



Solutions for a sustainable world

GREEN SOLUTIONS AWARDS



BUILDINGS



DISTRICTS



INFRASTRUCTURES



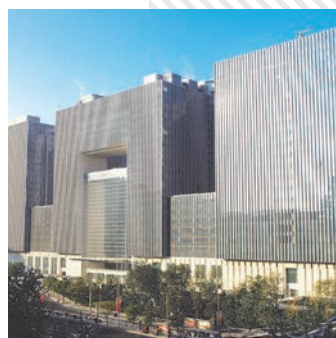
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Global Alliance
for Buildings and
Construction



GREEN SOLUTIONS AWARDS



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EDITO

Radically transforming our ways of life to reach carbon neutrality: such is the major challenge that we need to take on together before the end of the century. Beyond national commitments by States, local governments and companies invent new ways to build, renovate or manage cities.

The Green Solutions Awards were created by Construction21 to offer them a specific stage to show their achievements, to disseminate these pioneering and innovative solutions to the greatest number of professionals. Our creed? **Inspire thousands of professionals** and incite them to massively adopt more virtuous practices.

Invitation to the voyage

The 2017 edition of the Green Solutions Awards takes you on a trip to visit **exemplary buildings, districts and infrastructures around the globe**. Take notice of buildings located in tropical areas, they demonstrate that conciliating thermal comfort and energy sobriety in hot climates is possible. We salute the **arrival of China** into the Construction21 network, bringing 15 candidates to this year's contest. Also, the competition opens to infrastructures, with renewable energies production, sustainable mobility systems, water management and more.

We would like **to thank all the candidates**, who contribute to the growth of our exemplary projects databases. Thank you also to our juries, media partners and sponsors. The Green Solutions Awards reach every year hundreds of thousand professionals thanks to them.

Christian Brodhag
President of Construction21

Social media dedicated to the sector, www.construction21.org disseminates news and best practices of sustainable buildings and cities for free through 11 national platforms in Algeria, Belgium, China, France, Germany, Italy, Lithuania, Luxembourg, Morocco, Romania and Spain, along with an international platform in English. The Construction21 network, with 1 million visits in 2017, aims to cover the whole world within the 5 years to come.



GREEN SOLUTIONS AWARDS

Since their creation in 2013 by Construction21, the Green Solutions Awards draw more candidates in every year. The 2017 edition counts 150 contestants:



118 buildings



11 districts



21 infrastructures

The prizes reward the winners of **9 categories**, including two Grand Prizes for Sustainable Cities and Sustainable Infrastructures. Competing buildings are divided in 5 categories related to climate challenges and 2 Grand Prizes for outstanding buildings:



**Energy & Temperate
Climates**



**Energy & Hot
Climates**



Low Carbon



Health & Comfort



**Smart
Building**



**Sustainable Renovation
Grand Prize**



**Sustainable Construction
Grand Prize**

Originally, the contest promoted European projects only. Since 2015 and the COP21, other countries joined the competition. This year, contestants come from **19 different nationalities**: Austria, Belgium, Brazil, Burundi, China, Croatia, France, Germany, Italy, Indonesia, Japan, Luxembourg, Mexico, Morocco, Senegal, Spain, Tanzania, the United Arab Emirates and the United States of America.

If those competing buildings, districts and infrastructures are indeed pioneers of sustainable construction and cities, they nonetheless prove that the trend is expanding to all continents: no matter the climate, no matter the local cultures, national politics and policies or awareness within populations... professionals act to inhabit, work and live differently.

The Green Solutions Awards and Construction21 exist to offer these solutions great visibility toward the professional public, to inspire other experts on the web. The contest generates more than **1 million views every year** since 2015 and more are expected in 2017 and the years to come.

Will you embark on this adventure in 2018?



Sustainable City Grand Prize Winner

CITÉ DU CENTENAIRE



Urban renewal / *Montignies-sur-Sambre, Belgium*

The Cité du Centenaire in Charleroi is a **urban renewal** project and the transformation into an ecodistrict of a 1959 neighbourhood inspired by garden cities. While moving the Cité du Centenaire toward sustainability, this project also had to **protect and rehabilitate an architectural heritage**. The sustainability approach integrates **ecomobilities** and soft transportation modes, energy efficiency through passive renovations and constructions of housings, the drastic reduction of the district carbon footprint while favouring **social bonding** and interactions within the area.

To limit the environmental impact of the operation, demolition waste was reused and recycled, after sanitizing the buildings from all asbestos. All construction work included as much as possible **recyclable and low emission materials**.

This ecodistrict naturally aims to **respond to its inhabitants' needs** who were involved in the operation from the design phase. Children from the surrounding schools also participated in an art project to dress one of the buildings' gable. Mineral wool panels were coloured in the many tints collected in the demolished building to offer a genuine testimonial of past lives in the district. This piece of art now gives a **strong identity** to the Cité du Centenaire ecodistrict.

Project holder: La Sambrienne
Designer: Startech Management Group



MENTION



Virtual City of Zero Energy House

Urban sprawl / *Tomiya, Japan*

Contractor: Sekisui House, LTD



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Eiffage, 3rd major concession-construction company in France (64,000 collaborators, 100,000 projects, 14 billion € in revenues), operates in construction, infrastructures, energy and concessions. From Phosphore, prospective lab on sustainable cities, to Smartseille, a multicertified and pioneering ecodistrict, Eiffage innovates to build a sustainable future and can be defined as a global contractor for sustainable cities, from responsible infrastructures to factories of the future.



Photo credits Road of the future ©Eiffage-Enodo

3 questions for VALÉRIE DAVID, Director of Innovation and Sustainable Development

1 – Why did you decide to support the Green Solutions Awards?

Open innovation becomes strategic for major groups who are used to innovate from inside. By opening to other actors and creating a win-win ecosystem, our position on the market is accelerated and we respond better to the emerging B-to-B and B-to-C needs. Environment and sustainable development accelerate the transformation of our economic model of products “bought, consumed, thrown away” toward circular economy and services. Eiffage believes and promotes internal innovation and open innovation, as part of the company’s DNA. Two funds were created by Eiffage in January 1st, 2017 to accelerate the access to the markets for innovations. For the same reasons, Eiffage supports Construction21, a dissemination tool for our sector’s innovation, by sponsoring the Grand Prize dedicated to Sustainable Infrastructures in the Green Solutions Awards.

2 – What are, for your company, the main challenges related to the fight against climate change?

Everyone agrees that public works, construction and transports are enormous consumers of materials, energy and fossil fuels. The news reminds us on a regular basis: increase of climatic variations and exceptional weather events, fight against floods and rise of the seas, exceptional draughts are the more and more visible consequences of climate change. We are aware of these strategic challenges for the planet and Eiffage is convinced we are at the core of the solutions.

3 – What are your solutions, in your field, to face these challenges?

From 2008 to 2012, the work of Phosphore, prospective lab on sustainable cities, gathered the professionals of the Group and outside experts to build new perspectives by imagining challenges by 2030. We collectively imagined and proposed solutions around these 4 priorities:

- Reduce consumption of carbon materials
- Design sober buildings
- Promote transports and energy production methods with less GHG emissions
- Build sustainable cities and responsible, efficient and innovative ecodistricts

The exercise gave us a systemic vision. It also led us to create the High Quality of Life, that guides the design and implementation of the Group solutions at city level (efficient buildings, ecodistricts, eco-mobility solutions, etc.).



Sustainable Infrastructure Grand Prize Winner

FILTERING GARDENS®



Depollution system / *Rio de Janeiro, Brazil*

Filtering Gardens® is a biotechnology developed by Phytorestore. It uses **humid ecosystems and phytoremediation** to clean up waters and make them reusable again while recreating natural green spaces.

These filtering gardens are made of a series of pools filled with special substrates topped with local plants. These plants are carefully selected. Grey and rain waters flow through the substrates and the biological interactions of the roots treat the waters, without any addition of chemical, bacteriological, biological nor artificial compound. The efficiency of the process relies only on **natural properties** and **human knowledge** of that process. Thanks to this process, sewage networks receive less water to treat.

The esthetic result is a lot of green, with a wide range of indigenous species of plants **favouring the development of local biodiversity** while **improving the quality of water** in the region and contributing to **cooling the microclimate**.

Filtering Gardens® is highly replicable and adaptable to a large number of places and it can help the development and protection of their specific biodiversity. It also contributes **to raise awareness among the populations** on this topic through educative programmes. Its carbon footprint is very low and even generates **carbon credits**.

Contractor: L'Oréal

Construction company: Afonso França Engenharia

Manager/Dealer: Phytorestore Brasil



MENTION

Photo credit: © A. Meyssonier



Thassalia

**Geothermal power /
Marseille, France**

Contractor: Patrick Berardi

Construction company: Engie-Thassalia

Dealer/Manager: Engie-Thassalia



**WITH THE
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**Rabot
Dutilleul**



As an independent international family group in development and construction, Rabot Dutilleul currently counts among the 10 biggest French actors in construction. Founded in 1920, the company developed skills all along the years in complementary sectors related to the construction world, hence gaining almost full control over the real estate chain of value. Rabot Dutilleul cultivates values based on collective performance with nearly 1,750 employees and on long-term relationships with its partners. The Group is present in France, Belgium, Germany and Poland.



Photo credits: Les terrasses de la falaise – Boulogne-sur-Mer

3 questions for RODOLPHE DEBORRE, **Innovation and Sustainable Development Director**

1 - Why did you decide to support the Green Solutions Awards?

The Rabot Dutilleul Group places sustainable development at the core of its strategy, “for real”. We want to provide construction and renovation projects that make territories more environmental friendly through specific know-how and techniques. Following that spirit, Rabot Dutilleul chose to support the Green Solutions Awards and in particular the sustainable renovation category.

2 - What are, for your company, the main challenges related to the fight against climate change?

Construction does have impacts: energy consumption, greenhouse gas emissions, decline of biodiversity, increase of toxic elements, etc. However, unlike in other sectors like fishery and air transport, solutions exist for most of the issues. We consider it would be a crime not to implement them. Rabot Dutilleul structures its development on a strong environmental approach: design and construction of low energy buildings (BCC), HQE certified projects, CO2 assessment of its activities and CSR action plans. This approach allows the Group to renew its offer, while always watching its markets and environment.

3 - What are your solutions, in your field, to face these challenges?

Sustainable construction requires to manage energy efficiency in buildings. Rabot Dutilleul didn't wait to follow this approach, as many projects can testify, and pushes it further to achieve excellency with the expertise of its Pouchain subsidiary, specialised in electric and climatic engineering. The Group deploys many processes, for example (but there are many others!) to push forward the eco-design in the energy industry, without ever losing sight that the best building is the one in which the occupants feel the best.



Sustainable Renovation Grand Prize Winner

PROJECT 55



Office building / Mons, Belgium

The Project 55 is a zero energy **refurbishment of a heritage list mansion**, within the centre of the city of Mons. The project combines extensive insulation, optimal air tightness, heat recovery ventilation and controlled constructive details. Additionally, a specifically dimensioned photovoltaic installation has been implemented to compensate the energy consumption of the building.

A dynamic simulation has been commissioned to evaluate the risks of overheating and the means to avoid them, through solar protection and free-cooling.

Beyond the **high level of energy efficiency**, the Project 55 integrates **eco-materials** (wood wool, cellulose, C2C certified plaster, FSC wood, clay-based coatings). **Life cycle analysis** was decisive in the choices made to limit the carbon footprint of the building.

The use of these materials also contributes to the **health and comfort strategy** of the building. The well-being of its users and visitors is a major goal for the Project 55, as it shelters the offices of the Homeco company and serves as a training facility in sustainable development and as a visitor center to disseminate best practices

Contractor: Homeco
Construction manager: Homeco
Designer: Bachelart-Delvigne architectes
Engineering Consultancy: Homeco



MENTION

Hongqiao International Airport

Airport / Shanghai, China

Contractor: Shanghai Airport Authority
Construction company: Arcplus Group PLC East China Architectural Design & Research Institute Co., Ltd.
Consultancy agency: Arcplus Group PLC East China Architectural Design & Research Institute Co., Ltd.



MENTION

55 Amsterdam

Office building / Paris, France

Contractor: GECINA
Designer: Agence Naud & Poux
Construction company: Aquae, Viessmann
Consultancy agency: Egis, LTA, CEEF, Impact acoustique, Végétude





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BARRISOL®
WORLD N°1 MONDIAL

The Barrisol® Normalu® company, founded in 1967, is the world leader of stretch ceiling. It combines tradition, innovation, respect for the environment and technology to offer you the best walls and stretch ceilings.

Our products are rated A+ (very low pollutant emissions) and conform to the highest European and international standards. They are also certified "French Origin Guarantee". Barrisol® products are 100% recyclable. Our know-how was recognised in 2015 by the label "Living Heritage Company" (Entreprise du patrimoine vivant – a French government label) and in 2014 by the Décibel d'Or, a prize received for our "Acoustic Light®".



© COPYRIGHT 2009-2017 BARRISOL NORMALU S.A.S. /Oslo Opera House Architecte: Snohetta Architects/
Federation Square Australie
Architectes: Lab Architecture et Bates Smart

3 questions for JEAN-MARC SCHERRER, Président du Groupe Barrisol® Normalu® SAS

1 - Why did you decide to support the Green Solutions Awards?

Since the foundation of the company, 50 years ago, we became aware of the conservation and respect of the environment. In the heart of the Hardt forest, in Alsace, our head office is surrounded by green areas that we strive to preserve.

Respect for the environment is one of Barrisol's priorities. Today, it is one of our main vectors to convey our company policy. Participating in the Green Solutions Awards enables us to assert that it is possible to combine tradition with innovation, technology and protection of our natural resources.

Barrisol® system was imagined to use 20 times less raw materials than a standard product. All the Barrisol® sheets and profiles made of aluminium are 100% recyclable.

As a member of the English, Canadian and American Green Building Councils, Barrisol® started to commercialise the Barrisol Recycled® line in 2007. We combined innovation and respect for the environment: Recycled® sheets are manufactured from old Barrisol® sheets.

We use recyclable materials and encourage our partners and customers to join us in this endeavour.

2 - What are, for your company, the main challenges related to the fight against climate change?

Using fewer natural resources and less energy. The optimisation and the recycling of our products contribute to the reduction of waste.

3 - What are your solutions, in your field, to face these challenges?

We take different actions to preserve the planet, like:

- Setting up a process to recycle old sheets,
- Recycling waste of sheets and aluminium profiles,
- Providing employees with carpool vehicles and shuttles,
- Setting up a waste collection system for recycling.

Installing time switches and presence detectors to ensure proper management of our power consumption.



Sustainable Construction Grand Prize Winner

BSOLUTIONS



Office building / Gembloux, Belgium

This PassivHaus and BREEAM certified project was designed to demonstrate the **NZEB (Net Zero Energy Building) know-how** of the BSolutions architecture and engineering agency.

Built on 3 floors, the BSolutions building **offers autonomy to each floor** through the implementation of 3 ventilation systems with their own power supply.

The optimisation of energy efficiency is achieved thanks to the architectural design, the location and orientation, and the compacity of the building. BSolutions is half buried to benefit from a first natural thermal insulation and the ground inertia. Choice of orientations was crucial, for natural lighting all year long as well as to avoid summer overheatings, along with the implementation of photovoltaic panels that cover 60 % of the energy needs of the building.

Beyond the energy efficiency, **health and comfort** of the users were at the centre of this project through the guidance of BREEAM and PassivHaus approaches. Workspaces were designed to be full of light, and built with healthy materials. **Acoustics** were extensively studied for the best comfort: adapted floorings, acoustic elements in offices and creation of work cells equipped with acoustic glass partitions.

Contractor: BSolutions

Designer: BSolutions

Engineering consultancy: BSolutions



MENTION

Photo credit: ©Luc Boegly

Lycée international de l'Est Parisien

Education building /
Noisy-Le-Grand, France



Contractor: Région Île-de-France – Unité lycée
(mandataire: SAERP)

Designer: Ateliers 2/3/4/

Construction companies: CBC GTM, Balas,
Blanchard, Solstice, Tuvaco

Consultancy agencies: SAS Mizrahi, Éléments
ingénieries, Peutz et Associés



MENTION

Conservation and Research Center for Giant Panda of China

Research center / Si Chuan, China



Designer: Sichuan Provincial Architectural Design and
Research Institute

Consultancy agencies: CABR Architecture Design Institute,
Beijing University of Civil Engineering and Architecture

Sustainable development consultancy agency: Sichuan
Wolong National Nature Reserve Administration



Major player in construction chemicals, PAREX is a world leader, specialist of dry mix, providing solutions for the building community and acting in 3 fields: facade protection and decoration, tile setting and flooring systems, waterproofing systems and technical solutions for concrete and civil engineering.

We operate in 21 countries with 69 production sites and bring together 4,100 employees worldwide. We focus on developing our activity over the long term and aim to bring innovative solutions and products for sustainable construction. Our ambition is to be the preferred partner on our markets and in the local economic and social structure around our sites.



3 questions for LOUIS ENGEL, Safety and Sustainable Development Director of PAREX

1 - Why did you decide to support the Green Solutions Awards?

Our Sustainable Development program “Building Responsibly” is based on 4 commitments: innovating for our clients, preserving the environment, taking care of our employees, anchoring our activities locally. These commitments are fully in line with the partnership we have with Construction21, whose contest, the Green Solutions Awards, honours the most innovative solutions in sustainable construction. Convinced that this social media will help to effectively develop and share solutions for a more sustainable construction, we believe it is essential to be one of its partners.

2 - What are, for your company, the main challenges related to the fight against climate change?

The building energy consumption represents nearly a third of the total consumption worldwide and is responsible for almost a quarter of the greenhouse gas emissions.

We believe that all players in the construction chain must be mobilized and we have decided to play our part in this revolution, which is not only a technological, but also a cultural one.

3 - What are your solutions, in your field, to face these challenges?

For several years in France and more recently in the United States, in China, in Spain, in United Kingdom and in Chile, we have taken an active role in improving the thermal efficiency of buildings by developing our External Insulation Finishing System (EIFS) offer. To go further in our commitment to fight climate change, we initiated in 2016, following the Paris Agreement, our **Climate Program**, a 3-step voluntary approach which consists of:

- measuring the greenhouse gas emissions by end of 2018 in all countries where we operate,
- increasing our efforts to reduce these emissions,
- adapting and mitigating impacts of some residuals emissions by contributing to develop agroforestry programs in 11 countries around the world, close to the communities where we operate.





Energy & Temperate Climates Winner

KIRSTEIN & SAUER



Office building / Bielefeld, Germany

This **positive energy building** shelters a supermarket at the ground level and offices on the upper floors. The contractor wanted this project to be exemplary. This was achieved through the combination of **mature technologies** for a very high level of energy efficiency at a low cost, while providing high resilience and reliability. The thorough **energy planning** of the building was also key to this project as it integrated all needs of the building, from the systems to the users. Among the solutions implemented in this project, some are worth pointing out:

- An ultra efficient envelope, designed very early in the project,
- A urban heating network fueled by the combustion of waste,
- Low temperature heating floors,
- Ventilation/Cooling systems with adiabatic evaporation,
- Photovoltaic panels on the roof to cover every energy needs,
- The fine tuned building management through a BMS.

Here, the energy performance of the building is not achieved against the user. On the contrary, office spaces were designed to be **modular and to adapt to the needs of the tenants**. The BMS uses usage and occupation scenari along with sensors to regulate ventilation and heating.

Contractor: Kirstein & Sauer GmbH
Designers: Architekten Wannenmacher + Möller GmbH
Consultancy agency: Solares Bauen GmbH



MENTION

Biodiversum in Remerschen

Museum / Remerschen, Luxembourg

Contractor: Administration Bâtiments Publics
Designer: Valentiny hvp Architects
Consultancy agencies: SGI Ingenieure Junglister, BETIC S.A



MENTION

Vil·la Urània

Public facilities / Barcelone, Spain

Contractor: BIMSA
 (Barcelona Infraestructuras Municipales)
Construction manager: UTE Dragados-Acsa Sorigué
Designer: UTE SUMO arquitectes SLP
Construction company: AIA Instal Lacions
 Arquitectoniques
Consultancy agencies: Dekra, Q estudi.
 Presupuesto y mediciones
Owner: Viading



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The ADEME contributes to the implementation of public policies for the environment, energy and sustainable development. To help companies, local governments, public authorities and the general public, our agency provides them with expertise and council.

We also help funding research and implementation projects in all our fields of intervention.



3 Questions for BRUNO LÉCHEVIN, President of ADEME

Sustainable construction in tropical areas particularly matters to ADEME, so this is no coincidence if we are involved in the Global Alliance for Buildings & Construction launched during the COP21, where we support an “initiative for low carbon buildings in hot and tropical climates”. The Alliance gathers 25 partnered countries to deploy bioclimatic buildings on a broad scale.

This is a crucial challenge as today, more than 40 % of the population lives in intertropical areas, in countries where energy efficiency standards are often inexistent. Hence, we observe excessive energy consumptions, notably because of the use of air conditioning to remedy the heat discomfort.

That's why we decided to support the creation of a specific category in this contest: one dedicated to energy in hot and tropical climates, to highlight methods, materials and solutions adapted to these specific conditions and to the construction of exemplary buildings.

We are also creating a special MOOC dedicated to sustainable construction under tropical climates. This MOOC will be first and foremost addressed to building professionals from French speaking African countries and from French overseas territories, with a first season scheduled for February 2018.



Photo credit: ©H. Douris

Energy & Hot Climates Winner

BOIS D'OLIVES



Education building / Saint-Pierre de la Réunion, France

This school of 12 classes on the Reunion island (Indian Ocean) **demonstrates the specificity of sustainability approaches under tropical and subtropical climates**. This approach uses the **PERENE calculation tool**. The building proposes a bioclimatic architecture to structure the layout of the volumes and the technical choices of the project. Among the fundamental choices made to obtain a bioclimatic building and an efficient energy management are:

- Protection against dominant winds on the East and South-East sector and the protection of the courtyards,
- A broad sole umbrella roof to reinforce the solar and weather protection,
- Extended covers of the courtyards (greater than required in the programme) for a greater comfort for users,
- A thought through solar protection and specific for each glass bay orientation,
- The choice of a "dry" wooden architecture, a relevant answer when it comes to hygrothermal comfort,
- General layout of spaces to optimize the through-and-through ventilation,
- The management of infiltrated rain waters,
- Neat gardens, to add to the hygrothermal and visual comforts, and to filter dusts,
- Optimization of electric systems to obtain positive energy building.

Solar protections bath spaces in a **pleasant light** while providing true **hygrothermal comfort** to the whole school.

Contractor: City of Saint-Pierre

Designer: Antoine Perrau Architectures

Consultancy agencies: Leu Réunion, GECP, BET AIR, CREATEUR



Photo credit: ©Rohan Lietar

MENTION

IME Yépi Kaz Nursing home / Remire Montjoly, France

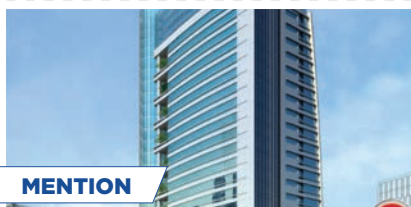
Contractor: Apajh Guyane

Assistance to the contracting authority: CED Guyane

Designer: Acapa

Construction company: B2TG

Consultancy agencies: Robert Celaire Consultants, Alter



MENTION

Guangdong Academy of Traditional Chinese Medicine Hospital / Guangdong, China

Contractor: Traditional Chinese Medical Hospital of Guangdong Province

Consultancy agency: Guangzhou Institute of Building Science CO., LTD.



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BNP PARIBAS
REAL ESTATE

BNP Paribas Real Estate, subsidiary of BNP Paribas and one of the leading real estate services companies on an international scale, is offering a full range of services that span the entire life cycle of real property: promotion, transaction, advisory, valuation, property management and investment management. With 3,900 employees, BNP Paribas Real Estate offers its clients its knowledge of local markets in 36 countries (16 direct locations and 20 more through its network of alliances that now represents more than 3,200 people) with more than 180 offices.



©Jacques Ferrier Architectures / Chartier Dalix Architectes / SLA Paysagistes

3 questions for CATHERINE PAPILLON, Global Head of Sustainable Development/CSR

1 - Why did you decide to support the Green Solutions Awards?

The Green Solutions Awards is a contest that takes into account the different topics of sustainable development we are focusing on: social, energy, environmental and economic performance; well-being of occupants; integration of the different types of buildings into the surrounding districts; energy solidarity between buildings, etc.

Furthermore, the Green Solutions Awards highlight concrete and innovative solutions that all the industry can benefit from.

We also particularly appreciate the high standards for the recruitment process of participants, as well as the quality of the jury, which includes real estate experts.

For all these reasons, and because we, BNP Paribas Real Estate, consider it is our responsibility to bring to actors of the real estate sector our vision for the future sustainable city, we support Construction21 and the Green Solutions Awards for the second year in a row.

2 - What are, for your company, the main challenges related to the fight against climate change?

The building sector is responsible for 40% of worldwide greenhouse gas emissions. For this reason, BNP Paribas Real Estate is committed to its stakeholders to integrate climate change issues into its own processes and activities.

Our ambition is to contribute to the development of sustainable cities, by offering products and services that are environmentally friendly, energy efficient and respectful of the health and well-being of its occupants.

3 - What are your solutions, in your field, to face these challenges?

We develop solutions in our different business areas to anticipate and face environmental challenges, but also to respond to the new demands and habits of our clients (whether they are investors, companies, individuals or local authorities). It allows us to play a key role in the urban transition.

As an example, the BNP Paribas Real Estate global business real estate production is environmentally certified. Beyond certifications, BNP Paribas Real Estate provides for the implementation, as part of the Call for innovative urban projects "Réinventons Paris", with its winning project Ternes, of a connected energy system between offices and housings (smart grids), of a car sharing solutions allowing electric vehicle pooling, and of urban garden terraces, among other solutions.



Low Carbon Winner

THE NUBIAN VAULT



Administrative building / *Ourossogui, Senegal*

The Maison des Yvelines, an administrative building coupled with some housings, aims to disseminate an ancestral technique perfectly adapted to the Sahel region: **the Nubian Vault**. This 3500-year old construction technique was resurrected and reinvented by the Association La Voûte Nubienne. It only uses **mud bricks** and **earth-based mortars**. These natural materials provide thermal inertia, acoustic comfort and durable protection against the weather. In addition, the exclusive use of **local resources** drastically curbs the carbon footprint of the building.

The Nubian Vault technique also offers two more benefits: **low cost and great replicability**. It is very easily taught, as it was done for this building, with the training of local workers on site.

Last but not least, the Nubian Vault technique presents a large range of architectural possibilities and extended **modularity**. It can be used for housings, offices, healthcare centers, in various styles. Also, extensions can be easily added to the building.

The Maison des Yvelines presents a simple, replicable and economical solution to tackle the challenges of global warming under hot climates, while giving one of the best examples of **frugal resources management**.

Contractor: Conseil Général des Yvelines
Designer: AL-MIZAN Architecture
Construction Manager: ONG Le Partenariat
Technical expertise: Association La Voûte Nubienne
Structure: Habitat Moderne



MENTION

Studentenwohnheim 42!

Student residence / *Bonn, Germany*

Designer: Raum für Architektur
Contractor: Projekt 42! GbR
Manufacturer: Isocell



Smart Building Winner

AMPÈRE E+



Office building / Courbevoie, France

Ampère E+, a **deep refurbishment and restructuration** of a 1985 office building, is a breakthrough for smart buildings. This project combines **smart technologies, high level energy efficiency and users' comfort**. The multiple certifications for this building are a strong testimonial of its sustainability and innovation: HQE Excellent, BREEAM Very Good, BBC Effinergie Rénovation, Well Core and Shell, Well Interiors, and Cradle to Cradle label.

The intelligence of Ampère E+ resides in how it integrates technologies **in an open innovation approach** with various technical partners.

The building is smart for its users: **the next generation BMS** and the mobile **application Ampère** allow users to control lighting and temperature in their work space. The app also serves as an access pass, a payment system for the company restaurant and shows available meeting rooms.

Ampère E+ is the first building in the world equipped with a **system of energy production, management and storage**, sharply fitting energy needs and behaviours. The building generates energy through solar panels on the roof and energy recovery on elevators. This energy is then stored in used car batteries, a solution supported by the **ELSA European programme (Energy Local Storage Advanced system)**. The discharged energy represents between 5 and 15% of the building consumptions allowing Ampère E+ to temporarily live off the grid depending on the needs.

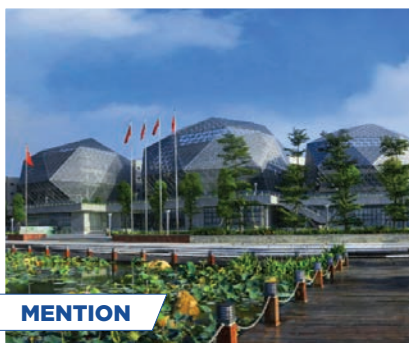
Contractor: Sogeprom

Designer: Ateliers 2/3/4/

Construction company: SCO

Consultancy agencies: INEX, Arcora, Peutz, Etamine

Innovation consultancy: Green Soluce



MENTION



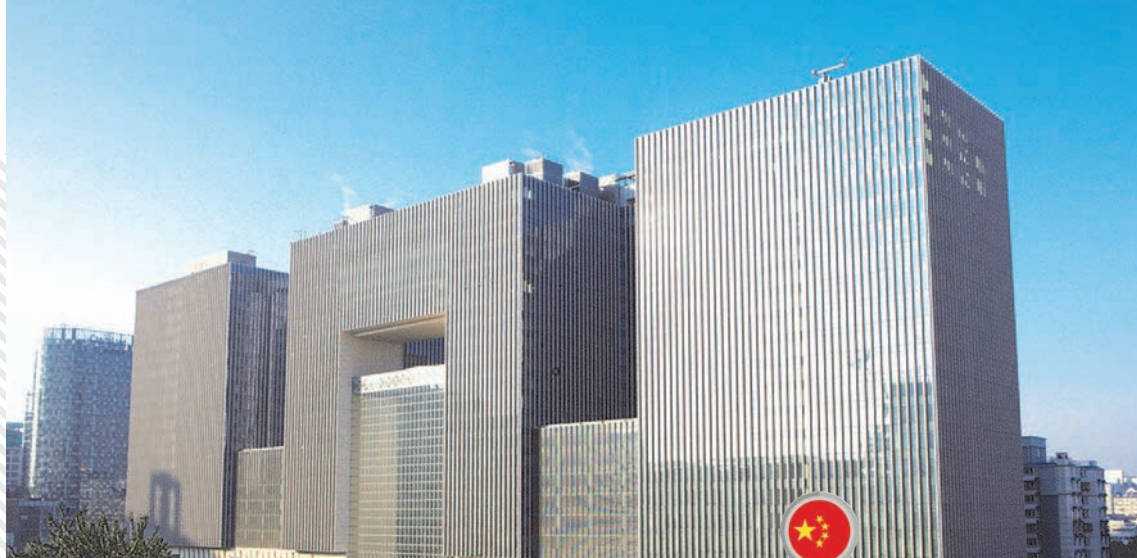
Office Building of Dongguan Eco-Park Holding CO., LTD.

Office building /
Dongguan, China

Contractor: Dongguan Ecological Park Holdings Limited

Designer: South China University of Technology Architectural Design and Research Institute

Consultancy agency: Beijing Tsinghua Tongheng Urban Planning and Design Institute Co., Ltd.



Health & Comfort Winner

CNPC HEADQUARTERS



Office building / Beijing, China

The CNPC Headquarters is a **vast tertiary multifunction complex** of 22 floors featuring offices, conference halls, restaurants, sports centres and car parks. It hosts an average of 3,500 people per day. **Health and comfort** were put at the centre of its design, following the requirements of the Chinese standard: Healthy Building.

This approach is based on the **thorough study of 7 factors**: air, water, diet, comfort, physical exercise, social interaction and access to services, therefore establishing a very wide definition of health and comfort provided by a building to its users.

Interior air quality of the CNPC Headquarters, a very important matter in China and especially in Beijing, is optimised through a double purification system, both active and passive, coupled with thorough monitoring. Water is also processed and treated through a very efficient purification process.

The well-being of the users of a tertiary building can also be addressed through healthy diet. With 3,500 people working every day in this building, the CNPC decided to provide healthy restaurant services based on the rhythm of seasons, the weather and the principles of Chinese medicine. This **healthy diet** can be completed with **sport activities** practiced in dedicated spaces available in that same building.

Contractor: China Petroleum Building Management Committee Office

Facility manager: Zhongyou Soluxe Property Management Co., Ltd Beijing Branch



MENTION

Oficina de Triodos Bank en Málaga

Office building /
Málaga, Spain



Contractor: Triodos Bank N.V Espagne
Construction manager: Altave



MENTION

Photo credit: Skanska 2016

Brock Environmental Center

Public building /
Virginia Beach, United States



Contractor: Chesapeake Bay Foundation
Assistance to the contracting authority: Skanska
Designer: SmithGroupJJR
Construction company: Hourigan Construction
Consultancy agency: Janet Harrison Architect

INTERNATIONAL JURIES



President of the jury Districts/Infrastructures

Carlos MORENO

Scientific Committee of the International Forum of the Human Smart City "Live in a Living City"



Jurors



David ALBERTANI

R20 - Regions of Climate Action



Miriam BADINO

Bonn Center for Local Climate Action and Reporting (carbonn* Center), ICLEI World Secretariat



Inès DAHMOUNI MIMITA

MD architectes



Delphine DANAT

Manexi
Fédération
CINOV



Maïta FERNANDEZ-ARRESTO

Barcelona
City Council



Julien L'HOEST

Energie et
Environnement
ingénieurs-conseils
S.A.



Xun LI

China Academy
Urban Planning and
Design (CAUPD)



Clare WILDFIRE

Mott MacDonald



President of the jury Buildings

Paula RIVAS HESSE

Green Building Council
Spain (GBCe)



Jurors



Mohammed AHACHAD

Faculté des sciences
et techniques de
Tanger



Arturo ALARCON

Spanish Institute
of Cement and its
Applications (IECA)



Lionel BOUSQUET

Epicuria
Architectes



Youssef DIAB

École des
ingénieurs de la
Ville de Paris (EIVP)



Jean-Marie HAUGLUSTAINÉ

Université de
Liège, Énergie et
Développement
durable



André LECOMTE

Hélium3
Architectes



Brahmanand MOHANTY

Asian Institute of
Technology (AIT,
Thailand)



Arlin MORALES LEMUS

Green Planet
Architects



Lionel TOUMPSIN

Neobuild S.A.



Jun WANG

China Academy of
Building Research
(CABR)



Qingqin WANG

China Academy of
Building Research
(CABR)



Steve WEYLAND

Team31 S.a.r.l

NATIONAL JURIES



Belgium

Marny DI PIETRANTONIO - Plateforme Maison Passive PMP

Jean-Marie HAUGLUSTAINE - Université de Liège, Énergie et Développement durable

André LECOMTE - Hélium 3 Architectes

Nicolas SPIES - Confédération Construction Wallonne

Jacques TELLER - Université de Liège, Urbanisme et Aménagement du territoire



China

Deci DAI - Architectural Design and Research Institute of TsingHua University

Xun LI - China Academy of Urban Planning & Design

Yanhui LIU - China Architecture Design Group

Chong MENG - Green Building Research Center

Jun WANG - China Academy of Building Research

Qingqin WANG - China Academy of Building Research

Youwei WANG - China Green Building Council

Jie ZENG - China Academy of Building Research Architectural Design Institute



France

Cédric BOREL - IFPEB

Lionel BOUSQUET - Epicuria Architectes

Olivier BRANE - Ecocopro

Franck BRASSELET - SARL Jungle Architecture Group

Frédéric BRUYÈRE - Eco-Stratégie

Jean-Mathieu COLLARD - CNOA

Jean-Yves COLAS - Studinnov

Delphine DANAT - Manexi, CINOV

Antoine DAVAL - Efficacity

Sébastien DELPONT - Greenflex

Youssef DIAB - École des ingénieurs de la Ville de Paris (EIVP)

Alain DUBRUILLE - Consultant construction durable

Olivier DUPONT - Centre technique de matériaux naturels de construction (CTMNC)

Laurent-Marc FISCHER - Architecture studio

Stéphanie GAY-TORRENTE - Reed Expositions France

Jean-François GRAZI - Business Immo

Philippe HERBULOT - Nepsen

Périne HUGUET - Atelier 13

François-Xavier JEULAND - Fédération Française de Domotique

Idriss KATHRADA - NovaSIRHE

Alain KERGOAT - Urban Practices

Martina KOST - B4E

Pierre-Yves LEGRAND - Novabuild

Guillaume LOIZEAUD - Reed Expositions France

Charlotte MIRIEL - Sintéo

Philippe NUNES - Xpair

François PELEGRIN - Architecture Pelegrin

Jean-Louis PERALTA - Ergonomie Conseil, CINOV

Pierre PERROT - Ingeko Energies

Jacques PEROTTO - Société Agora

Brigitte PHILIPPON - Philippon-Kalt sarl d'architecture

Katell PRIGENT - KAP.Caen

Gérard SENIOR - AETIC Architectes

Dominique SEVRAY - Planète Surélévation

Fabien SQUINAZI - Observatoire de la qualité de l'air intérieur

Hugues VÉRITÉ - Gimélec



Italy

Francesco DE FALCO - Freelance

Marco D'EGIDIO - Associazione Nazionale Costruttori Edili (Ance)



Luxembourg

Julien L'HOEST - Énergie et Environnement ingénieurs-conseils S.A.

Francis SCHWALL - Neobuild

Christian TOCK - Ministère de l'Économie

Lionel TOUMPSIN - Neobuild

Steve WEYLAND - Team31 s.a.r.l



Morocco

Mohammed Ahachad - Faculté des sciences et techniques de Tanger

Amine KABBAJ - Architecte

Abdellatif TOUZANI - École Mohammadia d'ingénieurs



Spain

José ANTONIO TENORIO - CSIC - I.Torroja - CTE

Ferran BERMEJO - Itec

Maita FERNÁNDEZ-ARMESTO - Barcelona City Council

Patxi HERNÁNDEZ - Tecnalia

Ignasi PÉREZ ARNAL - BIM Academy

Paula RIVAS HESSE - Green Building Council España

Bruno SAUER - Green Building Council España

Josep SOLÉ - URSA

Gerardo WADEL - Societat orgànica

Ignacio ZABALZA BIRBAIN - CIRCE

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PIERRE COLLETTE,
Chief executive officer

Why did you decide to support the Green Solutions Awards?

THEMA is a pioneer in the sector, so we naturally chose to support the innovation contest organised by Construction21. When THEMA s.a. was founded by Pierre Collette in 1989, offering high efficiency and low NOX emissions boilers was not what the market wanted. Two decades later, the challenge is won, THEMA is leader.

What are, for your company, the main challenges related to the fight against climate change?

In 2017, the energy sector is mutating. That is because people are more and more aware that reducing our energy needs is vital on the short term for our planet.

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We propose full solutions to our customers, from a broad panel of high quality and technically and environmentally innovative equipments (made in Europe). For example, THEMA s.a. designed a multi-energy heating and hot water installation in a jail of 312 convicts. This system includes heat recovery in refrigeration units, electricity production by cogeneration and heat production through 160 square meters of solar panels.

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