REWE Green Building – the future concept.

The sustainable supermarket for a new generation.
Sustainability is our mission: in thought and deed.

At the REWE Group, sustainability is more than just a short-term trend or a marketing gag, it’s a deep-seated philosophy. We at the REWE Group feel an obligation to the environment and society, and we are guided in this by our values as a cooperative enterprise. In other words, we do not stop at respecting the environment – we also believe in treating our employees and suppliers fairly. And we are able to do this without short-changing our business interests in any way.

Following the decision to place even greater emphasis on our responsibility to the environment and society, we pooled our company’s sustainability efforts at the beginning of 2008. In order to translate our strategy into concrete projects, we established four pillars of sustainability: ‘Green Products’, ‘Employees’, ‘Social Commitment’ and ‘Energy, Climate and the Environment’. These measures have firmly anchored environmental protection in our corporate strategy and company structure.

As a full-range company, acting sustainably is of key importance to us. We also believe in constructing and operating all of our REWE stores throughout the country in a way that conserves resources and protects the environment. Our pioneer project, the Green Building in Berlin, is a veritable beacon for this philosophy. From start to finish, this groundbreaking store was planned and built according to environmentally friendly building principles.

Pursuing credible and long-term ecological and social concerns is the guiding principle of all our actions. And it will always continue to be so.

Lionel Souque
Chairman of the Board of Management, REWE Markt GmbH
REWE stores – already sustainable today.

**REWE invests in energy efficiency.**
REWE stores and their products provide a daily litmus test for our credibility. So it’s no surprise that, today, REWE already ensures that its conduct avoids placing any unnecessary burden on our natural environment. REWE is currently the only German retail company investing in institutionalised energy efficiency management. The system involves systematically calculating store-specific consumption targets and comparing these to actual values. The goal is to promptly introduce appropriate energy-saving measures whenever and wherever necessary.

**Into the future with green electricity.**
All REWE stores use 100% certified green electricity – generated from renewable energy sources including wind, water, solar and biomass combustion. REWE’s green electricity is of the highest quality; it is certified by TÜV Süd according to EE01 criteria. To meet these requirements, 25% of production facilities must be less than three years old. In addition, the so-called ‘expansion obligation’ requirements help promote the construction of new renewable energy production facilities.

**Energy saving with long-term effects.**
The biggest energy consumers in supermarkets are the refrigeration and lighting systems. Together they account for about 75% of a store’s energy requirements. With this in mind, REWE has already been using extremely energy-efficient compound refrigeration systems featuring intelligent temperature control management and energy-saving lighting systems for many years. Glass doors on the coolers prevent cold air from leaking out, meaning that less energy is required for re-cooling. And the waste heat produced by the refrigeration systems is already being used to heat many of the stores. In this way, REWE stores are constantly working to increase energy efficiency, reduce emissions and sustainably conserve resources.

**The REWE Green Building – a new supermarket generation.**
Despite the generally positive energy balance at standard REWE stores, a recent analysis revealed that our energy consumption still shows potential for greater savings. As a result, REWE developed the ‘REWE Green Building – Concept for the Future’. This new 1,830 m² store combines daylight architecture – a technique that has hitherto been largely ignored in grocery retail – with the implementation of innovative and energy-saving technologies and materials. With the Green Building, REWE has committed itself to a new generation of supermarkets which is technically and structurally optimised for sustainability and takes a holistic view of the store itself.
The REWE Green Building. The new architecture for sustainability.
An environmentally friendly overall concept.

The Green Building is an end-to-end concept which brings together modern architecture, energy-efficient technologies, and systems for the generation of renewable energies. Alongside energy-efficient daylight architecture and sustainable building materials such as wood, the Green Building also makes use of cooling and air conditioning systems featuring natural coolants. In addition to this, photovoltaic and geothermal systems provide renewable energy and rainwater is used to clean the floors.

Sustainability requires transparency.

REWE is breaking new ground with this pilot project and leading the field as a pioneer in the sustainable construction and operation of retail property. However, to be certain that the REWE Green Building not only met REWE’s sustainability requirements but also satisfied objective criteria for sustainability, REWE had the building checked and certified by the German Sustainable Building Council (DGNB). The ‘REWE Green Building – Concept for the Future’ was the first supermarket in the world to receive the DGNB’s gold certificate in the ‘retail building’ category.

An adaptable building concept.

The building’s structure basically consists of twelve glued laminated timber frames that span the store. These are reinforced by steel supports on the façade. Thanks to its variable lengths and axial distances, this form of construction can be adapted to different locations and store sizes without losing its distinctive character. The roof and walls are also built from prefabricated wooden elements which, thanks to their special construction (featuring hollow chambers filled with blown cellulose insulation), are easy to manoeuvre into place. Wall cladding can then be selected depending on the kinds of materials that are typical for the region. This prefabricated wooden construction is a highly flexible and sustainable building system that can be implemented in a wide range of different locations.
Daylight architecture for a modern shopping experience.

The structural characteristics of the Green Building.
The REWE Green Building is an architectural expression of REWE’s philosophy of sustainability. Created in the style of traditional market halls, the building’s architecture makes use of daylight and allows for a number of divisions and uses under one roof. Thanks to its lone, free-standing character – in other words, the building’s self-contained architecture – the Green Building has shown a significant reduction in the amount of heat lost.

A 280 m strip of ribbon windows ensures that the generous sales area is constantly flooded with daylight. 18 domed skylights set in the roof ensure that an equal level of daylight can be enjoyed throughout the building. The Green Building’s interior roller blinds provide automated protection from the sun. This guarantees employees and customers alike comfortable temperatures and good visibility throughout the interior. The energy-efficient lighting system utilises brightness sensors to regulate light levels depending on the amount of available daylight, using only as much artificial light as is absolutely necessary. This also saves energy and creates a pleasant shopping atmosphere.

Freshness and variety in a bright, friendly atmosphere.
Thanks to the store’s daylight architecture, customers are able to shop in well-lit, comfortable surroundings. Every day, they have the chance to browse through an enormous selection of fresh, delicious foods in all sections of the store. Customers here can find everything their hearts desire under one roof: a colourful assortment of fruit and vegetables, a diverse range of refrigerated and frozen foods, freshly baked goods from the in-store bakery, and a fine selection of wines and other beverages.
Sustainable construction with environmentally friendly materials.

Using ecologically sound and easily recyclable construction materials.
A central tenet of the Green Building strategy is the use of construction materials that are as sustainable and environmentally friendly as possible. With this in mind, REWE made sure it used only ecologically sound, easily recyclable materials during the construction of the Green Building. In addition, all of the construction materials were certified in advance by energy consultants and verified as ecologically sustainable during the planning and construction phase.

Wood: a symbol of sustainability.
No other raw material embodies the principle of sustainability better than wood: it grows back quickly, it is recyclable, and there is an almost unlimited supply of it available in Germany. At the 2,550 m² site, REWE used wood to construct a pioneering store with a 1,830 m² sales floor – its focus on sustainability and energy conservation makes it the first of its kind in Germany. By using wood in the construction of the Green Building, REWE saved 435 t of the greenhouse gas CO₂ from entering the atmosphere.

Building construction: glued laminated timber frames.
Twelve 46.10 m glued laminated timber frames span the store at intervals of 6.38 m, forming the supporting structure and lending the Green Building an eye-catching and characteristic design.
The walls: wood sandwich construction.
A wood sandwich construction method was used to build the walls of the main façade. This enabled simple, fast and safe assembly of the prefabricated wooden components.

The insulation: sustainable cellulose.
The roof and walls are composed of prefabricated wooden components mentioned above. These wooden parts contain hollow chambers which are filled with cellulose, providing optimal building insulation.
Using natural resources.

Elements of resource usage.
The most important natural resources for our purposes are light, solar energy, water and geothermal energy. The Green Building uses natural daylight to provide lighting, modern photovoltaic systems to produce electricity, rainwater for cleaning and watering, CO₂ gas as a natural coolant, and geothermal energy to heat and cool the building.

Daylight – no other light source is more beautiful or cost-efficient.
The store is primarily lit using natural daylight. Indoor sensors measure the light levels in the interior of the building and automatically adjust the level of artificial light to compensate as needed.

Photovoltaics – optimised technology for electricity generation.
Solar power is produced on the store’s roof using two different systems. Photovoltaic modules integrated in glass are installed on the projecting roof; this system covers 332 m² of the projecting glass roof and produces 31 kWp of energy. And the 1,600 m² photovoltaic system on the main roof, which is composed of 805 modules, is more than just one of the first large-scale commercial photovoltaic systems in Germany – its construction also allows it to make use of reflected solar radiation across the whole surface of the roof. The system produces a total output of 133 kWp. The solar energy supplied by the two systems is enough to power 35 four-person households the whole year round.
Geothermal energy – for heating and cooling the building.

The favourable thermal conditions at the store’s site make geothermal energy an ideal option; to this end, twelve ground source heat pumps were installed in the car park – each reaching down to a depth of 99.5 m. The system completely eliminates the need for burning fossil fuels such as oil and gas. And in addition to heating the building, the geothermal energy can also be used to power air conditioning in the summer. The geothermal facility installed in the building could provide heat and air conditioning for 13 single-family homes all year round.

Rainwater – for cleaning the floors and watering the grounds.

Natural rainwater from the roof is collected and filtered in a 6,000 l cistern. The water is used for cleaning the floors, flushing the toilets and watering the building’s grounds. This saves valuable drinking water. And because the rainwater contains no lime, fewer cleaning agents are required when using the water to clean the store.

Natural coolants and refrigeration – saving energy and protecting the environment.

All of the cooler cabinets, refrigerated counter systems, freezers, cold-storage rooms and heat pumps in the Green Building use the naturally occurring coolant CO$_2$, which does not contribute to the destruction of the ozone layer. Waste heat from the refrigeration systems is stored in a 4,000 l buffer storage tank and re-used to heat the building. Fitting glass doors and energy-saving fans to the cooler cabinets and freezers reduces cool air leakage and significantly lowers the energy required for operation.

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The future is here now: energy efficiency and CO₂ neutrality.

Reducing emissions and conserving resources.
The Green Building combines daylight architecture with energy-saving construction techniques, optimum insulation, sustainable materials and the use of renewable energies. The result is a 48% reduction in primary energy requirements compared to standard stores. This is an impressive 29% under the limit set by the new, stricter German Energy Conservation Regulations (EnEV 2009) for buildings and their installed systems.

By using renewable sources, such as solar energy, to generate electricity, as well as exploiting geothermal energy for heating and air conditioning, the Green Building is already generating 40% of the primary energy it requires on site. Approximately four fifths of this is produced by the photovoltaic system and the remainder by the geothermal system. The rest is covered by other green energy sources. At the same time, the heating, cooling, air conditioning and refrigeration systems do not damage the environment with harmful CO₂ emissions. In short, the Green Building is completely CO₂ neutral.

Energy savings including refrigeration

Energy savings excluding refrigeration

Award-winning sustainability
The German Sustainable Building Council (DGNB) and the German Federal Ministry of Transport, Building and Urban Development (BMVBS) worked together to develop the ‘German Sustainable Building Certification’. The certificate gives a numeric value to sustainability, transforming it into a quantifiable commodity. Certification makes a significant contribution to maintaining the value of a property and can be factored into calculations of its life-cycle costs. Certification requires that construction and long-term operating costs are clearly communicated during the planning phase. This functional aspect is a distinctive feature of the certificate; and it is particularly important, as it is the low long-term operating and maintenance costs that make sustainable buildings such an attractive option. The additional expenses that arise during planning and construction generally pay for themselves within a few short years.

The ‘REWE Green Building – Concept for the Future’ is the first supermarket in the world to receive the Gold Sustainable Building Certificate from the DGNB. Furthermore, the REWE Green Building won first place in the “Stores of the Year 2010” awards ceremony held by the German Trade Association (Handelsverband Deutschland, or HDE for short) in the category “Food”.

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Certified electricity from renewable sources.

In addition to ecologically sound waste management and the use of environmentally friendly cars, REWE’s sustainability strategy also promotes corporate environmental protection, efficient energy management and green electricity. So perhaps it is no surprise that REWE has become one of Germany’s largest consumers of renewable energy. Consequently, in front of the ‘Green Building – Concept for the Future’ there are two power charging stations to ‘refuel’ electric cars with green electricity. These power charging stations help REWE to support both electric mobility and environmentally friendly energy production.

**Project data in detail.**

- **Location:** Groß-Ziethener Chaussee 37  
  Ecke Eichenauer Weg 61  
  12355 Berlin-Rudow
- **Architect:** Koch Architekten  
  Steinstraße 16-18  
  40212 Düsseldorf
- **Site size:** 9,777 m²
- **Area covered by structures:** 3,290 m²
- **Sales area:** 1,830 m²
- **Gross floor space:** 2,559 m²
- **Parking spaces:** 129  
  2 of which are handicapped spaces  
  3 of which are for parents/children
- **Bicycle racks:** 20
- **Power charging stations:** 2
- **Start of planning:** 10 July 2008
- **Planning permission application:** 28 November 2008
- **Planning permission received:** 31 March 2009
- **Start of store construction:** 25 May 2009
- **Opening:** 5 November 2009