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NATURALLY DURABLE

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CLEANER
ENERGY, MORE
EFFICIENT
APPLICATIONS

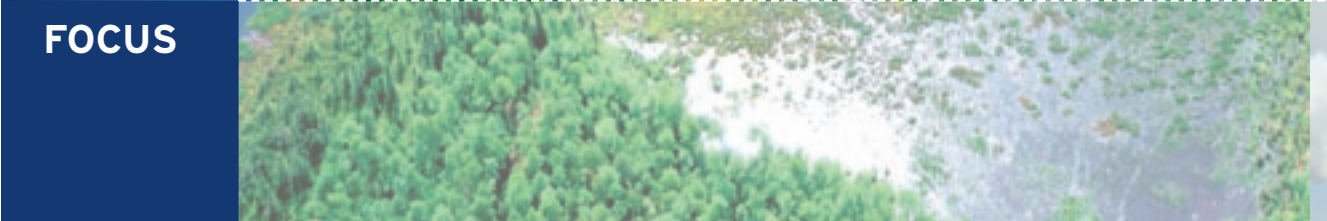
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Sustainability and durability are real watchwords in today's world, and this is likely to remain so in the future.

These key words have played an important role for Reynaers Aluminium for a long time. Not only does the company make efforts to reduce its own energy consumption and to reduce its emissions of greenhouse gases; Reynaers Aluminium also contributes to limiting the energy consumption of new and existing buildings through the development of energy-efficient façade concepts.

The winters are getting noticeably warmer, and the summers are becoming either drier or wetter depending on the latitude. The sea level is rising. More and more experts are convinced that this climate change - a consequence of the greenhouse effect - and the current speed of the changes are being caused by human activity. Politicians also seem to have woken up to the issue. The American politician and former vice president Al Gore put the climate crisis in the spotlight with his documentary "An inconvenient truth", which gained worldwide attention and for which he even won an Oscar.

But there is still hope. Ten years after the coming into being of the Kyoto Protocol, a European political breakthrough was achieved in March of this year: the European Union launched new ambitious plans

for CO2 reductions. By 2020, the EU wants to have reduced CO2 emissions by 20% compared to the baseline year 1990 as referred to in the 1997 Kyoto Protocol. According to the Kyoto objectives, the EU must have reduced its CO2 emissions by 8% in 2012 compared with 1990. The new binding agreements also state that energy savings of 20% must be achieved by 2020 compared with the current prognosis for that year, and that 20% of the energy used must come from renewable sources (solar, wind and hydroelectric power).

Durability and sustainability have formed one of the most important themes in the worlds of construction and architecture for quite some time. This is no surprise, since buildings account for 41% of the energy consumption of the European Union, and the European construction sector produces 400 million tonnes of construction waste every year, equating to 40% of all human-produced waste.

In recent years, a great deal has been invested in new techniques and technologies for the design of buildings in combination with integrated planning for energy management. In addition, the focus lies on the reuse of building and construction materials, and on recyclable materials - a development that not only helps protect the environment but saves money too.

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THE EU WANTS EMISSIONS OF CO₂ REDUCED WITH 20% BY 2020



INTEGRATED SOLUTIONS

Aluminium has been reused ever since the metal was first produced. Initially, this was done primarily for economic reasons. Aluminium is easy to melt down, and this process requires 95% less energy than is needed for the original production of the metal from bauxite. Moreover, aluminium is 100% recyclable, with no loss of quality. Today, 90% of the aluminium from construction and demolition waste is already recycled, and 60% of the material globally is now "secondary". Moreover, aluminium is a very durable material that requires no extra treatment and very little maintenance. Aluminium is also a light metal with a low melting point, which means that relatively little energy is required to manufacture products such as roller profiles and press-drawn metal sections, and that transportation costs remain low. It does not corrode either, meaning that no metallic substances get into the soil or surface water through rainwater.

Aluminium is a material that can be rightly called durable. Yet durable - or sustainable - construction not only means as much use as possible of sustainable energy resources and energy-efficient production and processing procedures. It



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RECYCLABLE, WITH
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is particularly important that the manufactured products contribute to energy-efficient buildings.

“Sustainable architecture is one of the most important themes in all the developments that we as a company have implemented over the years, and on which we are still working further”, explains Erik Rasker, CTO (Chief Technology Officer) at Reynaers Aluminium. “It began with the energy crisis in the 1970s, as a result of which a desire to insulate buildings better arose. We greatly improved the insulating properties of our profiles even back then. These days, it’s not just about the material properties but the total performance of the building.”

He adds: “Incidentally, we also build sustainably for our own use. Our new warehouse, to be built early in 2008, will have solar panels on the roof with which approximately 500,000 kWh of green energy will be produced per year (equivalent to the annual energy consumption of 166 families). This equipment will reduce CO2 emissions by 280 tonnes per year.”



Computer-controlled parallel opening windows for night ventilation.

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TOTAL CONCEPT

The thermally-insulated profiles that Reynaers Aluminium developed after the first oil crisis formed the start of an ever stronger focus on energy-efficient solutions. This development has continued up to the present day with the development and improvement of integrated sunblinds, high-insulating profiles and double façade solutions, for example. New sustainable and durable products come about partly through our own research. In addition, the questions of investors and architects, and the new guidelines and standards set by government bodies form motives to introduce even more sustainable products. Recent examples of this include the high-insulating window and door system CS 86-HI (with a UF value of up to 1.4 W/m²K) and the renewal of the façade system CW 60.

Reynaers Aluminium wants to inspire and serve project developers, architects and users with total façade solutions: integrated façade concepts with which considerable savings can be made. Rasker: “We are focusing on the complete picture: the façade, the sunblinds, the ventilation and cooling

and the lighting. We are investigating the possibilities of this directly in relation to our products, from simple window systems to interactive double façades.”

The façade is crucial for the durability of a building. The façade is the principal regulatory factor for allowing warmth, light and air in, and for the appearance. These factors are of decisive importance for the interior climate of the building, for the welfare of the user and for the relationship between the building and the outdoor climate, both visually and from the point of view of energy consumption.

Good thermal and acoustic façade insulation is one of the most important measures through which the energy required for heating and cooling a building can be greatly reduced or even rendered unnecessary, and the comfort level in the building can be optimised. Sufficient daylight coming in reduces the need for artificial light and – depending on which way the façades face – can also contribute to passive heating of the building. By integrating the ventilation facilities with the sunblinds in the façade design, advantage can be taken of the natural flows of warm and cold air. Moreover, an integrated approach prevents “energy leaks” occurring between different materials.

INSULATION

Reynaers Aluminium is looking into innovative solutions in all these areas. The results can be seen in the various systems now available, from simple window and door systems to complex façade systems with a high insulating value. The Reynaers products combine a high insulating value with slender profiles with various aesthetic characters. Through the integration of external sunblinds, the façade systems offer the possibility of controlling the energy efficiency of a building, and the use of energy-wasteful air-conditioning can be limited. A subsequent step that Reynaers intends to take in this regard is the integration of solar energy systems into façade systems.

"There is great architectural variety", adds Erik Rasker. "Aluminium can be extruded in a wide variety of forms relatively simply. There are slender profiles, thicker profiles, special designer profiles and all kinds of glass or enclosed façade elements such as cassettes. The integration of photovoltaic cells or interior and exterior sunblinds is also possible. It is still often the case today that the architect puts together a façade comprised of a number of different elements. We want to move towards concepts in which all of these solutions reinforce each other. Of course, this is only possible if we work

together with other parties." Reynaers is thus taking on more and more of an advisory role, for example for architects. An example of this is the software package designed by the company for the simple calculation of the impact of sunblinds on the energy consumption of buildings."

FREEDOM

Equally important - if not more important - is the fact that the façade plays a very important role in the appearance or identity of a building. In the longer term, the façade is a crucial factor in the consideration of whether a building is to be kept in use, by means of restoration or renovation, or demolished. On the basis of this observation, one can state that it is important for a façade to be durable, but that it is impossible to formulate a cut-and-dried solution for how a façade should be given a form that is worth preserving; people have always had different tastes, and always will. Therein lies another aspect of the durability of Reynaers' façade systems; they are systems that fit in with a multitude of styles and forms without imposing a particular preconceived image. This gives architects greater designing freedom, and durability and sustainability automatically become part of the architecture, whether it is a renovation project or a new construction project.

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Until recently, ecologically sustainable and durable buildings were generally presented as showcases, in which durability determined the unique character of the building. Durability and sustainability have now got past this stage; in the further implementation of sustainable solutions in the development and design process, in "regular" architecture and thus in everyday life, large-scale savings can now be realised and ultimately profits can therefore be made. ■



High quality thermally insulated window and door system CS 86-Hi with a U_f value up to 1.4 W/m²K.



**'WE WANT TO MOVE
TOWARDS CONCEPTS IN
WHICH ALL SOLUTIONS
REINFORCE EACH OTHER'**

Double façade
solution with
integrated solar
panels (La Salle
Innovation Park,
Barcelona).

