PwC, was put up for sale in the late summer of 2017 and Deka Immobilien expressed interest, things had to move quickly. Deka was looking to complete any purchase by the end of November 2017. This left little time for the Drees & Sommer technical due diligence expert team to closely inspect more than 150,000 square meters of space spread across 51 floors.

In order to carry out the technical due diligence task properly, the consultants assembled a large interdisciplinary team. Experts for construction, fire prevention, building services equipment and facade engineering – as well as a network partner for conveyor technology – contributed their expertise to the project.

› Technical due diligence, transaction consulting and negotiations, determination of fitout execution status, compilation of the document incorporated by reference ‹

Client:
Deka Immobilien GmbH, Frankfurt am Main

Project duration:
October 2017 – December 2017

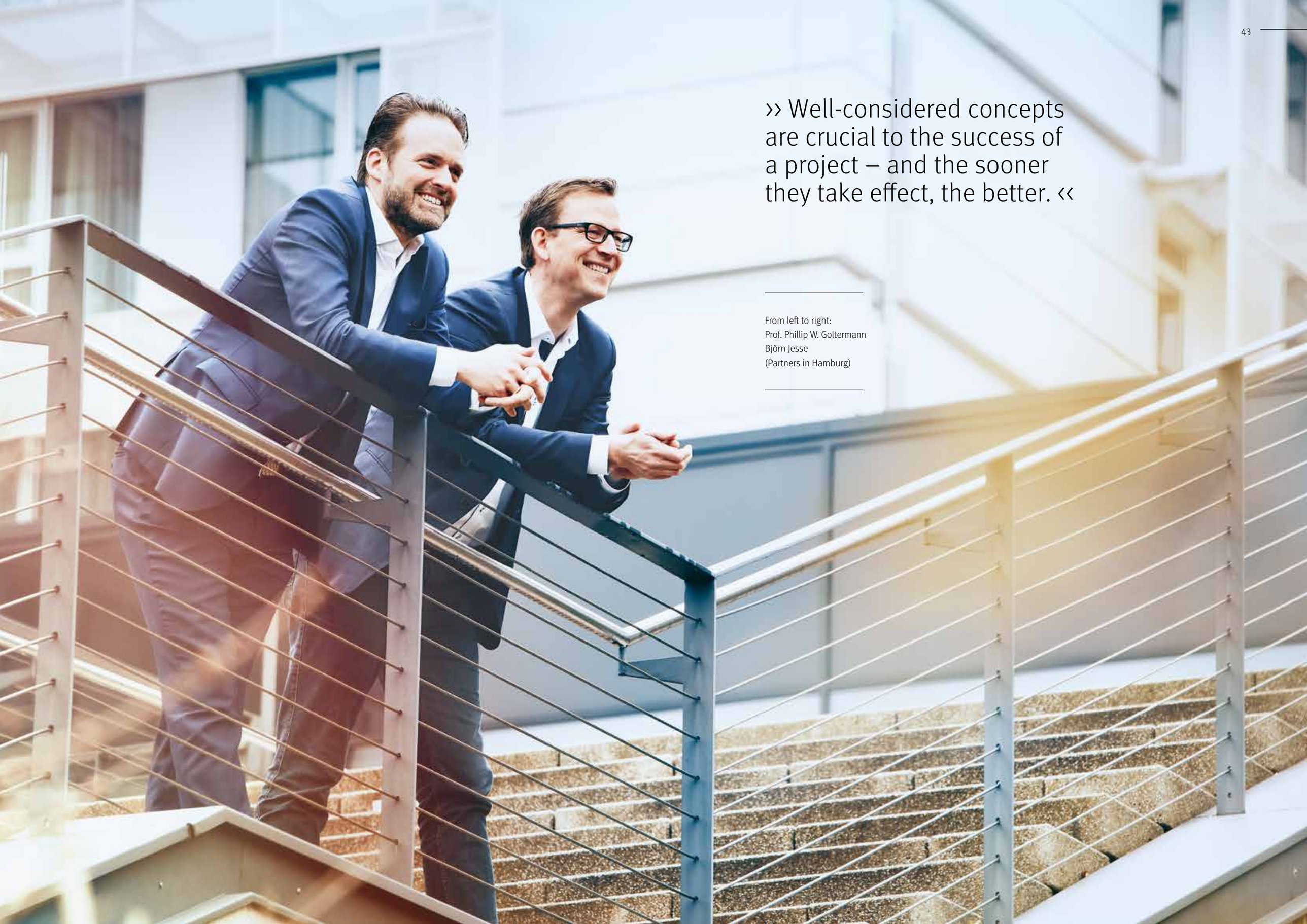
Architect:
Prof. Christoph Mäckler Architekten, Frankfurt am Main

Key project data:
- GFA: 152,203 m²
- Leasable area: 102,437 m²
- Parking spaces: 552
- Height of the building: 200 m
- Year of construction: 2008 – 2011
- Vendors: CA Immobilien Deutschland GmbH, WPI Fonds SCS-FIS, another pension company, and Fagas Asset GmbH
- Purchase price: Approx. €775 million

The task was to identify key highlights in the long-term use, subletting and possible future scenarios, to document points requiring clarification, and to express these as monetary values. To gain a complete picture of the property, the experts carried out inspections and obtained all the necessary documents from the purchaser. The consultants also successfully used a series of meetings to align differing perspectives of technical and business aspects on the part of the prospective purchaser and the vendors.

As in previous projects for Deka, close and regular exchange was a key success factor. As a result, all participants at Deka Immobilien were kept up-to-date on the current status and were able to quickly make informed decisions about the further procedure.

In addition to the technical due diligence, Drees & Sommer drew up reports on the standard and condition of the facade and elevators, and supported the client during purchase negotiations. As a result, Deka was able to close the largest transaction on the Frankfurt real estate market in the year 2017 to a positive conclusion in the shortest possible time – and at he same time add a landmark property to its portfolio.

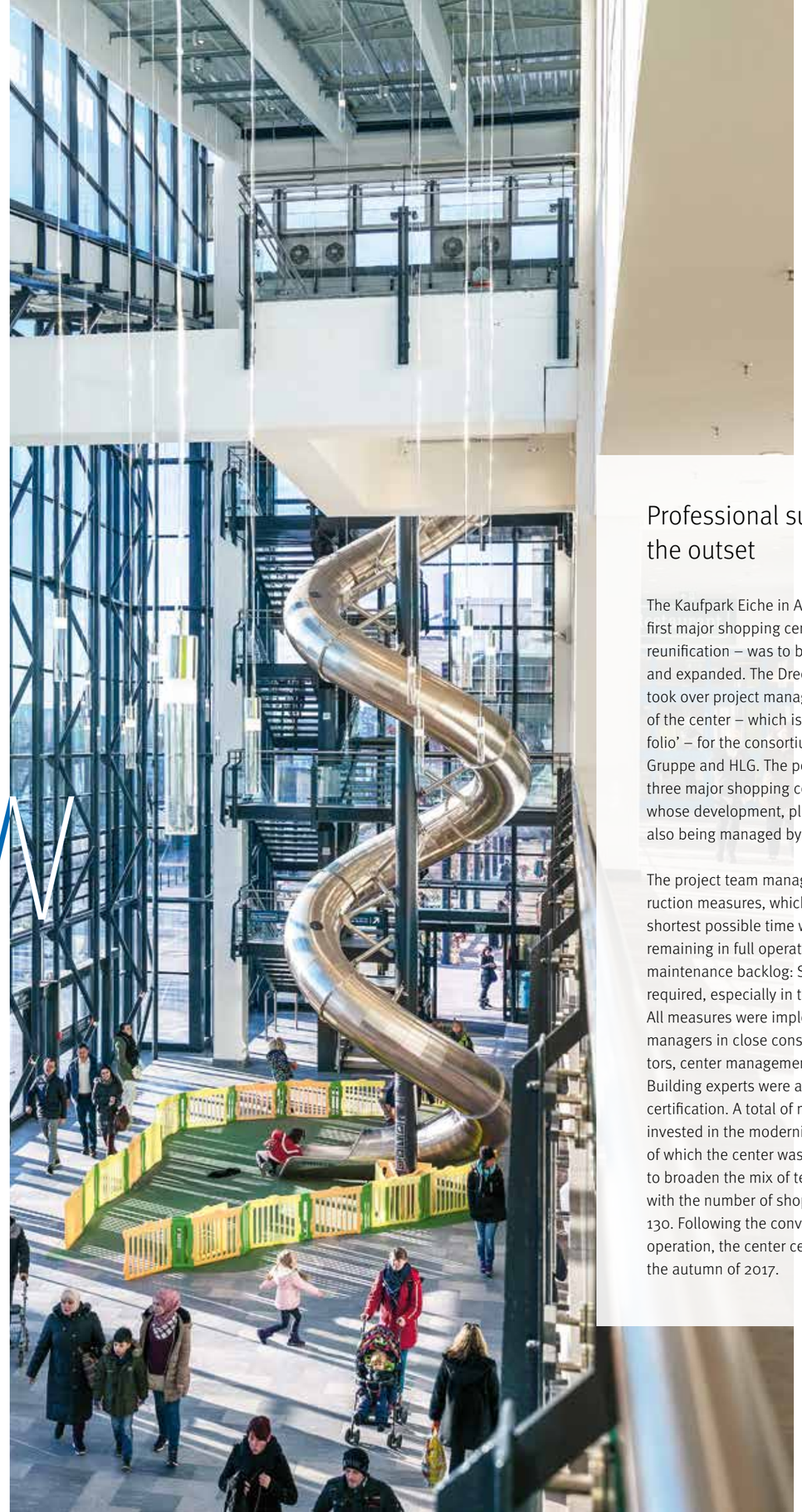


›› Well-considered concepts are crucial to the success of a project – and the sooner they take effect, the better. ‹‹

From left to right:
Prof. Phillip W. Goltermann
Björn Jesse
(Partners in Hamburg)

RETAIL CONCEPTS OF TOMORROW

Many shopping malls are showing their age. They might have been up-to-date a few years ago, but today they are no longer state-of-the-art and fail to meet customer expectations. Drees & Sommer retail specialists are the first point of contact when it comes to undertaking conversion or new construction with the shopping center in full operation so as not to lose customers or alienate existing tenants. Examples from over 500 retail projects show that shopping and conversion are not mutually exclusive.



Attractiveness is important: The two-storey stainless steel slide in Kaufpark Eiche is not only an eye-catcher, but a major drawcard for children!

Professional support from the outset

The Kaufpark Eiche in Ahrensfelde – one of the first major shopping centers in East Berlin after reunification – was to be extensively renovated and expanded. The Drees & Sommer Retail Team took over project management for the revitalization of the center – which is part of the 'Christie portfolio' – for the consortium Christie B.V., the redos Gruppe and HLG. The portfolio includes another three major shopping centers in eastern Germany, whose development, planning and realization are also being managed by Drees & Sommer.

The project team managed the extensive construction measures, which were implemented in the shortest possible time with the shopping center remaining in full operation. One challenge was the maintenance backlog: Systematic retrofitting was required, especially in the area of fire prevention. All measures were implemented by the project managers in close consultation with the investors, center management, and tenants. The Green Building experts were also responsible for BREEAM certification. A total of more than €50 million was invested in the modernization project, in the course of which the center was systematically expanded to broaden the mix of tenants and retail sectors, with the number of shops increasing from 79 to 130. Following the conversion with the center in full operation, the center celebrated its re-opening in the autumn of 2017.

Client:
Christie B.V., Amsterdam
redos Gruppe, Hamburg
HLG Gesellschaft zur Entwicklung von HandelsCentren, Münster

Project duration:
February 2014 – December 2017

Architect:
Maas und Partner, Münster

Key project data:
- GFA: 63,000 m²
- Construction costs: › €50 million
- Parking spaces: 3,500

Same location – new concept

A makeover was long overdue for the 30-year-old shopping center, Huma Einkaufspark, in the Vienna suburb of Simmering. The company – RWF Real-Wert Grundstücksvermietungs GmbH & Co., a subsidiary of the Jost Hurler Group – commissioned Drees & Sommer with project control of its conversion to a modern shopping center with an area of approximately 42,000 square meters. The legacy building was demolished in stages, and the new center erected in two phases – all without any suspension of retail activities or shop closures. In March 2016, the first section re-opened on schedule and within budget after a construction period of 15 months under the new name Huma Eleven. Existing tenants had moved to a temporary building in the meantime. After the tenants had moved into the new building, the temporary building was demolished and the second phase of construction was completed, creating space for an additional 30 shops and 400 parking spaces. The center opened on schedule in September 2017 after a construction period of 18 months.

The project team helped with the development and implementation of a long-term traffic concept and was also commissioned with technical & economic consulting and controlling, commissioning management, testing & commissioning, value engineering, profitability analysis, user management, and the development and ongoing update of the project strategy. The project was executed within the timeframe to the complete satisfaction of the customer and the prime tenant, SES Spar European Shopping Centers.

Client:
RWF REAL-WERT Grundstücksvermietungs-gesellschaft m.b.H. & Co. Objekt Flavus KG

Project duration:
August 2012 – September 2017

Architect:
Chapman Taylor, Düsseldorf

General planner:
ATP Wien Planungs GmbH

Key project data:
- GFA: Approx. 84,000 m²
- Gross volume: 404,572 m³

The new open-look sustainably built shopping center Huma Eleven with its attractive mix of tenants was developed on the old site without disrupting retail operations or closing shops.

Finding new audiences

A new real estate category: Many old movie theaters are being converted into modern shopping centers. Drees & Sommer Russia has advised the customer Edisonenergo LLC (ADG group), on the revitalization and conversion of old movie theaters into 'neighborhood centers'. The project involves the conversion of 39 existing cinema centers into modern urban district centers offering attractive shopping and leisure facilities. These are located on the outskirts of Moscow, where social and commercial amenities are few and far between. Initially, the project team supported the client by providing a cost estimate for the neighborhood centers. In a follow-up contract award, they were commissioned to undertake project preparation and optimization of project management. The experts also developed a BIM strategy for the multifaceted large-scale project, and prepared feasibility studies. Construction work for five objects has begun – 39 cinemas are scheduled to open in 2019.

Client:
Edisonenergo LLC, Moscow

Project duration:
August 2015 – June 2016

Key project data:
GFA: 480,000 m²

Revitalization roadmap for the future

The Boston Consulting Group needed a partner with a wealth of practical experience in the conversion of commercial real estate for a customer project: Drees & Sommer was commissioned to develop a conversion roadmap for the Russian customer X5 Retail Group, to show how revitalization could be successfully carried out without interrupting retail operations. First of all, the experts evaluated the process used for a previous supermarket conversion. Based on this data, they then developed a construction strategy for the revitalization of two pilot supermarkets, one in Moscow and one in Zelenograd. Drees & Sommer provided an independent perspective and imposed a process with lean structures and lean construction. As a result, the client was provided with roadmap detailing all the individual steps, as well as schedule and budget requirements for a successful revitalization of its supermarkets without any need for closures.

Client:
Boston Consulting Group, Moscow

Project duration:
December 2015 – March 2016

Key project data:
GFA: 3,950 m²

Support from an interdisciplinary project team

When it comes to shopping, eating out and entertainment, the ‘Gropius Passagen’ mall has been a favorite destination for Berliners for 50 years. But the German capital’s largest shopping center – with approximately 94,000 square meters of floor space – was no longer state-of-the-art and was slated for refurbishment: TH Real Estate and Unibail Rodamco Germany are investing a huge sum in the remodeling. The work is being undertaken in three phases with the building in full operation, allowing customers to continue using all areas of the center throughout the entire construction period. This means that existing lease agreements with major tenants, interventions in retail space, and the normal opening hours and noise reduction all play a major role in the conversion for both the client and the Drees & Sommer project controllers.

In addition to project management, Drees & Sommer is also undertaking construction management and tenant coordination in phase two and three for the client. Lean Construction Management, which is being used to manage the complex conversion processes, also ensures open communication and greater transparency on the building site. Thanks to an interdisciplinary team from the Berlin, Hamburg, Leipzig and Stuttgart regional offices, the client is being provided with strong support across all service areas. Completion of the modernized complex is slated for 2019. Phases one and two have already been successfully completed and handed over on schedule.

Client:
Gropius Passagen
GmbH & Co. KG, represented by mfi Development GmbH

Project duration:
September 2016 – October 2019

Architects:
- Saguez & Partners, Saint-Ouen, France
- Aukett + Heese, Berlin

Key project data:
- GFA: 50,000 m²
- Construction costs: €59.1 million

A single source for planning and consulting

Drees & Sommer successfully undertook project management of the conversion and expansion of CITTI Park in Lübeck for CITTI Handelsgesellschaft. The project managers were part of a general planning team, allowing them to achieve the high level of coordination required for design and consulting. They were also responsible for tenant coordination for the lessor. All measures were carried out with the building in full operation, requiring exhaustive project management and good communication with the client. Green Building certification in accordance with BREEAM attests the high technical and ecologically sustainable standard of the shopping center. Following a construction period of just under three years, the shopping center re-opened with more than 100 businesses in March 2017.

Client:
CITTI Handelsgesellschaft mbH & Co. KG, Kiel

Project duration:
November 2013 – March 2017

Architect::
Markus Derfler, bdsarchitects, Hamburg

Key project data:
- GFA: 45,000 m²
- Construction costs: €80 million

After a construction period of just under three years, the Lübeck CITTI Park is delighting customers with its spaciousness and extensive range of retail and food & beverage outlets.

› Want to save time and money while keeping customers? Revitalization without disruption of operation is the solution. ‹

Ralph Scheer, Partner at Drees & Sommer

›› Every construction project can become a landmark – provided you use lean processes and are passionate about top quality. ‹‹

From left to right:
Dr. Thomas Harlfinger
Rino Woyczyk
Martin Becker
Frank Reuther
(Partners in Munich)

POP-UP HOTEL IN AN EXCLUSIVE LOCATION

‘The Lovelace’ offers space for events and cultural exchange as well as 30 rooms and suites in the former premises of the Royal Bavarian Bank in Munich. RBSGROUP – Part of Drees & Sommer transformed the former offices into premium hotel rooms using an innovative design concept.

The Lovelace in motion pictures: To view the video, scan the QR code below or go to YouTube and search for ‘Drees & Sommer Lovelace’.

›› The experts succeeded in adopting our ideas and developing a harmonious concept that is reflected in all the rooms. ‹‹

Gregor Wöltje, Managing Partner, The Lovelace

Client:
The LOVELACE GmbH, Munich

Project duration:
February 2017 – August 2017

Key project data:
– GFA: 3,200 m²
– Hotel rooms and suites: 30

The Lovelace – the self-styled ‘hotel happening’ – opened its doors in September 2017. Guests will be able to visit the hotel and experience the experimental pop-up concept until 2019. In keeping with the spirit of pop-up culture, the project stands for authenticity and collaboration: In addition to a diverse cultural program and vegetarian catering, the overall concept also includes event studios, a function room, a rooftop bar, pop-up shops, a free-floating lobby with coffee shop.

The former offices have been converted into 30 spacious and well-appointed hotel rooms and suites. Guests can choose between six categories of rooms and suites ranging in size from 21 to 84 square meters. The design experts’ conceptual approach paid particular attention to retaining the feel of the original building, while at the same time giving each room an independent identity.

› Design and overall artistic management of hotel room fitout ‹

In keeping with the ‘happening’ theme, each room is a stage, where art, city views, music and the guests themselves are part of the production. A special highlight in this context is the ‘soft shell’ – a 360-degree curtain around the perimeter of the room. This not only gives the rooms a cozy atmosphere, but is also a central design element. The high quality of the fabric gives the rooms a pleasant acoustic quality as well as a providing a unique tactile experience and superior user comfort.

The design concept complements this dramaturgical approach and respectful treatment of the architectural heritage by paying equal attention to necessary functionality. Guests can discover a range of features and functions behind the peripheral curtain: Necessary infrastructure – such as wardrobes, storage space and shelves – is hidden behind the curtain, which also serves to frame the artworks on the walls.

Thanks to this simple but innovative solution, the experts were able to realize the customer‘s vision with a powerful concept despite working to a very tight timeframe and limited budget.

NEW LABORATORY IN HARMONY WITH NATURE

›› The result is impressive and practical. This building meets WALA's holistic quality standards with flying colors. ‹‹

Uwe Strofus, project manager,
Head of Technology at WALA-Heilmittel GmbH

When it came to their new laboratory building, pharmaceutics and cosmetics manufacturer WALA insisted on high standards of sustainability. Drees & Sommer Life Sciences experts provided support for the project.

WALA's goal was to expand its existing site in Bad Boll by adding modern laboratories and other facilities for some 180 employees. The laboratory was also to be the first of several possible buildings on the future WALA campus.

The project created more than 5,000 square meters of floor area, offering ample space – in particular for quality control laboratories and microbiology. Since its commissioning in May 2017, the lab's work has included testing some 1,000 different source materials to establish their identity and purity.

› Feasibility study (design phase), project management ‹

WALA has invested some € 31 million in the new building and grounds. The fact that the project is located in a water protection area posed huge challenges for planning and organization. The Drees & Sommer Life Sciences team initially supported the construction client with a feasibility study, and subsequently provided project management services. As the producer of anthroposophic medicines and natural & biocosmetic products attaches great importance to harmony between humankind and nature, they worked closely with Drees & Sommer to establish the criteria for a sustainable construction process.

The energy concept includes a heat recovery system, rooftop solar panels, and a pellet boiler. As a result, the new building surpasses the requirements of the 2014 Energy Conservation Ordinance (EnEV 2014) by around 25 percent. WALA also ensured conservation and environmentally friendly measures during the construction process. Excavated material suitable for agriculture was transported to suitable nearby areas under cultivation. With the help of safeguards and additional biotopes, the company is also supporting the conservation of the indigenous linden burn cow beetles (Scintillatrix rutilans) and sand lizards (Lacerta agilis).

Following excellent collaboration, Drees & Sommer was awarded follow-up contracts for project management of a logistics center in Zell-Wängen and for the development of a work environment concept and requirements analysis for an office building in Bad Boll.

Client:
WALA Heilmittel GmbH,
Bad Boll

Project duration:
July 2014 – December 2017

Architects:
h4a Architekten
Gessert + Randecker, Stuttgart

Landscape design:
Glück Landschaftsarchitektur,
Stuttgart

Key project data:
- Building area: 2,218 m²
- GFA: Approx. 9,090 m²
- Workplaces: Approx 180
- Cost:
  Approx. € 31 million net

›› Already today, buildings being designed that will define our cities for decades to come. This is a unique opportunity to shape the future. ‹‹

From left to right:
Matthias Schulle
Jörg Ewald-Lincke
Stefan Heselschwerdt
(Partners in Nordrhein-Westfalen)

FUTURE-ORIENTED REAL ESTATE STRATEGY FOR DÜSSELDORF

›› Fast development of a sound basis for comprehensive portfolio analysis. ‹‹

Client:
City of Düsseldorf

Project duration:
– Pilot project:
April 2017 – May 2017
– Overall project:
July 2017 – December 2017

Key project data:
– GFA: 650,000 m²
– Scope: 750 buildings

Drees & Sommer carried out some 750 comprehensive building inspections for the city of Düsseldorf. The findings form the basis for a long-term real estate concept for the city's property portfolio.

The state capital of North Rhine-Westphalia wanted a detailed overview of the condition of its real estate. The aim was to develop a status report and a possible rehabilitation roadmap for the next 25 years to assist administration and policy-makers, while also taking staff and financial capacity into account. This was a massive task as it involved taking an inventory of nearly 750 buildings with a range of uses.

Drees & Sommer accepted this challenging task, undertaking a portfolio analysis. As a first step, the real estate experts worked closely with the Office for Facility Management on a pilot project to determine the specific requirements for the overall inventory. Data for 19 buildings with a range of uses – including day-care centers, administration buildings, fire stations, sports facilities and cemeteries – was captured and evaluated with a special tool in April and May 2017. The requirements defined in the pilot project formed the basis for the public invitation to tender for inspection of the remaining 731 properties with a gross footprint of approximately 650,000 square meters. Three external inspection teams were awarded contracts, with Drees & Sommer managing the inspections and evaluating the results. Standardized data entry sheets ensured that the data collection teams collected comparable data despite any differences in the composition of the teams. Thanks to overarching coordination, the ambitious building survey started on schedule in August 2017. After only four months, all inspections were completed and the real estate experts were able to begin evaluating the results.

› Portfolio analysis, strategic property consulting ‹

Based on the inspection data, the project managers identified the short- to medium-term maintenance requirements for the next seven years as well as longer-term refurbishment investment needs. They also drew up building profiles and action catalogs. All these results were incorporated into an overall strategy, not only providing the city of Düsseldorf with specific property management recommendations, but also – for the first time – an analysis of its entire property portfolio. Thanks to the building tool, the Office for Facility Management is now in a position to continuously update collected data and prioritize measures itself.

BAYER CHOOSES MAXIMUM SECURITY

The research division of Bayer AG is adapting an existing laboratory building in Chempark Dormagen (chemical park) to changed requirements. As General Construction Manager, Drees & Sommer is ensuring a single source of supply for all services for the client and users.

›› We quickly provide the client with decision documents for all important steps. ‹‹

The key objective of the project is the upgrade of a ventilation system, as the original system no longer meets the client's requirements. The goals were to meet the deadlines and cost targets and to solicit input from the laboratory teams working there – for example by conducting a user survey.

Bayer commissioned the project team on the basis of excellent cooperation during a previous project and proven life science expertise. A special feature of this project was that the available plans did not accurately represent the building. The Drees & Sommer specialists also identified the need for modifications and improvements during an inspection – these were quickly implemented by the experts, allowing them to revise the 3D planning.

In order to achieve the best possible result by the end of the year, the project team is conducting the refurbishment 'from the inside out'. The first step was to analyze the existing ventilation system and to investigate viable retrofit options. Bayer opted for the most economical solution – the installation of a new ventilation system without disrupting laboratory operation.

› General Construction Management (GCM) ‹

Drees & Sommer was subsequently awarded the overall contract for the project, with responsibility for overall project management as well as building services engineering. The services were delivered in the form of General Construction Management (GCM), where the company provides management services from a single source of. This approach allows the interfaces between trades and disciplines to be reduced to a minimum. It also enables the team to successfully handle the intensive coordination required with the Approval Department of Chempark Dormagen.

Handover and commissioning of the laboratory building will be undertaken in stages by the end of 2018. As a result of the project's success, Bayer has already commissioned Drees & Sommer to undertake further laboratory upgrade projects.

Client:
Bayer AG: Bayer CropScience Aktiengesellschaft, Leverkusen

Project duration:
June 2016 – December 2018

Architect:
BFM Architekten, Cologne

Key project data:
- GFA: 3.000 m²
- Gross volume: 12,000 m³
- Cost: Approx. €5 million net

SMART OFFICE BUILDING WITH SPACE FOR START-UPS

Currently under construction in Cologne, ‘The Ship’ will not only be the smartest office building in Germany, but will also offer space for start-ups and coworking. Drees & Sommer is supporting the groundbreaking building with sustainability and workplace consulting and a digitization strategy.

» Thanks to the Drees & Sommer experts, we were able to realize our high demands with regard to functionality, design and quality. «

Dr. Oliver Steinki, construction client and cofounder of FOND OF GmbH

The initiator and construction client is the Cologne-based founding trio of FOND OF GmbH. The key goal of the modern seven-story building with a gross floor area of approximately 13,000 square meters and space for some 500 workplaces is to provide an inspirational work environment. In addition to start-ups, which will fill The Ship with life on a permanent basis, coworking space is planned. The 200+ FOND OF GmbH employees will also move into the building. The client’s goal is to build a platform that facilitates interesting encounters and promotes inspiration and synergy. This should strengthen the local start-up scene and further consolidate Cologne’s position as an incubation hub.

Client:
FOND OF GmbH, Cologne

Project duration:
February 2017 – November 2019

Architect:
MÜLLER ARCHITECTURE, Cologne

Key project data:
- GFA: 13,600 m² (above ground)
- Construction cost: Approx. €28 million

› General Technical Planning (Building Services Equipment, Energy Design, Structural Physics, Facade Engineering, implementation of digitization concept), DGNB certification, Workplace Consulting, digitization strategy ‹

With extensive experience in digital building concepts, innovative work environments and sustainable construction, Drees & Sommer’s interdisciplinary team is helping the client to realize their aspirations. The experts have taken on the role of general technical planner and are also developing a holistic digitization concept and providing workplace consulting services for the project.

The digital structure of the building includes a network of more than 2,500 sensors, 156 access control points, and 146 beacons. Sensors in concrete ceilings and lamps allow ‘Tracking of Everything’ – such as occupancy information for desk sharing and coworking – and access checkpoints and beacons pass this information on to visitors. The building also meets the highest energy standards and will undergo DGNB Gold certification.

Drees & Sommer workplace experts carried out requirements, mobility and building analysis for the new work environment of The Ship. A custom workplace typology was then jointly developed with the customer.

The Ship derives its name from the building’s shape when seen from the air. ‘The Ship’ is also a metaphor for a joint journey to new shores and thus embodies the founding spirit of the initiators, the goals of the construction project, and the architecture of the new office building.

›› Reliability and experience
do not preclude innovative thinking.
Rather, they are prerequisites
for pioneering projects. ‹‹

From left to right:
Bernhard Unseld
Claus Bürkle
Andreas Schele
Gabriele Walker-Rudolf
Ralph Scheer
Thomas Jaißle
Patrick Theis
(Partners in Stuttgart)

SUCCESSFUL DISTRICT DEVELOPMENT — STUTTGART'S NEW CENTER

The Dorotheen Quartier is revitalizing Stuttgart's city center: Drees & Sommer supported the unique project from the initial design drafts onwards. The combination of harmonious and modern elements ensures that the complex blends into the cityscape.

A high-quality site was predestined for redevelopment: In 2009 EKZ Grundstücksverwaltung – a property management subsidiary of the E. Breuninger Group – launched a planning competition with the state of Baden-Württemberg. Until then, the area around the tradition-steeped Breuninger department store had lain dormant for years. Drees & Sommer assisted the client with the definition of planning requirements and a profitability analysis, and then managed the architectural competition, which was won by Behnisch Architekten Stuttgart in 2010.

Design changes continued to be made right up to the start of demolition. The state of Baden-Württemberg had committed to preserving the historic Hotel Silber, which was adjacent to the site, and erecting a memorial there. This led to a redesign of the complex: Instead of two, there were now to be three buildings of smaller size and height that blend harmoniously into the surroundings.

Over an area of some 65,000 square meters, the Dorotheen Quartier offers Stuttgart residents a mix of retail, local amenities, offices, parking facilities, urban living, and food & beverage outlets. The street level is reserved for retail and restaurants, while the upper floors feature offices and 19 apartments. The three future-oriented building complexes have created new visual axes in the middle of the city.

› Designer selection process, structural physics, building ecology, Green Building certification, project control, energy management, user manuals ‹

Drees & Sommer supported EKZ Grundstücksverwaltung by providing comprehensive project control services throughout the project. Following a lengthy planning permission process, which the project controller monitored with the help of a comprehensive to-do list, the project picked up speed again in October 2013 with the demolition of the first buildings. Shell construction began in spring 2015, and fitout started a year later. Although the facade engineering was complex, satisfactory solutions to the challenges were found through close consultation with all stakeholders in special meetings. The project managers were also responsible for structural physics and Green Building certification (LEED Platinum) for the complex.

Sudden design changes that arose during tenant fitout of the commercial areas had to be implemented in time for the opening. The experts managed the individual steps and drew up user manuals for the tenants in time for their move into the building. Thanks to their many years of experience and close cooperation, Drees & Sommer and the client ensured the opening of the first businesses in June 2017 and the grand opening in September 2017.

» Project managers collaborated closely on this demanding project from the word go. «

The open, spacious concept makes the Dorotheen Quartier a unique attraction in Stuttgart's inner city – for shopping, urban living, work, or a stroll.

Client:
EKZ Grundstücksverwaltung GmbH & Co. KG, Stuttgart

Project duration:
2009 – 2018

Architect:
Behnisch Architekten, Stuttgart

Key project data:
- GFA: 64,237 m², of which approx. 38,000 m² above ground
- Gross volume: 250,228 m²
- Car parking spaces: approx. 350
- Investment volume: › €200 million

COLLABORATION WITH PROFESSIONALS PAYS OFF

The Carmen Würth Forum was inaugurated on the 80th birthday of its namesake. The Cultural and Convention Center – with its remarkable architecture – is a new attraction in the Hohenlohe region – and an achievement to which Drees & Sommer also contributed.

The Carmen Würth Forum was opened on July 18, 2017 after a construction period of one and a half years. The client welcomed 1,400 invited guests – including prominent figures from politics, business and the arts – to the inauguration ceremony.

Designed by British architect David Chipperfield, the distinctive building with a 161,000 square meter footprint features a Great Hall with seating for 2,500 and a chamber music hall (Reinhold Würth Saal) with seating for 600. The Great Hall is suitable for events such as anniversary celebrations, conferences, trade fairs, and product presentations. The Reinhold Würth Hall, in contrast, has outstanding acoustics as a result of its layout and special surfaces on the ceiling and wall panels, which have minute perforations and absorb undesirable vibrations, ensuring the best possible sound quality. The Carmen Würth Forum is complemented by an adjoining area with space for 10,000 people during open-air events. A special sculpture garden surrounds the building.

Drees & Sommer's many years' experience in the planning and realization of cultural buildings and event venues – such as the new Stuttgart Art Museum – served to convince the client that the company was the right choice for the complex project. The support provided by the team included customized Project Management, Technical & Economic Controlling (TEC) and Facility Management services.

› Project Management, Technical & Economic Controlling (TEC), consulting on ecofriendly building materials, Facility Management (FM), Project Communication System (PCS) ‹

Project organization was very lean – with reporting and numerous organizational processes reduced to the minimum. Drees & Sommer was also responsible for efficiency in other areas: For example, the team reduced energy consumption and operating costs through the installation of a photovoltaic system.

The construction industry was impressed with the result: In 2017, the Carmen Fürth Forum received the Hugo Häring Prize for outstanding buildings from the Baden-Württemberg regional association of the Association of German Architects (BDA).

Client:
Adolf Würth GmbH & Co. KG, Künzelsau

Project duration:
April 2006 – July 2017

Architect:
David Chipperfield Architects, Berlin

Key project data:
- GFA: Approx. 10,000 m²
- Seating:
  - Chamber Music Hall: 600
  - Great Hall 2,500
- Capacity of open-air area: 10,000
- Construction costs: Approx. €60 million

›› Considerable reduction in time required for design and construction. ‹‹

COMPLEX DATA CENTER COMPLETED IN RECORD TIME

›› Project executed in substantially shorter time with no loss of quality or additional cost. ‹‹

After a construction time of only nine months, Data Center Building H has been in operation at e-shelter's Data Center Campus Frankurt 1 since November 2017. Drees & Sommer experts contributed to the success of the highly complex new building by providing Lean Construction Management (LCM®) services.

The Frankfurt headquarters of e-shelter – an NTT Communications company – comprises approximately 60,000 square meters of data center and plant & equipment rooms, making it Europe's largest data center site. In the lead-up to the construction process for Building H, Drees & Sommer experts worked together with their long-standing client to establish their requirements. Wishes such as a significant reduction in the standard completion time of twelve months, early identification of risks and problems, and optimization of the interaction between construction management and contractors made Lean Construction Management the ideal choice.

The client's team and many of the companies involved in construction had no previous practical experience with LCM®. But adaptation of the approach to the specific project situation and integration of planning and execution allowed the LCM® experts to convince all stakeholders of the benefits of the methodology and establish a spirit of trusting and cooperation. The focus was on the construction process itself, which was continually optimized through visualization, standardized lean routines, and discipline.

› Lean Construction Management ‹

This allowed the data center – the largest at the site to date – to be built in just nine months while meeting all the customer's quality standards. The already tightened schedule was cut by a further four weeks – despite unfavorable weather conditions during the construction period. All previous buildings built by e-shelter are some 30 percent smaller and took around twelve months to complete. The standardization of construction processes also enabled e-shelter to accelerate overall scheduling of its own offerings.

As a result of the successful introduction and application of Lean Construction Management, e-shelter commissioned the Drees & Sommer experts to undertake further projects using the methodology: All upcoming projects in 2018 will make full use of LCM®!

Client:
e-shelter

Project duration:
December 2016 – November 2017

Key project data:
- GFA: 17,979 m²
- Construction costs: Approx. €100 million

SWIFT AND SURE PROJECTS WITH LCM AND CONSTRUCTION LOGISTICS

Lean Construction Management (LCM®) is gaining in popularity. More and more builders use the method because it makes processes on the building site more stable and transparent. Projects can be completed faster and more reliably when lean logistics processes are used. Two current examples show how Drees & Sommer teams work in practice.

» Early and systematic integration of construction logistics into an LCM project is often the key to success – and ensures a stable, reliable construction process. «

Patrick Theis, Partner at Drees & Sommer

» Lean is a general approach and LCM® is its specific implementation in a construction project. Our Expert Center ensures integration and quality. «

Dirk Jannausch,
Senior Project Partner at Drees & Sommer

Switzerland's tallest timber high-rise is being built on the University of Lucerne's new campus.

The Suurstoffi precinct in Risch-Rotkreuz in the Swiss canton of Zug will be a place to live, learn, work and relax, providing accommodation for 1,500 residents and 2,000 students. Along with other buildings, the 60-meter timber high-rise – Switzerland's tallest – is being built on a site of some 10 hectares. The construction client is Zug Estates AG, which has set itself the goal of creating a completely carbon-free precinct.

An interdisciplinary Drees & Sommer team is supporting the construction of the three buildings involved in the project: two University of Lucerne school buildings and an office building intended for lease. The consultants are contributing know-how in construction logistics, Lean Design Management, Lean Construction Management, and the use of integrated tools.

A board with work cards serves as an LCM® management tool on the building site. The LCM planning board shows completed work directly in the BIM (Building Information Modeling) model via special software. This software integrates logistics, BIM and LCM®. The team is also managing the complex on-site construction logistics – from delivery of material to its use on site – using schedule cards. A logistics solutions company is responsible for off-site construction logistics. GPS allows exact tracking of any shipment.

The Drees & Sommer specialists determined the project participants' requirements at the start of the project. The consultants are holding regular lean workshops to ensure that problems are identified and solved at an early stage, before they impact the site. This approach has proved very successful so far: The project is keeping up with the ambitious schedule, which sees the building opening in autumn 2019.

›› Lean methodology is particularly suited to demanding projects with many participants, as the focus is on the overall process. Everyone works together allowing risks to be identified much earlier, and schedule, cost and quality goals to be met. ‹‹

Paul Schneider, Senior Project Partner at Drees & Sommer

4,000 kilometers away in Saudi Arabia, clients are also putting their trust in Drees & Sommer expertise. Initially, the consultants supported construction company Nesma & Partners with the building of a hospital in Riyadh using LCM®.

Over eight weeks on site, they were able to substantially increase the efficiency of the eight trades managed – by an average of eight percent. That convinced the client, and the experts were awarded follow-up contracts for managing the construction of a hospital in Jeddah as well as a total of 300 student apartments in Thuwal. They also increased the efficiency of these projects with the aid of lean tools. The scale was impressive, requiring the coordination of more than 500 project participants.

Thanks to the increase in efficiency, Nesma & Partners' investment in consulting quickly paid off. Drees & Sommer also assisted the construction company with the establishment of its own lean department, enabling it to independently organize its projects according to lean principles in future. The construction projects for Nesma & Partners are not the first LCM® projects supported by Drees & Sommer in the Gulf region. The experts have also worked in Qatar and the United Arab Emirates for Consolidated Contractors Company (CCC) – a large construction company operating in the Middle East – and for Kaefer insulation technology.

Lean Construction Management applies lean principles from production in the execution phase and agile approaches from software development to the planning phase of construction projects. LCM® is particularly effective when logistics is integrated and streamlined from the outset. To this end, the experts consider the entire value-added process, plan preassembly, modularize building elements, and design delivery strategies such as 'just in time' material supply.

LCM® is based on a continuous and proven three-step process: Overall process analysis, process planning with takt planning, and board planning. LCM® construction sites are more transparent and stable, faster, better organized, and less prone to errors than other sites. As far as logistics is concerned, for example, material is only delivered for the day it is required.

Whether in Switzerland, Saudi Arabia or anywhere else in the world, the aim is always to adapt the established Lean Construction Management system to the specific needs of each project, to select suitable tools, and to establish a lean culture.

Lean Construction Management is being used in Thuwal, Saudi Arabia.

›› In a world subject to constant change, we need future-proof infrastructure and sustainable real estate more than ever. ‹‹

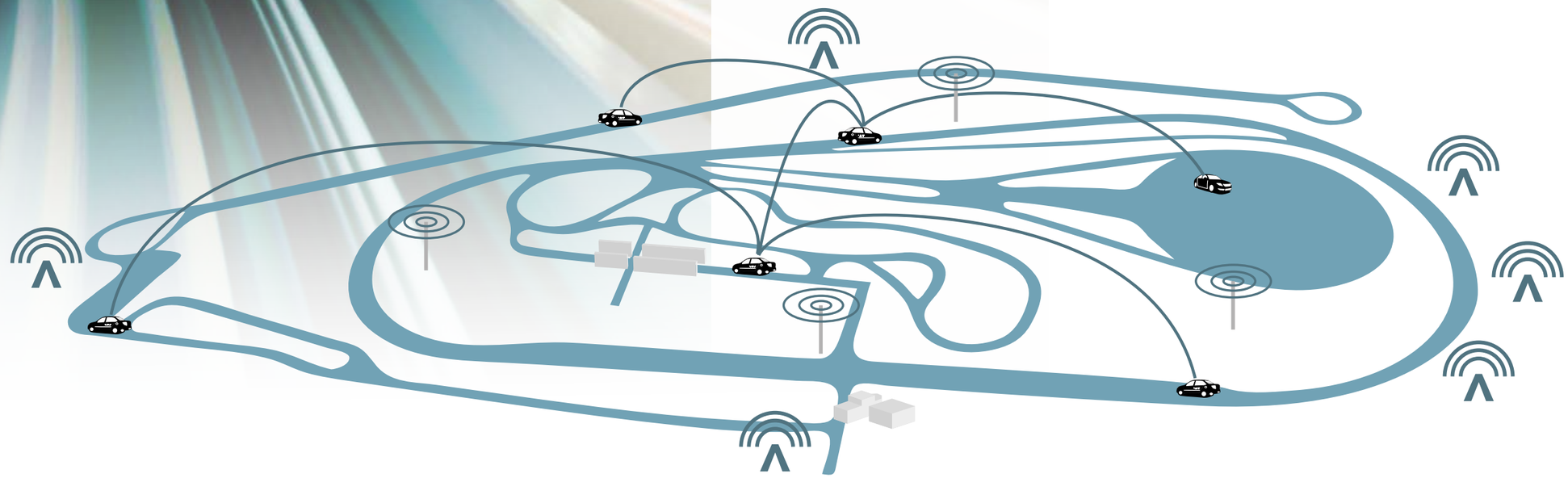
From left to right:
Dr. Jürgen Laukemper
Prof. Dr. Michael Bauer
Dr. Peter Mösle
(Partners in Stuttgart)

TEST TRACKS FOR MOBILITY OF THE FUTURE

Private transport, electromobility and autonomous driving – when it comes to the future of mobility, there are still a lot of issues to resolve. In addition to its own holistic solutions, Drees & Sommer is supporting customers who are grappling with these issues – as demonstrated by two unique projects.

SIMULATION TEST ZONES:

– Narrow intersection with features including variable backdrops, traffic signals, and a courtyard entrance
– Wide intersection with features including variable backdrops, left turn, and a bus lane
– Straight two-lane road with features including footpath / cycleway, parking bays, and a tunnel
– A range of parking scenarios
– Multipurpose area for features such as traffic circles and intersections
– Connecting roads between the zones



Engineering sustainable mobility faces four key challenges: Increasing road safety, transport efficiency, energy efficiency and the quality of urban life. These are also the key areas being researched by CERMcity (Center for European Research on Mobility). The test facility, the only one of its kind in Germany, is being built by a project consortium in and around RWTH Aachen University with funding from the Federal Ministry of Education and Research (BMBF). It is being integrated into existing test track sections at the Aldenhoven Testing Center.

The facility will primarily act as a validation environment for urban transport. The networking and automation of different road users and the infrastructure required for sustainable mobility must, of course, be tested for safety in urban traffic before use. This currently poses a challenge for many vehicle manu-facturers and suppliers, particularly small & medium-sized enterprises and start-ups.

Drees & Sommer experts are providing requirements management and project control services to CERMcity and supporting the customer with extensive construction expertise. The project has only capped subsidies. Close coordination is also necessary with the automobile industry – the future users of the facility – to determine their requirements. Experts are coordinating systematically with users on this.

Client:
RWTH Aachen University, Institute for Motor Vehicles, Institute for Automatic Control

Project duration:
December 2016 – December 2018

Planning office:
IngenAix GmbH, Aachen

» The future of mobility lies in a broad mix of conventional and new forms of mobility. That’s why it’s exciting for us to successfully shape projects in applied research, in industry and then in the real world. «

Claus Bürkle, Drees & Sommer Partner

» Mobility is becoming increasingly automated and autonomous. But it also needs to become safer. That's why in future we will also need more test facilities that are more flexible. «

Dr. Jürgen Laukemper, Drees & Sommer Partner

Client:
Daimler AG, Sindelfingen

Project duration:
September 2014 –
December 2019 (estimated)

Architect:
Tilke, Aachen

Key project data:
- Area: Approx. 520 ha
- New road construction: Approx. 50 km
- Earthworks: Approx. 3,6 million m³

But it's not only universities and research institutes that are working on mobility – companies are, too. Daimler AG is currently building a unique testing and technology center in Immendingen. Daimler will use the 520-hectare site – formerly a military training area – to test passenger vehicles. The focus is on the optimization of combustion engines, development of hybrid and electric vehicles, testing new lightweight construction technologies, and further development of assistance systems culminating in the realization of accident-free autonomous driving.

The key feature of the facility is an oval track whose steep curves allow an unsteered vehicle to drive without centrifugal force. This 'infinite straight' allows the simulation of scenarios such as long freeway drives.

Because of geological challenges and the specialties of road and track construction, Daimler AG commissioned Drees & Sommer infrastructure experts to undertake project control. After detailed project analysis, the experts fine-tuned the project structures and processes and coordinated the numerous contractors in close collaboration with the client.

Whether companies or research facilities, the two examples show that Drees & Sommer's clients are also working intensively on the future of mobility. Thanks to their wide-ranging know-how, the experts are able to provide comprehensive support – on infrastructure issues, mobility concepts and the management of specific projects.

SQUARE GUARANTEES SUSTAINABLE INNOVATION FOR MANNHEIM

›› The homes benefit from an efficient overall energy concept as well as from e-mobility, smart grid and grid-interactive building technology. ‹‹

The conversion of the former Benjamin Franklin barracks into a sustainable residential and commercial district marks a step into the future for the city of Mannheim, undertaken in partnership with Drees & Sommer. Building on climate protection goals, the modern precinct will feature innovations in the areas of energy efficiency, energy generation, smart grids and electromobility.

Client:
GBG – Mannheimer Wohnungsbaugesellschaft mbH, Mannheim

Project duration:
March 2015 – December 2022

Architect:
ap88 Architekten Partnerschaft mbB, Heidelberg

Key project data:
- GFA: 7,300 m²
- Living area: 4,600 m²
- Apartments: 48
- Cost (Cost categories 200 – 700): Approx. €20 million gross

SQUARE (= Smart Quarter and Urban Area Reducing Emissions) is a project to demonstrate energy-optimized development of residential districts. It is subsidized by the European Regional Development Fund (ERDF). Two multi-storey residential buildings are planned, each with 24 apartments. One building is being refurbished in accordance with the current Energy Conservation Ordinance (EnEV), while the other is being developed into a grid-interactive energy surplus building. Both properties are integrated into a green urban district with a Mobility Energy Cube. In the operational phase, energy monitoring will show whether – and at what level – power savings can be achieved.

A new type of planning is required for 'green' urban districts like these – featuring grid-interactive low-energy, zero-energy and energy surplus houses as well as storage technologies for electricity, heating and cooling that also interact with the power grid: Only the right tools, methods and processes allow such developments to be designed to be economical. It is no longer solely a question of maximum energy production – the decisive factor for a successful combination of ecology and economy is the right concept for each of the various technologies.

› General Construction Management (GCM) with energy management and monitoring, building physics, building ecology, Cradle to Cradle® (C2C), building services equipment (BSE), energy design, structural engineering, construction management ‹

In order to achieve social, environmental and economic sustainability of the project, it was first necessary to gather reliable information on future energy consumption. Drees & Sommer was commissioned to compare various rehabilitation options, and to examine aspects such as e-mobility and smart grid solutions.

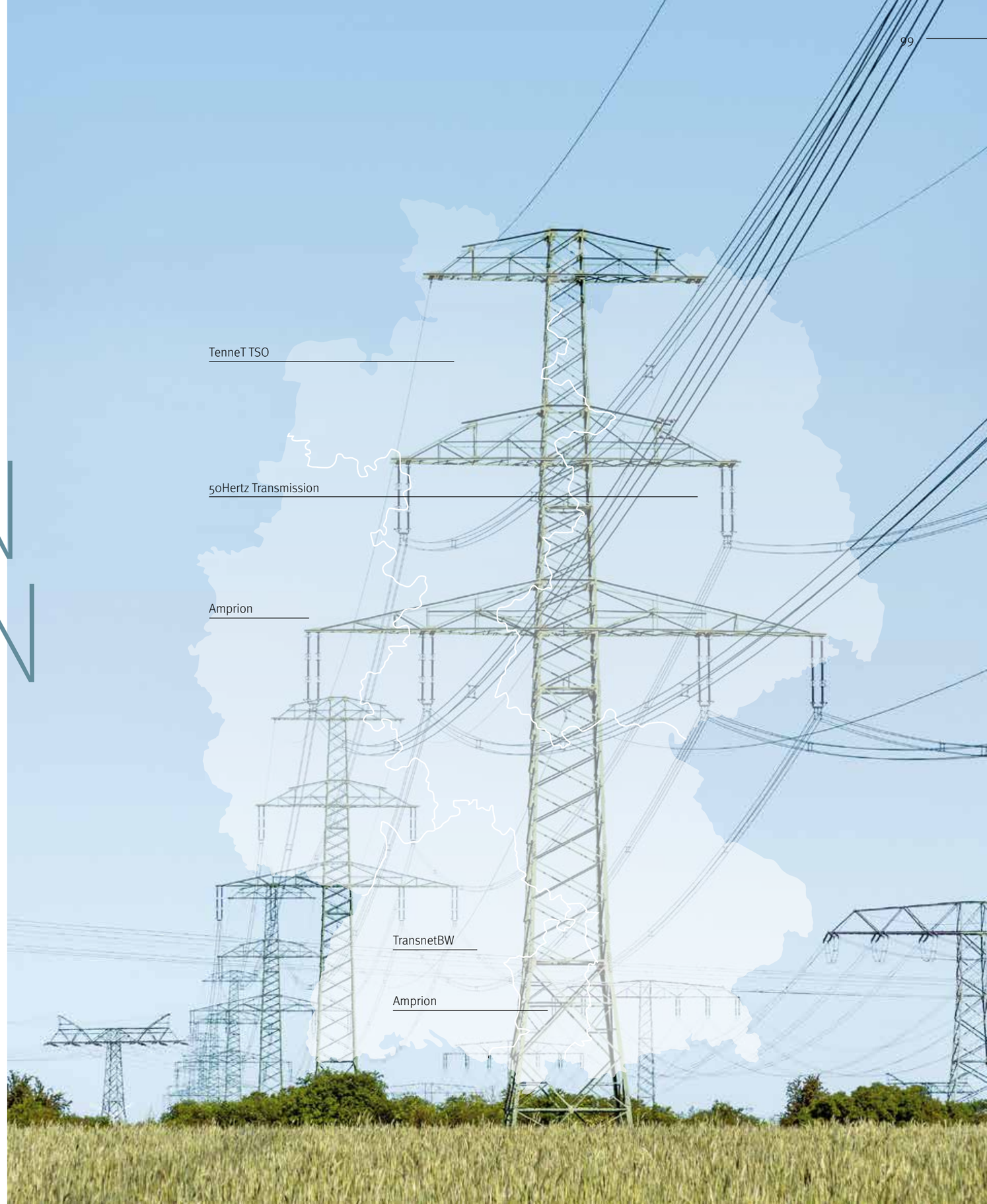
The company also played a key role in later stages of the project: After completing examination of rehabilitation options, the experts were awarded the contract for planning and project execution as General Construction Manager. In this role, Drees & Sommer is supporting the client as the point of contact for almost all matters relating to the project.

›› Inside knowledge of our clients' industries enables us to develop bespoke solutions. ‹‹

From left to right:
Thomas Häusser
Philipp Späth
Mirco Beutelspacher
Christoph Vagn Philipsen
(Partners in Stuttgart)

ENERGY TRANSITION EXPERTS ON A MISSION

Since 2011, the focus of the energy transition in Germany has been on upgrading the electricity grid – particularly the huge HVDC transmission lines, the ‘power autobahns’, which primarily run from north to south. Drees & Sommer has previously been involved in many grid expansion projects, and is currently supporting all four transmission grid operators.



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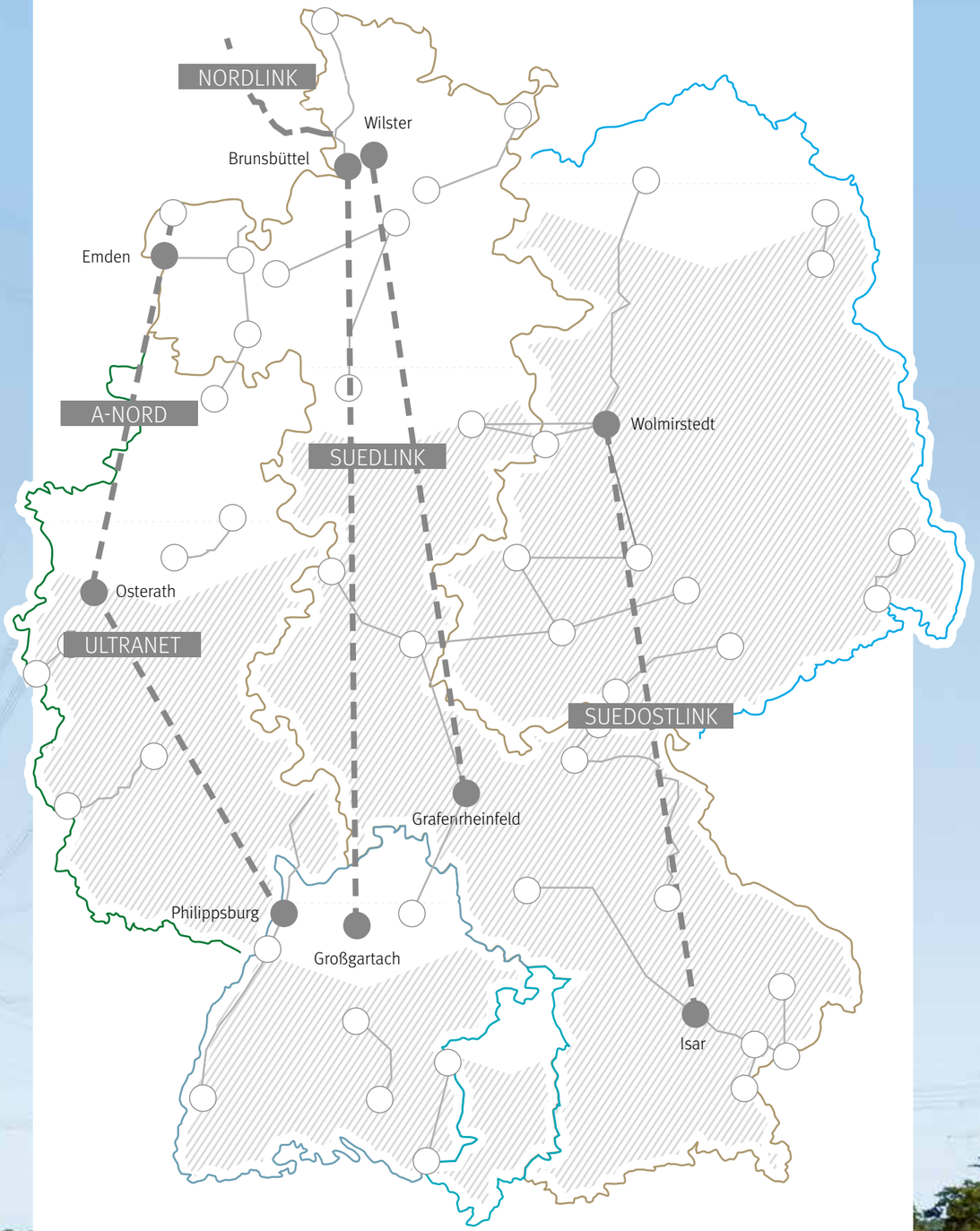
Since the decision to phase out atomic energy, the German energy transition has not developed as many observers expected. Back in 2011, most experts assumed that the gradual shutdown of nuclear power plants would be compensated by an increase in the share of new fossil fuel power stations (mainly gas-fired power plants), but above all by the expansion of renewables (solar, wind, biomass). Also, back then, the fluctuation in energy generation by renewables was to be offset by mass storage technologies, such as pumped storage. But the regulation of the electricity market (such as caps on profits from the sale of electricity), the drop in the price of carbon certificates, and the fall in the price of electricity on the stock exchange led to different outcomes: Nowadays, it is almost impossible to run large coal- and natural gas-fired fossil fuel power stations and pumped storage plants economically. As a result, not only are no new plants being built, but an increasing number of existing ones are being decommissioned.

As the energy transition progresses, an increasing proportion of energy is derived from renewable energy systems, which can only be controlled to a limited degree at best. This is having a negative impact on electricity grids, for example with regard to grid stability and security of supply.

The establishment and expansion of the large high-voltage direct current (HVDC) transmission lines continues apace Drees & Sommer has been supporting all four German transmission network operators (Amprion, Transnet BW, TenneT and 50Hertz) since the ‘early days’ of the energy transition. Numerous experts at various locations have supported various projects: In addition to project control, they have also provided process management and project communication services as well as developing project management manuals.

Christopher Vagn Philipsen, the Dreso Partner responsible for the area, reports that, “At Amprion, for example, we are providing support during the planning phase from project initiation right through to the application for planning approval for network expansion projects. For 50Hertz, we are undertaking the principal’s role with our consortium partner and working closely with the relevant specialist departments at local level.” The TenneT office in Lehrte near Hannover has been a particular focus of activity since 2011. There, Drees & Sommer experts are working on site with the customer to manage the establishment and expansion of grid connections to offshore wind farms in the North Sea. “We are also supporting TenneT with the communication of grid expansion measures in Bavaria, and acting as project controller for their corporate headquarters in Bayreuth,” says Philipsen.



» The storage possibilities resulting from the expansion of e-mobility pose a challenge for the distribution networks. «

Christopher Vagn Philipsen, Partner at Drees & Sommer

Jan Kloten of the Berlin regional office confirms that they are providing a similarly diverse range of services for the 'South East Link', the HVDC transmission line from the Magdeburg region to the Isar River near Landshut. "The new approval process based on the (German) Grid Expansion Acceleration Act (NABEG) is characterized by intensive coordination between the project partners 50Hertz and TenneT, and with the Federal Network Agency and planners, as well as by comprehensive public consultation in the form of planning forums, information platforms and 'Dialog Bus' tours.

So what are the next steps for the energy transition and the HVDC grid expansion? For the former, attention is turning to interconnecting associated fields, for instance linking electricity generation with heat generation & storage, and mobility: Electric car batteries, for example, could play a key role as intermediate storage devices in the electricity grid.

But this is of relatively minor significance for the HVDC transmission lines discussed above. "The storage possibilities resulting from the expansion of e-mobility are a challenge, particularly for the downstream distribution networks, that is, for medium- and low-voltage lines," says Philipsen. Actually, the term 'distribution networks' has become a misnomer because today they both distribute and collect electricity – thanks to numerous large and small photovoltaic arrays, wind turbines and biomass plants. "We're talking about more than 1.5 million 'power plants' that form a decentralized power generation infrastructure." But one thing is certain: The future will remain electrifying.

What is the status of the HVDC grid expansion?

The current Federal Requirements Plan for the land-based grid provides for some 2,800 kilometers of new transmission lines, and optimization and upgrade of some 3,100 kilometers of existing transmission lines. This includes the four major HVDC transmission lines from north to south:

- SuedLink (TenneT/TransnetBW), 2 lines each 700 km long
- SuedOstLink (50Hertz/TenneT), 500 km
- Ultranet (Amprion/TransnetBW), 340 km
- A-Nord (Amprion), 300 km

The corridors for these transmission lines have now been broadly defined or are undergoing the approval process.

According to the Federal Network Agency, the processes are on schedule. Following definition of the corridors, the exact routing has to be approved. The planned completion date of 2025 is very ambitious given the total length of nearly 2,300 to 2,400 kilometers.

For new HVDC projects – with the exception of the Ultranet project – priority is to be given to underground cables, that is, the transmission lines are not to be built as overhead lines. This vastly increases the cost – with estimates ranging from around five to eight times the cost of overhead lines. The total budget for all HVDC transmission lines is in the tens of billions of euros. Added to which are the costs for HVDC lines required to connect offshore wind farms in the North Sea. A total capacity of some five gigawatts has been installed over the last seven years. The previous German Federal Government aimed to achieve generation of 6.5 gigawatts from offshore wind farms by 2020.

INDUSTRY EXPERTISE FOR AN AUTOMOTIVE LEGEND

›› Experience and local expertise bring maximum reliability to the project. ‹‹

Lamborghini – a name that stands for stunning esthetics and captivating technology far beyond the world of automobiles. Drees & Sommer provided crucial support in the construction of the company's new factory and administration buildings in Italy.

Automobili Lamborghini SpA expanded its historic factory in Sant´Agata Bolognese for the production of its new super sport utility vehicle, the Urus. The project at the factory site encompassed the construction of a new assembly hall, a finishing hall, a paint shop, a logistics hall, an office building, and the conversion and extension of the pilot hall. Modifications to the existing factory were also to be undertaken without disrupting production. The client's goal was not only to establish production of a new series, but also to increase research & development capacity.

› Project preparation, project management, potential analysis, feasibility studies, relocation management ‹

In July 2015, the Drees & Sommer automotive experts were awarded the project management contract for the extensive undertaking. The challenges for the interdisciplinary team of automotive and local specialists included coordination of the complex interfaces between building infrastructure and plant technology, as well as the implementation of existing Audi and VW standards. The realization of the individual projects without disrupting production was a routine obstacle that required an overarching concept for the construction sites and individual subprojects. Drees & Sommer took on additional tasks during the course of the project, including plant layout design, 3-D collision checks, and relocation management for logistics.

The first pre-production release model rolled off the production line on schedule in mid-2017, after which the factory progressively ramped up for Start of Production of the series vehicle in first half of 2018. The inauguration ceremony for the factory extension was held before the end of 2017 in the presence of the Italian Minister President.

Client:
Automobili Lamborghini SpA, Bologna, Italy

Project duration:
July 2015 – July 2018

Designers:
- Prospazio: Sassuolo
- Politecnica: Modena
- Studio Generali: Modena
- Tecnopolis: Bologna

Key project data:
GFA: 80,000 m²

From left to right:
Veit Thurm
Prof. Jürgen M. Volm
(Partners in Zurich)

›› As far as we are concerned,
a project becomes exclusive as soon as
we assume responsibility for it. ‹‹

BUILDING THE FUTURE TOGETHER

F. Hoffmann-La Roche AG is systematically continuing the development of its headquarters in Basel/Kaiseraugst – with Drees & Sommer on the team.
The key to success is knowing and understanding each other. The Home for IT project in Kaiseraugst proves this once again.

The wide staircases are intended to connect both floors and people.

›› You have to understand the client to act as a consultant. Success requires the continuous long-term involvement of users. ‹‹

F. Hoffmann-La Roche AG started the restructuring of its headquarters in Basel with Bau 1 (‘Building 1’), which opened in 2015. The company was so impressed by Drees & Sommer’s performance as general planner that the trusting cooperation continued with the Home for IT project. The office buildings for the IT department are the core elements of the Roche area in Kaiseraugst, from where the group is driving its business model, which has been significantly altered by the digital transformation.

As in the case of Bau 1, Roche wanted state-of-the-art solutions in terms of sustainability, and here too the users had high expectations of their future workplaces. That’s why they were involved in the planning and development process – and were delighted with the result after moving in. The fitout, furnishings and indoor climate offer maximum levels of comfort, and the atriums flooded with natural light create space for movement and encounter.

› GCM / General Planning (project initiation and draft design), Requirements Planning, Land-use Concepts, Client Consulting, Building Services Engineering, Workplace Consulting (color & furnishing concept, furnishing logistics), LCM ‹

The project was a challenge with regard to adhering to the schedule and planning. One reason was a decision made long after the start of construction to use a new office concept – facilitating activity-based working – implemented by Drees & Sommer workplace consulting experts. The move away from conventional personal desks to the modern flexible system of desk-sharing paid off. Instead of the originally planned 1,500 workplaces, only 1,100 were needed, and one of the four Home for IT buildings can be used for other purposes. Drees & Sommer’s lean planning proved valuable in every way. Despite all design changes, thanks to the rigorous problem analysis and the rapid solution-oriented measures of Lean Construction Management (LCM), the execution schedule was met and all specified qualities – such as functionality – exceeded, with the project completed just under budget.

To ensure that these and the flexibility of Home for IT remain high throughout its entire life cycle, the Drees & Sommer experts used modular planning with the aid of integrated building zones, especially for the areas technology, fitout and use. This had already proved effective for Bau 1. Which proves that ongoing cooperation across several projects pays off.

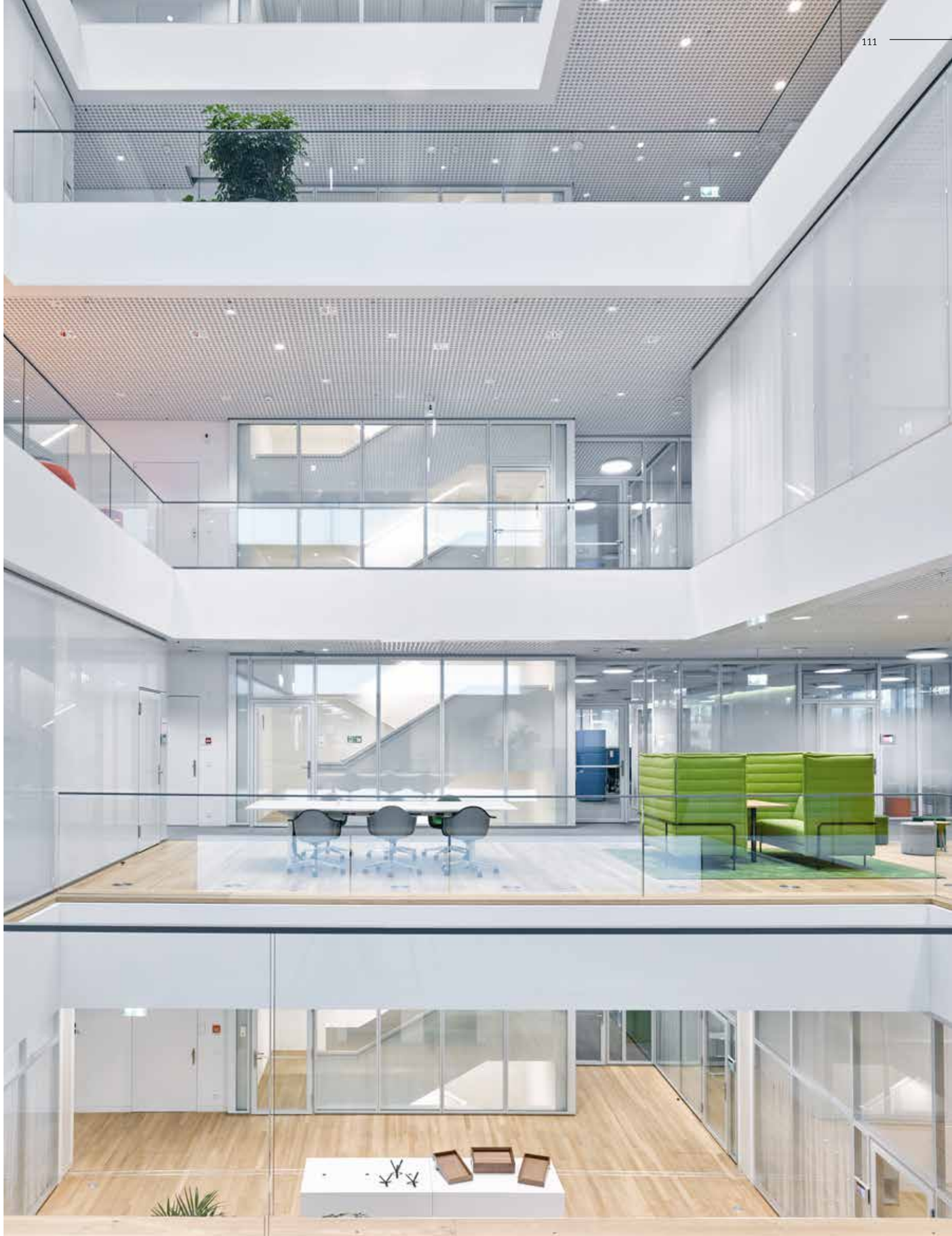
The atrium is a visual highlight that also promotes exchange between employees.

Client:
F. Hoffmann-La Roche AG, Basel

Project duration:
September 2013 – November 2017

Architect:
Nissen Wentzlaff, Basel

Key project data:
- GFA: 52,500 m²
- Gross volume: 227,000 m³
- Total cost: Approx. CHF 292 million



HEALTH AND BEAUTY IN A STUNNING SETTING

The newly created Bürgenstock resort looks down Lake Lucerne in a location that is steeped in tradition. With four hotels, residential suites with hotel service, an alpine spa, conference and business center, and restaurants and bars, the resort attract guests from all over the world. A further drawcard is the Waldhotel Health & Medical Excellence, in whose construction a team of nine from Drees & Sommer Zurich played a key support role.

The Bürgenberg – a place steeped in tradition

The 1,128-meter Swiss mountain Bürgenstock/Bürgenberg has long been a popular holiday resort and conference destination. The first hotel opened there in 1873 with the name Hotel Kurhaus ('spa hotel'). Other hotels followed. The resort was then boosted by a rail connection, its own water supply, and the Hammetschwand lift. Europe's highest outdoor elevator still allows visitors from all over the world to enjoy stunning views. In the 1950s and 1960s, the Bürgenberg hosted many celebrities: Audrey Hepburn, Sophia Loren, Konrad Adenauer, Sean Connery and many others visited the picturesque resort.

The foundation stone of the new Bürgenstock resort was laid in 2014. Opened in 2017, the resort includes four hotels, residential suites with hotel service, the Bürgenstock alpine spa, a large conference center, restaurants, bars and numerous sports and leisure facilities.

High-quality furnished rooms and breathtaking views: Guests can recuperate here in five-star luxury here.

The terraced design of the new building allows it to blend naturally into the forest landscape. Roof gardens and planted facades, which reflect the green of the forest, reinforce this effect. The five-star hotel specializes in meeting the needs of guests who want to focus on their health. They can spend their time there improving their fitness, recovering from everyday stress, or joining customized nutrition programs. Some of the 160 rooms are reserved for rehabilitation and for in-patients from the neighboring canton of Nidwalden.

› Construction management including construction supervision, invitation to tender and contract award, cost planning & monitoring, scheduling, Lean Construction Management, defect management with Contrace, building site logistics, commissioning management ‹

The opening of the Waldhotel on December 14, 2017 as the final element of the Bürgenstock resort marked the end of a long and challenging project for all participants. Drees & Sommer provided in-depth support to Bürgenstock Hotels AG over the final two and a half years before the opening. Initially, the team collaborated with the existing construction managers, but after a few months, the client transferred overall responsibility for construction management to Drees & Sommer. This essentially covered the invitation to tender and the award of all construction services as individual contracts, construction management including associated quality assurance, cost & schedule management, and handover to the operator. Drees & Sommer was also commissioned to undertake overall coordination of commissioning of the resort.

Client:
Bürgenstock Hotels AG, Obbürgen

Project duration:
October 2015 – March 2018

Architect:
- Matteo Thun und Partner, Milan (design and concept planning; planning of invitation to tender)
- Monoplan AG, Zurich (detailed planning)

Key project data:
- GFA: 28,350 m²
- Construction costs: Confidential
- Operator: The Bürgenstock Selection
- Owner: Katara Hospitality
- Category Five-star hotel
- Special features: 4,200 m² Health & Medical Center
- Floors 11

To meet all of these requirements, Drees & Sommer first revised cost planning, starting again from scratch. Despite joining the project at a late stage, the team was able to optimize the project and reduce costs – for example by using alternative materials on the facade and internal wall surfaces. Two prototype rooms – built by two different companies – were used for quality assurance for the later series fitout and helped project management reach their award decision for the key trade of carpentry.

The geographical location of the project was a major challenge for building site logistics and transport. As a result of the strategy of awarding separate contracts, up to 85 companies had to be coordinated daily. The individual trades had to undertake fitout on nearly all floors at the same time in order to meet the deadline. Lean Construction Management (LCM®) was used for planning and coordination of execution on site to increase efficiency and ensure the necessary process stability. Here, colleagues from the local construction management team worked closely with the Drees & Sommer LCM® Expert Center. At the beginning of 2017, the LCM® specialists revised the existing schedule with the help of overall process analysis and process planning. This improved capacity utilization for the individual trades and smoothed peak workloads. In February, they introduced board planning at the site, thus ensuring a smooth and efficient construction process.

›› A superior quality hotel project successfully completed with the help of LCM® and passion. ‹‹

›› For us, interdisciplinary collaboration means daring to think outside the box technically, but more importantly, looking at things through the customer‘s eyes. ‹‹

above:
Jörg Wohlfarth
(Partner in Leipzig)

right:
Daniel Kluck
(Partner in Dubai)

OFFICES AND CONTACTS

HOLDING

Drees & Sommer SE
Obere Waldplätze 13
70569 Stuttgart, Germany
Phone +49 711 1317-0
info@dreso.com

Your contacts:
Dierk Mutschler
Steffen Szeidl

AACHEN

Drees & Sommer
Campus-Boulevard 57
52074 Aachen, Germany
Phone +49 241 9278762-0
info.aachen@dreso.com

Your contact:
Klaus Dederichs

AMSTERDAM

Drees & Sommer Netherlands B.V.
Hoefbladstraat 20 – 22
2153 EX Nieuw-Vennep, Netherlands
Phone +31 88 776-2670
info@procore.nl

Your contacts:
Kurt van Dijk
Michel de Haan

ATLANTA

Drees & Sommer USA
100 Hartsfield Centre Parkway
Suite 500
Atlanta, GA, 30354 USA
info.atlanta@dreso.com

Your contacts:
Christine Gruna

BASEL

Drees & Sommer Schweiz
St. Alban-Vorstadt 80
4052 Basel, Switzerland
Phone +41 61 785-7200
info.schweiz@dreso.com
www.dreso.ch

Your contacts:
Niklaus Arn
Prof. Jürgen M. Volm

Drees & Sommer Schweiz
Malzgasse 20
4052 Basel, Switzerland
Phone +41 61 785-7200
info.schweiz@dreso.com
www.dreso.ch

Your contacts:
Tomas Kucharik
Veit Thurm

BERLIN

Drees & Sommer
Bundesallee 39 – 40a
10717 Berlin, Germany
Phone +49 30 254394-0
info.berlin@dreso.com

Your contacts:
Oliver Beck
Simon Dietzfelbinger
Thomas Graf
Claudia Niendorf
Benedikt Scholler
Steffen Sendler
Markus Weigold

Gassmann + Grossmann Baumanagement GmbH
Bundesallee 39 – 40a
10717 Berlin, Germany
Phone +49 30 254394-0
berlin@gagro.de

Your contacts:
Jürgen Brandstetter
Uwe Rödiger

BREMEN

Drees & Sommer
Auf der Muggenburg 9
28217 Bremen-Überseestadt, Germany
Phone +49 421 278712-0
info.bremen@dreso.com

Your contacts:
Prof. Phillip W. Goltermann
York Friedrich Stahlknecht

BRUSSELS

Drees & Sommer Belgium
Boulevard Brand Whitlock 87
1200 Brussels, Belgium
Phone +32 2 73770-30
info.brussels@dreso.com

Your contacts:
Maximilien Ast
Christopher Matthies

BUDAPEST

Drees & Sommer Hungária
c/o Regus EMKE, Rákóczi út 42
1072 Budapest, Hungary
Phone +36 1 327-4565
info.hungary@dreso.com

Your contact:
Marc Guido Höhne

COLOGNE

Drees & Sommer
Habsburgerring 2
Bürogebäude Westgate
50674 Köln, Germany
Phone +49 221 13050-5260
info.koeln@dreso.com

Your contacts:
Jürgen Einck
Jörg Ewald-Lincke
Stefan Heselschwerdt
Frank Kamping
Christian Könings
Jochen Kurrle
Matthias Schulle

Gassmann + Grossmann Baumanagement GmbH
Habsburgerring 2
Bürogebäude Westgate
50674 Köln, Germany
Phone +49 221 27079-5341
koeln@gagro.de

Your contacts:
Heinz Heger
Mirko Weiss

COPENHAGEN

Drees & Sommer Nordic
Wildersgade 10B, 2nd floor
1408 Copenhagen, Denmark
Phone +45 45 2690-00
info.nordic@dreso.com
www.dreso.dk

Your contacts:
Prof. Phillip W. Goltermann
Carsten Hyldebrandt
Sebastian Lundholm Petersen

DORTMUND

Drees & Sommer
Königswall 21
44137 Dortmund, Germany
Phone +49 231 9125697-0
info.dortmund@dreso.com

Your contacts:
Nadin Bozorgzadeh
Stefan Heselschwerdt

DRESDEN

Drees & Sommer
Freiberger Straße 39
01067 Dresden, Germany
Phone +49 351 873239-0
info.dresden@dreso.com

Your contacts:
Andy Brunner
Marko Grünberg
Thomas Grundmann
Andreas Rost
Jörg Wohlfarth

DUBAI

Drees & Sommer Gulf
DIC – Dubai Internet City
EIB04 (BT) Building, Office 210,
P.O. Box 500 128
Dubai, U.A.E.
info.dubai@dreso.com

Your contacts:
Stephan Degenhart
Daniel Kluck

DÜSSELDORF

Drees & Sommer
Derendorfer Allee 6
40476 Düsseldorf, Germany
Phone +49 211 23390-0
info.duesseldorf@dreso.com

Your contacts:
André Boers
Karsten Eisenmann
Christian Fürwentsches
Jörg Ewald-Lincke

ERFURT

Drees & Sommer
Anger 66 – 73
99084 Erfurt, Germany
Phone +49 361 59896-6410
info.erfurt@dreso.com

Your contacts:
Marko Grünberg
Christian Krajci
Andreas Rost
Jörg Wohlfarth

FRANKFURT

Drees & Sommer
Schmidtstraße 51
60326 Frankfurt am Main, Germany
Phone +49 69 758077-0
info.frankfurt@dreso.com

Your contacts:
Frank Bornmann
Anastasios Chatzinikolaou
Sascha Hempel
Klaus Hirt
Thomas Hofbauer
Sascha Kilb
Verena Kraiß
Ralf Molter
Norbert Otten
Markus Sauer
Marc Schömbs
Dietmar Zwipp

Gassmann + Grossmann Baumanagement GmbH
Schmidtstraße 51
60326 Frankfurt am Main, Germany
Phone +49 69 29802887-0
frankfurt@gagro.de

Your contacts:
Jürgen Brandstetter
Levent Celik
Nils Wetzel

RBS - Projekt Management GmbH - Unternehmensberatung
Schmidtstraße 51
60326 Frankfurt am Main, Germany
Phone +49 89 318561-251
welcome@germany.rbsgroup.eu

Your contact:
Simone Bücksteeg

FREIBURG

Drees & Sommer
Kaiser-Joseph-Straße 194
79098 Freiburg, Germany
Phone +49 761 881790-0
info.freiburg@dreso.com

Your contacts:
Stefan Kattendick
Ralph Scheer

Gassmann + Grossmann Baumanagement GmbH
Heckerstraße 29A
79114 Freiburg, Germany
freiburg@gagro.de

Your contacts:
Heinz Heger
Peter Jürgensen

GÄRTRINGEN

dsa-engineering GmbH Automotive Production Systems
Max-Planck-Straße 6-8
71116 Gärtringen, Germany
office@dsa-engineering.com

Your contacts:
Dr. Jörg-Matthias Böttiger
Guido Darnieder

HAMBURG

Drees & Sommer
Ludwig-Erhard-Straße 1
20459 Hamburg, Germany
Phone +49 40 514944-0
info.hamburg@dreso.com

Your contacts:
Prof. Phillip W. Goltermann
Björn Jesse
Christoph Küpferle
Claudia Niendorf
Helge Plath
Harald Wüst

Gassmann + Grossmann Baumanagement GmbH
Ludwig-Erhard-Straße 1
20459 Hamburg, Germany
Phone +49 40 514944-0
hamburg@gagro.de

Your contact:
Peter Jürgensen

RBS - Projekt Management GmbH - Unternehmensberatung
Ludwig-Erhard-Straße 1
20459 Hamburg, Germany
Phone +49 89 318561-251
welcome@germany.rbsgroup.eu

Your contact:
Dr. Verena Hilgenstock

HANOVER

Drees & Sommer
Podbielskistraße 342
30655 Hannover, Germany
Phone +49 511 2138870-0
info.hannover@dreso.com

Your contacts:
Martin Albrecht
Heinz Günter Freihoff
Björn Jesse

KIEL

Drees & Sommer
Schlossgarten 6
24103 Kiel, Germany
Phone +49 431 200027 9600
info.kiel@dreso.com

Your contacts:
Prof. Phillip W. Goltermann
Joachim Lenschow

LEIPZIG

Drees & Sommer
Brühl 65
04109 Leipzig, Germany
Phone +49 341 91930-0
info.leipzig@dreso.com

Your contacts:
Marko Grünberg
Andreas Rost
Jörg Wohlfarth

Gassmann + Grossmann Baumanagement GmbH
Brühl 65
04109 Leipzig, Germany
Phone +49 341 91930-0
leipzig@gagro.de

Your contacts:
Jürgen Brandstetter
Stephan Rüdiger

LAUSANNE

Drees & Sommer Schweiz
Avenue de la Gare 33
1003 Lausanne, Switzerland
Phone +41 21 647-5506
info.schweiz@dreso.com

Your contacts:
Niklaus Arn
Grigor Hadjiev

LONDON

Drees & Sommer UK Ltd.
Ground Floor, 13 New North Street,
London, United Kingdom, WC1N 3PJ
Phone +44 20 3858-0221
info.uk@dreso.com

Your contacts:
Sascha Hempel
Phillip Ratcliffe

MADRID

Drees & Sommer España S.L.
Calle Eloy Gonzalo 18
28010 Madrid, Spain
Phone +34 912 032310
info.spain@dreso.com

Your contact:
Billy Taylor

MANNHEIM

Drees & Sommer
Q7, 24
68161 Mannheim, Germany
Phone +49 621 7186899-0
info.mannheim@dreso.com

Your contacts:
Mirco Beutelspacher
Jochen Günther

MILAN

Drees & Sommer Italia
Viale Luigi Majno, 17
20122 Milan, Italy
Phone +39 02 290-62666
info.milano@dreso.com

Your contact:
Oliver Mantinger

MOSKOW

Drees & Sommer Russland and CIS
Zemlyanoy Val 9, 4th floor
105064 Moskow, Russia
Phone +7 495 79230-92
info.moscow@dreso.com
www.dreso.ru

Your contacts:
Tim Comaia
Ilijas Hadzimejlic
Natalia Loginova

MÜNSTER

Drees & Sommer
Am Mittelhafen 10
48155 Münster, Germany
Phone +49 251 67430-222
info.muenster@dreso.com

Your contacts:
Stefan Heselschwerdt
Christian Terwey

MUNICH

Drees & Sommer
Geisenhausenerstraße 17
81379 München, Germany
Phone +49 89 149816-0
info.muenchen@dreso.com

Your contacts:
Dr. Thomas Harlfinger
Wolfgang Lindner
Frank Reuther
Stefan Schweitzer
Holger Seidel
Dr. Markus Treiber
Rino Woyczyk

RBS - Projekt Management GmbH - Unternehmensberatung
Kistlerhofstr. 70, Geb. 76
81379 München, Germany
Phone +49 89 318561-0
welcome@germany.rbsgroup.eu

Your contacts:
Martin Becker
Kai Ertel
Daniel Seibert

Gassmann + Grossmann Baumanagement GmbH
Geisenhausenerstraße 15
81379 München, Germany
Phone +49 89 2441920-0
muenchen@gagro.de

Your contacts:
Boris Matisic
Matthias Nisch

MUNSBACH/LUXEMBOURG

Drees & Sommer Luxembourg
6c, rue Gabriel Lippmann
5365 Munsbach, Luxembourg
Phone +352 261205-5550
info.luxembourg@dreso.com

Your contacts:
Maximilien Ast
Heiko Butter
Lothar Diederich

NUREMBERG

Drees & Sommer
Äußere Cramer-Klett-Straße 19
90489 Nürnberg, Germany
Phone +49 911 9928660-0
info.nuernberg@dreso.com

Your contacts:
Frank Pickel
Holger Seidel

PARIS

Drees & Sommer France
70 boulevard de Courcelles
75017 Paris, France
Phone +33 1 78414711
info.france@dreso.com

Your contacts:
Heiko Butter
Jean-Marc Guillen

SHANGHAI

Drees & Sommer Engineering Consulting
The Bridge 8, Building 9, Unit 9506,
No.25 Jianguo Zhong, Huangpu District,
Shanghai 200025, P.R. China
Phone +86 21 6136-9165
info.shanghai@dreso.com

Your contact:
Baldur Steimle

ST. PETERSBURG

Drees & Sommer Russland and CIS
pl. Truda, 2, lit. A
190000 St. Petersburg, Russia
Phone +7 812 309-9323
info.st.petersburg@dreso.com
www.dreso.ru

Your contacts:
Tim Comaia
Ilijas Hadzimejlic
Evgeniy Kaverin
Natalia Loginova

STUTTGART

Drees & Sommer – Projektmanagement und Immobilienberatung
Obere Waldplätze 13
70569 Stuttgart, Germany
Phone +49 711 1317-0
info.stuttgart@dreso.com

Your contacts:
Thomas Berner
Mirco Beutelspacher
Thomas Jaißle
Ulrich Kaufmann
Alexander Kittel
Josef Linder
Heiko Rihm
Ralph Scheer
Andreas Schele
Philipp Späth
Matthias Stolz
Heike Titze
Bernhard Unseld

Drees & Sommer – Engineering
Obere Waldplätze 11
70569 Stuttgart, Germany
Phone +49 711 687070-0
info.stuttgart@dreso.com

Your contacts:
Prof. Dr. Michael Bauer
Dr. Peter Mösle

Drees & Sommer – Entwicklungs- und Infrastrukturberatung
Untere Waldplätze 37
70569 Stuttgart, Germany
Phone +49 711 222933-0
info.infra@dreso.com

Your contacts:
Sebastian Beck
Claus Bürkle
Mustafa Kösebay
Markus Lampe
Dr. Jürgen Laukemper
Christopher Vagn Philipsen

Drees & Sommer – Strategic Process Consulting and Facility Management Consulting
Untere Waldplätze 37
70569 Stuttgart, Germany
Phone +49 711 1317-2288
info.stuttgart@dreso.com

Your contacts:
Thomas Häusser
Dirk Jannausch
Patrick Theis

RBS - Projekt Management GmbH - Unternehmensberatung
Untere Waldplätze 37
70569 Stuttgart, Germany
Phone +49 711 1317-1577
welcome@germany.rbsgroup.eu

Your contacts:
Andreas Bay
Sven Mylius

Gassmann + Grossmann Baumanagement GmbH
Kronenstraße 34
70174 Stuttgart, Germany
Phone +49 711 225558-30
stuttgart@gagro.de

Office Pliezhausen
Römersteinweg 3
72124 Pliezhausen, Germany
Phone +49 7127 1804-0
pliezhausen@gagro.de

Your contacts:
Heinz Heger
Peter Jürgensen
Boris Matisic
Andreas Schele
Stefan Schwarz
Mirko Weiss
Achim Zumpfe

ULM

Drees & Sommer
Hämpfergasse 9
89073 Ulm, Germany
Phone +49 731 9691495-1831
info.ulm@dreso.com

Your contacts:
Ralph Scheer
Petra Wohlgemuth

WARSAW

Drees & Sommer Polska
Ul. Chmielna 132/134
00-805 Warsaw, Poland
Phone +48 22 48778-29
info.polska@dreso.com

Your contact:
Jörg Wohlfarth

VIENNA

Drees & Sommer Wien
Landstrasser Hauptstrasse 1A
1030 Wien, Austria
Phone +43 1 5335660-0
info.wien@dreso.com

Your contacts:
Manfred Drescher
Marc Guido Höhne
Nadja Pröwer
Georg Stadlhofer

ZURICH

Drees & Sommer Schweiz
Förrlibuckstrasse 10
8005 Zürich, Switzerland
Phone +41 43 366-6868
info.schweiz@dreso.com
www.dreso.ch

Your contacts:
Niklaus Arn
Rainer Preisshofen
Veit Thurm
Prof. Jürgen M. Volm

CONTACTS FOR SPECIFIC INDUSTRIES

Automotive
Philipp Späth
philipp.spaeth@dreso.com

Education and Research
Matthias Stolz
matthias.stolz@dreso.com

Finance
Marc Schömbs
marc.schoembs@dreso.com

Healthcare
Frank Reuther
frank.reuther@dreso.com

Hospitality
Gesa Rohwedder
gesa.rohwedder@dreso.com

ICT
Klaus Dederichs
klaus.dederichs@dreso.com

Life Sciences
Rino Woyczyk
rino.woyczyk@dreso.com

Public Sector
Claus Bürkle
claus.buerkle@dreso.com

Property Companies
Klaus Hirt
klaus.hirt@dreso.com

Retail
Ralph Scheer
ralph.scheer@dreso.com

Residential
Simon Dietzfelbinger
simon.dietzfelbinger@dreso.com

PHOTO CREDITS

Cover
© nadla – gettyimages.com

Pages 2 – 7, 26 – 27, 42 – 43, 50 – 51, 68 – 69, 96 – 97, 106 – 107, 119
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Pages 108 – 111
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Pages 112 – 117
© Bürgenstock Hotels AG

Page 118
© Mine Seumel

IMPRINT

Drees & Sommer SE
Obere Waldplätze 13
70569 Stuttgart
Phone +49 711 1317-0
Fax +49 711 1317-101
info@dreso.com
www.dreso.com

Drees & Sommer_1805/1740/wdn/E

DREES &
SOMMER