

ecobuilding

SUSTAINABILITY THROUGH INNOVATION

The real estate industry is facing major challenges. Ecological change, housing shortages, increasing interests, inflation and high cost of construction, material and energy require smart economical and technological solutions.

The **ecobuilding AG** can built on years of extensive knowledge of digital, technological and ecological innovations. We want to contribute to make construction faster, more ecologically sustainable and, in particular, to create living space more cost-effective. To realize this, we advance comprehensive digitalization of all planning and construction processes with the use of BIM (Building Information Modeling). Then we combine digital planning with prefabrication. Due to this construction plan we produce a great variety of building components in exceptional quality and ensure the architectural individuality to be preserved. Through prefabrication we are able to save construction material and concrete, because walls and ceilings are custom-made and we are able to use a higher proportion of recycled concrete.



Christoph Gröner
CEO of ecobuilding AG

Our goal is to supply buildings and entire neighbourhoods with renewable energy through the combination of various innovative technologies, making them climate-neutral in the future. With an intelligent mix of technology, we aim to utilize environmental energies on-site and store them for times of lower energy output.

We will ensure a sustainable future in the construction industry and dedicate all our forces to this goal. We just established an important strategic cooperation with the national energy supplier RheinEnergie AG to realize our climate-neutral project "Cologneo Campus" in Cologne.

And we are just starting.

A handwritten signature in black ink, appearing to read 'Christoph Gröner', with a long, sweeping horizontal line extending to the right.

The construction industry of the future

THE ECOBUILDING AG SPECIFICALLY
FOCUSES ON SUSTAINABILITY

Climate Change is one of the most urgent problems of our time. Agreements and concrete targets for the global community have been adopted worldwide in order to combat man-made climate change. Germany, too, has undertaken measures to improve its CO₂ footprint. The Federal Climate Protection Act stipulates net greenhouse gas neutrality by 2045. In the year 2023 the carbon emissions have decreased to the lowest level since 70 years. A lot has been achieved but we are still a long way from reaching the goals. The real estate industry today is under particularly enormous pressure to take action. The building sector is responsible for around 30 percent of greenhouse gas emissions in Germany.

The goal is to build and manage new residential and commercial space in a way that is as carbon-neutral as possible. So far, the real estate industry has failed in finding ways to achieve this. Thanks to groundbreaking innovations our corporate group has made significant strides in the right direction in recent years and has developed sustainable solutions in line with a circular construction economy. Because we see it as our responsibility and our mission to develop sufficient affordable, functionally high-quality and ecologically sustainable space for life, work and recreation. Now, with **ecobuilding AG**, we have created a company that is fully committed to the topic of sustainability and innovation.



Ronald Pofalla
COO of ecobuilding AG



The aim of **ecobuilding AG** and its specialised subsidiaries is to enable the creation of sustainable properties through an efficient combination of Building Information Modeling (BIM), prefabrication, i.e. the serial prefabrication of components, and individually planned energy management. With this approach **we save 80 Percent CO₂ in construction and management of the buildings.**

This encompasses the entire lifecycle of a building: starting with the selection and procurement of resources and raw materials, continuing through the entire planning, production and construction process, and finally extending from management to demolition right up to the recycling of the property.

The **ecobuilding AG** is divided into four overarching divisions, which, with their specialised subsidiaries, enable the creation of sustainable real estate – from planning (ecosolution) to production (ecoprefab) and coordination (ecomangement) to operation (ecoenergy).

ecobuilding



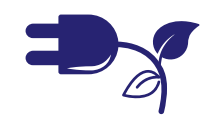
ecosolution



ecoprefab



ecomangement



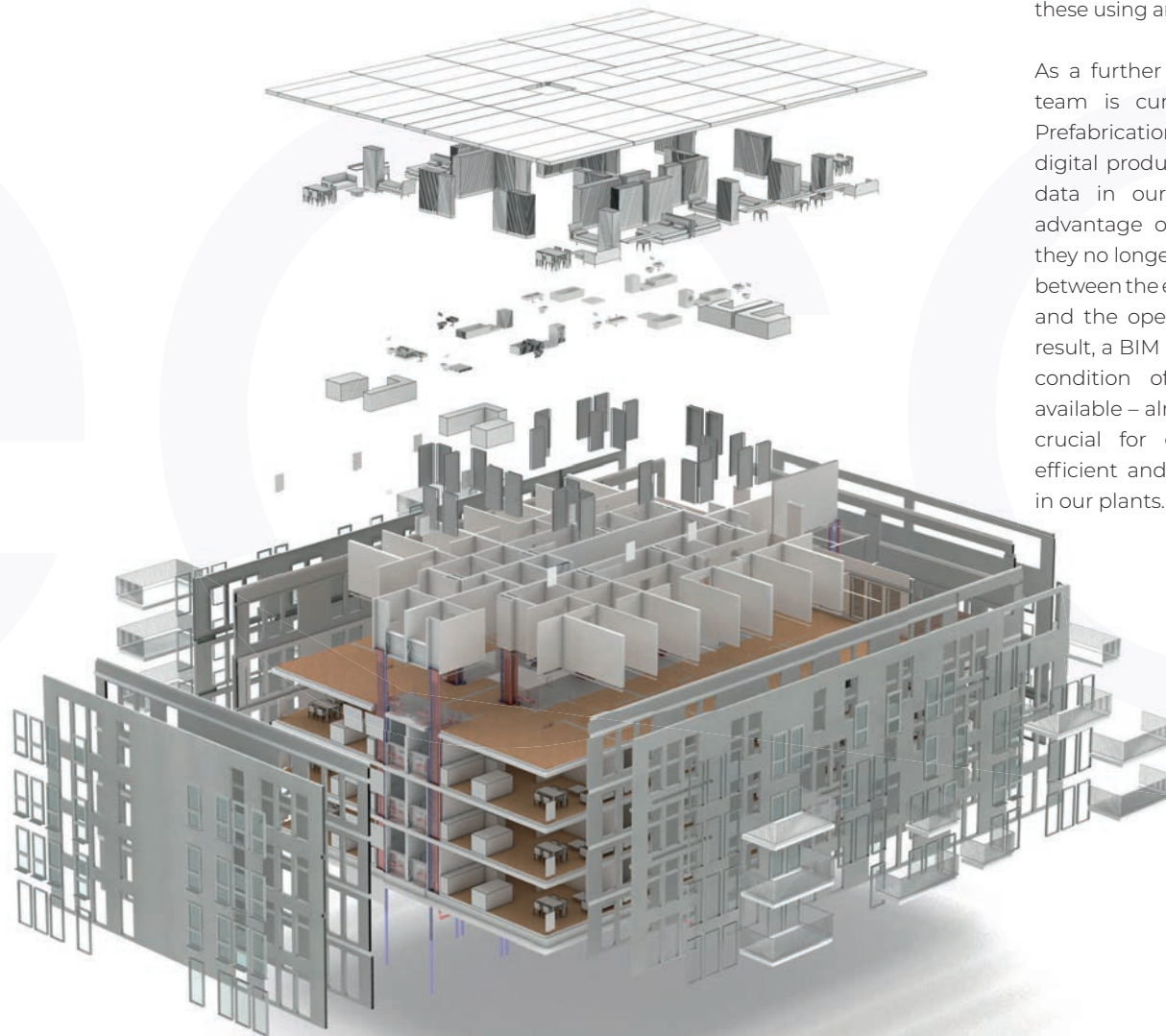
ecoenergy

ecosolution

ARCHITECTURAL PLANNING IN NEW DIMENSIONS

Digital technologies form the necessary basis for a future-proof construction and real estate industry. This particularly applies to the circular construction industry that we are consistently striving for. ecosolution GmbH consists of the architecture start-up REHUB digitale Planer GmbH and the software start-up REHUB FORGE GmbH, both of which are driving forward the digital transformation of architectural planning in a profound and process-oriented manner with great innovative and pioneering spirit and are experts in integrated planning using Building Information Modeling (BIM). By creating digital twins of the constructed reality, we produce exact data models and databases of our buildings.

Direct and indirect emissions can also be determined using the data collected over the entire lifecycle of a building and, even decades after construction, it is still possible to see where materials were used in which quantities. Consequently BIM creates digital material passports, which can be accessed at any time. Up until now, it has been impossible to find out which materials were actually used, especially in the case of older buildings. Digital twins are therefore a prerequisite for using existing buildings as a materials resource, thereby enabling a circular construction industry. As well as



classic, high-quality architectural planning, the REHUB team is dedicated to the digitalisation of planning processes and methods in order to ultimately automate these using artificial intelligence (AI).

As a further important step, the REHUB team is currently developing “BIM for Prefabrication” models to ensure that the digital production chain suffers no loss of data in our future prefab plants. The advantage of these BIM models is that they no longer demonstrate any differences between the execution model (“as planned”) and the operator model (“as built”). As a result, a BIM model of the actual executed condition of the precast elements is available – almost like a digital twin. This is crucial for guaranteeing a particularly efficient and smooth production process in our plants.

ecoprefab

MORE EFFICIENCY WITH SERIAL PREFABRICATION

The second pillar of **ecobuilding AG** is **ecoprefab GmbH**, under the umbrella of which **prefab nrw GmbH & Co. KG** and **prefab sax GmbH & Co. KG** are located as companies of our two newly built prefab plants in North Rhine-Westphalia and Saxony. The serial pre-production of construction components – also called prefabrication – combined with Building Information Modeling is vital for a sustainability construction industry.

Due to these production processes, the amount of resources and time required can be reduced enormously.

CO₂ emissions are reduced by 50 percent.

Visualisierter Entwurf unseres geplanten
Prefabrication-Fabrikprojektes

Two ultra-modern precast plants, our EMC II, will be built in North Rhine-Westphalia in Nörvenich and in Thierbach, Saxony, in the next few years. They will be able to produce ceilings and walls with windows, insulation and conduits as well as balconies, stairs, supports and columns. **This allows an overall prefabrication level of more than 60 percent to be achieved.**

After serial production, the finished structural components are transported to the construction site and assembled there. The entire production process in the plants, from planning to manufacturing and execution, is handled digitally using BIM.

This efficient combination of digital BIM planning and prefabrication makes construction **at least a tenth cheaper** than conventional construction and requires only **half the time**. The ecological benefits are no less significant: direct digital management and control make planning processes more transparent and material consumption easier to optimise, meaning that overproduction, erroneous deliveries to the construction site and unnecessary waste can be avoided. The reduced amount of concrete and reinforcing steel required also significantly reduces the CO₂ emissions usually associated with production. In addition, the future prefabrication plants will be able to work with even more recycled concrete, which in turn will also reduce emissions.

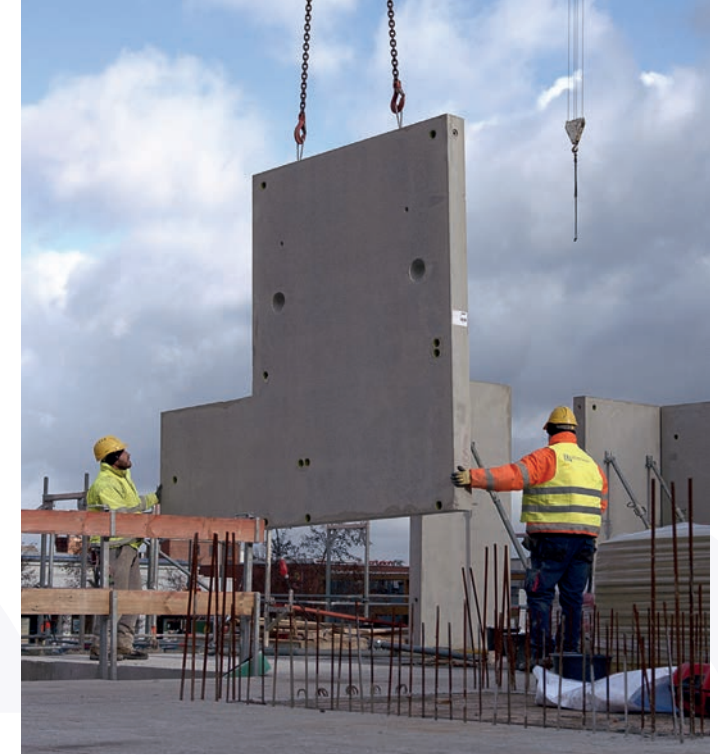


Optimal integration, self-sufficient supply

The locations for our two new production facilities were chosen to ensure that the conurbations and cities in which construction is increasing, now and in the future, are easy to reach. This ensures shorter travel distances.

The North Rhine-Westphalian plant in Nörvenich is located in the hub between the Benelux states and the German metropolises on the Rhine and Ruhr. Thierbach has an excellent infrastructure with motorway and rail connections. This makes it possible to reach a range of up to 350 km.

Both plants will also use rooftop photovoltaic systems to autonomously generate a large part of the electricity they need. The plan is for as much power to be produced from solar energy over the course of the year as is required for prefabrication. At the Nörvenich plant, the surplus electricity will be fed into the grid or converted into self-produced green hydrogen using electrolysis. This means that production is possible with locally self-generated solar power. Moreover, the green hydrogen from the plant can be used for emission-free mobility at the location.



ecomangement

FOR EFFICIENT PROCESSES
RIGHT FROM THE START

ecomangement GmbH acts as an interface between the other three corporate pillars of **ecobuilding AG**. As such, it organises, coordinates and monitors all processes within our construction projects to ensure smooth processes. It also provides consultancy and all related services. To this end, two new subsidiaries were founded: *ecoplan GmbH* is responsible for the digital planning that can steer the prefab plants. *prebuild GmbH* is dedicated to the construction-site assembly of the prefabricated parts produced in advance in the plants.



ecoenergy

INTELLIGENT COMBINATION OF INNOVATIVE TECHNOLOGIES

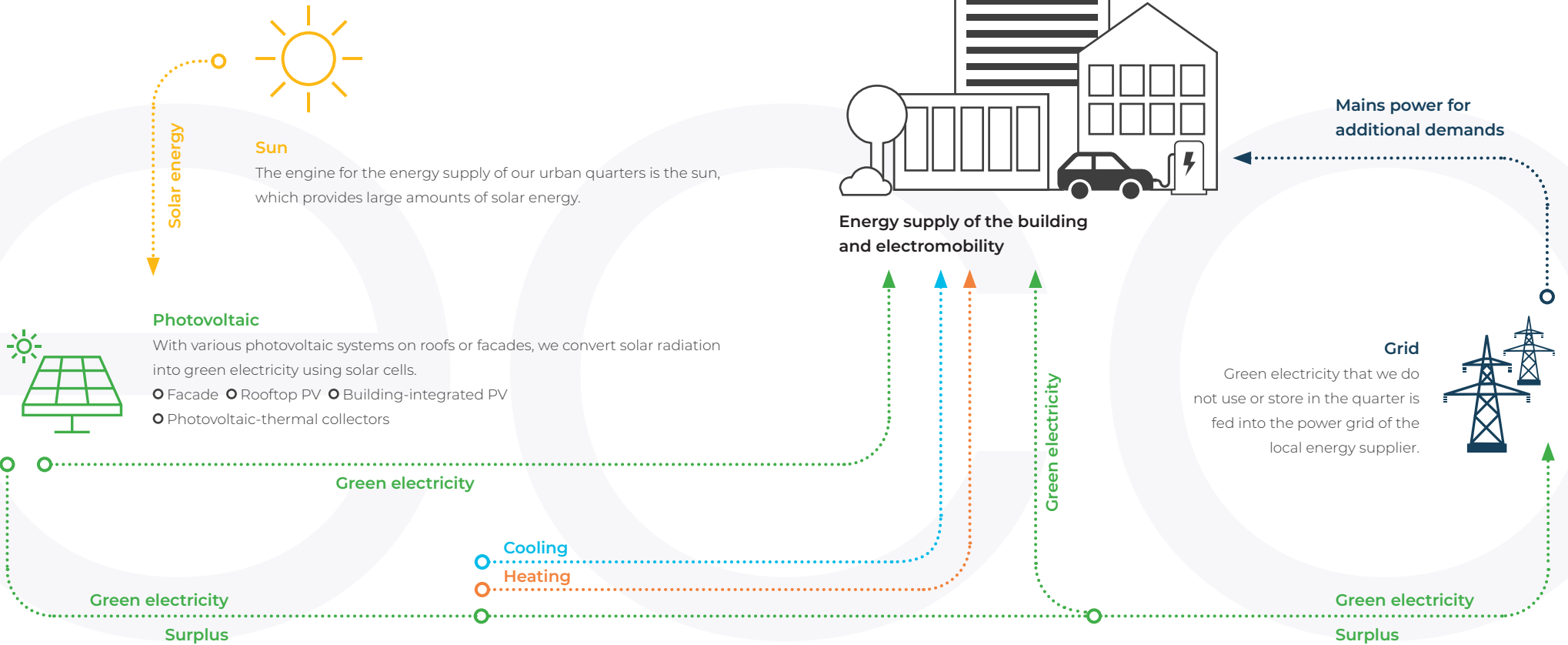
We aim to achieve a carbon-neutral supply of energy for our neighbourhoods by using various innovative technologies for the self-sufficient generation of renewable energies. The optimal combination and networking of these technologies makes it possible to both utilise environmental energies at the site and store them for times when energy yields are low. To this end, our team of energy experts tests and develops individually customised solutions depending on the local conditions.

The technologies used and combined include photovoltaics, geothermal energy, groundwater heat pumps, wastewater heat exchangers, air-to-water and ice storage heat pumps and several more. Of course, the charging infrastructure for e-mobility is also included in the on-site energy concepts.

Thanks to the use of green environmental energies, we can significantly reduce emissions in our neighbourhoods. Not only will it be possible in some neighbourhoods to reduce CO₂ emissions by up to 100 percent, we will also achieve a carbon-positive balance; in other words, more greenhouse gases will be avoided in the heating/cooling of the buildings than are caused. The surplus of green electricity can be made available to third parties. The accumulated technical know-how is the cornerstone for a future-proof energy design that meets the requirements of security of supply, comfort and genuine climate protection.

Mixed Technology

EXAMPLE OF A CLIMATE-NEUTRAL ENERGY SUPPLY WITH GREEN ELECTRICITY



Heat pumps

The most efficient way to generate heating and cooling from this green electricity is by using heat pumps to harness natural environmental heat sources.



- Soil ● Groundwater ● Water Bodies
- Wastewater ● Air ● Ice Storage



Electricity storage

Green solar electricity varies from day to day. With electricity storage technologies, we increase the availability of green electricity as needed.

- Short-term storage (battery) ● Long-term storage (hydrogen)

Future cooperation

IN COLOGNE WE CREATE COLOGNEO CAMPUS TOGETHER WITH THE RHEINENERGIE



In cooperation with the nationwide energy supplier RheinEnergie we realize our quarter "Cologneo Campus" in Cologne-Mülheim. Here we develop a flagship project for the electrification of heating and cooling supply in combination with ground source heat pumps, local green energy and district heating. We aim to implement an innovative and sustainable energy concept, which is carbon neutral.

Centerpiece are decentralized ground source heat pumps, which use environmental energy like thermal energy and air. The same heat pumps are used in wintertime for heating and in summertime for cooling. Not only saves this cost of investment and therefore results in lower end consumer prices, but also ensures a regeneration period for the ground probes. The ground probes revoke the warmth of the earth in winter for heating, which will be returned in summer through the cooling system.

This circuit system is supported through the connection to the district heating network of the RheinEnergie. The electricity for the system of ground source heat pumps will be mainly derive from on-roof and building-integrated photovoltaic system with a total energy performance of 565 kilowattpeak. Altogether the cooperation partners combine in their energy supply concept decentralization, decarbonization and electrification in the heating and cooling supply.



Cologneo Campus

INFORMATION

Area: Cologne-Mülheim
Object Type: Quarter
Completion: around 2026
NGF: approx. 30,300 m²
Units Parking spaces/electrified: 377 / 65

ECO-FACTS

CO₂ savings in figures:

410 tons of CO₂ less per year

166,415 saved emissions in truck kilometres

75% CO₂ savings through renewable energies

702 tons of CO₂ less per year including purchase of net-zero emissions of district heating and green energy

> 100% CO₂ saving

Non-binding visualization
M15 - COLOGNEO CAMPUS, Cologne



Non-binding visualization
Eckiger Rundbau - COLOGNEO CAMPUS, Cologne

The RheinEnergie AG, the **ecobuilding AG** and the Gröner Group AG intend to cooperate nationwide with further projects (stated in a Memorandum of Understanding - MOU). Together we aim to analyze and evaluate all of our ecobuilding-quarters - for example our GREENVILLE in Karlsruhe to engineer individual and innovative strategies for sustainable energy supplies.

Management Board of ecobuilding AG



Christoph Gröner
CEO of ecobuilding AG

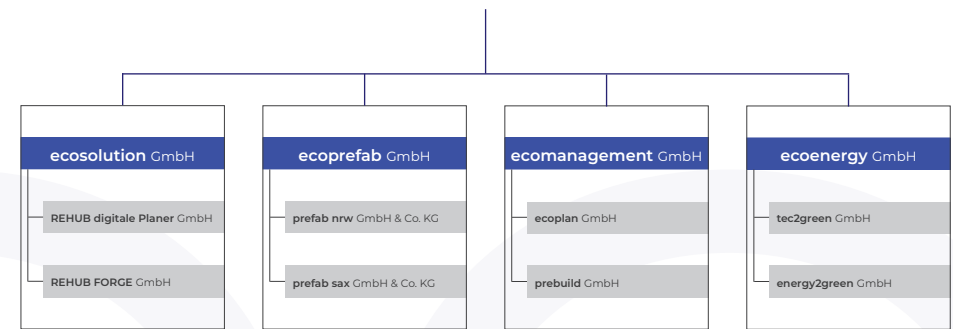


Ronald Pofalla
COO of ecobuilding AG

Supervisory Board

Josephine Heigel, Frank Gröner, Ulrich Metz

ecobuilding



Disclaimer: This publication is for informational purposes only.

Last updated: March 2024

Legal information

Responsible according to German press law

Publisher

ecobuilding AG
Bismarckstr. 79
10627 Berlin
T +49 30 7675948 1100
F +49 30 7675948 4999
E info@ecobuilding.ag

Picture credits: Adobe Stock, Cycle Zero Visual GmbH, kadawittfeldarchitektur GmbH, REHUB digitale Planer GmbH, Tom Züfle (CG Immobilien GmbH), Bart Spencer

Digitalization, Prefabrication and
ecological change go together.

The **ecobuilding AG** leads the way.

www.ecobuilding.ag