

Facts interviews some renowned experts from various professional backgrounds.

## Opportunities for using renewable energies.



Prof. Dr.-Ing. M. Sc. Econ. Manfred Hegger  
Specialist in design and energy-efficient construction at Darmstadt Technical University, Germany

**Facts:** Is it already possible to make efficient and appropriate use of renewable energy sources in buildings?

**Hegger:** Buildings differ from other objects that we use every day in one very major respect. They meet all the requirements for the use of renewable energy sources. They are linked to the ground and they can utilise the uniform temperature level close to the earth's surface, or they can draw geothermal heat from lower levels. Air flows freely around buildings, so they can benefit from pressure differences and wind energy. They are exposed to daylight, which means that they can tap the most powerful energy source that is available to us: the sun. Depending on the building's location, other renewable energy sources may be available: groundwater and flowing water, biomass and biogas, to mention just a few. To an increasing extent, buildings can liberate themselves from the costs, uncertainties and hazards of conventional energy sources.

The challenge of sustainable development holds out tremendous opportunities for the construction sector: new scientific, technical and design-related developments in a sector of the economy which has lagged behind for some time in terms of innovative strength, new export opportunities and a renewed role as the motivator for long-term lines of social development. Expectations of creative opinion leadership from architects are correspondingly high.

The efficient use of resources and energy is becoming a key quality characteristic of architecture. Perfected technologies are available so that we can make efficient use of the resources that the earth can offer us, without impairing its natural beauty. It is also true that the methods used in architecture are, at the same time, the instruments of material-efficient and energy-efficient construction – such as lightness and mass, protection and transparency, texture and colour, economy and effectiveness of space. Used creatively in combination with new technologies and revised objectives, these aspects are giving birth to a new culture of building: sustainable and efficient. Architects are increasingly tackling long-term global and social issues through their buildings, and they are creating patterns of construction that provide responses to those issues.



Rolf Disch, Solar Architect, Freiburg, Germany

**Facts:** Is the use of renewable energies changing architecture? Which design aspects are playing a part in this?

**Disch:** The use of renewable energies is in the process of changing our creative approach. In the next ten to fifteen years, solar architecture will become established as the standard, and will already be influencing urban construction planning: this starts with the orientation of the building, the provision of transport routes and the question of how to supply energy to a new residential area. As regards design, the use of renewable energies can and should be visually emphasised on the building itself.

**Facts:** Does the planning of building technology call for an integrated approach?

**Disch:** Energy-efficient building design starts out with the question of how the building can be cooled. This calls for an integral and integrated concept, because - as far as possible - no additional conventional energy should have to be used for cooling. Examples include passive cooling and intelligent facades that keep heat away in summer but channel it inside during winter.

**Facts:** What importance do you attach to the use of renewable energies in new buildings or refurbishments?

**Moschberger:** Due to the climate protection targets set by the European Union and the obligations entered into by the member states, renewable energies are playing an increasingly important part in the building sector as a whole. Because of the large number of residential buildings put up prior to 1977, the use of regenerative energy sources and the refurbishment of existing buildings represents the greatest challenge. At present, the installation of systems that utilise renewable energy sources is receiving financial support from the public sector. In the medium term, however, a legal obligation will be imposed on the basis of the policy discussions currently under way in France.



Christophe Moschberger, Head of the Energy Efficiency and Renewable Energies Section in the "Cluster énergivie" network of companies, Alsace, France

On the other hand, the public sector has rather neglected the aspect of energy efficiency in the past. This situation has now changed radically. Energy efficiency and low-energy buildings are very much centre-stage. Buildings of the future will produce more energy than they consume. To achieve this, systems to generate renewable energy must interact optimally with energy-efficiency measures in areas such as ventilation and control. Building technology and an integral approach to planning will, therefore, play key roles in the future.