Sustainable Architecture

across Europe!

Architects' Council of Europe
Conseil des Architectes d'Europe

About the ACE

The Architects' Council of Europe (ACE) is the only representative organisation for the architectural profession at the European level and it aspires to speak with a single voice on its behalf in order to achieve its aims. Its headquarters and Secretariat are based in Brussels, its member organisations are the regulatory and professional representative bodies of all European Union (EU) Member States, Accession States, Switzerland and Norway. Through them, it represents the interest of over 480,000 Architects in 33 countries of Europe. The principal function of the ACE is to monitor relevant policy and legislative developments at EU level, seeking to influence those areas of EU Policy and legislation that have an impact on architectural practice and on polices affecting the overall quality and sustainability of the built environment.

For further information go to: **www.ace-cae.eu**

ACE
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Sustainable Architecture across Europe!

An exhibition of the Architects' Council of Europe

Under the patronage of **Freida Brepoels** (MEP)

Sustainable Architecture across Europe!

The **Architects' Council of Europe** marks its 20th Anniversary this year, 2010. Mirroring close connections with the European Union and its enlargement, the **ACE** is now an organisation that represents the architectural profession in 33 countries through its 47 member organisations. It has become an important network for action and platform for communication that has benefited both the profession of Architect and the field of architecture. As we mark our first 20 years of existence, we celebrate its achievements in this catalogue.

While planning our celebrations, we realised how delicate a task it is to adequately illustrate the past work and achievements made possible by the huge commitment and dedication of hundreds of volunteers and elected representatives who make up the **ACE**. They gave, and continue to give generously, their time, expertise and energy in developing common positions among European architects and furthering the causes of education and practice in architecture. That work also cultivates awareness of the broad impact of our professional work in many spheres of life, mainly through specific projects, external cooperation and manifestations.

We believe that our profession is equipped and can continue to manage the necessary changes in achieving a sustainable environment and thus a better quality of life for all citizens. We believe that the work of the **ACE** can and does enable and assist practicing architects in our Member States and organisations to responsibly and harmoniously respond to the needs of society and the environment. We believe that the ultimate measure of the effectiveness of the **ACE** can only be measured by the success of architects across Europe in creating better spaces and better buildings which correspond to human, spatial and environmental requirements.

The **ACE** is well aware of the major global challenges that are facing us in the coming decades. We understand that our lifestyle, in particular in more developed countries, has resulted in irresponsible waste of energy under the illusion of the availability of inexhaustible resources. In accepting the fact that buildings account for approximately 40 % of all energy use and approximately 35 % of all greenhouse gas emissions, the architectural profession is assuming the responsibility, together with other participants in the construction process, to do all it can to ensure that all new buildings are highly energy efficient and designed on the principles of sustainable design.

Architects are already engaged in making a positive shift to embrace new design approaches, new methods and materials to ensure that their professional activity becomes a part of the solution in achieving the stated '20-20-20' targets of the EU. But the focus of our attention also extends to the realm of old and existing buildings, in the knowledge that we live on the 'Old Continent' with rich and varied cultural and built heritage, passed on to us by previous generations, with large material value and in continuous use. It is an exciting challenge to preserve that valuable resource, whilst ensuring its survival and continuity, but also with adequate contemporary use and comfort.

That is why part of our 20th Anniversary celebrations were conceived as the exhibition of 32 best practice examples of sustainable architectural projects from our member organisations across Europe. I hope that the exhibition will illustrate our ambition and allow the viewing public to better understand the tools and elements of design that an architectural project has to contain in order to achieve sustainable results in a completed building space.

In preparations for this exhibition the **ACE** has received enthusiastic support from its member organisations with over 80 projects submitted for consideration. It was therefore difficult to select and narrow down the 32 exhibited projects. We hope that the end result speaks for itself in a way wich demonstrates the power, beauty and creative diversity of examples of sustainable architecture in Europe.

I invite you to celebrate with the **ACE**, to enjoy the exhibition and to read the additional supplementary information on each theme included in this catalogue. The making of the exhibition is the result of a creative collaboration between the **ACE**, its member organisations and the new faculty of Architecture, Architectural Engineering and Urbanism (LOCI) at the Catholic University in Louvain-la-Neuve. Preparing the exhibition provided a practical learning opportunity for the students of architecture in Masters 1, facilitated by the staff at the University who believed in our project and embraced it. The passionate interest of my colleagues on the Executive Board of the **ACE** and our dedicated staff at the **ACE** Secretariat have made this exhibition the success it is. I sincerely thank them all.

My hope is that this exhibition will inform, inspire and reassure the public, our clients, users, legislators, strategists, architects and our colleagues in member organisations that we actively seek to contribute to a better life in our society, on our continent and in the world and that we face the future with a smile and optimism.

Selma Harrington,
President of the ACE 2010-2011

photo: Adam Mørk

Foreword

It is a great pleasure to host this inspiring exhibition mounted by the Architects' Council of Europe in the European Parliament in Brussels.
Being an architect myself (started in 1978; I have combined my own office with politics until 1993), I strongly believe in the significant contribution that high quality architecture can bring to society and to the people I represent.

In view of global challenges like climate change and scarcity of resources, everyone needs to play a role in ensuring a prosperous future for all. In this regard, sustainability is essential for architects as well. This means taking more care of the resources that are at our disposal, taking more care of how our buildings are designed and built and finally, taking more care of how they are operated throughout their useful life.

This exhibition by the Architects' Council of Europe, which brings together 32 exemplary projects of completed sustainable architecture, is a clear demonstration to my colleagues in the European Parliament and to all who visit this exhibition that sustainable architecture is acting as an example that our objectives to create a more prosperous sustainable society are achievable.

This exhibition has been mounted on the occasion of the 20th Anniversary of the Architects' Council of Europe and I take this opportunity to congratulate it on its achievements to date and on the marvellous work it has done to promote a higher quality and more sustainable built environment for all, a human habitat that is provided by a highly trained and skilled profession. I am also pleased to learn that it is expected the exhibition will travel to many European countries thus bringing, to a large number of EU citizens, the good examples and best practice cases that have been carefully selected by the Architects' Council of Europe.

It is my hope that the coming 20 years will be even more fruitful for the Architects' Council of Europe.

Van harte gefeliciteerd en veel succes voor de toekomst!

Frieda Brepoels, Flemish MEP (N-VA)
Member of the European Free Alliance

Letter from Organising Committee

ACE 1990 -2010 An Anniversary worth celebrating

Just over one year ago, the Executive Board of the Architects' Council of Europe (**ACE**) decided to organise a series of events to mark its 20th Anniversary.

It was a difficult decision to take as the global financial crisis was and still is having a strong negative effect on the architectural profession. It can be said that the effects of the global economic crisis have overshadowed the festive mood that should have accompanied the decision to mark our Anniversary.

While this was understandable, particularly as unemployment soared in the profession, the Executive Board felt that such an important date could not be missed. To recognise these difficulties, it was a principle from the start that the member organisations of the **ACE** would not be asked to fund the events and that they should be fully sponsored from external companies and associations.

Having taken the decision to organise the events it was time to act.

The **ACE** knocked on the doors of the European Parliament and, more particularly, on that of the Belgian MEP and architect Frieda Brepoels. She was immediately enthusiastic and agreed to support a Conference and Exhibition in the premises of the European Parliament in Brussels.

After finalising an exciting programme for the Conference, several companies and associations were approached by the **ACE** and they were, to the surprise of several, prepared to support the events. This way, none of the already scarce operational funds of the **ACE** had to be used to mark the 20th Anniversary. It is true that the **ACE** did not have extensive experience of sponsoring but it took to the task with careful enthusiasm. It gave a lot of attention to the often-expressed concern of the ethics of working with commercial

partners in order to ensure that the independence of the **ACE** as a representative organisation would not be compromised. The **ACE** found that the sponsoring partners were fully supportive of this approach, and I am delighted to report that we have succeeded in getting ten sponsoring partners and one donation.

In addition to the Conference in the European Parliament which, like the exhibition is set around sustainable architecture and European legislation, a festive evening programme hosted in the cultural heart of Brussels, the Palais des Beaux-Arts (Centre for Fine Arts) has been organised. During this evening the recently restored building of the great Art Nouveau architect, Victor Horta, will be on show to the guests and delegates of the **ACE**.

The mounting of the **ACE** exhibition has also been surprisingly successful as 75 % of the member organisations of the **ACE** sent projects for the exhibition. Given that response rates to **ACE** actions are often lower, this can be called an overwhelming success. These 25 countries sent in an average of more than 3 submissions thus given the selection Committee the difficult task of selecting just 32 projects from the 80 or so high quality projects received by the deadline. Therefore, I take this opportunity to congratulate our European architect colleagues for the outstanding work they delivered to the **ACE** and I a regret that it was not possible to display them all in the exhibition and its accompanying catalogue.

Finally, being responsible for the organisation of these Anniversary events, I would wholeheartedly like to thank everyone for their contribution to their success. I would explicitly like to thank the Executive Board of the **ACE**, colleagues, students, teachers, members of Parliament, sponsors and not in the least, our own small group of permanent staff for their extraordinary dedication and unfailing faith that this ambitious project could be brought to a good end. I think we can be very proud of all we have achieved!

Jos Leyssens,
Vice-President of the ACE
Chair of the 20th Anniversary Organising Committee

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photo: Timothy Soar

Achievements of the ACE

The first 20 years of the Architects' Council of Europe

The Architects' Council of Europe (**ACE**) is the representative body for the Architectural Profession at the European level. It has 47 Members Organisations from 33 countries and through them it represents about 480,000 architects. The principal function of the **ACE** is to influence EU policies and legislation in order to ensure a high quality sustainable built environment is possible.

Its actions have touched on many different themes and many different areas of activity and over its first 20 years these have been significant in many respects. One of the key early achievements was the recognition of architecture as a matter of public interest from which much work to promote the adoption of architectural policies within the Member States of the EU has been built.

At a time like this the ACE remembers all of the persons who have worked so hard for it during its first twenty years. Those persons include the Past Presidents who were Romano Viviani (Italy), Georges Reuter (Luxembourg), Francisco da Silva Dias (Portugal), Diethart Weber (Germany), Frank Duffy (United Kingdom), Jean-Marie Fauconnier (Belgium), Hans Haagensen (Denmark), Ioannis Tsouderos (Greece), Jaime Duro Pifarré (Spain), Hervé Nourissat (France), Eoin O'Cofaigh (Ireland), Utz Purr (Austria), Katarina Nilsson (Sweden),

Leopoldo Freyrie (Italy), Marie-Hélène Lucas (Luxembourg), Jean-François Susini (France), Juhani Katainen (Finland) and our current President, Selma Harrington (Ireland). The **ACE** also remembers the recently retired Secretary General, Alain Sagne, who built the organisation from its earliest days through to the year 2010. His contribution in establishing contacts and building networks is a worthy legacy for the many years of faithful service he gave to the organisation.

It is not possible to list all of the achievements of the **ACE** over its first 20 years. Nevertheless we are pleased particularly to list the following key achievements that the **ACE** is proud of:

• Leading the work of the Energy Efficiency Action Plan Taskforce on the fundamental importance of buildings to energy savings in Europe, 2010

• Completion of a *Common Language* of sustainable construction in conjunction with the European Concrete Platform (ECP) in which over 350 terms are defined. Agreement with the European Economic and Social Committee to translate the defined terms into all official languages of the EU, 2010

• Exerting a positive influence on the content of the EU Commission Guide to the Temporary or Mobile Sites Directive (92/57/EEC) in relation to the role of designers

• The adoption and publication of the *ACE Declaration and Policy on Architecture and Sustainability* in 2009

• The regular surveys on the impact of the global financial crisis on the architectural profession in Europe, since 2008

• The extensive input to the *Build for All* guide on how to take accessibility criteria into account in Public Procurement procedures, 2008

• The successful completion and publication of the *Sector Study of the Architectural Profession in Europe* in 2008

• The successful Conference *Designing the Future, the Market and Quality of Life* held in Brussels in April 2008

• The inclusion of architecture as a key component of the *Leipzig Charter on Sustainable European Cities* in 2007 and in subsequent Ministerial Declarations

• Instrumental influence on the founding of the European Network for Architects Competent Authorities (ENACA), which arose from the ACE Forum on Administrative Cooperation (FAC), 2007

• Establishment of a Joint Working Party with the schools of architecture represented in the European Association for Architectural Education (EAAE) in 2005

• The adoption of recommendations and guidelines on the transposition into national law of the Public Procurement Directives, 2005

• Incorporation of design contest provisions in the EU Directive on Public Procurement (2004/18/EC) and gaining assurance that Member States can, under the principle of subsidiary, have provisions for fee scales in their jurisdiction

• The signing of Profession-to-Profession Mutual Recognition Agreements (MRA) with Mexico (2001) and the USA (2005) aimed at facilitating the movement of architects between the jurisdictions of the signing parties.

• The publication of the policy book *Architecture and Quality of Life* in 2004

• Fundamental influence on the founding of the European Construction Technology Platform (ECTP) that arose out of deliberations in the European Council for Construction Research, Development and Innovation (ECCREDI), 2003

• Leading the Expert Group of the European Commission on Sustainable Construction Methods and Techniques as part of the preparatory work for the Thematic Strategy on the Urban Environment, 2003

• The adoption of the *Council Resolution on Quality in Urban and Rural Environments* in 2001

• Defeating the "Irish Amendment" to the Architects' Directive, which, if it had been adopted, would have opened cross-border recognition to under-qualified persons, 1999

• The holding of the Conference *Architecture – Mediator of Urban Tensions* in the UNESCO Headquarters in Paris in 1999

• The carrying out of the *Lyon Study* on the impact of the *Architects' Directive* in 1996

• The White Book, *Europe and Architecture Tomorrow*, published in 1995 under the Presidency of Jean Marie Fauconnier; Written by Eoin O Cofaigh; Presented to Jacques Santer, Commission President, on the initiative of Georges Reuter; Instrumental in pushing Commission policy on architecture and urban design, which at the time of publication was quite non-existent. It was also fundamental in the development of national architectural policies in many Member States, which all followed its publication.

The book was written and published in English and French and it was translated into: German, Spanish, Portuguese, Romanian, Greek, Italian, Polish, Czech, Mandarin Chinese and Turkish. It remains the most widely translated and published work on architecture in the 20th century.

• Founding member or participant in a number of influential networks and forums in the European Union, including:
- ECCREDI (European Council for Construction Research Development and Innovation)
- ECF (European Construction Forum)
- ESF (European Services Forum)
- ESP (European Services Platform)
- Club Profile (Informal network of associations representing liberal professions)
- EFAP (European Forum for Architectural Policies)

Influential participation in numerous European Commission Steering and Expert Groups on issues as diverse as better regulation, insurance and life cycle costing

The **ACE** is aware of the challenges facing the world but given the success of its first 20 years it turns to face the future with confidence and with a sense of a new energy. It draws that new energy from the knowledge that the architectural profession is capable and willing to significantly contribute to the well being of society through the immense effort that it makes to ensure that all buildings are well designed and built.

Faculty of Architecture, Architectural Engineering and Urbanism (LOCI) of the Catholic University of Louvain-la-Neuve (UCL)

photo: Adam Mørk

From the building to territorial development: 1 faculty, 3 sites, 3 degree programmes, 1 research effort

The purpose of the Faculty of Architecture, Architectural Engineering and Urbanism (LOCI) of the Catholic University of Louvain-la-Neuve (UCL) is to organise educational programmes and research in architecture, architectural and territorial engineering, town planning and territorial development. It secures a significant presence and development of these educational and research programmes and coordinates them on three sites: architectural programmes are organised in Brussels and Tournai, civil engineering and an additional master's degree programme in town planning in Louvain - La-Neuve. The triple particular feature of the faculty - 3 sites, 3 degree programmes, 1 research effort - is unique in the university landscape in French-speaking Belgium. The faculty resulted from a project where the specific features are in harmony with the common foundations and aims, the responsibility of which exceeds the mere instruction of practitioners to question, as far upstream as possible, the action of architects, civil engineers, and town planners

faced with the challenges of contemporary society. It is against this background that the faculty defines and organises its research policy and offers room for more assertive development for the research traditions and aims that have emerged for more than thirty years in its different components.

Today the faculty comprises, in several research entities, new human and material resources to take up the challenges of research in architecture and town and territorial planning which are becoming more urgent by the day: sustainable development, from architecture to territory, is therefore part of its major concerns. One of these research centres, dedicated to bioclimatic and sustainable development, embarked on its work by developing a new theory of bioclimatic architecture. The aim of this theory is to design and erect buildings so as to attain thermal comfort, in winter and summer alike, and visual comfort. Its application leads to energy savings in heating, cooling and lighting.

• The research is currently being conducted around three main areas of activity:

- Bioclimatic and sustainable architecture;
- Energy efficiency of tertiary sector buildings and their equipment;
- Continuing education and training.

The centre has produced more than 30 published works, numerous articles, teaching and design tools, etc. It has acquired an international reputation attested to by the close links it has established with foreign institutions. Concerned about meeting the needs of society, the centre is also endeavouring to support architects and their interlocutors, students and graduates, to integrate sustainable development in their daily practice.

The research activities are carried out in the International Energy Agency of the European Community, the Federal State, the Walloon, Flemish and Brussels Regions, and in contact with the industrial and private sector. Furthermore, the centre cooperates closely with many national and international research teams.

Pr. André De Herde, Dean

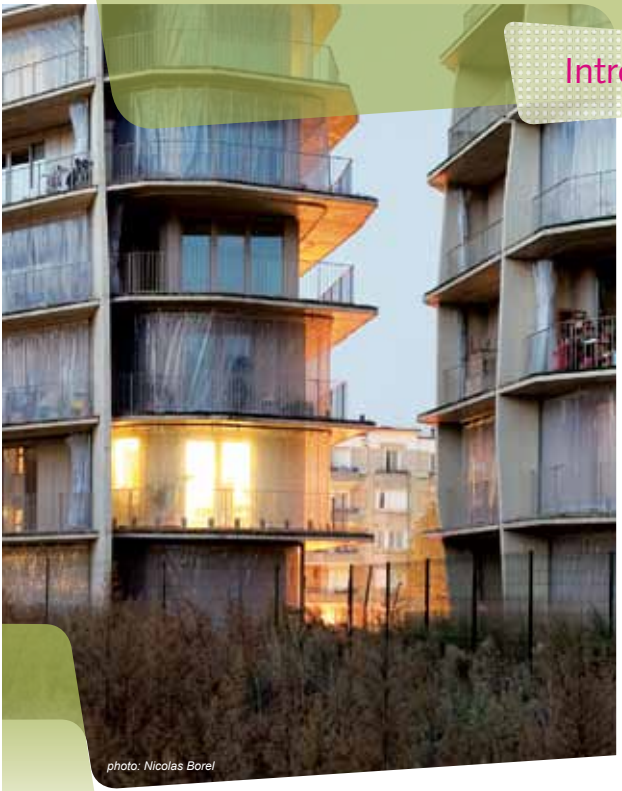


photo: Nicolas Borel

Introduction

Welcome to the exhibition of best practice example of sustainable architecture from all corners of Europe. This exhibition has been mounted by the **Architects' Council of Europe (ACE)** to mark its 20th Anniversary. The exhibition contains 32 projects from 25 countries in Europe and in its thematic approach demonstrates how the architectural profession is meeting the target of producing beautiful sustainable and affordable architecture – an architecture of the future.

One of the key criteria for entry to this exhibition was that each project must be completed and occupied thus demonstrating that what many believe to be high technological and risky approaches to building is already with us in all corners of Europe. The hope of the **ACE** is that those who visit the exhibition and read this catalogue will learn a little about how best to design buildings of all types.

The preparation of the exhibition owes a great debt to the confidence of the staff at the new faculty of architecture, engineering in architecture and urbanism of the Catholic University of Louvain la Neuve whose students in the first year Masters course took the raw content submitted by our Member organisations analysed it and presented it in the display panels. Those students are named in the following pages.

This exhibition was conceived for the premises of the European Parliament and it will form the backdrop for a ceremony to mark the 20th Anniversary of the **ACE** on the 3rd of December 2010 at the Palais des Beaux arts in Brussels. Following that the exhibition will travel across Europe to be displayed by the member organisations of the **ACE** over a two year period. In this way it is hoped that the **ACE** will bring to a very wide audience the demonstration that sustainable architecture is already with us and that it is inspiring, necessary and good for society.

How to broach the issue of *sustainability* in architecture?

Benoît Thielemans – *Architect, MA*
Professor, UCL-LOCI
Managing Director of ceraa asbl (Centre for study, research and action in architecture)

The approach proposed to students in the 1st year of the Master's degree programme was characterised by three dimensions:

A holistic vision that covers, in addition to issues relating to energy and climate change, the integrated management of water, the ecological choice of materials, extensive attention to health, the relation of architecture to nature, and more particularly to biodiversity, or the means for encouraging a sustained attitude on the part of users.

An approach by levels, from the contribution made by the project to the territory to services supply mechanisms, via the construction and comfort of interiors. For the architect tackles his project from the wider context down to the detail rather than in terms of areas of specialisation.

Systems that affect space are developed and accordingly lead to architectural interpretation. Because sustainable architecture is essentially the result of an approach of attentive architectural design.

This approach has led to the following classification of themes by levels:

THE TERRITORY or THE BUILDING IN ITS CONTEXT

This level is concerned with all the arrangements of buildings and plots of land that promote social exchanges and environmentally friendly mobility and biodiversity, and which enrich the local rural or urban landscape, and more generally the way in which sustainable architecture contributes to the sustainability of the environment on a community scale. This level comprises three themes:
Theme 1 > **Exchange and identity**
Theme 2 > **Mobility**
Theme 3 > **Biodiversity**

THE BUILDING or INHABITABLE VOID or BUILT SOLID SECTION

This level shows how, through its organisation of space, the building provides shelter for a rediscovered pleasure of living or working in it, adapted to contemporary or future living conditions. On the other hand, it is concerned with the way in which the project takes account of the finite nature of resources through an ecological choice of materials, and closes the loop. This level comprise the following two themes:
Theme 4 > **Living spaces**
Theme 5 > **Sustainable construction**

THE ROOM or COMFORT

This level shows how the project meets the needs of users by providing comfort adapted to their activities in line with the local climate. It comprises two themes:
Theme 6 > **Thermal comfort**
Theme 7 > **Comfort**

SUPPLIES or TECHNICAL EQUIPMENT

This level is concerned with integrated systems for the rational use of water, waste management and supply of renewable energies. All these aspects are grouped under a single theme.
Theme 8 > **Energy and Services**

photo: Miran Kambič

Architecture contribute

Exchange and identity

Exchange and identity are means of interaction by and between the building and its physical and social context. Consequently, an architectural work that includes positive ecological elements while maximising exchanges and attesting to its integration in the urban landscape constitutes a tool for communication and promotion of sustainable construction.

Identity

A building acquires identity when it completes the urban landscape through its form and adaptability, giving it meaning and presence in the process. The elements geared to making construction sustainable are enshrined in the very nature of the building, giving it meaning and attesting to a certain art of living geared to the conservation of resources.

Exchange

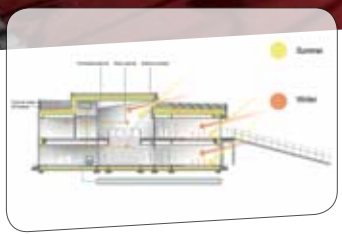
A project is not intended solely for a given activity such as housing, offices, administrative authorities, recreation centres, etc. It is important to bear in mind that a project is designed first and foremost to bring people together around a common purpose. The architect's role is therefore to design a space for promoting social interactions and for maximising opportunities for exchange between the building and its context.

Denmark Sanderum

Dragen Children's House

C.F. MØLLER ARCHITECTS; *Julian Weyer, Mette Nymann Nielsen*


photo: Uffe Johansen



The integrated Kindergarten is a Children's House, which sets new standards for sustainable architecture and pedagogical design. The building is a simple geometric form of two levels linked by staircases and ramps designed to be climbed by the children. This project is certified to the passivhaus standard: it requires only a small amount of energy, it is perfectly insulated and it has integrated solar hot water with electricity generation and mechanical ventilation system with heat recovery. At the main entrance a touch screen informs parents about the current energy performance of the building.

The building has an integrated relationship with the urban and natural surroundings due to the large ramps and apertures that give the idea of the metamorphosis of the construction into the landscape, like it is being liquefied.
The big openings allow views to the outdoors and give the impression that the natural environment could enter the building. Small spaces or niches where the children can play, read, draw or hide away characterise the project. Staircases and ramps are designed to stimulate children's sensory and motor activity. Small "loopholes" are set in the walls, allowing kids to play across the room divisions. In addition, there are purpose-built spaces such as a theatre, an atelier, a motor skills room and pedagogical kitchens indoors and outdoors, to give the children different and special opportunities to experiment and create moments of socialisation and meeting.


photo: Nicolas Borel

France Paris

Herold Social Housing

JAKOB + MACFARLANE

The design of this project started from residual urban spaces and the need for a huge number of apartments. The idea is to have three separate buildings with 100 social housing units in each adapted to the difficulties of the site. The dwellings are characterised by different sizes and on the ground floor there are 10 apartments designed for people with severe disabilities and some shops. The building site was characterized by a series of different factors such as unbuildable land rules, Hausmannian setback rules, preservation of ancient trees, site views, that the project took into account from its start point.

The three buildings are integrated in to the surrounding context as they have been generated by placing the floors into the gaps of the urban space. The circulation routes are developed on large exterior walkways, which become a new public space for each apartment. The balconies can both serve as an overhanging protection or, in wintertime, as winter gardens with the use of an ETFE transparent membrane producing warmth through the solar radiation. Thus each apartment could have its own balcony garden integrated in the building and this gives the opportunity to live more in the outdoor space, while the public space of the complex is conceived by the ground floor public garden.

Ireland Waterford

Nurse Education Building WIT

A&D WEJCHERT & PARTNERS ARCHITECTS; Paddy Fletcher

The Nurses Education Building is a project in the Waterford Institute of Technology campus, where the architects A&D Wejchert & Partners have built four other complexes. This is a three-storey building housing classrooms, lecture theatres, laboratories and informal lounge spaces. A curved central staircase in the big atrium links all the floors being a unifying element of the entire building and allowing it to widen towards the top and to be more illuminated. The façade of the building is curved too and follows the pedestrian paths from the entrance into the heart of the campus.

The Nurse Education Building shows that it is possible to combine sustainable architecture and exchange opportunities in a building intended for multiple functions. The organisation of space is clear and can be read without difficulty once inside. The atrium, at the centre, constitutes the core. It is very spacious and provides ample


photo: Peter Moloney

clarity for the building thanks to the natural light coming from above. Around it all spaces have been arranged over three levels for a total surface area of 3,760 square metres. At the centre of the atrium, a staircase connects the three levels and serves as a light shaft. Finally, in addition to being a sustainable architecture tool, the atrium also enables everyone to appreciate an enjoyable meeting space.

Slovenia Podčetrtek

Hotel Soltelia

ENOTA

The Soltelia wellness hotel was built in a space situated between two hotels of different architectural origins. To stand out from pre-existing structures, the architect wanted to integrate this building into the landscape. The structure of its wood cladding thus merges with the trees in an informal way inspired by the unexpected

surprises of the landscape. Furthermore, its low height and its terraced arrangements allow nature to emerge in the background.


photo: Miran Kambič

The design of the hotel makes it stand out from the nearby buildings, putting it far from the surrounding built environment linking it with its natural surroundings. The design concept wanted to avoid the monolithic mass, which would represent a big barrier for the view of the forest. The idea was to have a volume broken up into small pieces like a sort of different tiers of the landscape. As a result the four storey 150-room building seems to be much lower than its actual dimensions. The particular shape of the hotel offers a two-dimensional perception of the building, as it would be done by a series of parallel planes placed one behind the other. From a different point of view the buildings reveals an entirely different view of itself: a timber façade with a rhythmic sequence of balconies and terraces.

Belgium Brussels

Passive Logements Wauters

Ines Camacho Architecte

The first terraced house in Brussels build to passive standard, the Wauters dwellings consist of two 120 square-metre duplexes with terrace and garden. Situated in Schaerbeek in a dense urban setting, near the Terdelt garden district, it features a play of clear and contemporary volumes. Erected to fill a gap site, the house fits into the existing context by following the alignment of the buildings and by respecting a certain uniformity of colours.


photo: Antoine Rocca

The open façade on the south side affords fine living spaces outside. Moreover, these terraces serve to evacuate the heat in summer.

The indoor design is articulated around a suspended central kitchen with an ample open plan and big spaces. The bedrooms are located in the ends of the building to allow for more tranquillity and silence for the inhabitants. The building is designed with ecological criteria: choice of materials, techniques used, heating and energy consumption. The heating is a heat recovery ventilation system together with a geothermal and a heat pump system. There are photovoltaic panels on the roof producing 50% of energy consumption of the building. This allows the building to become practically independent from an energy point of view.

photo: Wojciech Kry´nski

Architecture enables
Mobility

The notion of mobility, and more precisely of soft or environmentally friendly transport, is inevitably linked with sustainable development. Nevertheless, it comes down first and foremost to convincing the public to use public transport, while the bicycle could also constitute a simple, feasible and economical solution. A reflection on mobility is consequently an integral part of the design of a sustainable architectural project.

The architect therefore proceeds by including an analysis of the concentration and diversification of activities and dwellings so as to reduce urban sprawl. He supports the creation of cycling tracks and quality urban spaces to encourage non-polluting transport. Finally, he provides spaces and facilities for cyclists (parking areas, lifts, etc.).

In town, sustainable architecture begins by a location close to public transport services. Moreover, to encourage commuters to use this mode of transport, parking facilities must be provided at the entrance to cities capable of accommodating a sizeable number of cars during the day.

Accessibility of public transport

Parking facilities for cars and bicycles

In the neighbourhood, sustainable architecture aims to limit the use of the car by providing numerous local services. Care must also be taken to changing pedestrian and cycling paths into green and flowered walks and rides and to providing sufficient lighting.

Proximity of services
Accessible and safe cycling and pedestrian paths

Inside the building, sustainable architecture entails installing passageways and lifts of such size as to accommodate residents with their bicycles

Poland Warsaw

ECO PARK Allegretto

KURYLOWICZ & ASSOCIATES;
Stefan Kurylowicz, Maria Saloni-Sadowska

Allegretto is a part of the residential complex EKO PARK realised on a large site of 19 hectares. The area is remote from the centre of Warsaw and at the time it was designed it was an empty space, with no particular use or characteristics of note. The quarter was designed as a group of five four-storey build-

ings, linked by an internal courtyard. It was necessary that each apartment should have individual character and should provide the possibility of almost free arrangement. Each unit has its own open space (a patio, a garden, a terrace, etc…) and a common garden for all the tenants. The Allegretto complex is placed in an excellent and central point of the new urban environment. It is linked to the city centre and to the International Airport of Warsaw by communication routes. It is also adjacent to open green complexes and to the modern housing estate of the 1930's.

The central principle of this project is proximity. More specifically, the residents of this neighbourhood can access numerous services (shops, museums, etc.) very rapidly, as it has been designed as a commuter town. Located at the edge of the city, this site of some one hundred dwellings is served by several bus and underground stations that offer rapid connections to the city centre. Inside the neighbourhood, a central street serves all the plots. Large, underground facilities are provided, because no car is authorised on the site. Thanks to this system, the residents can enjoy wide green spaces placed at their disposal in peace and quiet.

Sweden Malmö

Urban Villas

Cord Sigel, Pontus Åqvist

Urban Villas is a building located in a 500 dwelling units block in the old dockyard area of Malmö, the third largest city of Sweden. The project is developed in two different buildings, one lower with a courtyard and one higher facing the street. Two symmetrical three-storey buildings constitute the courtyard building with a private garden on the fourth storey. A six-storey building with one villa and garden per storey and a communal rooftop and piazza at the top constitutes the street building. Each dwelling unit has its own entrance, garden and floor plan. An external vertical spiral staircase links the units as a kind of a public footpath. The idea of the project also includes a communal flower garden and several areas for relaxation and socialisation. The green courtyard and the balconies elevate the climatic quality of the building complex.


photo: UrbanaVillor

This project has attached great importance to the environment, and in particular to environmentally friendly transport: the bicycle. Cars are not admitted to the site, so the architects have provided many facilities for cyclists. For instance, the lifts are designed to enable the inhabitants to get as close to their home with their bike as possible. Storage spaces have been created and passageways that serve the apartments have been widened for greater comfort.

Germany Freiburg

The Solar Settlement

ROLF DISCH SOLARARCHITEKTUR

photo: Rolf Disch SolarArchitektur

A complex of 59 multi-storey dwellings and commercial buildings constitutes the project. All these colourful townhouses produce more energy that they consume; the extra energy produced can be sold at a guaranteed premium gained back into the grid. The project is therefore very valuable both from an environmental and from a profits point of view. The roof is equipped with photovoltaic roof panels and a system of heat recovery is provided. Eco-friendly urban devices are planned as well: car sharing, public transport, bike lanes, and footpaths. The commercial building functions as a western barrier between a heavy busy street and a car free housing complex. The Solar Estate was the first residential development in the world to have a positive energy balance in all its houses.

As in the previous two projects, cars are not allowed on the 11,000 square metres of this residential neighbourhood. To promote pedestrian and bicycle traffic, the site provides numerous pedestrian and cycling paths. Furthermore, several shops have been placed at the entrance of the neighbourhood to reduce transport. An underground garage as well as outdoor parking facilities and a car-pooling system have also been provided for motorists.

photo: Harry Cock

Architecture enlivens

Biodiversity

In our increasingly urbanised and more densely populated regions, biodiversity is coming under strong human pressure. Pollution, irrational use of the soil and of natural resources, the reduction of green areas and the pronounced presence of industries lead to the loss, fragmentation and deterioration of ecosystems. And yet, man is very closely linked to nature, for he cannot survive without it.

It is therefore essential to preserve biodiversity in cities. To reach this goal, however, an ecological vision cannot be limited to green spaces alone. It must invest in the urban landscape, at the very heart of the most densely built up areas.

By preserving biodiversity we encourage the production of oxygen, the fertilisation of soils, the attenuation of climate change, the reduction of flood risks, the fixation of atmospheric dust, the reduction of CO_2 and CO_2 rates, the well being and health of the residents, an increase in green spaces, the conservation of the local flora and fauna and of the natural equilibrium, the reconstitution of an ecological grid that increases the circulation of animal and vegetable species, the reduction of urban heat islands, filtering and organic purification of rainwater and finally, a privileged relationship between man and nature.

Include water in the project

As we know, water is indispensable for life. It is therefore vital to focus on preserving it, from a qualitative and a quantitative perspective. However, the state of water tables is a cause of concern today. More specifically, whereas they are fed mainly by rainwater, as surfaces are becoming more impermeable, man is increasingly forced to recover water in sewers, thereby depriving these natural reservoirs from a substantial contribution. Furthermore, as the sewers are not always capable of receiving quantities of water, flooding is more and more frequent.

By ensuring that water can seep naturally into the soil, we can clear the sewer network and keep the groundwater tables from drying up. In the initial design phases of a building, the natural water cycle is an important element that has to be addressed in order to choose the most appropriate surface treatment.

The ideal is obviously to reintroduce rainwater to the soil by maximising infiltration surfaces, but we can also store it so as to reuse it or to get it to evaporate. This type of action can reduce certain costs such as the connection of the installation to the sewer network. Such a relatively simple process can therefore have an extremely positive impact on nature and on costs.

Maximising the presence of water surfaces

As already underscored, the enhanced urbanisation of our region leads to a loss of green spaces and an increase in hard surfaces. Such a reduction can be countered by several architectural means. The best known example is undoubtedly that of the green roof which combines aesthetics, sustainability and protection of biodiversity.

In fact, green roofs boast more than one winning asset. In addition to a positive impact on the environment, in particular by improving the quality of the air and by recomposing the local biotope, it offers remarkable insulation and soundproofing and has a longer life thanks to its exceptional water tightness. Finally, green roofs also help minimise the impact of large, impermeable surfaces by recovering rainwater and slowing down its flow, thereby preventing floods during extreme weather conditions.

Conservation of nature

The theme of biodiversity also implies the conservation of the existing environment. To protect the flora and the fauna, it is important to reduce the impact man has on nature. It is therefore necessary to design buildings constructed in such a way as to cause the least possible damage to the environment. Wooden structures on piles, for instance, reduce the hold of the built structures on the surrounding nature, while affording uninterrupted views and optimal sunlight. It is thus possible to combine the conservation of nature with well designed architecture, without one of these aspects being detrimental to the other.

Integrating nature

Introducing plants in built structures in urban settings offers numerous advantages, especially in regions with clement weather conditions. This process helps create a microclimate that improves the air quality and provides ecological niches for insects. Furthermore, particles of pollution suspended in the air are absorbed by the flora, which, in return, produce oxygen. Decking terraces and balconies with many pots of flowers regulates the air temperature and prevents overheating.

Integrating nature in the built area improves the quality of life of inhabitants in many cases. Many interior courtyards and gardens thus feature shrubs and plants in the common areas where inhabitants can come and relax, while concurrently promoting biodiversity. Furthermore, vegetation on the balcony of some structures provides shade for the dwellings and muffles surrounding noise.

Cyprus Nicosia

House in Kaimakli

Yiorgos Hadjichristou, Petros Konstantinou, Veronika Antoniou

The refurbishment of a traditional house in Kaimakli, allowed the architect Yiorgos Hadjichristou to design his own private house. The house is built with a bioclimatic approach not forgetting the traditional conditions prevailing in this region. It is developed on one level but with the possibility to have some mezzanines due to the high ceiling of the traditional house. An outdoor staircase, allows occupants to reach the roof: this is a real part of the house usable as a terrace or as an outdoor garden and directly visually linked with the two internal courtyards around which the house is developed. This link is also visible thanks to the use of vegetation, which permeates the whole house. The main aim of the project is the permanent changing of the spaces during time. There are movable partitions and furniture that arrange the spaces in different combinations depending on the number of people, the weather conditions, the mood of the owner, the functional needs.


photo: Joao Teigas

The aim to preserve the traditional structure of the house generates the idea of new spaces built around two courtyards. During the warm months (biggest period of the year in Cyprus) all the movable partitions can be opened and the house becomes a unified courtyard, including the central part of the house. This concept allows a more direct relationship with nature and a completely new way to occupy the outdoor spaces. The house can be opened to allow the weather conditions and light to enter and affect the indoor environment and become a part of the urban and natural context outside. Important use of vegetation characterises the house, by using it as movable shading panels, dividing surfaces or natural balustrade. This can create the illusion that the spaces are amorphous, treated as internal or external ones with the characteristics of a multilayered skin made of timber panels, glazed or polycarbonate panels, curtains and vegetation to filter the weather conditions.

The Netherlands Terschelling

Town Hall Terschelling

DE ZWARTE HOND, Jurjen van der Meer, Tjeerd Jellema

This project was born as a glazed L-shaped pavilion, discreetly inserted in the 1954 Town Hall through a below grade placement in an excavated dune and a green roof. This addition creates a courtyard area between old and new buildings. The building consists of a single storey corridor, which connects the old building with the new one. The roof is partially covered with grass and partially with solar panels. The dry construction used, the desmountable system and the minimal paving surfaces on the area (due also to the sedum roof) are the principle evidence of how the project takes nature into account. The building is characterised by an open plan that allows a more versatile space. The design of the workspace was conceived after consulting the users. This building gave solutions to many Frisian Island problems, such as the use of prefab components that can easily be transported to the island. It is composed of a structure of pillars and slab, which are combined with glass between.


photo: Harry Cock

The design process was affected by the geographical location (Wadden island) and the sensitivity and character of the area (dune and the old town), this allows light to enter and to have a high perception of nature inside the building. The minimal steel construction makes the building transparent and the dune land-

scape visible behind the building from the road. The glass used in the open office is printed in an abstract representation of the dune landscape allowing a natural effect even inside the building. The roof garden makes the visual perception of the building very light and natural, allowing the collection of rainwater and a major area of permeable surfaces. All the building overhangings are conceived in a bioclimatic way, avoiding excessive insulation but allowing light to enter through a totally glazed surface.

Turkey Urla

Vineyard House

Serhat Akbay

This private residence is located in Urla, a rural and traditional village in Turkey. The piloti structure bears an elevated platform on which the house is developed. The construction is made of wood and is built by the traditional crafts techniques using local wood. The main side of the house has fixed double glazing, with a gap behind of 35 cm to guarantee natural ventilation. A small stove used both for cooking and heating the house. The effectiveness of the solution adopted is due to the “know how“ of the owner and of the architect that are natives from this region of Turkey and could get benefit of all the environmental parameters. The building is east-west oriented and is set in the centre of a field unavailable for agriculture. The orientation of the house allows the sun to penetrate in winter, but keeps it out until sunset during the summer.

The long and rectangular shape of the building and its apparent simplicity (just one storey) fits perfectly in the rural context, without being too intrusive. The material used is local and as natural as possible, so it respects the traditions of the Urla area.

photo: Serhat Akbay

This single-family home in Turkey consists of wooden modules pre-assembled in the workshop and then brought to the site. This has prevented the use of large machinery that would have damaged the space. Furthermore, this type of construction prevents serious damages during de-costruction. More specifically, as it is “posed” on the site, this structure is very easy to dismantle, without requiring major resources. It therefore helps to preserve nature, because it is integrated in – without ever imposing on – nature.

photo: Miguel de Guzmán

Architecture shapes

Living spaces

Sustainability means being open to all

When an architect designs a project, he must make sure to include pleasant interior volumes adapted to current and future living conditions. Particular attention must be paid to the accessibility of the premises. For instance, access ramps enable people with disabilities and with reduced mobility to access – and to easily move within – a building.

Sustainability means adaptability

Next to accessibility, adaptability is an indispensable asset that a building needs in order to continue to be useful in time. The architect must therefore design living and working spaces capable of adapting to the activities and the needs of each and everyone.

Sustainability means controlling light

Controlling natural light offers a dwelling a free and unlimited lighting source. Moreover, reducing artificial lighting and relying more on natural light has beneficial repercussions on the well being of the occupants.

Sustainability means sharing

Finally, as already mentioned in the first theme, it is important to design spaces for meeting and interaction so as to create bonds between individuals.

Belgium Gent

Nature and Environment Educational Visitor Center

EVR-ARCHITECTEN;
Luc Eeckhout, Jan Van Den Broeke, Luc Reuse

The project is a nature and environment education visitor centre on the edge of the city of Gent. The visitor centre has different areas: an exhibition hall, a media room, a laboratory classroom, an outdoor classroom, office spaces and a cafeteria. The idea of the project was to keep the visitor centre as part of the nature reserve, but the architects decided to put the building not in the park itself but in the extreme border of it, to make it less intrusive and to allow an easier access for visitors, employees and deliveries, because of the proximity to the parking lot. During the first stage of the design, a list of accommodation needs was asked of the client to allow the building to be more functional and to better answer to the environmental needs. The ground floor is a public and open space, while the second floor is a specific space for education and training. The building is conceived as a single block to limit the outer surface, to have less heat dispersions and energy loss. The main material used is wood post and beam structure to give the highest prefabrication quality and to use a renewable material. The structure is highly insulated and the building has preheated and precooled air ventilation. Blinds, thermal massive materials and vaporisation of water, buffered in the green roof, protect the façade. The internal comfort is therefore the main feature of the building demonstrating the efficiency of using green technologies in architecture.

Germany Hamburg

Unilever Headquarters

BEHNISCH ARCHITEKTEN;
Stefan Behnisch, David Cook, Martin Haas

The new Unilever Headquarters is situated on the banks of the Elbe in Hamburg. The building is located at the intersection of the road that leads to the city centre, the embarkation wharf for cruise vessels and the start of the promenade on the dike. Reminiscent of a boat, its shape marks the harbour context and opens up to the city and its inhabitants.
The identity of the place and of the company is consequently reflected in the materials and shape of the building. The architectural brief of the building boasts the following functional qualities: a central atrium, large terraces, and a long corridor with easy access to different meeting points in the different levels thanks to a system of stairways, ramps and lifts. Moreover, it features many principles of sustainable architecture: natural light, sun protection, active and passive energy generation and natural


photo: Adam Mørk

ventilation systems. On the outside, a tubular structure in steel supports the wind protection system in transparent ETFE film.

Thermally activated reinforced concrete ceilings cool the building. A layer of ETFE placed into the glazing surface of the facade protects from strong daylight and from strong wind and weather influences. A new SMD-LED device has been developed for the lighting systems so as to assure a better performance and comfort of the indoor spaces.

Spain Valladolid

Centre of Environmental Resources

O.D.I. MÁS P. SLP; Julio Grijalba,Paloma Gil, Alberto Grijalba, Eduardo Carazo, Victor Ruiz

The exhibition building consists of a partially buried floor, hosting the main part of the exhibition and a first floor to hold the permanent exhibition. The design includes parking semi-concealed in vegetation and pergolas made with photovoltaic panels. As the building is partially underground the inertia of the soil works as a thermal insulation for the building. The building is insulated by the use of masonry insulated with a recycled-paper cellulose fibre insulation. The roof is a flat green roof acting as an acoustic insulation and a natural cooler. The building has a compact shape; the only outstanding volume is a glazed box made with low emissivity glass.

The thermal control of the building is achieved by the use of underfloor heating and by a cooling system that takes energy from the solar collectors on the roof, by forced air ducts. The lighting system of the building uses halogen free wiring and low energy lamps. The lighting devices are regulated automatically according to the daylight factor. Both the thermal and lighting devices allow the building to have a better internal comfort, quality of work and use of the spaces.
The project also serves as a manifesto building to show how it is possible to have a green architecture combined with an optimal indoor comfort quality. Another feature of the design process was the flexibility and adaptability of the spaces used for exhibitions, due to the industrialised and prefabricated metal elements.


photo: Miguel de Guzmán


photo: Giuseppe Micciché

Switzerland Zurich

Badenerstrasse 380

POOL ARCHITEKTEN

The building is a housing development in the southeast corner of the Albisriederplatz and is constituted by some tower blocks with a sculpture concept behind. This building not only takes account of the physical and thermal comfort of the inhabitants, but its idea is that the entire lifestyle of the people counts, inside and outside their well-insulated homes. All the occupants agreed to a contract to modify their lifestyle in order to support the 2000-watt goals.

All the buildings are executed in wood and the ceiling is realised with wooden hollow box elements. When creating the project the clients asked for a very specific mix of tenants so different types of apartments were provided with varying numbers of bedrooms. The building shape recalls the typical Swiss narrow and long homes. This area is really dense and urbanised so the project combines a high quality of life and organisation in the building with the proportion of the spaces and the high number of flats needed. The architectural and the environmental objectives were developed in parallel and neither is subordinate to the other. The building is not only a green building but it also acts as a lighthouse for a better lifestyle for all of its tenants.


photo: Hufton+Crow

Architecture delivers

Sustainable construction

Throughout its life span, a sustainable building has a low energy and water consumption. Furthermore, the materials used to build it are environment friendly and often recycled. Finally, once it has reached the end of its useful life, the building makes room for a healthy plot of land.
Wood or concrete? What are the respective advantages?

Wood

Wood is a 100% natural and ecological material. It is recyclable and biodegradable and its life exceeds that of many other materials on the market. Its use helps limit greenhouse gas emissions because it absorbs CO_2. Moreover, wood production requires little energy.

Contrary to a widespread idea, the use of wood can prove beneficial for the forest, because felling promotes its regular renewal. Nevertheless, it must be managed sustainably, i.e. make moderate use of the wood and replant. Otherwise, human action will prove particularly harmful to nature.

When used under the right conditions, wood is a sustainable and resistant material. In fact, its strength and durability has been proven since oak framed buildings from the 16th Century are still in use today in many EU countries. Flexible and light, wood is easy to transport and can be used to build on any plot of land. Furthermore, wood is a material which entails little water, air or soil pollution when processed. It also has the advantage of being a local material, and a large variety of local species can be cultivated depending on the regions.

Modular, a house made of wood can be adapted spatially as and when required. Living in a wooden house means enjoying the benefits of very good thermal and acoustic insulation. Properly designed and built, timber framed buildings regulate the indoor environment, thereby ensuring thermal comfort throughout the year, irrespective of the season.

Concrete

Using concrete has numerous advantages in terms of sustainable construction. It is a very flexible material that affords extensive architectural freedom. Moreover, in addition to its energy efficiency, concrete can also be fully recycled and re-used.

Furthermore, insulating concrete can be used for monolithic construction which requires no additional insulating materials. High or ultra-high performance concrete can be used for slimmer structures.

In winter, solar energy is stored by concrete and released after a certain interval because of its high thermal inertia. This same principle comes in very useful in cool spring and autumn evenings. Thus, a well-managed house can reduce its heating costs.
In summer, the thermal inertia of concrete prevents overheating by distributing in time the coolth accumulated during the night. Thermal comfort is thereby ensured in winter and summer alike.

For the construction of a conventional single-family house, the production, maintenance, demolition and reuse of concrete represents less than 5% of the consumption of all the energy needed to operate that building. This means that 95% of this consumption is used for lighting, heating and air conditioning.

Finally, its mass makes concrete a naturally good sound insulating material and, depending on its structure or the texture of its surface, a good acoustic absorbent.

Why combine the two?

These two materials have many qualities, including that both are durable. Combining the two therefore means complementing the qualities of one with those of the other, to obtain a good-looking, doubly sustainable building. Parts in wood or in concrete will be chosen depending on how the building is to be used. The most common arrangement is to put the concrete at the bottom to support the building, and the wood on top, so as to capitalise on its lightness. Some rooms or orientation will require a high thermal inertia, while others will require very little. A good knowledge of these materials and their advantages is therefore indispensable for optimal architectural design on the thermal, structural and sustainable front.

Re-use of materials

Recycling materials in construction helps reduce the ecological and economic impact. For example, using the materials of a site and its surroundings means limiting the transport of materials, as well as reducing wastage and thus the cost of construction.

Luxembourg Luxembourg

A+P Kieffer Omnitec Company Building

CBA CHRISTIAN BAUER & ASSOCIÉS ARCHITECTES

When a manufacturer of air conditioning and heating decides to build its headquarters, the architecture of the building must be both the calling card of the company and must show the modern concepts that air conditioning systems are capable of. This project demonstrates how contemporary architecture and building technology are mutually reinforcing. The building has a narrow plan totally oriented to the south. The entrances to the different offices are located in the gables, a central corridor serving each level in the direction of the length. These are no ceiling finishes so that the thermal inertia may contribute to a substantial reduction of heating needs in winter and cooling needs in summer. High windows let natural light get deep into the building and external blinds protect the offices from an excessive summer heat.

Adiabatic cooling and air conditioning, plus night cooling of concrete components, provide reasonable comfort in summer. The thermal insulation is 20cm thick mineral wool panels and all windows are triple glazed with thermal break frames. This type of façade makes the building almost insensitive to temperature differences between indoor and outdoor. The slabs are used as a warming or cooling masses by means of pipes embedded in them carrying warm water or cold water depending on the period of the year. Controlled ventilation is also embedded in concrete guaranteeing the right air rate and dehumidifying the atmosphere. The architecture of the headquarters building represents advanced technology. In this project, the architect combined wood and concrete to capitalise on the advantages of these two materials and to obtain a building that is recyclable and ecological, light and flexible, as well as energy saving.

United Kingdom Watford

Lighthouse

SHEPPARD ROBSON;
Alan Shingler, Dan Burr, Ben Reed, Cara Oliver

This residential house is intended to be a prototype for a zero-carbon sustainable home. The design concept allows adaptable, flexible and modern spaces characterised by advanced technologies and environmental systems. The building is a 93 square metre house of two and a half storey, with two bedrooms. The structure has a barnlike form with a curved roof with photo-voltaic panels on it. This particular-shaped roof covers the living room, which has a double height. The living area has a timber portal structure so floors can be slotted between frames or left open depending on the requirements. At the ground level a timber frame carries the vertical loads of the open plan frame above and provide stability to the load bearing shear walls.

Utilising a TEK wall system, the construction method provides the highest level of thermal efficiency and air tightness.
The living space is located in the first floor to maximize daylight.
A phase change material in the ceiling absorbs heat by changing from solid to liquid. This process is reversed when the room is cooled with the night air of the passive ventilation system.
A water collection system is used to store rainwater for the garden and washing machine and is also used for shower and bath water and for the WC. As a result, an average saving of 50% compared to a conventional house is achieved.


photo: Beat Bühler

Austria Schlins

Rammed Earth House

Roger Boltshauser, Rauch Martin

In a south-facing slope, the architect Martin Rauch has completed his house and studio together with a team of Zürich architects. The material used for the floors, the vaulted ceilings, the wall, the plaster and the steps, the washbasins, the shower cabins and the tiles of the roof is mainly earth, 85% of which was taken from the excavation of the building site. The material was then formed, primed, cast, coated, baked, pressed or rammed to become a real construction material.

The house is a demonstration of the fact that a high quality result can be achieved by building with natural materials. In the construction phase all the applied material and operating data was documented and analysed and compared with realistic energy and climate data. A large part of the technology used was completely new and studied with the use of instruments to define the adhesion and the combustion proprieties of the soil. The earth for the walls was compressed in the formwork with pneumatic rams and rollers and insulated with a bituminous sheeting and foam glass insulation. A high level of knowledge in this new field was achieved with this project.

Estonia Nina Village

Strawbale Houses

Rene Valner

“Six years ago most architects and builders considered the idea of straw building material more than strange, but for us it was a new and contemporary way of creating a simple living space” Rene Valner. With this technique the architect built a residential complex of three similar detached houses made of straw bales and clay plaster. An asphalt coat covers these three houses outside so the straw is not visible. The use of straw bales is considered to have several advantages: the low energy content of the materials and


photo: Mikk Suursild

low carbon dioxide emissions, the healthy indoor climate and the low heating costs due to the heat containment and capacity.

Building with the straw bale technique is low cost and characterised by the reusability and independence of the materials: wood, straw, cellulose, wood chips, clay, lime and sand. The only big issue is the intensive labour of plastering and the long finishing time. Another feature of this type of building is the fire resistance: the finished plaster coat does not let oxygen through and hence does not catch fire. This house has a small ecological footprint and it requires minimal care, is well insulated, it makes the maximum use of daylight, it consumes little ground water and it uses renewable energy to function. With the straw bale technique it is possible to save money by reducing the need for wood for posts and beams as highly compressed straw bales covered with plaster carry loads, and the plaster also protects from moisture and fire. These efficient, comfortable and futuristic houses are also popular guesthouses at the same time. The electricity is provided by a windmill next to the site.

photo: Levente Borsay, Péter Medgyasszay

Hungary Magyarkút

Family House

Péter Medgyasszay

The construction phase of the house was an occasion to meet and to call many volunteers to come and help and get the “know-how” during construction. The house was build for 6 people, but with the requirement not to be too large because some inhabitants would move on in time. Two different feasibility studies were made to examine the costs in the planning process both for the construction phase and for the maintenance as well. The cost of the passive house seemed to be less hence ecological principles were considered. Different techniques of energy saving were used: a fireplace and boiler both of them planned with closed combustion chambers were used. To allow the use of solar energy the necessary boilers and tubes were built.

The heating surface is placed in the ceiling and it is installed to turn on under 19°C inside. It turns on rarely; basically the fireplace is able to heat up the whole building. The gas boiler is necessary only for domestic hot water. Sustainable construction means using non-toxic materials. In this project, natural materials such as straw and wood were used to obtain a wooden structure with straw insulation that provides natural airtightness. This building was used to examine the effect of climate change for summer heat comfort with an energy simulation program and several monitoring measurements were made to see the air tightness of building, the thermal bridges and indoor CO_2 concentration.

photo: Nicolas Borel

Architecture shelters

Thermal comfort

Solar panels

Solar energy is often used for the thermal comfort of a sustainable building. When designing a project, therefore, it is necessary to orient the solar panels properly by installing them on the sunniest parts of the roof or the facade. A hydraulic system is then used to store the energy and to supply it inside the house at the appropriate times, such as at night, for instance. This system can also be placed in the ground.

Adaptation and economy

In a sustainable building, ingenious systems are used to adapt the energy demand and to economise for as long as possible. We can, for instance, adjust the opening and closing of printed glass louvres according to the climate, provide a double skin, control the light, etc.

Thermal strategy

Several thermal strategies can be deployed according to the season.

In winter, it is possible to heat by letting the sun's rays in. We can also use thick walls that help keep the heat inside the building and install selective glazing. Finally, double insulation may also prove very appropriate in very cold regions.

In summer, the building can be cooled thanks to a hybrid passive ventilation system that minimises mechanical and electrical equipment. It is also possible to provide protection from the sun by means of outdoor blinds or by the automatic regulation of interior venetian blinds.

The benefits of an atrium

In summer, blinds protect the atrium and thus prevent overheating. A draught of fresh air cools it thanks to a series of small windows installed at roof level which can open automatically when it is too hot, thereby securing an ideal temperature at all times. In winter, the air is renewed by mechanical ventilation. The summer protection against the sun is withdrawn and the sun's rays can penetrate generously into the atrium and heat it.

France Poitiers

Kyoto High School

SCAU architectes

This building was the first school in Europe to reach the zero fossil energy and 100% clean energy use. The school is located in a former farm in the heart of suburban St. Eloi and it combines two schools around a restaurant: the hotel school of Poitiers and the agricultural college. The schools combine education, government, training workshops. The access to the building is via a large square in a big atrium designed with bioclimatic comfort in all seasons. A walk of trades is punctuated by thematic gardens. The name of Kyoto given to the school refers to the environmental approach and energy saving which combine the school and the Kyoto protocol.

The ambitious objectives fixed were achieved and the high school shows performance above average in terms of reduced consumption of energy, renewable energy and natural resource use. The use of local materials and architectural elements and the timber cladding recalling the tobacco dryers keeps the memory of the place. The energy needs of the building are reduced with a high performance envelope and a bioclimatic approach: natural ventilation in the atrium, use of natural lighting, energy efficient systems with high performance or heat recovery.
A large use of renewable energy is also incorporated to assure the use of clean energy and zero fossil use for this building.

Denmark Lystrup

Home for Life

AART architects; Anders Tyrrestrup

Home for life is the world's first Active House and it is the result of many studies and research. This building is a self-sufficient and CO_2 neutral project because of its solar collectors, solar cells and solar heat pump. The house produces more energy than it consumes and it is calculated that in 40 years it will have returned more to nature than it will have consumed. The material used is timber framing above a concrete raft with external cladding and floor tiles made from recycled glass. The windows are characterized by new energy saving glass technology. The glazed surface is 40% of the total floor area. Having the maximum of the daylight, the demand for electricity for lighting is reduced.

Light and ventilation are key factors and to ensure healthy indoor climate the glazed areas of the building have opening mechanisms and sensors that register heat, humidity and CO_2. There is also a light sensor to turn off the lights when you leave the room. This project is a demonstration that architecture gives answers to human needs and allows high level of internal comfort.

Romania Timisoara

City Business Centre

ANDREESCU & GAIVORONSCHI SRL;
Vlad Gaivoronschi, Dan Munteanu

The site was an area in bad condition near the edge of the old baroque citadel in the central district. The office building is the first stage of a five buildings complex, main gallery, and atrium that will replace the existing textile industry. The second building will be similar to the first one and the other three will complete the modular "small city". The urban landscape

concept connects the old baroque district with the west town. A basement with parking constitutes the first building and technical spaces, a ground floor and a mezzanine for retail and services, with five floors and a penthouse for class A offices.

There is a big flexibility for the office spaces around the main central nucleus, because the concrete structure with steel armature and steel beams gives the possibility to have 11 m openings. The building is energy saving and in one year it offered 40% reduction of electricity consumption. The intelligent building management system can manage and control the energy loss by the use of sensors in the facades allows to it control the shutting and opening of the mobile glass lamellas according to weather conditions.

United Kingdom Leamington Spa

Wolseley Sustainable Building Center

ECD Architects

The Wolseley Company decided to build a new showroom with a small ecological footprint showing may of the products it sells. This building was built with a long east-west axis and has a façade covered with sun shading and overhangs to cut solar gain. The project has different galleries, an audio-visual theatre for forty people, office facilities, a coffee room a seminar room and washroom facilities. Almost all the products used in the building design are available in the Wolseley shops. The sunshades are a particular treatment that allow them to have photovoltaic panels on their surface and the façade has openable windows to allow for cross ventilation. The use of heat pumps dramatically reduces the electricity use for heating and cooling and the low flow toilets use one third of the water used by traditional toilets.

Two different photovoltaic systems serve the building. Two complementary construction approaches were used in the building: an external mass insulation and a lightweight timber structure. Thermal mass is provided by the floors in concrete and from the support structure of columns and walls. The shape of the building is compact to minimise the external surface area and heat loss. Externally insulated precast sandwich panels, timber curtain walling and low emissivity double-glazing form the envelope of the building. The building uses a ground source heat pump and a wood pellet boiler to meet the residual demand. Hot water comes from the solar thermal collectors and stores, while electricity is generated through photovoltaic panels. There is also a micro-wind turbine in the project.

Malta Valletta

Malta Stock Exchange

ARCHITECTURE PROJECT; Alberto Miceli Farrugia

The new Malta Stock Exchange, now housed inside an old, 19th century garrison chapel (built in 1855), is one of the many examples of neoclassical British buildings in the city of Valletta. The building originally consisted of a big empty space simply

covered by a wood frame. The intervention therefore pertained essentially to the insertion of two parallel office wings placed over the length of the building. These arms are built with steel posts and lintels, closed by glass partitions. The office platforms communicate through the central space situated below the reconstructed roof. A distinction is drawn between the original brick walls and the inserted structure. A large window, the only intervention in the original brick structure, replaces one of the compartments of the chapel in the back of the building. The opening affords occupants a view over the Barrakka gardens whilst giving pedestrian in the garden a glimpse of the activity inside the building.

photo: David Pisani

In converting the former garrison church into the Malta Stock Exchange, the architectural project sought to give the building a new future while integrating new ecological architecture concepts. To provide a pleasant working environment for all the employees of the Malta Stock Exchange, the architect put emphasis on the coolness of the building, through a strategy that minimises the need for mechanical and electrical equipment. He consequently opted for passive and hybrid ventilation. For the central space, this ventilation goes through the roofs and windows. The building is also cooled by a night convection and evaporation system. During the day, adjustable shutters provide protection against the sun. The offices and conference rooms on the ground floor are cooled by cooling cassettes. Finally, in winter, the building is heated with heating batteries.

photo: Lluis Casals

Architecture protects Comfort

Acoustic comfort

The most ecological solution for reducing the impact of noise on a dwelling, a workplace or other frequented location consists of creating a screen of greenery. A tree, a copse, or a hedge will provide considerable protection against acoustic disturbances while providing oxygen and well being.

When the building is designed, the architect can cut down the noise by giving his project a precise shape. Thus, a structure with zigzagging walls can absorb sound waves and create a noise trap.

Furthermore, a second protective skin outside the first reduces the transmission of noise from the street. Today, triple glazing, and acoustic and thermal insulation are recommended.

Visual comfort

Every moment of the day brings its quality of light to living spaces. A sound management of openings can provide great visual comfort whilst remaining respectful of ecology, whether at home or at the workplace.

To the East, the morning rays accompany you and brighten up your day. To the West, the evening light penetrates deep in the room because the suns rays are lower. To the South, the sun is high in the sky and provides intense and warm light from above. Finally, to the North, the lighting is constant and soothing without any dazzling.

To maximise the light inside the dwelling, the architect may choose to increase the glazed surfaces and thus to provide additional visual comfort. Moreover, it is altogether possible nowadays to enjoy visual comfort without sacrificing thermal comfort. There are numerous devices that enable you to enjoy light in most rooms of a building. The building can be compartmentalised in a well thought out manner, bringing light from interior reflection devices, or using light shafts or atriums.

We may nonetheless want to be protected from the light. This can be done by using glazing with transparent plastic sheets as this material prevents excessive luminosity. We can also use removable outdoor protection against the sun to diffuse light inside the building depending on the weather conditions. We can thus enjoy protection from the sun's rays in summer, while reducing artificial lighting in winter. There are also other solutions such as interior venetian blinds which can diffuse light evenly without dazzling. Furthermore, these blinds can now be fitted with a light sensor on the roof. The laths open and close according to the orientation and intensity of the light. Finally, it is also possible to use a system of materials added on the sunniest side for protection. This system affords a view of the outdoor environment while preventing any direct incidence of the suns rays.

Respiratory comfort

It is possible to ensure air renewal through architecture! Several techniques can be used: natural cross ventilation, division of frames to allow controlled natural ventilation, ground-coupled heat exchangers, etc. We can also protect air quality by designing green spaces that will not pollute the air.

Slovakia Bratislava

LU88. Office Building

Peter Benuska, Peter Topinka

Set in a suburban context, this building takes advantage of many sustainable strategies in order to provide bright, contemporary office space to its occupants. In doing so, it respects many of the key characteristics that constitute quality, sustainable architecture, thus providing a high level of comfort to its users. The overall structure of the building is of concrete, a material with high thermal mass that helps to modulate the temperature within the building. The heating and cooling system is based on a grand-source heat pump. The half-buried ground floor is an appropriate response to the site that also increases the thermal inertia of the building, becoming a source of coolth on hot summer days.

It also has carefully oriented glass surfaces that means that solar gain is managed to avoid overheating whilst at the same time bringing full daylight into the heart of the building. This strategy is further reinforced by the use of an internal courtyard that gives a greater opportunity for bringing in daylight and gives to the occupants a greater contact with the outside environment. In this way, the comfort levels of the occupants is enhanced well beyond that of less well considered office buildings.

Greece Lamia

ETVA VI.PE. Industrial Parks

Dima Vassiliki, Mpasiakou Vassiliki, Sofia Tsiraki-Biri

The concept at the base of this project is a light steel construction with a “zig-zag” shape on the southwest façade. The optimal orientation of the building allows a proper exposure to the sun and the glazed surface connects visually the indoor with the outdoor environment. The glazed surface is shaded by blinds to prevent solar overheating and to avoid energy use for extra cooling. The roofs and other top openings let the warm air out

while cooler fresh air enters from the openings at the base: this provides a natural ventilation and a good indoor climate.

The “zig-zag” double façade has also another duty: it helps in reducing the street noise reflecting the sound away. The particular shape and brise soleil used are useful both for a sun shading and for a noise reduction effect, but they allow to see outside and have a constant visual link with nature. This building effect also has the feature of being not only a green industrial area but it also produces clean energy and assumes a decisive role on environmental issues and Business Park design. This particular shaped building thus becomes a prototype to have business headquarter without forgetting visual and acoustic comfort. The zigzagging wall in this building absorbs sounds.

Spain Barcelona

Blood and Tissue Bank

SAAS, SABATÉ ASSOCIATS;
Joan Sabaté, Àlex Cazurra, Horacio Espeche

This building combines several advantages for health and interior comfort. More specifically, an anti-radiation device was installed to prevent a rather common occupational disease, lipoatrophy. To that end, an electromagnetic radiation dissipation system was installed on the foundation slab. Materials with a low rate of volatile organic compounds were also used. Furthermore, the Barcelona blood and tissue bank is equipped with small openings that represent less than 50% of the total surface of the façade. This allows a maximum of natural light to enter into the premises and make them far more pleasant! Venetian blinds with reflecting horizontal lamellae diffuse light inside the building thereby reducing the use of artificial lighting by 30%.

The windows have been reduced in size and are protected against solar radiation. The openings occupy less than 50% of the façade and have selective glazing, through which 50% of sunlight, but only 30% of heat can penetrate. These Persian blinds are adjusted automatically according to the cloud cover and angle of incidence of the sun's rays, thereby avoiding any unwanted solar energy.

Croatia Koprivnica

Gymnasium 46°09’ N / 16° 50’ E

STUDIO UP; Lea Pelivan, Toma Plejic

photo: Robert Les

The Gymnasium and Sports Hall is a complex building in contrast with a vast plain landscape. The gymnasium is placed in the centre of the plot without a background and a hierarchy of surrounding buildings. The use of the building is thesefore clear and visible and the heavy structure in reinforced concrete on the ground floor allows a lighter structure on the upper floors with a H shaped steel elements dry assembled. The roof is made with specially designed elements even if all the materials used were available on the standard building market. No unnecessary finishing was done to save energy, time and money in the construction phase.

There is no air conditioning in the gym but in the sports hall and in the classrooms of the top floor a system of shutters and ducts ensure a constant flow of cool air in summer. The outer coat is a translucent skin, illuminated at night, which became a symbol of the city of Koprivnica. The use of this particular material allows a huge penetration of daylight during the day, since all the building become transparent but with the proper protection to solar rays and overheating. The visual comfort is assured considering also the shape of the building, of the main sports hall and also of the internal paths, well lit, clear and easily recognisable. The acoustic performance of the building was studied considering the shape of the main sports hall and also using ducts and plants on the ceiling to break the noise and reduce the disturbing effect of echoes and bad propagation of sound.

photo: Ansis Starks

Architecture integrates

Energy and services

Water

Various mechanisms can be introduced in a sustainable structure to guarantee rational water use: dry or highly water saving toilets, rainwater recovery, water recycling, etc.

Energy

Various processes can also be designed to minimise the energy consumption of the building, such as designing passive solar buildings and using efficient solar installations integrated into the architecture.

Waste

Waste management can be facilitated by instructional and ergonomic means such as repair, reuse, recycling, composting, etc.

Ireland Dublin

York Street Social Housing

Seán Harrington

This new residential development re-establishes the former street line in two different streets, marking an important city corner. A block of dwellings is used with apartments accessed from single staircase and lift cores. There are also duplex apartments accessible from an open deck overlooking the communal courtyard. The dwellings of the southern boundary of the site all have own door access. The façade reflects perfectly the structural system, the apartment typology and the different characterisation of the circulation towards rhythmical elements. In the corner of the two main façades an elegant tower is set as a joint. Environmental principles are behind this building: a controlled passive solar gain using glazed winter gardens and solar thermal roof panels. The building has an energy efficient communal heating system and a high thermal insulation and a green roof.

An important feature is the collection of rainwater from the roofs to be stored and to be used for irrigation and car washing. Recycling and composting is encouraged: residents can separate their kitchen waste into paper, plastics and food in a special 3-chamber cupboard under the kitchen sink. There are lot of communal facilities in this project, such as children's play area, recycling facilities and communal waste composter, the product of which can be used in the courtyard, the roof gardens or on individual balcony planters or pots. Each block is supplied with heating and hot water is provided by solar panels connected to boilers located in the plant room on the roof. Thermostatic panels in each unit and thermostatic valves on every radiator allow for individual temperature control. For this project, the architect has attended to the recovery of materials that were present in the previous building. He also used materials that require little production energy. Solar panels were placed as was a low-energy common heating system. Finally, a green roof offers very good insulation for the entire structure; moreover.

Latvia Gipka Village

Passivhaus Lielkalni

Ervins Krauklis

This house was designed to passivhaus standards and raised great interest in public opinion. The site was the Latvian seaside meadow vegetation and existing trees were preserved and integration of new landscaping into existing environment was carefully planned. The house tries to respect the typical fishermen's village house in shape and finishing, but with really new environmental devices. This building was the first passivhaus standard building in Latvia and it was built by a small local company since every local knows the "eco house" and the techniques to reach the best performance in energy saving.

The construction was designed starting from the traditional practice in Latvia, but then the project was redesigned to reach


photo: Ansis Starks

the passivhaus standards. The owner was involved in the design of mechanical systems and in the building process as well. Interior decoration and interior design was done partially by the owner as well. The structure is in concrete bricks with a 25cm insulation of glass wool, the foundation is a concrete slab with a layer of foam glass. Heat pumps and solar panels were used in this house and the quality of the indoor environment matches the tradition of the Latvian landscape.

Bulgaria Sofia

Anglo-American School

ADA Ltd; Ivo Panteleev


photo: Ivo Panteleev

In the area between the Ring Road and the Pancharevo Municipality the Anglo American School was built. The building has all the school facilities such as external terrace, playgrounds, classrooms, laboratories, sport and technical facilities. The building was set in a strategic area from a public transport point of view and it has a compact shape to avoid energy loss. All the personnel of the school were trained in the correct use of the building and to practice and teach “green education”. All the technical equipment like boiler room, air conditioning, rainwater reservoirs are accessible for children to educate them on how they operate and were built. The project was designed considering accessibility for all and the improvement of infrastructures and the involvement of public transport. Solar panels are placed in the roof to heat the sanitary water.

A thick thermal envelope guarantees the thermal insulation and the CO_2 emission was calculated as well. The project has a particular system of recycling of waste from the building including grey water. Rainwater is collected from all roofs and used for irrigation and the pond is well designed and integrated in the site. A mechanical ventilation system is provided and natural ventilation is used with openable windows where not possible. Adaptability in future was considered in the design phase allowing the option to have a future extension. Minimal use of watertight pavements and increasing use of green spaces was provided. The water is recovered in a pond and then used for watering.

photo: Robert Les

Conclusion

The challenge to find new ways of living is only just beginning.

The ACE believes that the decade from 2010 to 2020 must be a transformational one for the construction sector and that it will see the coming of age of sustainable architecture as the most appropriate approach to the design and building of our urban and human habitat.

This exhibition has demonstrated that many of the best practices are already with us and the main technologies are already tried and tested. The **ACE** will continue in the next 20 years of its life to promote and encourage the architectural profession to refine and extend its knowledge of these approaches and technologies so that it can continue to be the leader in the provision of high quality sustainable buildings for society.

This catalogue is also available on line at the **www.ace-cae.eu**

photo: David Pisani

List of selected Projects

Austria
Rammed Earth House - Schlins
Roger Boltshauser, Martin Rauch

Belgium
Nature and Environment Educational Visitor Centre - Gent
evr-Architecten; Luc Eeckhout, Jan Van Den Broeke, Luc Reuse

Passive Logements Wauters - Brussels
Ines Camacho Architect

Bulgaria
Anglo-American School - Sofia
Ivo Panteleev

Cyprus
House in Kaimakli - Nicosia
Yiorgos Hadjichristou, Petros Konstantinou, Veronika Antoniou

Croatia
Gymnasium 46º 09' N / 16º 50' E - Koprivnica
Studio Up; Lea Pelivan, Toma Plejic

Denmark
Home for Life - Lystrup
AART architects; Anders Tyrrestrup

Dragen Children's House - Sanderum
C.F. Møller Architects; Julian Weyer, Mette Nymann Nielsen

Estonia
Strawbale houses in Nina village - Nina Village
Rene Valner

France
Kyoto High School - Poitiers
SCAU architectes

Herold Social Housing - Paris
Jakob + MacFarlane

Germany
Solar Settlement - Freiburg
Rolf Disch SolarArchitektur

Unilever Headquarters - Hamburg
Behnisch Architekten; Stefan Behnisch, David Cook, Martin Haas

Greece
ETVA VI.PE. Industrial Parks - Lamia
Dima Vassiliki, Mpasiakou Vassiliki, Sofia Tsiraki-Biri

Hungary
Family House - Magyarkút
Péter Medgyasszay

Ireland
York Street Social Housing - Dublin
Seán Harrington

Nurses Education Building WIT - Waterford
A&D Wejchert & Partners Architects; Paddy Fletcher

Latvia
Passivhaus Lielkalni - Gipka Village
Ervins Krauklis

Luxembourg
A+P Kieffer Omnitec Company Building - Luxembourg
cba Christian Bauer & associés architectes

Malta
Malta Stock Exchange - Valletta
Architecture Project; Alberto Miceli Farrugia

The Netherlands
Town Hall Terschelling - Terschelling
De Zwarte Hond, Groningen, Jurjen van der Meer, Tjeerd Jellema

Poland
EKO PARK Allegretto - Warsaw
Stefan Kurylowicz, Maria Saloni-Sadowska

Romania
City Business Centre - Timisoara
Andreescu & Gaivoronschi srl; Vlad Gaivoronschi, Dan Munteanu

Slovakia
LU88 - Bratislava
Peter Benuska, Peter Topinka

Slovenia
Hotel Sotelia - Pod□etrtek
Enota

Spain
Blood & Tissue Bank - Barcelona
SaAS, Sabaté Associats; Joan Sabaté, Álex Cazurra, Horacio Espeche

Centre of Environmental Resources - Valladolid
O.D.I. más P. slp; Julio Grijalba,Paloma Gil, Alberto Grijalba, Eduardo Carazo,Victor Ruiz

Sweden
Urban Villas - Malmö
Cord Sigel, Pontus Åqvist

Switzerland
Badenerstrasse 380 - Zurich
Pool Architekten

Turkey
Vineyard House - Urla
Serhat Akbay

United Kingdom
Lighthouse - Watford
Sheppard Robson; Alan Shingler, Dan Burr, Ben Reed, Cara Oliver

Wolseley Sustainable Building Center - Leamington Spa
ECD Architects

Students
UCL – LOCI

Exchange and Identity
BAUDOUX Aurélie
GOFFART Megane
MARTINOT Charlotte

Mobility
SALAMON Fruzsina
BUYCK Sébastien
LEBRETON Yann

Biodiversity
SALAMON Fruzsina
BUYCK Sébastien
LEBRETON Yann

Living Spaces
CARDON de LICHTBUER Geoffroy
GUILLAUME Sophie
SIMON Manu

Sustainable Construction
de NEUVILLE Géraldine
LECOMTE Mathilde
VAN den ABEELE Elodie

Thermal Comfort
BOUCHART Julien
LEQUEUX Tanguy
NASR Michaël

Comfort
BOUVET Charles
de RUETTE Henry
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