

inSites

Unlocking Insights from the World of Placemaking

No.5

BUILDING ON THE STOCK

How the Renovation and Refurbishment of Existing Buildings Can Help Decarbonise the Construction Industry



umdasch

THE STORE MAKERS

INTRODUCTION

Where trends meet spaces

inSites is the new online format from umdasch The Store Makers. It deals with developments, trends and innovations in the creation of spaces. The name says it all: the format aims to provide in-depth insights into different places (sites) – be it retail spaces, offices, food courts or other exciting meeting spaces. inSites shows what moves the placemaking industry: it uncovers backgrounds, sheds light on complex topics and focuses on the people who work every day to make spaces more functional, aesthetic and sustainable – in short: better.

inSites is green in 2024

Sustainability is the main theme running through 2024 inSites, with everything revolving around the umdasch Sustainability Guide. This was created by the Store Makers after the umdasch exhibition at EuroShop 2023. Under the motto “Plant an idea”, visitors to the most important industry event for the retail sector were invited to record their ideas for a sustainable point of sale on the umdasch Sustainability Tree.

Many exciting and valuable contributions were collected, from which a comprehensive guide with six sustainability focal points was created – with the most important resource at the centre: people. Because successful, sustainable spaces can only be created through joint action.

Your Store Makers from umdasch wish you inspiring reading!

EXECUTIVE SUMMARY

The fifth edition of the umdasch inSites online format deals with the topic of building stock in five chapters. The focus is on what can be done to equip existing buildings for a sustainable future, in the sense of contributing to resource conservation and environmental and climate protection.

Model-based planning methods play an important role in the sustainable digitalisation of the construction industry. [Building Information Modelling \(BIM\)](#) is used not only in new construction, but also in the renovation and refurbishment of existing buildings. On the way to a climate-friendly construction site, it is particularly important to develop [sustainable building solutions](#), such as making the building material concrete environmentally friendly and future-proof. A holistic approach to the [energy-efficient renovation](#) of existing buildings, which seeks to reconcile sustainability and economic efficiency, will help reduce emissions. The compatibility of ecology and economy is generally promoted by the [use of existing buildings](#), as this is usually more economical in terms of resources and costs than new construction. The sustainability of buildings can ultimately be demonstrated through [green building certifications](#), which is becoming increasingly important.

UMDASCH SUSTAINABILITY GUIDE

The Way to Sustainable (Retail) Environments

The six focal points do not stand alone, but are interlinked. Follow the lines in the guide to see which topics influence the area of building stock. These lines will lead you to the individual sub-chapters of the Trend Paper.

(STORE) DESIGN



Refurbishment/Reuse
Energy-Efficient Lighting

ENERGY



Energy-Efficient Building Operation
Renewable Energy
Green Digital Signage

DIGITALISATION



Building Information Modelling (BIM)
Digital Solutions and Products

MATERIALS



Sustainable Materials
Recycling/Upcycling
Sustainable Sourcing
Certifications

BUILDING STOCK



Sustainable Building Solutions
Reduction of Emissions
Use of Existing Building Stock

SUPPLY CHAIN



Packaging
Logistics
Transparency, Integrity, Compliance

ECO-DESIGN

ENERGY
TRANSITION

DIGITAL
INNOVATIONS

CIRCULARITY

RENOVATION

COLLABORATION

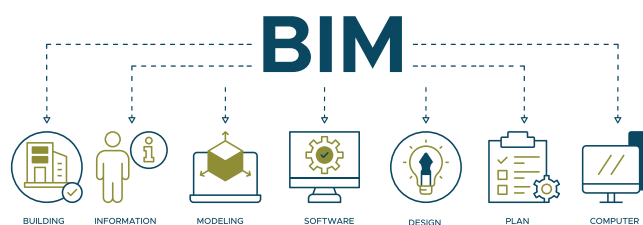
PEOPLE

BUILDING INFORMATION MODELLING (BIM)

A NEW QUALITY OF DIGITAL INFORMATION

One of the key technologies for digitalisation in construction is Building Information Modelling (BIM). It is used not only in new construction, but also in the conversion or renovation of existing buildings, where energy efficiency is a key issue.

In building construction and civil engineering, there seems to be no way around the digital method for planning, executing and operating structural facilities. The focus here is on the creation and use of a digital model. 3D laser scanning in conjunction with AI technologies will further reduce the effort involved. The possibilities offered by model-based planning methods are also interesting not only for



the design of new buildings, but also for the conversion and renovation of existing buildings. When BIM is combined with a digitalisation strategy for existing buildings, there is an opportunity for greater efficiency gains.

BIM sustainability check

- + **Benefits over the entire life cycle:** BIM enables simulations and analyses of costs and energy efficiency, increasing efficiency during construction. The digital building models are also used throughout the life cycle of a building, improving efficiency in the operation of the building and in renovations and conversions.
- + **Energy-efficient design decisions:** With BIM, design decisions such as building orientation and the placement of windows or solar panels can be simulated in terms of their impact on energy consumption. This leads to more energy-efficient and sustainable designs.
- + **Review energy consumption:** 3D building models make it possible to simulate the configuration of technical systems and to verify actual energy consumption during operation with target/actual comparisons. This potential can only be realised at a reasonable cost through the use of digital technologies.
- + **Reduction of embodied energy:** By linking material databases to the 3D building model, sustainability-focused simulations can be performed to reduce the embodied energy associated with the production, transport, installation, maintenance and dismantling of building materials.

BUILDING INFORMATION MODELLING (BIM)

Efficiency gains

Efficiency gains are particularly evident when building information is taken to a new level of quality during renovation or refurbishment. This requires a platform that enables the creation and maintenance of a digital information pool in parallel with the physical building stock – a platform such as that offered by [NeoTwin](#) with its [PrometriQ](#) product.

“With our BIM-enabled platform PrometriQ, we offer our customers a cloud solution for managing real estate and infrastructure assets throughout their lifecycle.”



© NeoTwin

ROBERT HIENZ
DIRECTOR PRODUCT MANAGEMENT
AT NEOTWIN

“Renovations or conversions can be carried out much more efficiently with PrometriQ. In addition, measures such as the creation of an additional building envelope for energy-efficient renovations can only be efficiently planned and implemented using digital methods,” explains Robert Hienz, founder and Director of Product Management at PropTech start-up NeoTwin. A 3D scan of the existing façade serves as the basis for the prefabrication or production of the new energy-efficient envelope. Particularly in the case of serial renovations



of similar buildings, such as several residential buildings in a neighbourhood, targeted 3D modelling of the necessary components can save costs. This is particularly useful for technical building equipment.

Single point of truth

NeoTwin puts investors, developers and property owners at the centre of the customer experience. “PrometriQ supports customers through the two system areas of Asset Information Management (AIM) and Project Information Management (PIM). The seamless integration of the two areas creates a powerful control tool with a comprehensive and consistent database,” says Hienz. This ‘single point of truth’ organises the master data of physical structures and projects (new construction, renovation, conversion, etc.) and provides the relevant metrics, information and analyses for day-to-day management and reporting.

BUILDING INFORMATION MODELLING (BIM)

Examples from Practice

There are many use cases for the BIM-enabled PrometriQ platform. For example, it is being used by a multi-family office to manage a property portfolio of 80 properties worth €1.5 billion. In the area of project information management, it is being used by a housing association for the energy-efficient renovation of residential buildings, using 3D building models and façade elements. Pilot projects are also underway in the infrastructure and retail sectors. “We are currently embarking on an exciting project with the umdasch general contracting experts,” says Robert Hienz. “When reorganising a network of locations, the branches are recorded using 360° views and 3D scans. On this basis, the client’s corporate IT simulates and finally positions the new WIFI access points for a customer WLAN. This improves communication between all parties involved, reduces travel and saves CO₂. It also makes the process speed and material ordering for upcoming construction projects more efficient, which contributes to sustainability. Even technical assets/devices and business

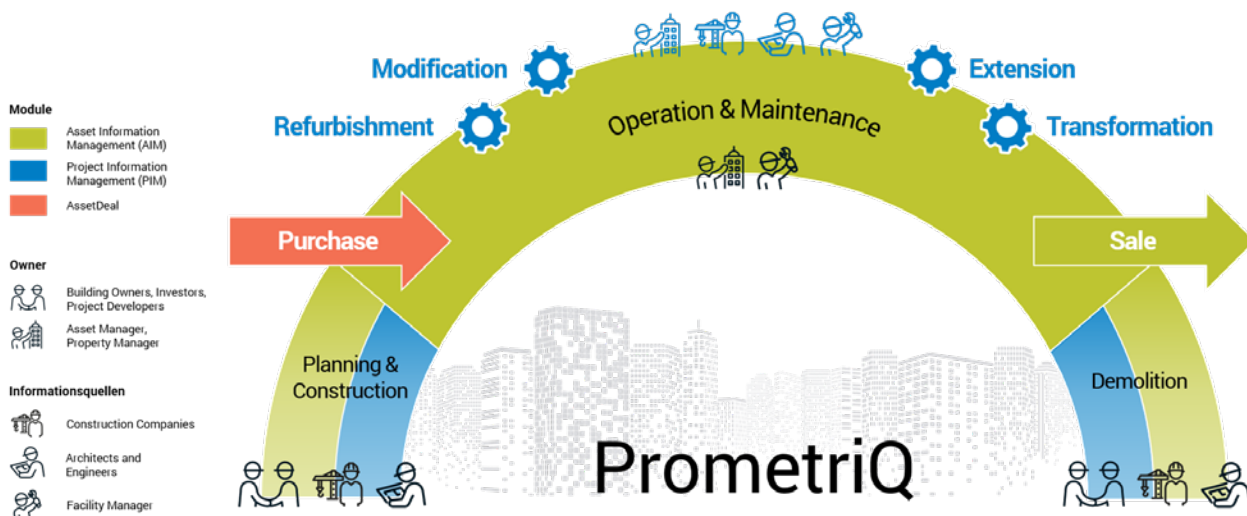
equipment can be inventoried as 3D objects, which provides an overview and status analysis and also increases the reusability of components, for example when moving,” explains Hienz.



IN A NUTSHELL



The PropTech start-up [NeoTwin](#) was founded in September 2018. Umdasch Group Ventures joined as a strategic partner in September 2019, taking a majority stake in NeoTwin GmbH. Umdasch Group Ventures GmbH is an innovation incubator within the Umdasch Group whose mission is to identify new technologies, processes and materials and to develop them to market maturity.



PrometriQ focuses on owners’ built assets, be they existing buildings or new construction projects. The platform offers two main functions: Asset Information Management and Project Information Management. © NeoTwin

SUSTAINABLE BUILDING SOLUTIONS

TOWARDS CLIMATE-FRIENDLY CONSTRUCTION SITES

Sustainable construction is the key to decarbonising the building sector. The construction industry is particularly focusing on the Product Carbon Footprint to identify products that are harmful to the climate. Innovative solutions such as recycled concrete or carbon neutral concrete, which is currently being researched, can also make an important contribution to reducing emissions.

There are many different ways to reduce the environmental footprint of the construction industry, and these are becoming more widely used. Designers are increasingly turning to more sustainable materials, supported by Building Information Modelling (BIM) systems that allow material data to be quickly modified or optimised with regard to desired ecological parameters. In the spirit of a circular economy, modular building components that can be easily dismantled and reused in new projects are preferred to disposable materials. This applies to building material manufacturers in particular, but also construction suppliers such as formwork and scaffolding specialist Doka, part of the Umdasch Group, are working intensively on such sustainable solutions.



Quick Q&A with Thomas Meinschad, Senior Expert R&D at Doka:

Thomas, you are already on a decarbonisation course at Doka. What are the key words when it comes to the formwork and scaffolding specialist's sustainability goals?

↳ The key term related to the company's sustainability goals is the [Product Carbon Footprint](#), or PCF. By calculating the PCF, we create greater transparency about the main sources of greenhouse gas emissions throughout the lifecycle of our products. This enables us to identify opportunities to reduce emissions and take targeted steps in our value chain.



SUSTAINABLE BUILDING SOLUTIONS

What is the significance of building materials with a low PCF?

↳ Construction products with a low PCF are becoming increasingly important. Take the Nordic countries in Europe, for example. Here, tenders require the specification of PCFs. If this requirement cannot be met – for example, because the wrong building materials, heating and cooling systems have been planned – then the company will not be awarded the contract and the construction project will not be carried out. In addition, loans and financing are increasingly being linked to PCFs.

How are building materials manufacturers responding to these requirements?

↳ Building materials manufacturers are required to supply products that meet the specifications. The brick industry is developing mixtures that can be fired at lower temperatures, and insulation systems are being made from sustainable raw materials such as lignin foams. These are just two of many examples.

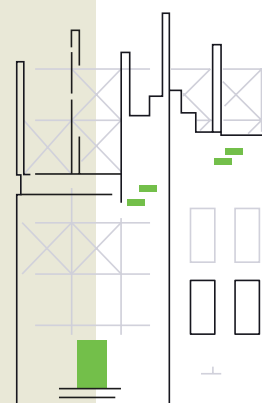
What does this mean for developers in terms of choice of materials?

↳ While in the residential sector it is possible to switch to materials that are naturally less harmful to the environment (wood, clay, etc.), concrete will continue to be the material of choice for infrastructure due to its price and performance. As concrete is considered indispensable, but at the same time consumes resources that need to be protected, therefore the focus is on concretes made from reduced clinker cement (RCC = reduced carbon concrete) or recycled concrete, which uses recycled aggregates instead of primary materials.



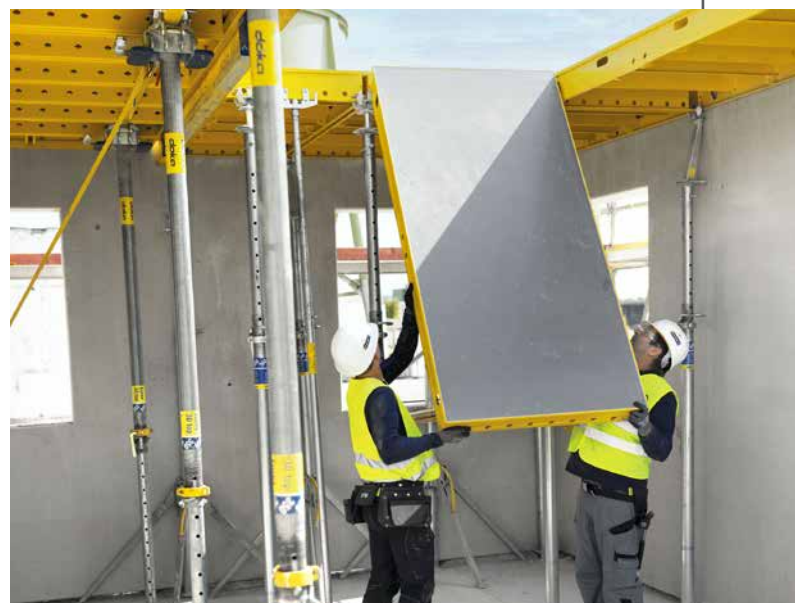
THOMAS MEINSCHAD
SENIOR EXPERT R&D AT DOKA

© Johanna Meinschad



Climate-neutral concrete

According to the [status report on the Federal Waste Management Plan](#), 99.6% of concrete waste in Austria is recycled. However, due to the longevity of products, the use of secondary materials is still only around 10% of total demand. If recycled concrete is to fulfil the environmental aspirations of the circular economy, additional low-CO₂ processes for cement production from waste materials will be needed.



Doka has calculated the PCF for more than 7,000 formwork and scaffolding products. © [Doka](#)

SUSTAINABLE BUILDING SOLUTIONS

The potential of innovative concrete formulations for the decarbonisation of concrete is also the subject of the Austrian research study RCC2 (Reduced Carbon Concrete). The research project, led by a cross-industry consortium of companies, focuses on a functional prototype of a heatable formwork developed by Doka. Background: In its predecessor project, RCC, the consortium investigated the practical use of low-clinker concrete formulations on construction sites as early as 2021. Although these have a significantly reduced CO₂ footprint of around 80%, they also have a disadvantage. They take longer to set, which in practice can lead to longer construction times and higher costs, for example due to delayed stripping and longer use of formwork on site. At winter temperatures, the potential CO₂ reduction of the low clinker mix is still 67% with the aid of heated formwork.

“The new Doka prototype is designed to compensate for the delayed strength development of RCC concretes at low ambient temperatures. By using electricity from renewable sources, the already low PCF of electrically powered heating can be further reduced,” explains Thomas Meinschad.



Climate-friendly concrete was tested in summer and winter trials.
© Doka



IN A NUTSHELL



The [RCC2](#) research project involved a cross-industry consortium consisting of Doka, STRABAG Real Estate, Romm ZT, Mischek ZT, bauXund, CarStorCon Technologies, MPA Hartl and the concrete producers Asamer, Holcim and Wopfinger. The common goal was to overcome the technical, legal and economic hurdles to establishing low-carbon performance concrete and to pave the way for a ‘climate-friendly’ building material on Austrian construction sites.

In addition, a joint project is investigating how these innovative concrete formulations can be made even more climate-friendly by adding technical carbon based on biochar. According to Meinschad, the aim is to make concrete-like materials more sustainable, with the ultimate goal of achieving state-of-the-art, climate-neutral concrete.

REDUCTION OF EMISSIONS

Renovations for *Energy* and Cost Efficiency

The energy-efficient renovation of existing buildings is crucial to reducing emissions and promoting sustainable buildings. Given the large number of possible measures, a holistic approach is needed to combine sustainability and economic efficiency, explains Christoph Hermes, project manager in the general contracting division at umdasch in Osnabrück, Germany.



CHRISTOPH HERMES
PROJECT MANAGER
UMDASCH CONSTRUCTION
SOLUTIONS

Christoph, the energy-efficient modernisation of existing buildings is often seen as the key to reducing emissions. Why is this process so important?

↳ Energy-efficient refurbishment is crucial to reducing energy consumption in existing buildings and, at the same time, reducing emissions. By combining different renovation measures, we can not only reduce the environmental footprint of buildings, but also create economic benefits for owners.

How does one go about planning and carrying out an energy-efficient renovation project? What are the first steps in the process?

↳ When we talk about energy-efficient renovation, we first consider approaches to improving energy consumption. This includes all insulation measures, focusing on the façade, basement ceilings, top floor ceilings, roof cladding and possibly basement walls in contact with the ground. The replacement of windows, external doors or heating, ventilation and air conditioning systems should also be considered. When considering energy-efficient renovation in the context of sustainability, we always evaluate the

REDUCTION OF EMISSIONS



current state of a property, particularly its current energy consumption, in relation to its economic efficiency.

What are the key factors for a successful energy-efficient renovation?

↳ How much money and energy can ultimately be saved by taking action depends on a number of factors. The parameters range from the energy efficiency of the building to be renovated to subsidy programmes and interest rates on the capital market – the key word here is cost-effectiveness. The professional implementation of the measures, possibly by regional specialist companies, and the definition of the desired efficiency standard should also be mentioned in this context.

You mentioned efficiency standards.

What challenges do you see here?

↳ From an energy perspective, the best efficiency standard should always be the goal in order to conserve energy resources in the future. However, this also means that this standard often already leaves a significantly worse ecological

footprint today when the required materials are manufactured. Finally, the so-called 'grey energy', i.e. the energy used to produce, transport, store, sell and dispose of products, must also be taken into account.

Can you give us some specific measures that can be taken to reduce emissions during an energy-efficient renovation?

↳ Of course, there are many. In the case of the façade, the use of a thermal insulation system can improve the heat transfer coefficient. In the roof area, replacing or installing new roof insulation (either on the top floor ceiling or around the rafters) will reduce heat loss into the heated space. The choice of roof tiles is also important, as they absorb emissions and can filter out pollutants that are washed away by rain. For windows and doors, experts recommend modern glazing with a U-value of 0.7, and for the heating system, replacement with a heat pump. Additional support from a photovoltaic system also reduces the need for external emission sources (e.g. power plants). The radiators should then be adapted to the system. Further reductions in

REDUCTION OF EMISSIONS

emissions can be achieved by reducing the cross section of the heating pipes, while at the same time reducing the flow temperature.

Why is a holistic approach so important to the success of refurbishment projects?

↳ A holistic approach is crucial because the individual measures only work together effectively in the context of the overall project. At umdasch, we therefore have an extensive national and international network of subcontractors, architects and project managers to ensure that all aspects of the refurbishment are optimally implemented. Our expertise in project and construction management and our many years of experience in major refurbishment projects, such as Glogauer Weg in Wolfenbüttel (GER), demonstrate the importance of this integrated approach.



For the Glogauer Weg refurbishment project in Wolfenbüttel, Lower Saxony, [umdasch Construction Solutions](#) from Osnabrück took on responsibility for 62 residential units across 11 buildings. From demolition, concrete repair and window replacement to extensive electrical and insulation work, the project focused on sustainable solutions such as the removal of asbestos-containing façade panels and energy-efficient modernisation. A contribution to sustainable housing.

A rough rule of thumb for energy saving potential:

18-22 %	Exterior façade insulation
12-16 %	Roof insulation
13-17 %	Top floor ceiling insulation
9-11 %	Basement ceiling insulation
15-22 % (depending on system)	Heating system replacement

Note: The potential savings are highly dependent on the condition of the building.

IN A NUTSHELL



Most heating energy is lost through the building envelope, i.e. the walls, roof, basement and windows. On average, an unrenovated detached house loses about 25% of its heat through the walls and 20% through the roof, windows and basement. The remaining heat loss is usually due to 'improper' ventilation.

USE OF EXISTING BUILDING STOCK

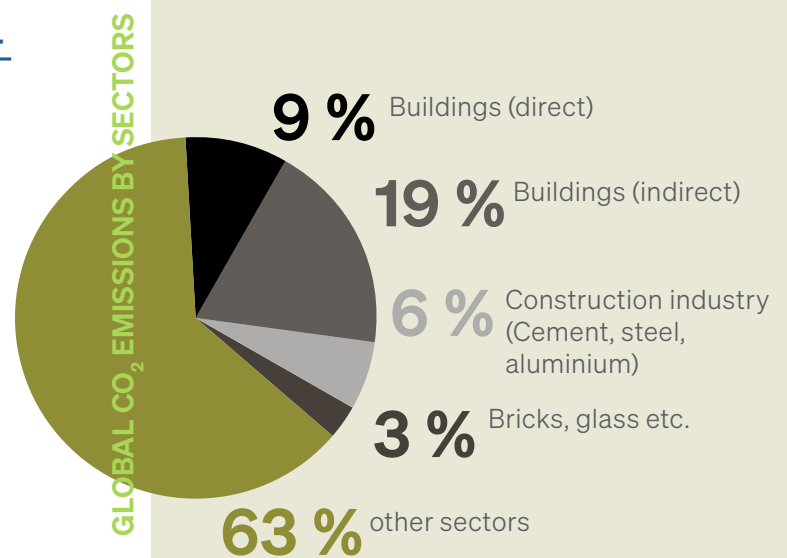
A PARADIGM SHIFT IN CONSTRUCTION

The construction sector is responsible for **37 per cent** of global greenhouse gas emissions. One way to improve this balance is to focus on the building stock. Renovating and refurbishing existing buildings reduces the need for new construction materials, which in turn reduces emissions from manufacturing, transport and the construction process itself.

Green Deal and cultural heritage

The renovation and refurbishment of existing buildings is therefore of particular importance in the context of the EU taxonomy. As the EU's [Green Deal](#) aims to make Europe's building stock emission-free by 2050, investments in energy-efficient renovations are not only tax-deductible, but can also be financed through funding programmes.

In addition to the environmental benefits, there are also economic arguments in favour of building in existing structures. Renovating and modernising existing buildings is generally less expensive than building new ones. In addition, renovating historic buildings, which are often part of our cultural heritage, helps to preserve them. Modern technology, such as energy-efficient windows, heating systems and insulation, can be integrated invisibly without affecting the historic appearance.



Source: [UN Status Report 2022 on Buildings and Construction](#)



USE OF EXISTING BUILDING STOCK

“The renovation of existing buildings is one of the key strategies for a sustainable future due to the combination of environmental, economic and social benefits.”



VERONIKA HAMMINGER
PROJECT MANAGER RENOVATION
UMDASCH GROUP VENTURES

Holistic renovation projects

When it comes to renovations and conversions, the Umdasch Group, consisting of the umdasch Store Makers and Doka divisions, offers a comprehensive range of solutions for a wide variety of construction projects of all sizes, including residential buildings, high-rise buildings and bridge projects. “As general contractors, the Store Makers coordinate all the subcontractors involved and manage the entire construction process. This means that the customer receives everything from a single source, from implementation to completion,” explains Veronika Hamminger, Project Manager Renovation at Umdasch Group Ventures. In addition to classic renovation projects, the Store Makers also offer the option of converting buildings. One example is the conversion of an office building into a modern residential building.

Doka, for its part, is bringing innovative technologies and solutions to the refurbishment process. “While systems such as the Xlight aluminium framed formwork, the Xsafe safety system and the Ringlock modular scaffold create added value in residential construction, the SL-1 Volto load-bearing scaffold and Ringlock are frequently used in infrastructure projects,” says Hamminger. “These systems provide efficient, safe and flexible solutions for complex renovation projects of all kinds,” she adds.



[Doka Ringlock modular scaffolding](#) was used as a renovation all-rounder at Horst Castle in Belgium, creating a safe working area for the professional restoration of the undulating walls of the historic building by the lake. © Doka

Where the journey is going

“The renovation and conversion of existing buildings is currently undergoing rapid change. New technologies, materials and construction methods are opening up numerous opportunities not only to maintain buildings, but also to adapt their use and transform them in innovative ways,” says Project Manager Hamminger.

USE OF EXISTING BUILDING STOCK

A key approach for the future is the circular economy. Instead of completely demolishing old buildings, existing materials such as steel girders, bricks or wooden elements can be selectively refurbished and reused. This is in line with the concept of urban mining, which is becoming increasingly important. Instead of disposing of building materials in landfills, they are selectively recovered and reused in new construction projects.

Hamminger also sees the adaptation of buildings to new living and working models as one of the most exciting developments in the field of repurposing. Abandoned office buildings are increasingly being converted into living and working spaces that meet modern demands for flexibility, sustainability and community. Especially in cities where housing is scarce, repurposing existing buildings offers a sustainable and resource-efficient alternative to new construction.

Veronika Hamminger concludes: “The future of building in existing structures lies in the combination of sustainability, innovation and flexibility. Germany and Austria are pioneers in this field, not only because of their ambitious climate targets, but also because of their willingness to break new ground in construction.”

ALTE KÄMMEREI SHINES IN NEW SPLENDOUR



[Art-Invest Real Estate](#) is transforming the listed former administration building 'Alte Kammerei' in Düsseldorf into an innovative mixed-use concept that includes modern office space as well as gastronomy, events and retail. While the historic conference hall will be preserved, the inner courtyard will be revitalised as an event space. umdasch is the general contractor for this exciting project. © Art-Invest Real Estate



CERTIFICATIONS

CERTIFIED AGAINST CLIMATE CHANGE



Green building certification is not a new concept, having been introduced in the 1980s. What is new is its enormous popularity, which parallels the growing importance of global ESG guidelines. The EDGE certification system occupies a unique position in this context.

Wide choice, limiting factors

Green building certifications assess the sustainability of buildings and promote environmentally friendly construction methods for new and existing properties by encouraging companies to explore the limits of sustainability. Among the best known and most widely used are the UK's [BREEAM](#) (Building Research Establishment Environmental Assessment Method), the US Green Building Council's [LEED](#) (Leadership in Energy and Environmental Design) and the [DGNB](#) (German Sustainable Building Council) system.

There is no shortage of green building standards around the world. However, most certification schemes have a number of limiting factors in common, including a focus on high value, bespoke

buildings, the costliness of assessment procedures and limited access to the applications and schemes for many developers and property owners. Since 2014, the International Finance Corporation (IFC), a member of the World Bank Group, has offered an alternative in the form of the [EDGE](#) (Excellence in Design for Greater Efficiency) certification.



Certification process made easy

“EDGE includes free software, green building standards and a certification scheme. The IFC launched EDGE in response to the need for a measurable and credible solution to demonstrate the economic benefits of green buildings and thereby attract investor interest,” explains certified EDGE expert Aldina Mugo, Senior Engineer at [Neulandt](#), part of Umdasch Group Ventures.

FURTHER INFORMATION

IN INSITES NO. 1



You can find more information on building certifications in [inSites issue no. 1](#).



CERTIFICATIONS

One of the unique selling points is the relatively simple **EDGE [certification process](#)**:



1. Register the project: The building/project is first registered in the EDGE application. Experts assist the customer in achieving the savings required for certification.



2. Select the level of certification: There are three levels of EDGE certification. The first level is achieved when a building uses 20% less energy, water and embodied energy in materials compared to local benchmarks.



3. Achieve certification: Based on the savings achieved, the project receives one of the following certifications:

- **EDGE Certified:** At least 20% savings in energy, water and embodied energy in materials.
- **EDGE Advanced (Zero Carbon Ready):** At least 40% on-site energy savings.
- **Zero Carbon:** At least 40% energy savings (EDGE Advanced) and fully powered by renewable energy (on-site, off-site or through carbon offsetting) to reach 100%.

“The EDGE app is free and easily accessible to everyone, and certification is inexpensive. The system has been developed for the mass market and is designed to enable the implementation of green building regulations on a large scale, as certification is available for both developing and developed countries,” emphasises Mugo.



ALDINA MUGO
SENIOR ENGINEER
UMDASCH GROUP VENTURES

CERTIFICATIONS

Win-win situation

According to Mugo, the Umdasch Group and its divisions can make a contribution by informing customers, especially in the area of building renovation, about the certification of their buildings. Aldina Mugo herself has set herself the goal of encouraging colleagues to complete the EDGE expert course in order to understand how the app and certification system works: “The Neulandt technology and service package for rapid housing construction is designed for large-scale housing and neighbourhood development projects. We support our clients in obtaining EDGE certification for their projects.”

The result is a win-win situation that contributes to the decarbonisation of the building sector and, in the form of corporate partnerships, can outlast the lifecycle of buildings.



IN A NUTSHELL



IFC developed EDGE to promote resource-efficient construction in emerging markets and combat climate change. With population growth in developing countries and the need for affordable mass housing, the design of green buildings is becoming increasingly important.

Key facts about EDGE

Year of origin	2014
Country of origin	USA
Organisation	International Finance Corporation (IFC), a member of the World Bank Group
Distribution	Global projects in over 100 countries
Certified area	78 million square metres worldwide
Application	Various types of buildings such as residential, offices, hospitals, schools, retail, warehouses, hotels, etc.
Certification criteria	At least 20% savings in energy, water and embodied energy in materials compared to local benchmark.
Certification levels:	<p>EDGE CERTIFIED: </p> <p>EDGE ADVANCED: </p> <p>ZERO CARBON: </p>

CONCLUSION

Sustain the Stock, Boost the Balance

The construction industry is responsible for a significant share of global CO₂ emissions. Around [37%](#) of global greenhouse gas emissions are caused by the construction sector. Building in existing contexts offers a significant opportunity to improve this balance. When existing buildings are renovated, refurbished and prepared for new uses, the use of new building materials is minimised and emissions associated with manufacturing and logistics are reduced.

Energy-efficient renovations play a key role: proper insulation, replacement of inefficient heating systems, installation of renewable energies such as photovoltaic systems, etc. can drastically reduce energy consumption. It is important to take a holistic view here, as only the intelligent interaction of individual measures can lead to a significant increase in efficiency.

(Artificial) intelligence and interaction are also key words when it comes to the use of intelligent technologies such as Building Information Modelling, which represent digitalisation strategies and rely on communication and cooperation between all those involved in the construction process.

In this way, renovation or conversion work can be carried out much more efficiently.

The use of sustainable building materials is becoming a necessity, and the calculation of product carbon footprints provides the basis for this. By creating transparency over the entire life cycle of products, the potential for reducing emissions can be identified and targeted measures can be taken.

Moreover, the decarbonisation of materials does not stop at concrete: the latest research projects aim to produce concrete that is climate-neutral in the future. In turn, the use of recycled concrete, which has now become standard, demonstrates the growing importance of the circular economy as another key piece in the puzzle of resource conservation and environmental sustainability.

Finally, green building certifications bear witness to these successes. Their importance is also growing, and most certifications can be applied to both new and existing buildings.

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