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be.passive

quaterly magazine
of the passive standard
> www.bepassive.eu

2015 : Brussels goes passive !

More info?
See page 62

editorial
Bernard Deprez
chief redactor

ACT !
ACT !
ACT !

Spring has arrived and to celebrate the great weather, **be.passive** proudly presents its special edition piece on Brussels – in English!

The change in season seems to have prompted some student architects to post a big "Act!" on our "**be passive!**" posters. We couldn't put it better, in spite of the paradox: "ACT = **be passive!**"

This represents a desire to lead from the front, as demonstrated in the Brussels region over recent years. That is why we are dedicating this special edition - which contains an anthology of articles previously published in earlier editions - to projects in Brussels. We thought it would be great to salute this amazing city and its commitment to the **be-passive** message. In 2010 it was announced that all construction projects should be built inline with the passive standard. From 2015 all new public projects undertaken in the Brussels region must now meet the same energy standard.. A passified Brussels now has almost 1000 passive homes either completed, under construction or in the planning stages, amounting to over 100,000m² of office space, nurseries and schools, plus passive renovations that will truly achieve 15 kWh/m² per year..

be.passive is aiming to create dynamic communication that no only encourages change but stimulates the creativity needed to get things done. This cultural work is necessary to build bridges between designers, builders and residents that encourages environmentally responsible architecture. Yes, **be.passive** is seeking to motivate creators of all stripes (rather than merely postulating for "energy constraints"), creating a vision of what is possible when we talk about energy, materials and regional planning. Sustainability is key, and we want this to be upheld throughout the architectural, artistic and social planning aspects of our work.

be.passive claims the right to exercise free speech: it does not act as a mouthpiece for any political authority in any industry, any professional organisation or even any member of passive platforms. **be.passive** first and foremost serves society in the broadest sense. It works towards the welfare of all, through promoting the idea of energy in the public interest, towards the wider dissemination of knowledge and best practices. It puts the good of all ahead of any special interests.

Finally, **be.passive** aims to share knowledge and experience in design as freely and as transparently as possible, including the implementation and promotion of passive architecture. It sees this open source ethos as a pre-requisite for the exchange of knowledge and practices, the establishment of a network of stakeholders and a measure of influence touching everybody. Please do not hesitate to consult our online editions at www.bepassive.be.

If you agree with our editorial line, please do not hesitate to share your experiences or suggest a topic or an article by contacting the editor. "Do something : **Be Passive!**", and so here is the plan!

summary

"walking the park" #01

Design and constructed by:
Jacob JeBailey
Asher DeGroot
Kevin James
David Gallaugher
Photo:
Andre Forget

photo
Filip Dujardin

on the spot

Dubrucq 222

Social or passive? Both, of course! 8 social housing projects along with neighbourhood facilities are being carried out by B-architecten as part of the Escaut-Meuse 'sustainable neighbourhood' contract in Molenbeek. To keep tenants readily informed, a screen located in the lobby will display the building's energy consumption. ■

> arch: www.b-architecten.be
> contractor: www.gillion.be


08


03


07


05

01 Nursery - rue de l'Hectolitre (BE)

Success at the first attempt for this nursery catering for 48 children in rue de l'Hectolitre in Brussels. The recessed architecture enables a vertical nursery on 4 levels.
Architect : www.r2d2architecture.be

02 Back to the Canal (BE)

A hotel and training centre for the town of Molenbeek-Saint-Jean. The Old Malthouse will be renovated to the low energy standard and it will host a Hotelier Training Centre and CASCO areas, while a new passive construction with a hotel training centre will round off the complex, similar to a watchtower.
Surface area 6.100 m².
Architects **:** www.escaut.org, www.ms-a.be
and www.grontmij.be

03 Victor Hugo School in Roubaix (FR)

2200m² for a new Victor Hugo school to be built as part of the urban renewal of the town of Roubaix and its Agenda 21.
Architect : www.dealzua.com

04 MD2E (BE)

"Centre for Jobs and Early Childhood." A single counter and its styling will bring together the joint regional and federal infrastructure relating to jobs, as well as a crèche, to be built on the ground floor. This is a flagship project for the Saint-Denis quarter contract in Forest.
Architect : www.A2M.be
Stability : www.tpf.be
Service engineer : www.jzh.be
Contractor : www.mmsitty.be

05 XXXL (AT)

With 470 passive homes, these buildings in Innsbruck form the largest residential passive complex in Europe. Tenants will soon occupy these apartments, with an energy consumption as low as just 7kWh/m² per year!
Architect : www.din-a4.at

06 The biggest (CH)

The figures tell the whole story - over 64,000m² of passive and "eco" offices. Would you believe it? The extension of the Credit Suisse headquarters in Zurich reflects a comprehensive approach. It was designed as a polymorphous city structure. The architectural superimposition is expressed using the different scales of project.
The complex as a whole brings to mind a body with life flowing through its cells. The result is a building made up of free "zoning", as opposed to a rigid frame, which can accommodate over 8000 employees. Work on the project is coming to an end.
Architect : www.stuecheli.ch
Constractor : www.hrs.ch

07 "E la nave va" in UK

The Brussels-Capital region has already bestowed an award on a passive floating hotel project (*Exemplary Building* winner 2009). In the United Kingdom, the construction of a boathouse has just begun for the Royal School of Worcester.
More info:
newsroom.ecocustomhomes.com/?p=31613
Architect : Associated Architects
www.associated-architects.co.uk/

08 Peronne goes passive (FR)

A refurbishment of a listed industrial water mill in Peronne, north of France.
It will be renovated into 40 appartments, offices and a eco-museum.
Architect: www.a2m.be

text
Caroline Chapeaux

photo
Bénédicte Maindiaux

With twenty years of experience in conventional financial institutions, Olivier Marquet opted to take over as head of Triodos Belgium in 2003. This is a sustainable bank that makes a direct link between the economy, human beings and their environment.

focus

Olivier Marquet, Triodos

the ethical banker

text
Caroline Chapeaux

With twenty years of experience in conventional financial institutions, Olivier Marquet opted to take over as head of Triodos Belgium in 2003. This is a sustainable bank that makes a direct link between the economy, human beings and their environment.

What prompted Olivier Marquet to switch to ethical finance after all those years? Having worked for twenty years in various management positions at Anhyp and subsequently ING, he became head of Triodos Belgium. This is a bank that invests its customers' deposits in sustainable development projects. "My way of thinking and a great deal of reading led me to this position. I was convinced there were two ways to change the world: the transfer of knowledge and the transfer of money", he says. He applied to a new management position at Triodos having heard about the vacancy from a close friend. "I wanted to work for what I believe in. Since then, not a day has gone by where I have been unhappy going to work in a bank. Knowing that what I do adds value is an exciting thought. My employees are right behind me. We are all passionate about the bank's ethos. "

Triodos was founded thirty years ago by a handful of university professors and bankers in the Netherlands. At the cornerstone of their way of thinking lay a simple question: How can we make the economy work for people, instead of having people work for it? The first sustainable bank in Europe answers this question with a simple model - linking its customers with entrepreneurs developing promising sustainable projects (renewable energy, green construction, nursing homes, social economy enterprise, etc). The objective is to fund community projects that are environmentally-friendly and to develop innovative and responsible companies.

Triodos means "three ways" in Greek: People, Planet, Profit. Profitability is certainly among the bank's objectives, however this is balanced by other objectives that are valued just as highly... Looking beyond the bottom line to focus on the bank's social vocation is what makes it a truly unique model- something which has now caught on throughout Europe.. The bank has grown to include the Netherlands, the United Kingdom, Spain, Germany and Belgium. Despite the global financial crisis the group has managed to keep its head held high. It continues to grow by 20-30% per year and funds over fifteen thousand projects across Europe. The Belgian branch has a lot to be proud of, with a 24% increase in deposits in one year[1] and around one thousand three hundred projects funded, the bank has seen unprecedented success, all of which underscores the suitability of the model. The crisis has even had a positive impact for Triodos, attracting a large number of new customers[2], disappointed by their experiences elsewhere. The number of savings accounts opened, investments into the bank's mutual funds and share certificates continues to grow. Their commitment to transparency has provided many customers with the confidence needed to invest their funds., particularly after the events of 2008.

You know where your money goes

Far from supporting the opacity of the financial markets, Triodos publishes commercial loans granted on its website[3] and in its quarterly magazine. "We only fund the real economy. By that, I mean that we personally know the recipients of our funds," says Olivier Marquet. Our customers know where their money is going and what it is being used for".

Projects are funded following a deep-seated analysis of the cases brought before the bank. Experts work together for the true ecological, societal and cultural gain of an initiative before giving it the go-ahead. "We are part of the financial system, but we always act according to strict ethical and environmental criteria," emphasises the banker. We consider the social, cultural and environmental impact of all the products and services we offer. Finally, like any other bank, we only accept projects that pose a reasonable level of risk".

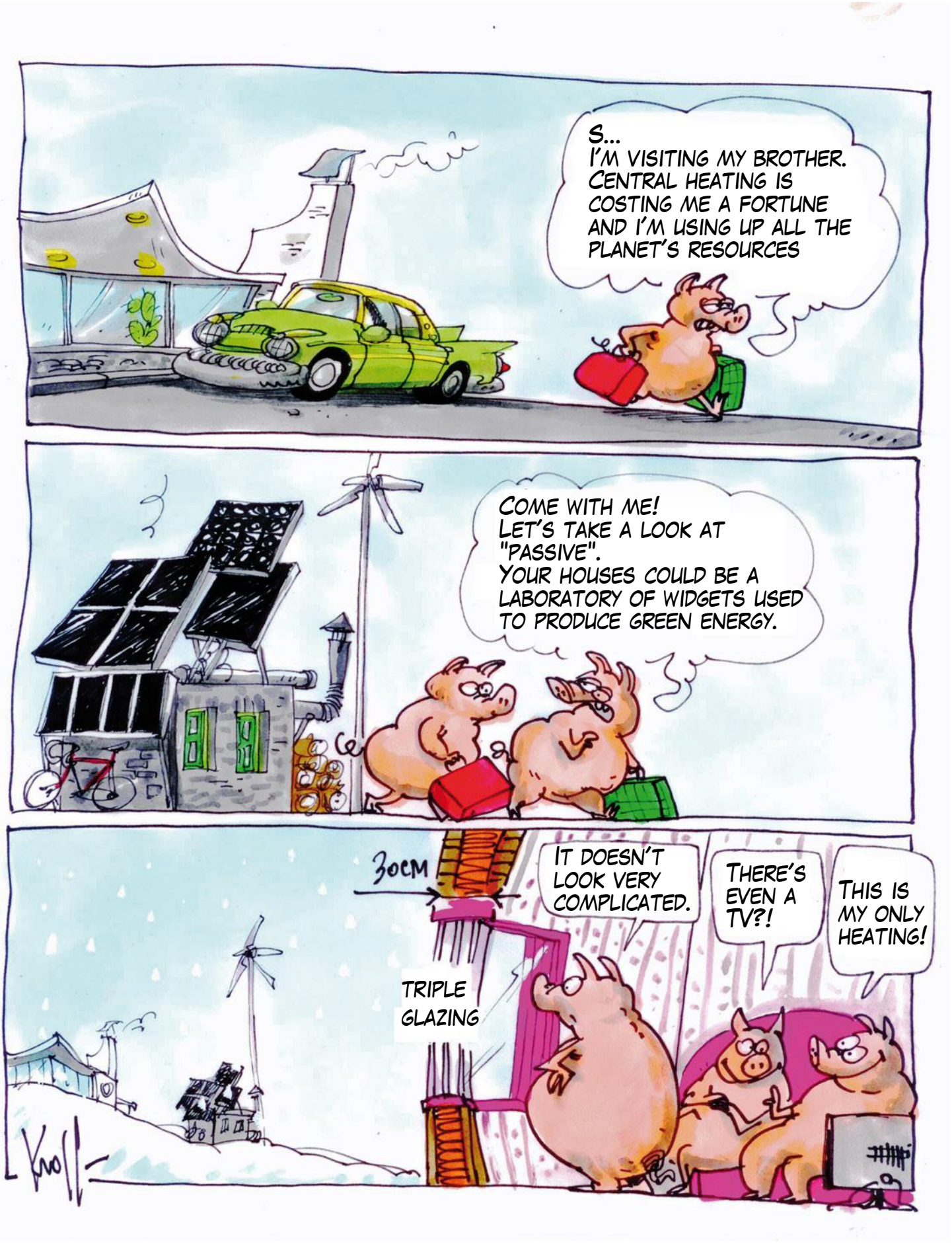
The small Dutch bank has, however, revealed itself to be bold. Oxfam, Exki, the Zinneke Parade and Lawyers without Borders are among the beneficiaries of loans granted by the Belgian subsidiary. With a visionary outlook, it has enabled a number of sustainable companies to emerge and, for example, was the first bank to raise enough investment to finance wind power in Belgium.

By joining the leadership of Triodos, Olivier Marquet has placed a bet on a model close to his convictions; where money promotes positive and sustainable social change, and transparency in banking and humanity take centre stage... ■

1. Triodos Belgium achieved 709 million euros of savings by late 2009. Source: Triodos Bank Annual Report 2009, available at www.triodos.be
2. In Belgium, the threshold of forty thousand customers has been exceeded, and the team has grown at exceptional speed to grow from fifty to eighty people within the space of two years.
3. A new Google Maps application shows the projects supported by the Triodos Group and their details on a location map. It is available at: www.suivezvotreepargnealatrace.be

For more information : www.triodos.be

drawing
Pierre Kroll



.be passive

Based on "be stupid" campaign from Diesel

a quarterly magazine by bepassive asbl
www.bepassive.eu

Coming from the United States, the enthusiasm for shale gas is about to reach European shores, and from there on to the rest of the world. The rush for "shale" could shake up the geopolitics of energy. But at what cost?

global view

there's water in the gas!

text
Gilles Toussaint

When it quietly approved three energy companies to prospect French territory in the hope of finding new deposits of "grey gold", the government of Nicolas cannot have been thinking clearly. A total of some 15,000 km² were open to exploration, including part of the Parc des Cevennes, townships in the Ardeche region and the Larzac Plateau. Larzac! Such a beautiful rural landscape - host to the anti-globalisation movement and the birthplace of José Bové. This is provocation-pure and simple.

The objective of this search is shale gas. This is the new Holy Grail of fossil fuel prospection - the bugbear of environmental campaigners. To recover gas trapped in layers of shale, engineers use a technique known as "hydraulic fracturing". A horizontal well is created to reach the target area, located some 2000 to 3000 metres in depth. A huge quantity of water containing a cocktail of chemicals and sand is then injected at high pressure to break the rock. The gas can then escape through the fissures held open by grains of sand. Although a straightforward process on paper, in reality the principle is very difficult to implement.

To understand the high emotions that this topic has aroused, we just need to look at the experience on the other side of the Atlantic. A marginal concern just a decade ago, the exploitation of shale gas skyrocketed in 2008, to the point that this "unconventional" resource now provides half the gas consumed in the United States. Dwindling reserves of conventional gas and the prospect of soaring prices in North America have boosted the interest of investors in this potentially lucrative niche. This development was facilitated by the preferential treatment granted by the former Bush administration, which has exempted the industry from a series of environmental measures set out in water protection laws. The fact that former Vice-President Dick Cheney was the head of the Halliburton energy company in a previous life is obviously just a coincidence.

This "miracle" hides a dark side recently exposed by a shocking documentary. In "Gasland," director Josh Fox went out with his video camera to meet the unsuspecting victims of this energy frenzy, gathering a variety of accounts from residents

bemoaning the disastrous consequences of the extraction process employed. The image of a stream of tap water that ignites when a cigarette lighter is held near it has become a talking point.

Criticism has mounted as the months have gone by. A study conducted by a professor from Cornell University concluded that the overall CO_2 cost of shale gas would be worse than coal. And to add insult to injury, the industry is praising the cleanliness of this energy! Above all, water is at the heart of this new ecological battleground: 10 to 20 million litres are transported by tanker trucks for each well. And they are quickly depleted. Drilling has to be repeated a few hundred metres further away. Some people also point to the additional hurdle for shale gas which is the emergence of renewable energy.

A few weeks ago, the New York Times entered its voice into the debate by posting more than 30,000 pages of secret reports from the US Environmental Protection Agency (EPA), the public authorities and the gas industry. These show that the environmental and health impacts are even more disastrous than was previously thought. Public health issues relating to water and air pollution have been observed in at least a dozen U.S. states, while in 2010 asthma was identified in 25% of small children in six Texas counties - more than three times the average level for people in that State. For the first time in its history, Wyoming was unable to meet the air quality standards due to toluene and benzene emissions (carcinogenic chemicals) released from the wells. It also appears that the gas has seeped into several water tables in Colorado, Ohio, Texas, Pennsylvania and West Virginia.

And the rotten cherry on the cake is that a number of studies highlight concerns about the impact of fracture fluid on the quality of drinking water. Part of it is actually pumped during the gas extraction phase. Besides the soup of chemicals it contains (although this represents less than 1% of the total volume), this mixture is loaded with various salts and toxic impurities as it passes into the well, and also radioactive elements with rates that may lie well above legal standards. A number of reports show that this mixture regularly finishes up in unsuitable treatment plants before being discharged into rivers, where water is pumped to feed into the drinking water system.

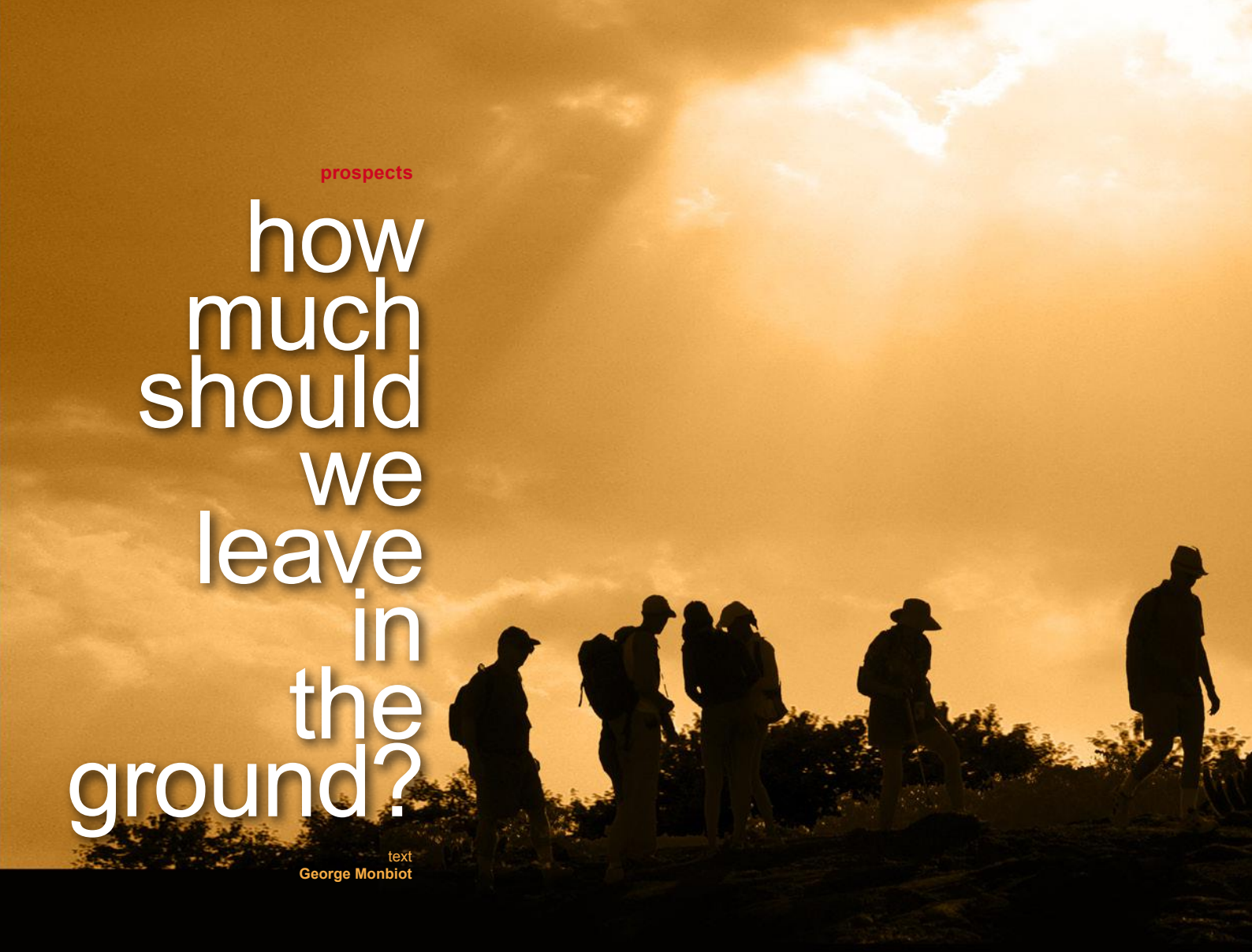
With warning signs growing, Congress instructed the EPA to investigate. This body has been conducting work over several months and is expected to deliver its findings by the end of 2012.

According to experts, global reserves of shale gas could represent one to two times the conventional natural gas reserves. These figures should, however, be taken with a pinch of salt, given the strong uncertainty about the quantities that are actually usable. Whatever happens, it is hardly surprising to see many countries won over by shale fever. This is especially true given that U.S. companies, with their technical expertise in extracting, seeking to position themselves in foreign markets. Canada has quickly followed the example of its more powerful neighbours. China hopes to find in this resource some relief from their current energy concerns. And Europe hasn't escaped this craze: exploratory projects are underway in several Member States, while a consortium of major energy companies has launched a study detailing European potential in this area.

But coming back to José Bové: Denouncing the lack of transparency that surrounds this issue, the Green MEP called for mobilisation. Although his call for the establishment of a moratorium has not yet been heard by his EU colleagues, he has created a stir in France. In the face of rising protests in the regions concerned, the French government has temporarily suspended exploration work in order to conduct an impact study whose findings should be revealed in June. Meanwhile, resistance is being organised. Several opposing demonstrations have been held and 80 MPs and senators from all political persuasions have expressed their opposition to these projects. Given the stakes, the stand-off is far from won. The Energy Minister, Eric Besson, has said that France has not closed the door on this resource. The question is whether, as argued by its proponents, shale gas could be exploited under environmentally and socially acceptable conditions while remaining economically competitive, or whether this "gas bubble" is set to implode.

"*Drill Baby, Drill!*" The risk is that the new Eldorado could end up as Waterloo. ■

how much should we leave in the ground?



text
George Monbiot

The two papers on carbon emissions published in Nature last week were ground-breaking: they show us how much carbon dioxide we can produce if we're to have a reasonable chance of preventing two degrees of global warming. It's a completely different approach from the UN's and national governments'. They set targets for reductions by a certain date but have nothing to say about the total amount of carbon we can release.

One of the papers, by Myles Allen and others[1], suggests that we can burn, at most, another 400-500 billion tonnes of carbon at any time between now and the extinction of humanity if we want to avoid two degrees of warming. The other, by Malte Meinshausen and others[2], suggests that producing 1000 billion tonnes of CO_2 between 2000-2050 would give us a 25% chance of exceeding two degrees. That's a lot less than Allen's estimate, as one tonne of carbon produces 3.667 tonnes of CO_2 when it's burnt : 1000 billion tonnes of CO_2 arises from 273 billion tonnes of carbon.

But let's err on the side of valour and use Allen's figures. Moreover, let's disregard all other greenhouse gases (which, he suggests, should reduce the total CO_2 budget to under 400 billion tonnes). How does his maximum allowance of carbon compare with known reserves of fossil fuel?

Let me make two things clear before I make this calculation. First, reserves are not the same as resources. A resource is the total amount of a mineral found in the earth's crust. A reserve is the part of the resource which has been identified, quantified and is cost-effective to exploit. In most cases this is likely to be a small percentage of the total resource.

Secondly, there is some controversy over the official figures for fossil fuel reserves. This is especially the case for oil, as the members of OPEC are extremely secretive about how much they possess. But for the sake of argument, let's take them at face value.

According to the World Energy Council:

- global reserves of coal amount to 848 billion tonnes[3]
- global reserves of natural gas are 177,000 billion cubic metres[4]
- global reserves of crude oil are 162 billion tonnes[5]

Because the calculations are much harder and the quantities involved less certain, I am ignoring unconventional sources of fossil fuel, such as tar sands, oil shales, bitumens and methane hydrates, as well as liquid natural gas resources.

On average, one tonne of coal contains 746 kg carbon[6]
One cubic metre of natural gas contains 0.49 kg carbon[7]

The figure for oil is less certain, because not all of its refinery products are burnt. But the rough calculation here[8] suggests that the use of a barrel of oil releases 317kg of CO_2. Depending on the density of the oil, there are roughly 7 barrels to the tonne, giving an approximation of 2219kg CO_2, or 605kg of carbon.

So the carbon content of official known reserves of coal, gas and oil amounts to:

+ [848 x 0.746 = 633]
+ [177,000 x 0.00049 = 87]
+ [162 x 0.605 = 98]

Total conventional fossil fuel reserves therefore contain 818 billion tonnes of carbon.

Even ignoring all unconventional sources and all other greenhouse gases and taking the most optimistic of the figures in the two Nature papers, we can afford to burn only 61% of known fossil fuel reserves between now and eternity.

Or, using Meinshausen's figure, we can burn only 33% between now and 2050. Sorry – 33% minus however much we have burnt between 2000 and today.

So the question which arises is this : which fossil fuel reserves will we decide not to extract and burn? There is, as I have argued before[9], no point in seeking to reduce our consumption of fossil fuels unless we also seek to reduce their production. Yet, apart from the members of OPEC (who do it only to shore up the price), no government is attempting to limit the amount of fuel extracted. Far from it; they all pursue the same strategy as the United Kingdom: to "maximise economic recovery"[10].

The test of all governments' commitment to stopping climate breakdown is this: whether they are prepared to impose a limit on the use of the reserves already discovered, and a permanent moratorium on prospecting for new reserves. Otherwise it's all hot air. ■

Note of B. Deprez : Yasuni

Ecuador created the Yasuni National Park in 1979 - made a World Biosphere Reserve by UNESCO in 1989, considering it one of the richest sites for biodiversity worldwide, with 2274 species of trees (644 per hectare), 1600 species of birds, 4000 orchids, 100,000 insect species, 150 amphibians, etc. spread over 982,000 hectares. "On a single hectare, the reserve has more plant species than all of North America combined."

Beneath this reserve, however, lies the biggest oilfield ever operated in the region, and extraction projects currently threaten the Yasuni park, and more broadly, Ecuador - a country with the highest rate of deforestation on the South American continent.

In 2008, the government proposed to waive 20% of the oil gain - specifically halting exploitation on the Yasuni reserves, amounting to 850 million barrels of oil - provided the international community symbolically redeems the unpumped oil. In 2010, Ecuador established a fund to manage this scheme, an initiative for which the UN, Germany, Belgium, the European Union, Italy and Spain have pledged support - support that is slow to materialize, putting the government of Ecuador in a more than uncomfortable position. Will it protect the forests and its indigenous population, or will it buckle under the combined pressure of the oil companies and the indifferent oil-guzzling nations?

1. www.nature.com/nature/journal/v458/n7242/full/nature08019.html
2. www.nature.com/nature/journal/v458/n7242/full/nature08017.html
3.www.worldenergy.org/publications/survey_of_energy_resources_2007/coal/627.asp
4. www.worldenergy.org/publications/survey_of_energy_resources_2007/natural_gas/664.asp
5. www.worldenergy.org/publications/survey_of_energy_resources_2007/crude_oil_and_natural_gas_liquids/638.asp
6. http://bioenergy.ornl.gov/papers/misc/energy_conv.html
7. http://bioenergy.ornl.gov/papers/misc/energy_conv.html
8. http://numero57.net/?p=255
9. www.monbiot.com/archives/2007/12/11/rigged
10. www.berr.gov.uk/files/file39387.pdf

* Published with permission of the author, www.monbiot.com. First published in The Guardian, 6 May 2009. .

interview: Evelyne Huytebroeck

Government Minister for the Brussels-Capital Region in charge of the Environment, Energy and Urban Renewal.

On 3 March 2011, the Brussels-Capital Region passed an order amending the decree of 21 December 2007 establishing the requirements and methodology for energy performance in buildings. The content of this draft order aims at immediately setting the passive requirements for 2015 and modifying some of the shortcomings related to the method of calculating the PEB.

Regarding passive, Article 5a provides that from 1 January 2015, individual PEB dwelling units will present:

- a net heating requirement of less than 15 kWh/m² per year;
- a primary energy consumption for heating, hot water and electrical accessories of less than 45 kWh/m² year;
- an air-tightness under 50 Pa less than 0.6 renewal per hour;
- an overheating percentage beyond 25°C less than or equal to 5% for the time of year.

Furthermore, Article 6a provides that from 1 January 2015, PEB Offices and Services units and PEB Education units will present:

- a net heating requirement of less than 15 kWh/m² per year;
- a net cooling requirement of less than 15 kWh/m² per year;
- a total primary energy consumption less than [90 - 2.5*C] kWh/m² per year. Definitions have been made of the compactness, i.e. the ratio between the protected volume and surface leakage [m³/m²];
- an air-tightness under 50 Pa less than 0.6 renewal per hour;
- an overheating percentage beyond 25°C less than or equal to 5% of the time of occupation.

The objective is already to give a clear signal to developers, architects and design firms for buildings whose application for planning permission will be submitted after 31 December 2014.

Furthermore, the Brussels-Capital Region has launched its 4th *Call for Exemplary Buildings*. Applications must be submitted no later than Thursday, 30 June 2011 at 1pm, with the Brussels Environment Division, Sustainable City, Energy and Climate, Exemplary Buildings Department.

be.passive : Belgium has a reputation for lagging behind in terms of energy performance. Is it possible to say that Brussels is trying to catch up?

Evelyne Huytebroek : "The last shall be first. This 2000 year-old sentence perfectly encapsulates the energy policy in the Brussels Region. Although we had the most poorly insulated homes in Europe in 2004, all new construction will have to comply with the passive standard by 2015 - which will enable people to consume ten times less energy than they would use for heating a "traditional" new home. Approved at the 2nd reading by the Government on 3 March 2011, this new requirement makes Brussels a world leader in terms of energy performance. The Recast Directive on energy performance approved in April 2010 states that all Member States should impose such a standard for new construction, but only from 2021. So Brussels is ahead of its time by six years!

This huge step was made possible by all the experience accumulated in Brussels since the previous legislature: the energy premium for passive buildings and the three editions of the *Call for Exemplary Buildings* are helping make more than 100,000m² of passive buildings - homes, offices, schools, nurseries, a funeral home and more. These firm achievements have demonstrated that it was possible, accessible and affordable.

This is also why social and public landlords (Housing Corporations of the Brussels Region, the Development Corporation for the Brussels Region and the Housing Fund) have decided that all new housing projects will be passive in 2010 in Brussels. All these passive buildings place Brussels in the Top 5 European passive cities.

Given the prospect of dwindling energy resources and the continued rise in energy prices, it is important to take the political steps necessary for the people of Brussels and Brussels itself to continue to live comfortably in "almost zero energy" homes.

be.passive : The passive standard in 2015 will only relate to new buildings. What do you see for the renovation sector? How can we introduce best practices in existing buildings?

Evelyne Huytebroek : Although it is now fairly easy to reach the passive standard for new construction, we cannot say the same for major renovations. Resolving thermal bridges and ensuring good weatherproofing during renovation work are often insoluble puzzles. Imposing the passive standard for major renovation work is therefore not on the agenda.

However, it is possible to reach a low energy level (consumption divided by 2.5) or even a very low level of energy (consumption divided by 5). The energy premiums that the *Calls for Exemplary Buildings* are helping to make it a reality that more than 200,000m² of buildings are low to very low energy. Nevertheless, further study opportunities to achieve performance levels for different types of renovation will be launched. The results will help to find the optimum setting within the energy performance of buildings which undergo major renovations.

There is still the field of simple renovations - the improvement of energy performance for buildings on an ad hoc basis, such as replacing the frame, roof insulation or replacing the boiler. Simple renovation has received a significant boost in Brussels thanks to prizes for renovation grants and green social loans for example. Not to mention social awareness and training - free support for anyone who asks, the Energy Challenge for households, the local action plan for energy management in townships, hospitals and schools. Existing buildings in Brussels actually represents the largest potential for improving energy efficiency. This is why this has been, and will remain, the focal point of attention of energy policy in Brussels.

be.passive : What has the impact been of all these measures on the cost of construction and renovation?

Evelyne Huytebroek : The 100,000m² of passive buildings (built or under construction) in Brussels show that the overhead for passive construction is negligible (5 to 10%) and can be quickly recovered by reducing the heating bill (by 90 %). Furthermore, this additional cost, following the experience of the construction sector, is moving towards zero. So I will not be surprised if by 2015, with the emergence of new technologies and new products, a new passive building is no more expensive than a "traditional" building.

be.passive : What is the training situation in companies?

Evelyne Huytebroek : Having boosted demand with all these initiatives, we then need to look to upgrade the provision of passive construction. The training of stakeholders in sustainable construction is the focus of the Employment-Environment Alliance, which was signed by the Brussels government and 50 public and private partners at the Batibouw Fair on 25 February 2011. This Alliance includes 44 initiatives, the cost of which is estimated at €5.5 million, to be launched in 2011. Training in "passive design/ low energy" - to be held in May-June 2011 by Bruxelles Environnement - will allow both designers and Project Owners to familiarise themselves with these concepts. ■

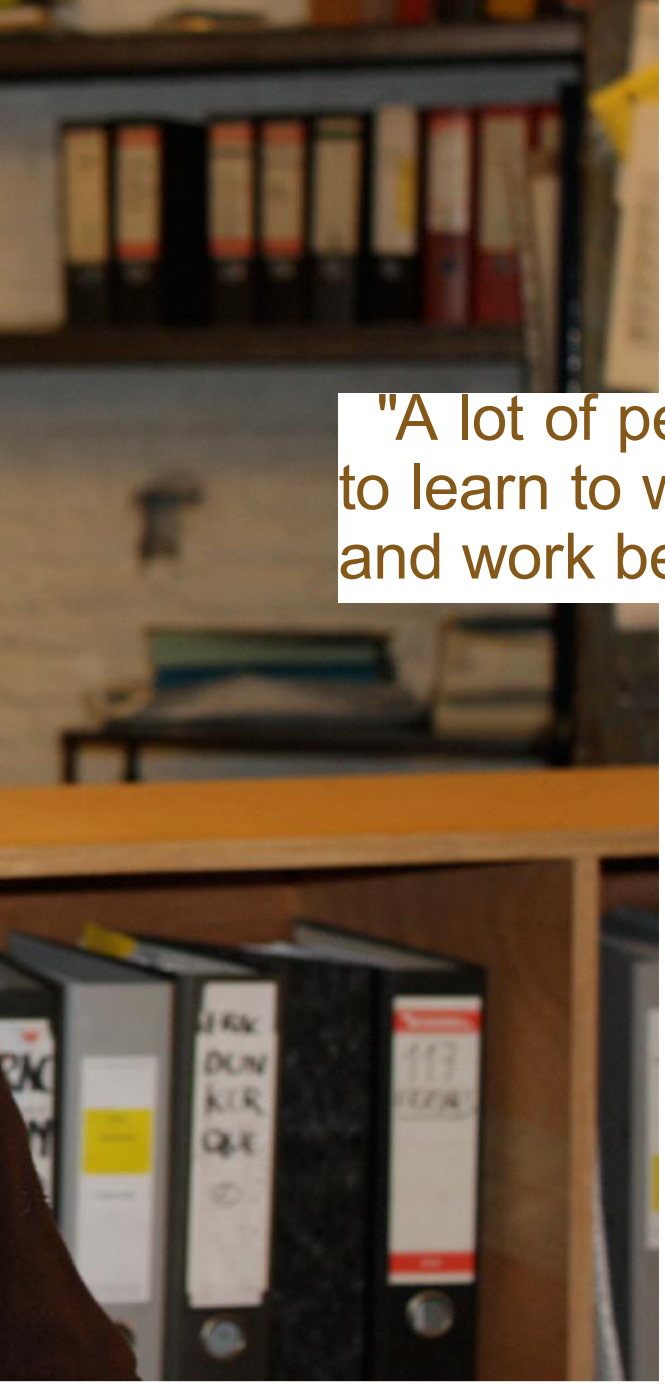
Mr. Bastin, you were named as the first Master Architect ("Bouwmeester" in Dutch) of the Brussels-Capital Region last November and you have been appointed for five years. What does a Master Architect do and how is this function organised, specifically?
The Master Architect is a function that ensures the architectural quality of institutional projects initiated by regional institutions, both in terms of procedures and results. It has nothing to do with either council works or private projects.

I see there is already excellent work going on in Brussels: the district contracts, the work of the IBGE, the Beliris agreements, for example. . What can a Master Architect bring to the table? I see my role as a centrepoint and a catalyst for new projects. A general reading and coordination of all works will also strengthen the image of Brussels to the outside world. It is sometimes useful to describe a function by that which it is not: the Master Architect is neither a regulator nor someone who imposes his vision of architecture!

In the Brussels-Capital Region, the Master Architect is a function created and funded by five ministers: Charles Piqué (Minister President), Brigitte Grouwels (Public Works), Christophe Doulkeridis (Housing), Emir Kir (Planning and Public Property) and Evelyne Huytebroeck (Environment, Energy and Urban Renewal). My main partner is the Minister President, but it is a sign of our success to also have such a commitment from other ministers. Initially, I can build a team of five people around me, mainly recruited from regional administrative bodies. We will spend the next six months reflecting on our vision and we will present a report on this subject at the end of the first half of 2010.

Is it a purely symbolic position?
It's more than that. The power comes from the legitimacy granted by the five ministers who fund this function from their own budget, in particularly difficult economic times.

A Passive Brussels in 2015 ... What does this mean to you?
The way that you phrase the question sounds something like a dream - Brussels has too much property to become passive in 2015! But dreams or motivational driving forces. What seems most important to me is to diversify the objectives within the parameters (climate, renovation versus new, etc).



"A lot of people will have to learn to work differently and work better..."

interview

meet Olivier Bastin

Master Architect / Bouwmeester
Brussels Region

text
Edith Coune

In this case, I see the concept of passive as new information with which architects must learn to juggle. Architects must adapt to new challenges and it takes time. For now, most do their own thing and only a few have already mastered the technique. Before they play a symphony together, they will need plenty of time to practice.

How can we speed up the process? Through training?
The offer of training exists - we simply need to find our way through the plethora of information around this subject. I don't believe everyone needs to be trained, or at least not everyone needs the same level of training. I lean towards the contribution of support from specialists in each project, where necessary, for example in the physics of building. This help can be either private or organised in groups, as appropriate.

Will the changing requirements for energy performance in buildings influence the beauty of architecture?
I am not prepared to comment on beauty in architecture!

Will changing requirements for energy performance in buildings influence the urban landscape?
Yes, certainly. To my mind, the urban landscape is not a single photo image, but rather an image in perpetual motion. And it is my role as Master Architect to help to accept this idea of constant change - of the constant evolution of a city.

Will sustainable development and the provision of multidisciplinary urban planners, architects, landscape for example,.stimulate the transformation of the city landscape.

Allow me say that as Master Architect, one of my priorities for the sustainable city will relate to the quality of procedures and quality of work. Some existing procedures are very poorly designed and work needs to be done alleviate working circumstances. Many people will have to learn to work differently and to work better. ■

what do you think?

text
Lili Julien

photo
Christophe Urbain

Alex De Broe & Barbara Oelbrandt
Asse
Detached passive house
Architect : Blaf
www.blaf.be

You opted to build and live in a passive house...

"We decided to take plenty of time to design the house of our dreams: that of an architect, a specialist in wind energy and their three children. Secondly, we consulted the passive house platform to see if it was possible to make it passive. Our main wish was to have a very transparent and very clear house. We designed large windows. From there, it was not difficult to make the house passive. We made the bay windows south-facing to make them a sun trap. Consequently, the essential triple glazing became the largest item on the budget for this project. Overheating is avoided using mobile textile screens which block 90% of the heat, without obscuring the view. Our future plans include installing a large solar panel system over our roof area to make us self-sufficient with regards to the whole family's energy consumption. We also have plans to be driving an electric car, which would also charge up on this system." ■

missionary

a finger and the moon

text
Bernard Deprez

A book whose author was speaking on the radio two weeks before the earthquake in Japan, will certainly end his career prematurely. It was entitled: "Fear is beyond our means: Finishing with the principle of precaution"[1]. A Professor of Economics, the author aggressively spoke against the "preachers of the Apocalypse" who exaggerate and hamper innovation. This kind of book will be really difficult to sell after Fukushima.

For a number of years now, some enlightened folk - such as the PMP and the PHP - have been reiterating that everyone has to reduce their dependence on oil. This became obvious in 2008, when oil prices reached $145 per barrel - mere months after they had dropped to $65. Today standing at $107 ($117.36 for Brent), this still represents an increase of more than 65% over five years! This sounds like a massive increase to me, especially when conventional scenarios (to calculate the return time for a passive house, for example) are based on an evolution

considered "pessimistic" of 5% per year.

In summary: It seems increasingly clear that the cards we are dealt with do not cater well for our actual situation.. Our minds are still mired in what they think they know and claim to control. Our faith in technology is reiterated at every opportunity. "When the sage points to the moon, the fool looks at the finger." Today it seems that we don't even have to point so far. We don't need apocalyptic preaching when the reality goes beyond all fiction. And there is no need to scare everyone to show that the world is changing, day after day.

We want this world to be more sustainable. What can that mean? Suppose first that it is possible to draft a response from different perspectives.

Like any living organism, man is biologically preconfigured to preserve his own existence - his "information-structure" in the words of Henri Laborit. Like any living organism, he can only do this as part of an adapted ecosystem, in which he regularly draws nutrients and energy. From this point of view, what insiders call the "environmental pillar" or "Planet pillar" (in which humans logically recognise themselves as a living species), sustainability is to ensure the conditions necessary for the self-replication of living systems, from single-celled organisms to major ecosystems. It is the automatic aspect that is important: human society is unable to empty or fill the oceans - in short, to make it rain. These free environmental services are irreplaceable.

Combined with their organic dimension, humans are social animals, capable of language. They live in the symbolic realm, which structures their representations, their means of action, their place in society and giving them an appreciation of ethics[2]. All this knowledge, these tools, these ethnic features and values buzz around like a running commentary on the "natural" world. The challenge here is to live alongside one another, in good company. This is, again to insiders, the "social pillar" or "People pillar": sustainability aims to guarantee conditions for a fair life for all.

There are, of course, many different opposing views: Romain Felli[3] contrasts the "ascending" vision of political ecology to a "descendant" vision of "sustainable development" which is an attempt at a productivist economy to maintain life through certain technical corrections. But conversely, conservative Americans have always treated Ms. Brundtland, the spokesperson for "sustainable development" as a "communist". Depending on whether you are rich or poor, it will always be a political issue - the social distribution of profits and costs, including environmental, climate change and economic insecurity creating tensions, leading to social and territorial divisions between nations and at the heart of a city.

However, biological life is a constant flow of nutrients and energy. Humans, especially, draw the resources they socially consider necessary through knowledge and tools, and as required by their lifestyles and the desires that they allow themselves. This is the field of economics, in the original meaning of the word, of providing for daily needs. Prosperity, or economic sustainability, therefore consists of ensuring the reproduction of means of action for society on its environment, through the development of working capacity, tools and respect for a third term: raw materials (resources, ecological processes, etc.) This is also known as the real economy.

The economic pillar, therefore, does not directly relate to "corporate profit" (which is just a means of economic action) nor the "financial benefit" (which is only a means of the means), but rather prosperity in the broadest sense of the word. Good architecture is produced through social and environmental and social prosperity, even if it does not necessarily enrich its creator or its users. It is fundamentally an economic act.

Environmental and social sustainability therefore makes sense through this economic cycle, which is clearly symbolic from any angle you look at it, with shared technical knowledge, values and social purpose. In my opinion, we need to challenge the famous "three pillars" that provide an equivalent position to the natural, the social and the economic, as if the economy were a substance in itself. This drift is due to the new weight of economic resources in the West - the large corporations which, by influencing the evolution of law[5], have become true subjects, actors, and thus ends in themselves.

More and more resources are devoted not to the living and future generations, but to enhance the tools and devices that regulate our private consumption ... and our desires. Material and energy flows are redirected to a monstrous aneurysm, which diverts all the riches of the world to itself in a form of unbridled enjoyment, perhaps a form of art - self-referential, an economic action, but which is deployed beyond the realms of its own rationality.

I am convinced that it was an architect who, for the first time in 1485, unfolded the map of sustainability. He was called Alberti. He called "necessities" everything related to the given, to the natural, and he called "commodities" everything that was symbolic, of use, representation, functionality. His books speak almost entirely about how to settle one with another through knowledge and technology - economics. And he saw that the sustainability - symbolism relationship (or the necessitas and commoditas relationship, in fact) only produced architecture when producing enjoyment - voluptas.

Claiming one's share of the control over material and energy flows, with regard to architecture, is therefore an inherently political and subversive act. Claiming one's share of architectural enjoyment is no less so. ■

1. Jean de Kervasdoué
2. Jean Gagnepain, Leçons d'introduction à la théorie de la médiation, Peeters, Louvain-La-Neuve, 1994.
3. Romain Felli, Les deux âmes de l'écologie - Une critique du développement durable, L'Harmattan, 2008.
4. Peter Jacques; Riley Dunlap; Mark Freeman, 2008. The Organisation of Denial: Conservative Think Tanks and Environmental Scepticism. Environmental Politics, 17:3, 349-385. DOI: 10.1080/09644010802055576.
5. Thom Hartmann, Unequal Protection : The Rise of Corporate Dominance and the Theft of Human Rights, Mythical Research Inc., 2002.

pictures speak

Annie van Gemert

"Uniformity"

www. annievangemert.com

text
Edith Coune

My dear niece,

I have a story to tell you. It's not a very classy one, but I can still laugh at it. Yesterday, I had coffee with my neighbour while his son Jean was visiting. Maybe you remember him. You were at school together. He works in a construction company now, but the name escapes me. As you can imagine, we were talking about passive construction. I must say he seemed pretty impressed with my knowledge. His company is just embarking in the passive field, but of course that hasn't always been the case. He told me that some years ago, when they talked about passive design, they said something like: Ah yes, passive design! You do one fart and it stays hot for three months (I warned you: this is not a very refined story, but it's great, don't you think?)

I was wondering, though. Aren't people who live in passive houses too hot in July? It's well above 30°, and I couldn't keep cool at night. How does it work in a passive house? Is it worse or better? Tell me about it - I'm starting to be known as a specialist in passive living in the quarter and I'm banking on you to stay that way.

Aunt Monica

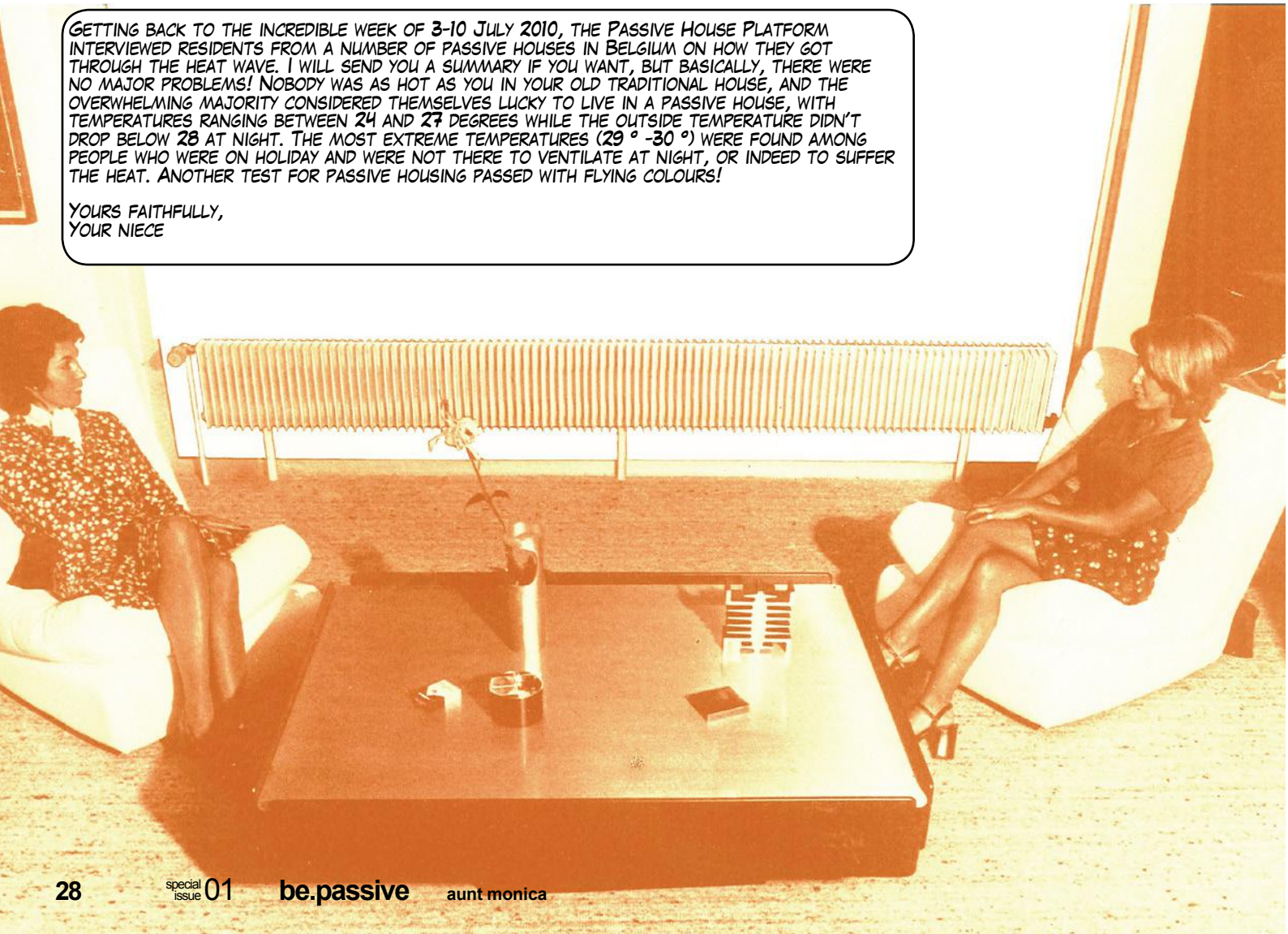
Dear aunt,

Your sense of humour is definitely not getting better with age! But basically, you asked an excellent question.

The so-called limitation of overheating has been identified as a quality criteria in passive design, in addition to insulation and air-tightness. Because heat inputs are stored ion a passive house, we need to restrict them during heatwaves, like the one we experienced in July.
This can be done through the building's thermal inertia, its orientation and the size of the windows, by setting up a sun visor ... and of course (everything often has to be at once) by the night-time ventilation, which has the attractive name of 'night cooling' (I'm telling you that so you can impress your friends). Anyway, we need to think about the project design. This is essential.

Getting back to the incredible week of 3-10 July 2010, the Passive House Platform interviewed residents from a number of passive houses in Belgium on how they got through the heat wave. I will send you a summary if you want, but basically, there were no major problems! Nobody was as hot as you in your old traditional house, and the overwhelming majority considered themselves lucky to live in a passive house, with temperatures ranging between 24 and 27 degrees while the outside temperature didn't drop below 28 at night. The most extreme temperatures (29 ° -30 °) were found among people who were on holiday and were not there to ventilate at night, or indeed to suffer the heat. Another test for passive housing passed with flying colours!

Yours faithfully,
Your niece



Now that we live in a passive house, we've had to throw out a lot of things that have become obsolete. We were tempted to keep them, just for their decorative or sentimental value, but hey, we must learn to let things go once they have outlived their usefulness. And it can make people happy and auction - there's no such thing as a small profit - bringing in enough to pay the heating bill for several decades ...

for sale

carte blanche

for sale

text and photos
Gérard Bedoret

01 > The draft excluder

Farewell little sausage thing, you did your job well. With you we felt less lonely, but the thing is: there are no longer any drafts, and your continued existence is happily at an end in a passive house.

02 > The hot water bottle

Another little companion to drop by the wayside: the hot water bottle. Icy sheets and feet that go with them are from another life, before the passive house. For those for whom it became like a soft toy or for people who like the gurgling of the warm water in the bed on a frozen morning, it's true that it might hurt to leave this one alone.

03 > Slippers

The ultimate sexy accessory, the furry slipper may join the list of endangered species in the passive age. OK: this is a sometimes torrid form of seduction in which many households find a constant source of inspiration, but we'll just have to find something else to keep the flames of passion burning*.

* be.passive suggestions available on request.

04 > Fly traps

This hungry little dangling mobile that created an atmosphere of Provence in the house no longer looks the same without the delicate winged creatures who were dying for long hours, agitatedly buzzing in their comical convulsions. Now that the dual flow ventilation enables us (if we so desire) to keep the windows closed, the bugs will lay their eggs outside, well away from our food. Flyswatters could perhaps be kept to take pizzas out of the oven, for example.

05 > Deodorizer

Okay, it had its charm - the fragrance of minty pine needles that filled the air in the home with the determination of a weapon of mass odour destruction. But now that's changed. In a house with double-flow ventilation, there aren't many odours left to destroy. So will chemical fragrances find some other way to wreak havoc on our bodies?

06 > Earplugs

Aeroplanes, pneumatic drills, trams, dogs, students, drunks, mopeds, chainsaws, lawnmowers, no outside noises can get through the triple glazing of a passive house. No more need for earplugs! Unless, whoever you have replaced your hot water bottle with snores, of course!

07 > Radiators

Yes, radiators - we'll have to get used to their absence. That's going to be weird. I know some people who find it a scary prospect. Radiators were considered part of the furniture - they brought such a...a... metallic touch. We can certainly fill the void they leave in a passive house by replacing them with other decorative objects such as anvils, suitcases, vacuum cleaners, lawnmowers, ... *.

08 > Cooker hoods

True, a cooker hood, is beautiful. Beautiful like a truck. So do not hesitate to put one in a passive house, even if there's nothing to hook it up to. Do it just for the look, because a kitchen without a hood is a bit like a house without a radiator - it's just weird. So unless you tend to cook Brussel sprouts with grilled sardines for every meal, I think we can pass on hoods in the passive house, thanks to ventilation.
For anyone who loves the sound of the hood because it covers over the sound of aircraft, please refer to "Earplugs" above. For those who like the sound of the hood because "it feels good when it stops," - well they'll have to find something else*.

09 > Hoods (2)

True, a hood is beautiful like a truck. Obviously, a passive house has no chimney. This may pose a problem for children who have been good all year and are waiting for Santa to arrive. However, my recent contacts with Santa suggest that he has already found an alternative ... ■

* be.passive suggestions available on request.

text
Marta Di Vincenzo

photos
Julie Willem, Architectes Associés

shared architecture

Aeropolis II
Avenue Urbain Britsiers 5
1030 Brussels Belgium

Client
Groep Arco - KWB - KAV - KAJ

Architect
Architectes Associés
www.architectesassocies.be

Energy consultant
Cenergie
www.cenergie.be

Stability
Setesco
www.setesco.be

Service engineering
Ingenieursbureau Stockman
www.istockman.be

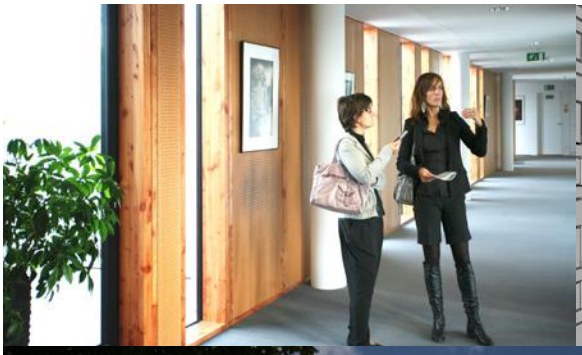
Contractors
Jacques Delens
www.jacquesdelens.be

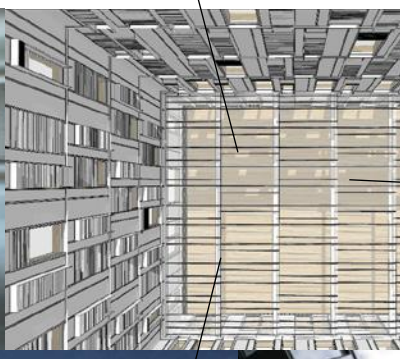
Vanderstraeten
www.vanderstraeten.be

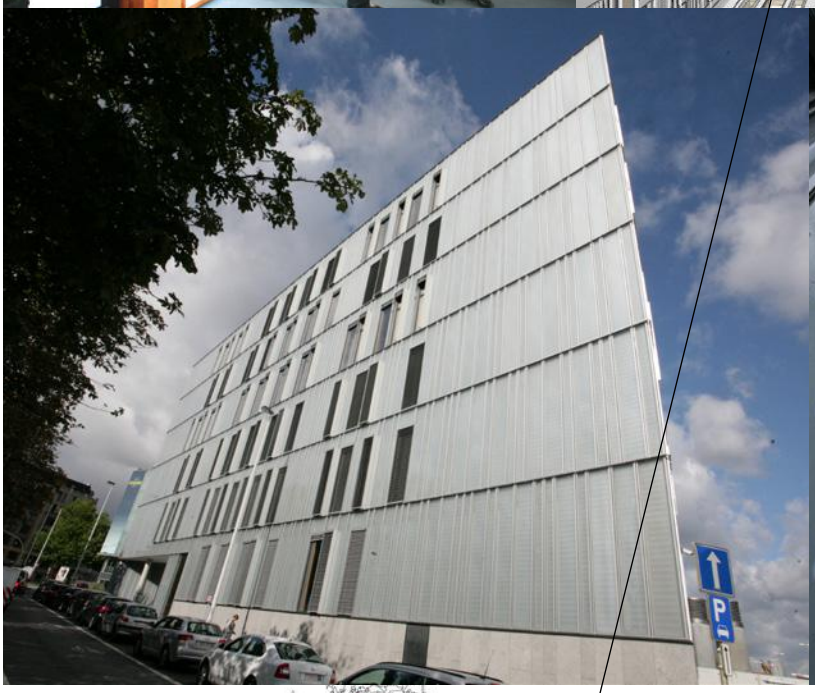
Aeropolis II, the largest commercial passive building in Belgium to date, brushes aside a great many misconceptions people have about passive construction. No, "passive" does not necessarily mean wood or brick and it is not reserved for small buildings. The passive standard does not limit the architect's freedom of expression. But achieving convincing results requires hard work, flexibility and collaboration with technicians. Sabine Leribaux, from Architectes Associés, tells us about her work.

Winner of a competition launched in 2006, an original project by Architectes Associés for the Aeropolis II offices in Schaerbeek was very different from what is in place today. Originally designed as a compact volume with a concrete structure with a brick outer layer, it includes sustainability criteria, although without achieving the passive standard. "When we won the competition for Aéropolis" recalls Leribaux, "we had just been experimenting with sustainable construction techniques on another project. Our experience with that made us want to tackle new projects with a generally green approach. We therefore decided to assess passive design costs to offer this choice to our client." According to the comparative energy analysis developed alongside Cenergie CVBA, the project's technical consultant, the passive standard would require a surcharge of 2% to 4%, which would pay for themselves over five years. Huis van de Arbeid ASBL, 70% of which is made up by the ARCO group (Dexia shareholder and investor in renewable

The trapezoid construction is built around a central courtyard - a true "heart of light" to ensure the best possible levels of light on office floors.

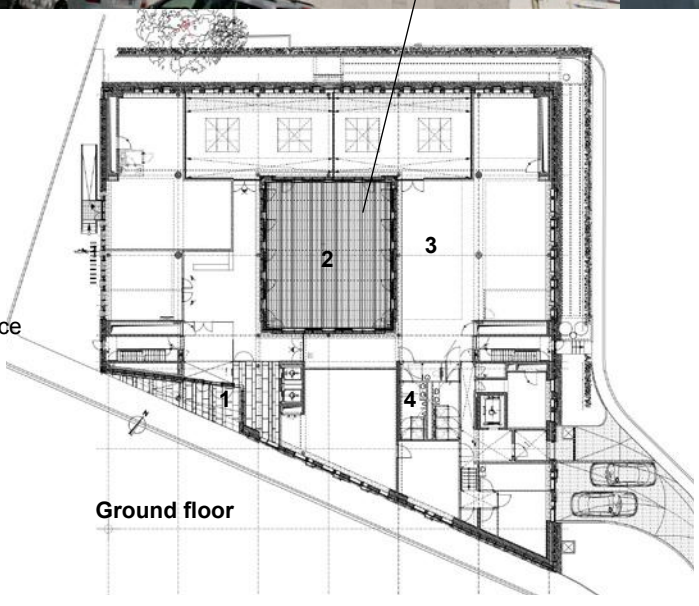




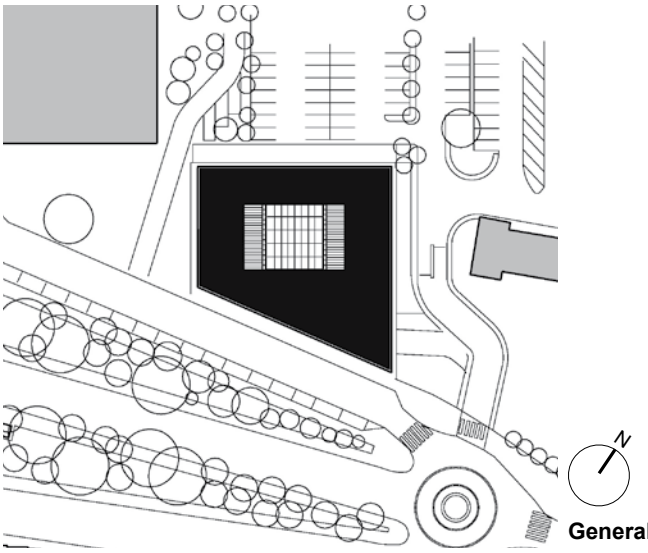


Ground floor
1 entry
2 courtyard
3 offices
4 bathrooms

Upper floors
5 offices
6 bathrooms
7 under-atrium space



Ground floor

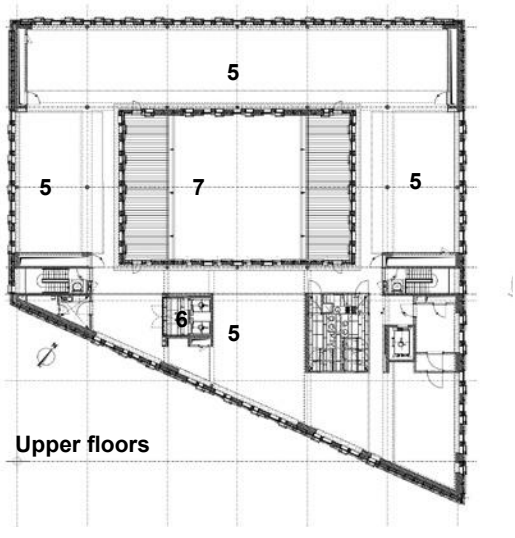


General layout

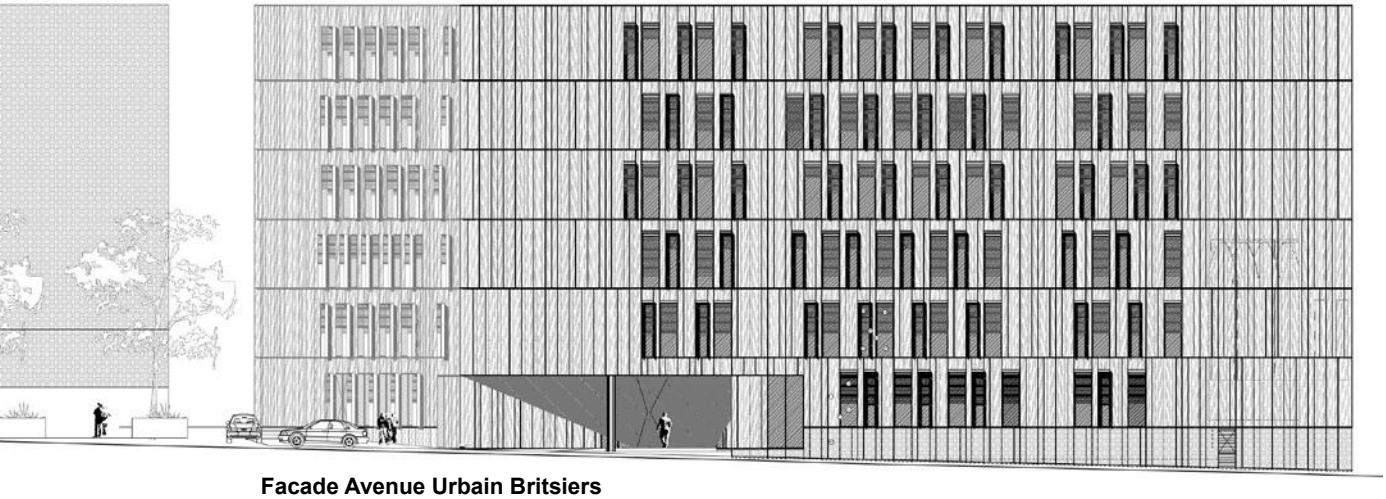
energy), is a project client and indeed the future occupant of the building. They took up the challenge. They expressed their willingness to replace the brick layer with glass.

But is it possible to construct a passive building with glass? "The curtain wall is, by definition, the most airtight option," agree the architects, "and a glass office building probably falls more in line with my architectural culture," adds Leribaux. This was therefore the beginning of a whole new experience that brought the Belgometal consultancy into the fold - a member of the Kyotec group. The first technical proposal, a double skin Regli, would have risked creating a type of greenhouse around the building. We therefore turned to something more innovative, which provides a layer of white glass enamel superimposed on a plate and framed by an anodized aluminium glazing bead: an good-looking solution, interesting to consider but with dreadful thermal performance. Only by introducing the vents on the side of the glazing beads did we finally manage to achieve the desired result. By combining the thin outer layer of aluminium with a wooden support structure filled with insulation, Architectes Associés created a passive curtain wall with limited environmental impact. Inside, a perforated multiplex panel backed with 2cm of rock wool resolves the acoustic balance. Airtightness is further secured through the use of a membrane positioned between the rock wool insulation panels (Resol, 15cm), as well as plastic elements inserted in the grooves of the wooden frames. A fibre-cement plate, covered by 5cm of Resol, closes up the wooden structure. Sheet metal and glass is attached to this framework, with an element crossing through the last layer of insulation.

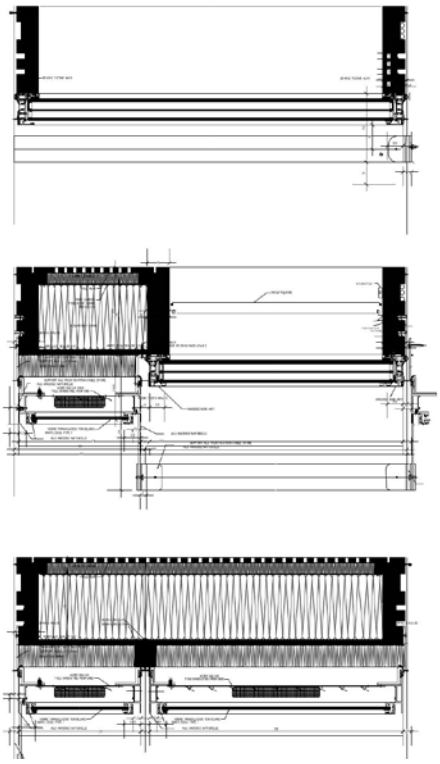
This skin comes in three façade modules: an opaque 90cm element, a fixed 90cm window and a module made up of a partially opening window and an opaque 30cm element. "It was essential to find inexpensive methods to liven up the façade. We had a certain amount of freedom in this part of the job, while sticking with prefab", said Leribaux. Arranged according to a method that architect Marc Lacour defined ►



Upper floors



Facade Avenue Urbain Britsiers



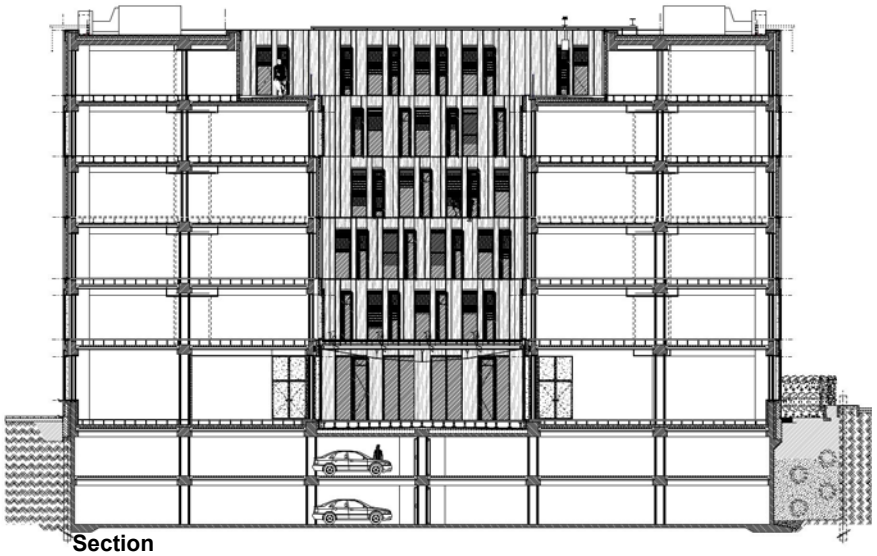
Facade details

as "randomized control", these three modules completely cover the six-storey building. The mixed element, with its protruding profiles (to hold the window opening behind the blind), add a relief to the façades. The white enamel glass with full modules bound to the plate provides a certain depth to the surface of the building and adds a shimmering effect to the pearlescent grey skin: this compact and opaque 70% covering thereby becomes clear and bright.

The module layout has been designed to ensure that a good level of natural daylight can enter offices, while allowing a flexible use of space. The office-type provides the combination of three different 90cm façade elements, for a total glazed surface area equal to just 22% of the floor surface area. The technical facilities required for air conditioning and lighting are designed in such a way that the open-plan area can be divided by a 270cm space partition without modifying the techniques used. The regularity of the trapezoid plan, built around a central courtyard, and the simplicity of the concrete structure provide great freedom for the the use and adaptation of space.

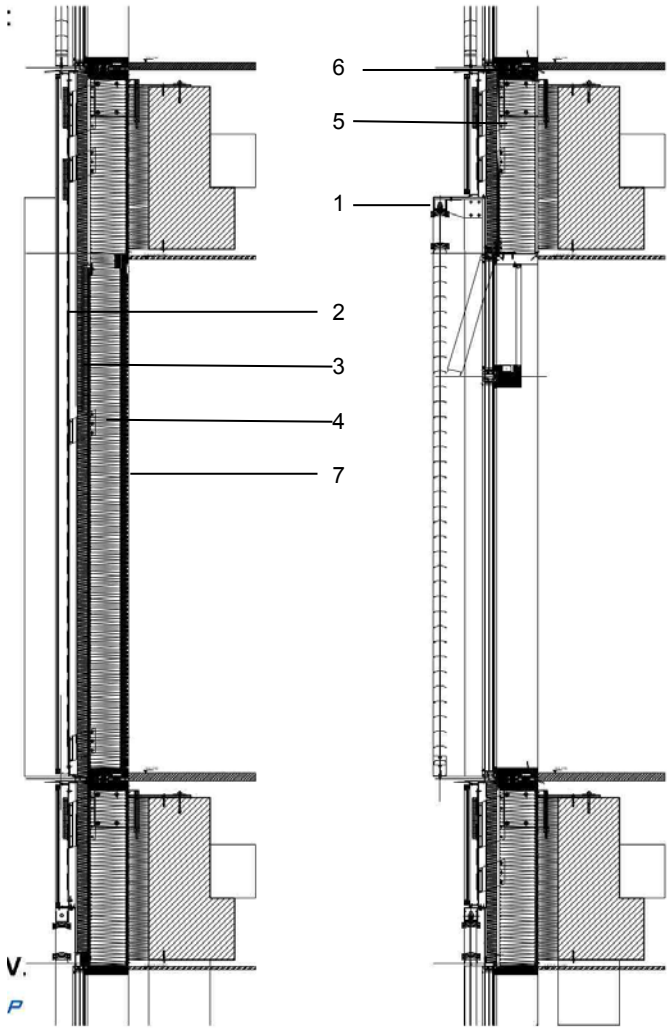
The distribution of full and empty spaces on the façade and the organisation of the plan also meet thermal requirements. "In an office building, internal loads (lighting, office, occupation) are very high. [...] The cold strategy is more important given the usual electricity consumption for air conditioning", explains the consulting engineer Lionel Wauters, from Cenergie. The offices are mainly north-facing, where the façade is generally glazed, while the southern section, which is more exposed to the sun and therefore the most enclosed, is partially occupied services blocks and vertical openings.

With an extremely effective thermal insulation and airtight curtain wall (n50 = 0.49 vol/h), the net energy requirement for heating is limited to 8 kWh/m² per year and the 7300m² building is heated only through sanitary ventilation. In winter, a Canadian well provides warm air, which is introduced into the premises through a floor radiant piping grid. A wheel ►

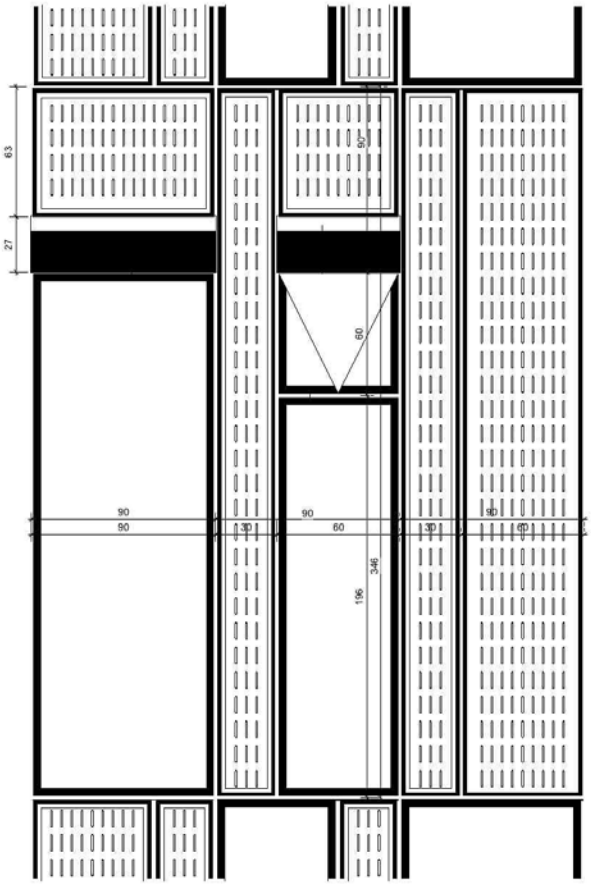


Section

Lobby
A subtle wrinkle of the "skin" allows access to the building.
Sketch, 3D model and the finished product.

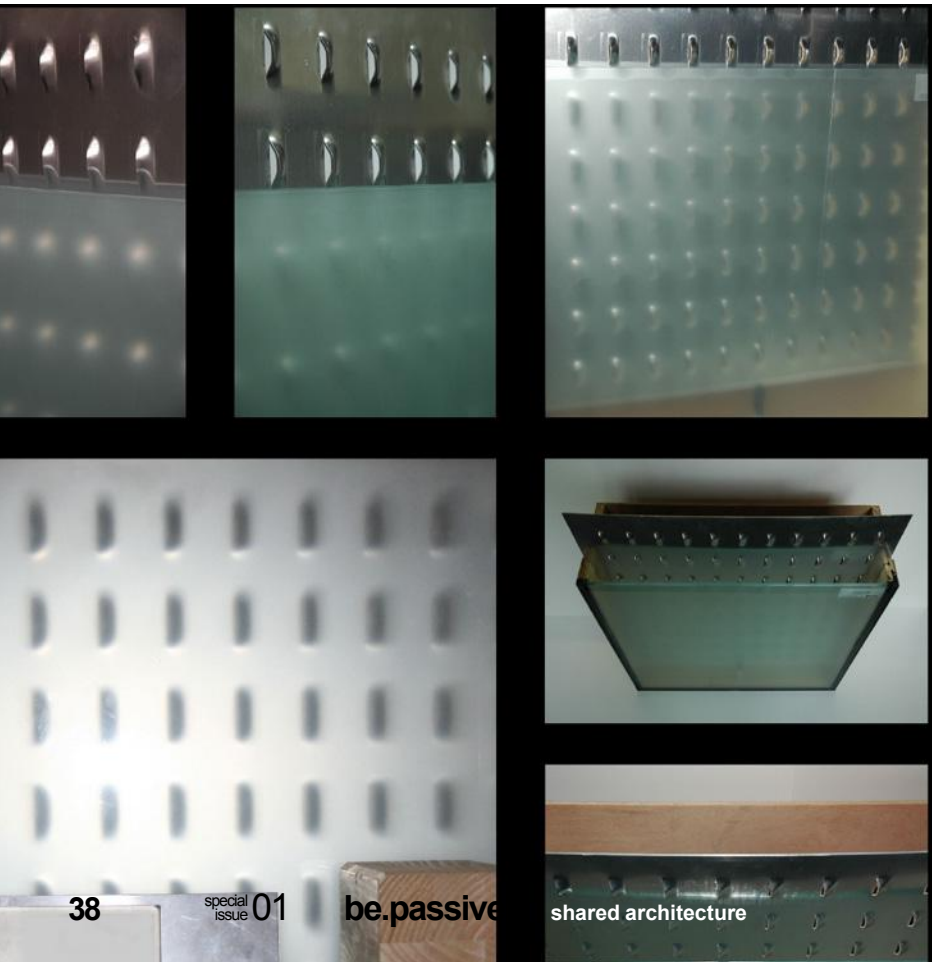


BELGO METAL N.V
KYOTEC GROUP



Modular façade detail

1. anodized aluminium
2. shiny aluminium pressed and perforated sheet white translucent glass
3. rock wool
4. Resol
5. fire break
6. profiled wood
7. Multiplex perforated panel



Sabine Leribaux , architect director of Architectes Associés
"As architects, we are all in the habit of drawing techniques for our buildings in a certain way. But with passive design, that doesn't work. The issues today are more complex, and solutions have to be well thought out. And you can't design that in just one day."

heat reclaimer keeps the heat from foul air sucked in through the ceiling grids. Given the very limited loss of heat, a 140 kW gas boiler is enough to ensure a comfortable 20°C in winter throughout the building. To ensure a similar level of thermal comfort during the summer months, an automatic sunlight control system is provided through the use of external blinds. During the summer, the Canadian well provides air cooling from 5 to 10°C, as well as a dehumidifier effect. In addition, a night-cooling system cools the premises and the concrete structure during the hours of darkness through the automatic opening of windows and forced extraction of air in the roof.

"In 2007, Aeropolis was named an 'Exemplary Building' by the IBGE, not only because it is passive," says Sabine Leribaux, "but because it is passive and reproducible." Architectes Associés is currently looking into how to use the same construction model for a new project developed using the Breeam method. This façade specialist has also been solicited by other architects. The costs involved are certainly not the same as those of the Brussels tertiary building market. In spite of the extra construction costs, the client managed to build Aéropolis II for €1300/m². But examples of projects such as this, highly positive in terms of architectural quality, energy savings and comfort, mean that investors will probably focus on quality. Companies will look to invest in training, and designers will offer innovative architectural solutions to match these new technical challenges. ►

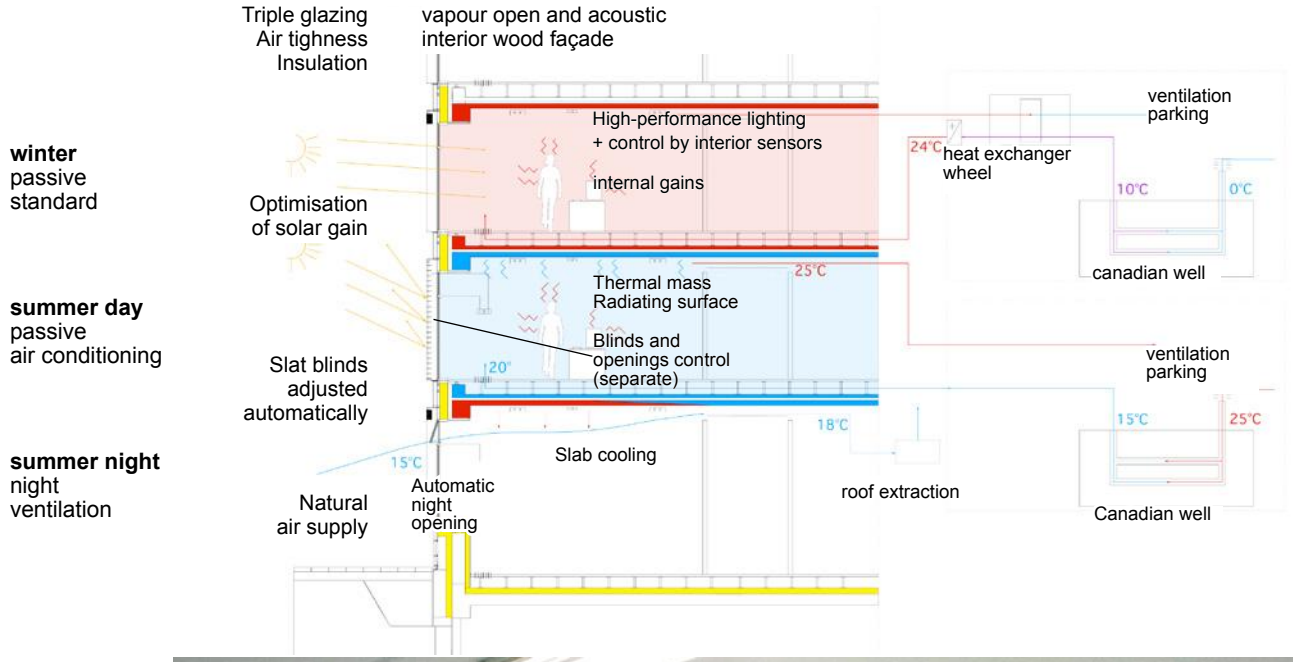
Aéropolis II plays its own role in the 2010 heatwave

On 14 July 2010, right in the middle of a heat wave, Brussels Minister Evelyne Huytebroeck wanted to check with representatives of the DG Energy from the European Commission whether a large passive office building without an active air-conditioning system ("cold unit") could provide a comfortable working temperature for employees.

And the result came as a surprise. It was a cool 24°C inside the Aéropolis II building, while outside temperatures rose to 31°C. This feat was made possible through an ingenious passive cooling system: advanced insulation that prevents the transfer of heat into the wall from the outside to the inside, a sunscreen that prevents direct sunlight from entering through windows, a night-cooling system that promotes the inertia of the building (visible concrete ceiling) to cool the building during the hours of darkness, and a Canadian well which cools the building by a few degrees during the daytime.

This achievement translates into substantial savings in electricity for cooling. Instead of using around 27 kWh of electricity to cool 1m² over the course of a year through the use of a "traditional" air conditioning system, Aéropolis II consumes scarcely 2 kWh of electricity for ventilation (night-cooling and Canadian well) - 13 times less!

A five-year monitoring plan is underway for this building, the 2008 winning "Exemplary Building". Confirmation of the initial results will be available in a few months.■



Floor surface area
7 388 m²
Net heating energy requirement (phpp): 8 kWh/m².year
K level 14
EPB level 50
Compactness
3.76m
Air tightness
n50 = 0.49 h-1
U of walls and windows
wall: 0.09 à 0.14 W/m².K
floor: 0.15 W/m².K
roof: 0.15 W/m².K
Uf : 1.5 W/m²K
Ug: 0.6 W/m²K
Systems
Dbl ventilation flow
Canadian well:
4 x 40m (tube diameter 70cm)
Costs
€11,500,000
excl. VAT, excluding fees
Or €1315/m²
(basement at 50%)
Architects:
Architectes Associés :
Amaury Adam, Laura Claeys, Mattias D'Hooghe, Muriel Desmedt, Jérôme Elleboudt, Amina Hammani, Marc Lacour, Elodie Léonard, Sabine Leribaux, Karim Megally, Denis Van Cauwenberghe, Sophie Vantieghem, Sébastien Zigrand
Contractor : Jacques Delens et Vanderstraeten
Facade : Kyotec - Belgo Metal

case file

2015 : Brussels goes passive !

texts
Bernard Deprez, Bram De Meester, Marny Di Pietrantonio, Bruno Busch, Hilde Breesch, Alexis Versele, Stefan Van Loon.

Between Expo 58 and Zineke Parade, Brussels is a floating island - extraordinarily captivating. A quaint royal capital, the administrative centre of the Flemish provinces, a city inhabited by French speakers - and a melting pot of dozens of cultures in search of asylum, whole areas taken up by the European project and gentrified by its legions of bureaucrats, cut up into 19 fiefdoms firmly held by as many mayors, a region dependent on others for its funding, property often monopolised by non-residents, no single group can lay claim to Brussels, saturated by a disparate set of demands and desires. ►

At its own expense: Brussels is so vaunted in the eyes of others, so much moreso than in its own. It seems to have tread a course in much the same way as an eel through the course of history, spending most of its time shying away from the limelight. "Or perhaps not!" What would stand as the city's signature? A liberal patronage countering and a bar-room socialism? An unceasing trade-off between private parties, households and public authorities, between principles and practice, accommodating the most radical ideas by steering everyone to their returning each their cottages and their neighbourhood committees? A well-tempered anarchist's paradise.

Floating between two sides, Brussels struggles to commit itself to either. Whereas other cities gather around visionary and ambitious politicians (this is in no way relating to the football stadia, stations museums) for their commitment to alternative mobility, for urban lifestyles which are not only more environmentally friendly but also more democratic, Brussels has long remained on the sidelines. Leaving others to take care of the teething problems of the future, Brussels has left it up to its entrepreneurs to fill it up (there are currently almost 2 million square metres of empty office space, in comparison to a deficit of several thousand homes), to run it through with urban motorways and drill it through with expensive tunnels. As the capital of Belgium, Brussels is one of the largest consumers of energy and CO_2 in Europe and its buildings are among the least efficient.

This is why the positive signs that have been flickering into view over recent years are so important for the city. There is greater awareness of the negative impact of traffic congestion and that alternatives need to be developed. There is a growing interest in the redevelopment of public spaces, the implementation of quality procedures, including the appointment of a "Master Architect", for example.. In particular, passive construction naturally count among these encouraging signs, with work performed by Bruxelles Environnement around the recent encouragement of energy-efficient architectural design (through the introduction of low-energy and passive energy subsidies) and especially the *Call for Exemplary Buildings*.

Thanks to a typically Brussels makeshift arrangement, mobilizing public money through the encouragement of multifaceted PPP partnerships (Public/Private Partnership or Public/Private Individual Partnership, and also Public/Public partnerships, etc.), these Requests (266,789m² worth of winners from 2007 to 2009) have made eco-design and energy targets more popular, especially with passive design for both new construction and renovations (80,981m² and 339 dwellings over 3 years).

This ambition, with which the new Government proudly proclaims its desire to make Brussels "the capital of passive design in Europe", has resulted in an agreement across the political spectrum through specific resolutions, all new public buildings will now have to comply with passive standards. This will also apply to all private new construction from 2015 onwards, as part of a scheduled framework plan for regional CO_2 emissions, making an overall reduction of 30% by 2025.

Scientists would like to go further but the "Brussels knows best" crowd seems to be in full voice. This case study shows you some of the most representative aspects. ►

the passive standard in Brussels

Like many cities, Brussels is facing two significant environmental challenges over the coming years: to reduce its CO_2 emissions and also its dependence on fossil fuels. Passive design represents a cornerstone for an over-arching vision of a city that does not want to find itself with no way out of its problems in the future.

The resistance and scepticism shown in the modern press about environmental issues is very revealing. The challenges seem to be becoming increasingly clear and significant as we approach the front line in the battle over the climate.

To reduce the risk of going beyond 1.5 to 2°C average warming and into an area of unpredictable climate disruption, the first challenge is to reduce greenhouse gas emissions. There are two ways to do this. The "absolute" approach is to set a hard cap that cannot be breached. For climatologist J. Hansen (NASA), we need to get back to CO_2 levels of around 350 parts per million (we are currently at 385 ppm). For others, it must "go as far as" limiting the amount of CO_2 released into the atmosphere, which naturally involves, for example, immediately shutting down certain deposits, as these would unavoidably exceed this limit.

The other approach is "relative". This is the one chosen by the European plan for a 20% reduction by the year 2020, compared to 1990 levels, by IPCC scientists who are seeking to reduce such emissions by 85-90% by 2050. This is also the approach taken by Brussels in Chapter 3 of the cross-party agreement, which sets out the rapid implementation of a new plan, Cobrace (Code of Brussels for Air, the Climate and Energy) which will provide the legal framework needed to achieve a greenhouse gas reduction of 30% by 2025 (compared to 1990 levels) in Brussels.

The other challenge is the impending sharp drop in the production of crude oil. This could happen in the short term - in one or two decades at most. Oil is crucial to the economy, because it is the energy provider par excellence, and is therefore fundamental to trade. However, in its World Energy Outlook

brussels regional parliament extension
Headquater of the French speaking part of the Brussels Region parliament.
arch : www.cooparch.be

500 passive houses in North Brussels
This public-private partnership chose the passive standard for those 500 news dwellings.
arch : www.ms-a.be

Office and industry
Development of the urban site (53 000m²) headquarters of Sibelga.
arch : www.cerau.be & www.mdw-architecture.com

published in 2008[1], the International Energy Agency expressed concerns about the current decline in production. This is the first time since its creation that it has conducted a thorough analysis of 800 deposits currently in operation. The IEA raised the idea of "peak oil", and concludes that decline will accelerate across the globe, moving from the current 6.7% to 8.6% in 2030[2]. This means that in fifteen years time, current production will drop by half! And yet the British daily, The Guardian[3] reveals that according to inside sources, the IEA has deliberately overstated oil reserves in order not to panic the markets. Swedish analysts estimate this overstatement to be in the order of ± 25%, so we are well and truly entering a post-oil world[4]. To avoid finding itself with nowhere else to go in a few years time, Brussels has clearly come down on the side of reducing its energy dependence.

A naturally immobile sector

Brussels has a relatively atypical profile: it is 96%[5] dependent on polluting fossil fuels, 72% of its C02 emissions come from the building usage (as opposed to the EU average of 40%), with 41% residential (35 million square metres) and 31% for the tertiary sector (29 million square metres). Industry is virtually non-existent (4%), as transportation is responsible for the remainder (23%). Steadily increasing since 1990, consumption began to level off in 2006.

Brussels has nearly 490,000 dwellings, of which 28% are houses and 72% apartments. Dwellings are poorly insulated in Brussels and other parts of the country, and renovation is slower to arrive. The housing stock is also relatively old, as only 16% of dwellings were built after the first oil crisis. Residential dwellings devote 85% of their energy consumption to heating and hot water (or 250 kWh/m² final energy). Conversely, in the tertiary sector it is electricity consumption, up 50% since 1990, as the heaviest contribution.

The property sector is famously unable to adapt very quickly. Only a few percent of the existing stock is renewed (renovation and new construction) each year. It is generally very slow to change. On the other hand, a building built today will not be renovated for 15 to 20 years, therefore a huge waste of time if it is designed without any vision for the future. Finally, if a building is only moderately efficient today, its renovation will also be less profitable tomorrow. ►

Office building in Brussels
Passive retrofitting of a modernist building, in Anderlecht.
arch : www.Lahon-Partners.com

Plume
In brussels's center the construction of 8 passive dwellings project is demonstrative of the careful integration into the urban fabric.
arch : www.b612associates.com

Cities now have to join forces to move as quickly and as far as possible. This is even truer for Brussels, given that energy consumption will change according to the level of gadgets purchased in Brussels and its population growth. However, for many years now the population is increasing and the Planning Bureau is promising some 170,000 additional inhabitants by 2020. They will need somewhere to live, will require more transportation and consumables.

Setting goals and the means to act

It is within this overall context that energy policy in favour of a passive Brussels makes perfect sense. According to S. Moreno-Vacca, of the PMP, "the Brussels strategy is to promote projects that serve as driving forces - especially passive design, or even more strongly projects that go even further. The Walloon region has a different approach. Its objectives do not go as far in terms of performance (they are restricted to K45 for example), but they affect a larger number of projects. In my opinion, the policy in Brussels is much more effective. It even has repercussions for the Walloon region and Flanders, who envy our level of subsidies.[6]".

Indeed, beyond the conventional initial incentivising measures (cavity wall insulation subsidies), Brussels has gradually built up a real system to encourage the quality of energy, thanks to "facilitators" who bring special energy expertise to the tertiary sector, public housing, with cogeneration and large-scale systems[7]. Since 2006, this multifaceted vision has bee articulated within a more over-arching approach for environmental efficiency in buildings, with the development of a tool for environmental rating - Green Building Brussels. These efforts led to the creation of an environmental construction facilitator in 2007 and the introduction of subsidies encourages integrated energy design, with passive design to be included in new-builds and low-energy in renovations. The Passive House Platform monitors these schemes. 2007 also saw the launch of the first *Call for Exemplary Buildings*, from which came the Sustainable Neighbourhoods facilitators (URBs).

Passive design all the way

Performed in parallel with the introduction of the PEB, considerable efforts have been made to put Brussels at the forefront of European energy practices. With subsidies defining both a very clear energy objective and a verification procedure suited to high-performance buildings (the PHPP worksheet published by the German Passivhaus Institute), Brussels has decided to support a standard with full expansion into Europe, extending it to issues relating to renovation. By "facilitating" the development of passive design, the region is dragging the new construction market upwards while providing adequate responses to its main concern, renovation.

Passive design is also established in the tertiary sector. The first passive offices in Brussels date back to 2007. Since then, several projects have been delivered or are underway. The region has developed a tertiary sector subsidy to encourage industry to adopt passive design. It has entrusted PMP to determine appropriate passive criteria for offices. This study, conducted alongside UCL, has led to the development of a tertiary handbook[8] which, on top of the relatively simple PHPP requirements, adds other specific criteria relating to cooling, the dynamic verification of comfort, and introduces a "committee of experts" to oversee these issues.

This initiative therefore proposes a general framework for Brussels, which is responding to the turmoil currently facing the sector, with the development of genuinely environmentally efficient tertiary concepts. Whether we are talking about the passive offices of Aeropolis II in Brussels (8000m², Architectes associés), the Energon offices in Ulm (8000m²) or Lu-Teco in Ludwigshafen (9900m²), the Elithis tower in Dijon (5000m², a passive project which almost achieves energy neutrality[9]), or the Pearl River Tower in Guangzhou, constructed by SOM (214,100m²), a 71-floor tower wrapped in triple glazing and equipped with two large air turbines capable of making the building self-sufficient in energy. It is therefore hardly surprising that Bruxelles Environnement has also decided to build its own headquarters based on the passive standard on the Tour & Taxis site!

Passive school, houses and offices
This complex urban district of more than 12 000m², a design and built collaboration (architect and contractor), will open its doors by 2013.
arch : www.a2m.be
contractor : www.democo.be

Passive school
the 3 floors primary school will host 280 children.
arch : www.nvtarchitekten.de

Households and companies: a shared goal

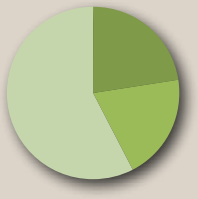
Finally, rapid changes to regulations are expected in the years to come. MEPs have already declared themselves in favour of minimum performance requirements for new and renovated buildings. They asked the Commission to "propose a binding requirement that all new buildings needing to be heated and/or cooled, be constructed to passive house or equivalent non-residential standards from 2011"[10]. As part of the reformulated Directive on the Energy Performance of Buildings, the Parliament also voted in favour of buildings with a net energy consumption of zero. In particular, Member States must ensure that "all new buildings are at least net zero energy buildings by 31 December 2018 at the latest[11]."

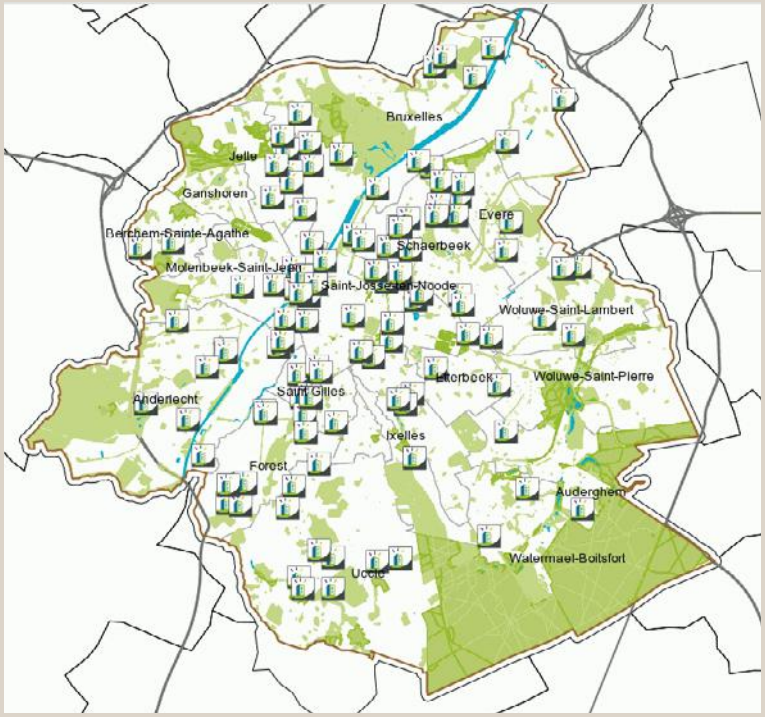
Our French neighbours are developing a standard for low-energy buildings (bâtiments à basse consommation - BBC), which will become mandatory from 2010 for new public and tertiary buildings, and from 2013 for all new dwellings in accordance with the objectives of the Grenelle 2 law[12]. It is therefore natural that the Brussels executive, in its cross-party agreement, stated in 2009 that all new public buildings should be designed to the passive standard by 2010. This comes in addition to resolutions already passed in four municipalities of Brussels. And, after the PEB move from E90 to E70 in 2011, the requirement should then be extended to introducing passive design for all new construction from 2015. Brussels will then be ready to meet the "zero energy" level, to be imposed by Europe from 2018.

This development very clearly aims to set a shared goal for households and businesses alike: the important thing is to bring the security and predictability that economic stakeholders need to invest in a changing world, rather than artificially prolong current unsustainable practices by furious, but ultimately superficial efforts. This is a matter of common sense, as summarised by Eric Gobert, project manager for the Aéropolis II passive offices. We don't want to "construct a building today that is already outdated!"[13]

The results of this conversion to passive design and eco-construction are already being felt today. Environmental and energy efficiency quality in buildings winning the Requests for Proposals far exceed the levels certified by reputable international labels such as LEED or BREEAM, which no longer bring real added value while the Brussels level has risen so much[14]. The reason is simple: while these labels operate on the principle of "best practice" (just do a little better than the others to earn points), the Region has invested in an objective-based approach, like that the passive standard: simple, accurate and ambitious targets far more effective than a cumbersome and exhaustive assessment system. We should congratulate ourselves for setting the bar so high! ►

1. www.iea.org/weo/2008.asp ; www.worldenergyoutlook.org/docs/weo2009/WEO2009_es_french.pdf
2. see interview with Mr. Fatih Birol, chief economist of the IEA, by G. Monbiot, www.guardian.co.uk/environment/video/2008/dec/15/fatih-birol-george-monbiot
3. www.guardian.co.uk/environment/2009/nov/09/peak-oil-international-energy-agency
4. www.monbiot.com/archives/2009/11/16/if-nothing-else-save-farming/
5. The remainder is contributed by the incineration of household waste transformed into electricity.
6. Bernard Deprez et al., Vert Bruxelles, Architectures à suivre, Racines Editions, 2009.
7. www.bruxellesenvironnement.be > professionnels > les facilitateurs
8. www.maisonpassive.be/?Les-criteres-pour-le-TERTIAIRE
9. La tour Elithis, une signature " écoresponsable ", in Systèmes Solaires, Le journal des énergies renouvelables, n°193, November 2009.
10. INI/2007/2106: 19/12/2007 - EP: decision of the committee responsible, 1st reading/single reading. www.europarl.europa.eu/oeil/resume.jsp?id=5484562&eventId=996810&backToCaller=NO&language=en
11. Position of the European Parliament 23/4/09 (EP-PE_TC1-COD(2008)0223
12. Le marché des bâtiments à basse consommation d'énergie décolle, Le Monde, 28 October 2009.
13. Vert Bruxelles, op.cit, p.17.
14. Bâtiments durables. Vers une certification adaptée au marché de Bruxelles-Capitale, 20 November 2009 (www.brusselsgreentech.be)





map of all the exemplary buildings of the 3 first calls (2007- 2008- 2009)

extending the scope of passive

To stimulate the property market, Bruxelles Environnement has gradually built up a fairly comprehensive set of subsidies and assistance for individuals and public authorities alike. It has entrusted the PMP, alongside the PHP, with the task of investigating cases relating to passive design and low energy renovation.

As part of its activities, the PMP is also helping to train the sector (491 architects have been trained in the use of PHPP, management of thermal bridges, etc.)

In the residential sector, the region has been encouraging all renovation work demonstrating a net heating requirement of less than below 60 kWh/m² per year, and all new construction work meeting the passive standard since 2007, through a regional subsidy of €100/m². A subsidy designed for the tertiary sector was added to these measures in 2009.

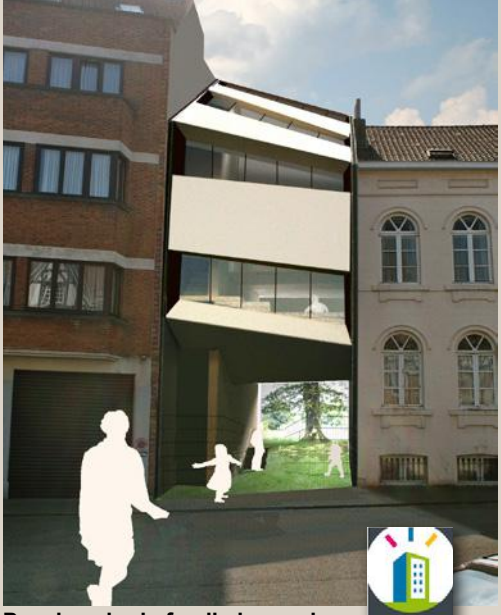
Since 2007, the PMP has opened 190 cases of residential subsidies. 61 cases deal with renovation work, and 129 deal with new-builds. Among these renovations, there are 3 passive design cases, which bumps the current number of passive cases up to 132 (sometimes for more than one dwelling per case). From 6 cases in 2007, passive design rose to 58 in 2008 and stands at a current total of 119 in 2009 (late November). It is interesting to note that although low-energy renovation stood at 66% in 2007, the proportion went down to 55% in 2008 and dropped to 13% in 2009. It is therefore passive construction, with 87% of the cases in 2009, which is now a real driving force!

While introducing its new system of subsidies, and deciding to go into overdrive, the region also launched a first *Call for Exemplary Buildings* in 2007. But among the "exemplary" projects, many do not share the same political significance. Between a "hip and trendy" promotion in the style of Malmö, the city-expo in the style of Hanover, the big moneymaker in the style of Bilbao, Brussels does not want to follow a 'copy'n'paste' approach. It is looking for something original: a mix of enlightened top-down and committed bottom-up? This is the Brussels way: trusting people to ask a great deal of them, move away from their practical needs, bet on their skills and support their ideal of a more environmentally friendly way of urban living.

The Brussels approach is actually based on a Request for Proposals initiated by the Government in Franche-Comté to encourage energy efficient design based on the Swiss Minergie standard.® [1]. Curious to see what the Brussels market was capable of, the region sought to promote simple and efficient architecture in terms of energy efficiency and green building. It was about encouraging accessible, reproducible solutions, not technological prowess. "In 2007, we did not really know what to expect, so we do not impose minimum performance. We just set a cap, targets and objectives", explains Grégoire Clerfayt, Chief of Staff to Minister Huytebroek (see interview p.48-49). The selection criteria for the Request for Proposals therefore cover the topics of energy management (passive design in new construction, low energy in renovation) and those of the green construction.[2]

Therefore, on 3 May 2007, the Brussels government launched the first competition to identify and support the most environmentally exemplary projects in the Brussels-Capital Region in the tertiary sector, collective housing, private housing and public facilities. The response far exceeded expectations, with a large number of participants and winners. "The Request was a tremendous boost for Brussels", says Grégoire Clerfayt. The operation was repeated on 9 April 2008 and 10 September 2009. To date, all three operations culminated in some 117 winners and more than 266,000m² of exemplary green construction!

Why did it succeed so well? Mainly because many architects launched themselves into the concept and decided to go even further than the Region was hoping for. As she had originally



Passive single family house in Brussels.
This strange suspended house, also one of the *Exemplary Buildings*, is under construction now.
architect's : Bart Van Leeuw en Heidi Van Eetvelde

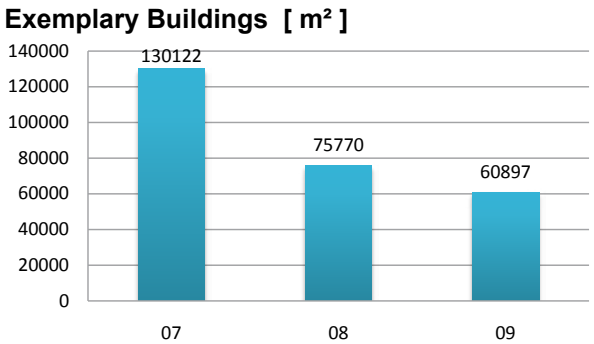
Passive, ZERO energy, and 0 charges : is it a dream ?
No ! This *exemplary* building will host two lucky families, its passive design and complements make it the first social charges-free building in belgium.
arch : www.a2m.be

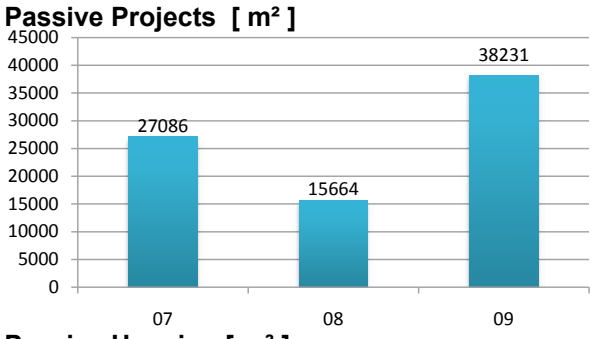
designed a low-energy project, the architect Ines Camacho was excited about the competition and decided to revise her design: "I realised that my project was close to passive criteria, even though I had never thought about it in those terms. I dropped what I was doing and spent six months converting my final entry. It was through a combination of naivety and innocence that I threw myself into the adventure. But today I think I couldn't do anything other than design low energy or passive buildings, because I no longer wish to use old techniques. The old stuff stinks - I'm not interested in it anymore! "[3]

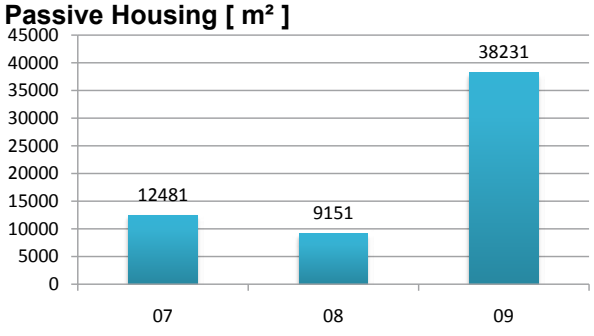
For Grégoire Clerfayt, it was the creativity and skill of design teams, architects and engineers that made the difference: "In Belgium, we have architects and engineers who are extremely well trained ... but they don't know it! From zero passive building in 2007 to over 40,000m² in 2009, not to mention the renovated buildings that have also come very far, just with our existing know-how, and with people coming from nothing without having undergone huge training campaigns, that demonstrates the market's ability to do extraordinary things! "

The *Call for Exemplary Buildings* over the past three years have shown that a net requirement of less than 30 kWh/m² per year is possible in renovations, but the real costs between the different performance levels are not the same. The range of subsidies in Brussels needs to change to be broken down into amounts suited for different performance levels, depending on whether we are talking about a new passive construction or low, very low or passive renovation (60, 30 or 15 kWh/m² per year). The range of subsidies will therefore change in 2010 to better match the reality on the ground. Additional subsidies will also be available to encourage the use of environmentally-friendly materials and solar power.

1. www.effinergie.org/site/Effinergie/Liste_AppelsAProjets
2. Pour plus de détails, voir Bernard Deprez et al., Vert Bruxelles : Architectures à suivre…, Editions Racine, 2009.
3. Vert Bruxelles, op. cit.







like a cat in the sun

The passive headquarters of Bruxelles Environnement at the Tour & Taxi site.

After having successfully organised three environmentally efficient *Calls for Exemplary Buildings* since 2007, the Environmental Authorities in Brussels were eager to translate all these ideas into a design for offices they intend to lease to get their own headquarters.

The site currently occupied by Bruxelles Environnement in Woluwe (outlying and almost inaccessible by public transport, with soul-less, very energy-inefficient sales offices), isn't ideal, given that it would be better to be in the city centre, within easy reach of everyone in Brussels in a neighbourhood undergoing reconstruction which would certainly make good use of such a "driving force".

As well as being its headquarters, the Bruxelles Environnement offices also have to be environmentally exemplary. Firstly, of course, through its central location and the availability of public transport (reducing the number of parking spaces for a building accommodating over 1000 people to just 150). Built for the rental market by the private sector (a T & T project), the building sticks within the tertiary idiom, i.e..not always very green (curtain wall, metal structures, etc). But the structural design saves on material and implementation. The principle of having an enclosure provides a great simplicity in the distribution of glass and opaque parts (the main façade, facing east and west, is glazed up to 50%). Verdun roofing and rainwater recovery add to this green approach, but it is mainly the energy management aspects that will make this project exemplary, since it will be "passive".

Although offices in Brussels consume an average of between 89 and 107 kWh/m² per year, the net heating requirements of the future headquarters should not exceed 15 kWh/m² year. But the project also presents an excellent energy performance for cooling, lighting and other electrical consumption and, if it complies with the requirements developed specifically for tertiary passive design in the Brussels region, its overall consumption of primary energy will be reduced by 75-80% in relation to sector average, amounting to estimated primary energy consumption of between 78 and 82 kWh/m² year, against 350 to 450 kWh/m² per year according to annual ICEDD surveys. This drastic reduction in energy consumption is a measure of the climate and logistical challenges that lie ahead.

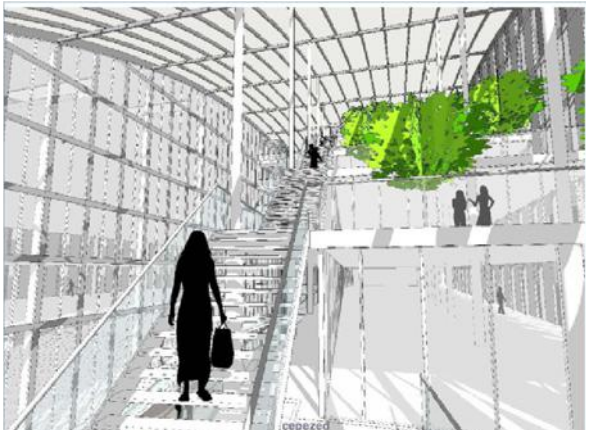
Located alongside the canal and a city park, the future seat of the administration the Tour & Taxis site is developing a concept based on the "box within a box" principle. While maintaining a simple, compact volume, CEPEZED architects have broken open the office floors in the middle to create a long wide fault through which a generous amount of natural light shines through a large glass south-facing roof. This 'box of light box' envelopes the east-facing offices alongside the canal, which overlap across a series of interior terraces bordered by a wide stairwell. This atrium, open on ground floor, lies at the heart of the project: its still, quiet mechanics create a microclimate conducive to meetings, fresh perspectives and day-to-day work.

It will also serve as the face of the building, opening out to the outdoors opposite the Royal Stores built by architect Ernest Van Humbeek in 1907. By providing an enclosed space, the building rounds off an urban landscape reinterpreting the entrance to the Tour & Taxis site. Architecturally, the concept offers a simple and effective space. Its' refined, curving mass, lying like a cat in the sun, suggests an almost friendly presence. Aside from ensuring very good working conditions, its transparency provides a welcome counterpoint to the huge bulk of the Royal Store.

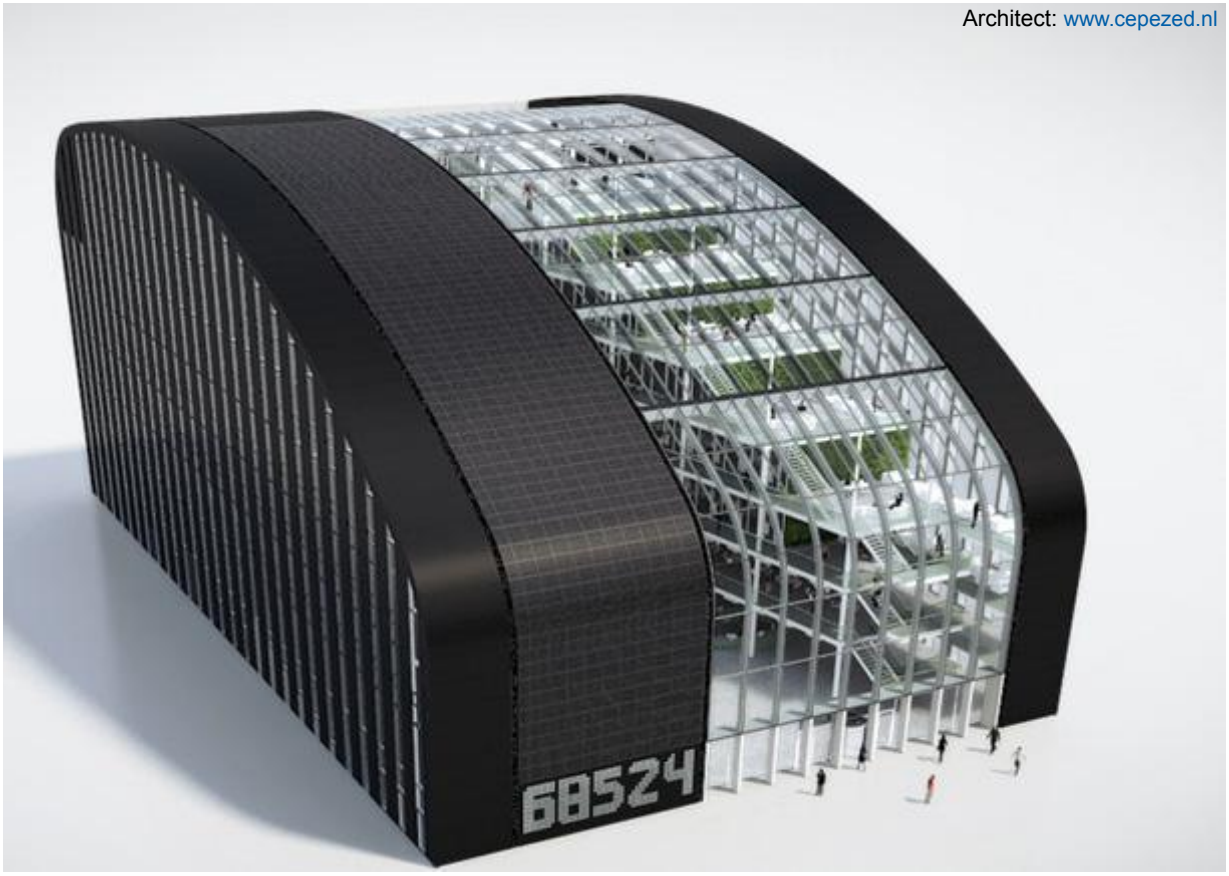
Specialists in passive platforms have been able to check with the architects and their design department that the project, originally planned to meet an E60 performance, could be slightly revised and brought up to passive standard at no extra cost and with no loss of comfort, mainly thanks to its very compact nature. Overheating control is provided by external sunscreens, or internal sunscreens in the atrium, and will be complemented by a passive night cooling strategy or by a "colloidal concrete" slab system.

This will not be the first passive office building constructed in Brussels. The first operation was delivered in 2007 and others have been made in Anderlecht or are underway in Schaerbeek, Forest and Brussels. But at over 15,000m², this represents the largest passive office complex in Belgium and second largest operation in Europe to date. This "claim to fame" is doubtless temporary, but the important thing is surely to take the lead? Brussels therefore once again shows its determination to make the region a benchmark capital for environmental construction, especially the passive construction. It is true that previous *Calls for Exemplary Buildings* already positioned the city among the most dynamic regions of Europe, quickly putting it alongside countries such as Germany, Austria and Switzerland.

The region certainly didn't seek any less for the headquarters of its own environmental administration. In a region where many offices are left vacant and where, owing to a lack of industry, buildings and particularly offices are responsible for 72% of CO_2 emissions, no new tertiary scheme should be allowed to be ecologically inefficient. ►



Architect: www.cepezed.nl



interview

be.passive: Mr. Clerfayt, you are embarking on a second term as chief of staff at the Energy, Air, Climate, Sustainable Construction and Green Economy Unit with Ms. Huytebroeck in Brussels. How was the energy issue upon arrival in 2004?

In 2004, Brussels was relatively prehistoric in this area, with a policy that received very little investment in energy, human and budgetary resources and no vision. There was no interest in energy at a regional level. Everything we put in place in 2004 and 2005 was derived from our experience in the Walloon region, where experts told us it was possible to build better, with "best practice" amounting to a 30% improvement. It was already perfectly satisfactory with regard to meeting the Kyoto criteria.

What happened next?

Then we really found out about the passive standard, which promised an improvement of 90%! We knew this from experience abroad, but it still seemed unattainable for us, very technology-oriented and a long way from the realities of Brussels.

It is a succession of happy accidents that brought us to the passive standard: the work of some architectural firms (including the housing corporation office in Mons, with cheap passive housing and very low energy renovations), and the choice of Blaton in 2007 of making its headquarters according to the passive standard. In 2006, I made a trip to Freiburg and I discovered the passive standard in action. It is actually much simpler, technically speaking, than we thought - really just buildings like all others. We can see these buildings. People live in them. This is not an experimental laboratory! I came away with the conviction that we were perhaps not so far from reaching our goal. We could do it by putting ourselves in a situation of emulation, or competition. I also took part in a European think tank, organised by Energie-Cités. That's where I met a representative of the Franche Comté region, who organised a Request for Proposals using the Swiss Minergie Standard. ®. I found the principle of such a Request for Proposals very interesting: an open framework, the idea of competition….

And so the *Call for Exemplary Buildings* was born?

In 2007 we decided to launch the idea. On the one hand, a system of subsidies for passive construction and low energy renovation, and on the other,the idea of a competition. But we did not really know what the market was able to do. So we drafted the competition regulations in March in order to set energy objectives, and we added the potential of doing environmentally-friendly construction. Our approach was to keep things simple, efficient and affordable: not conceptual experimental architecture, and nothing unaffordable! We have not imposed any minimum performance level. We just set a cap, targets and indicative targets. We had no requirements, but rather we made invitations. The competition was there to see what people were capable of doing and to compare the results.

What was the response?

It was a wonderful surprise. The quantity and quality of the projects we received were quite unexpected! We have gained a very high energy efficiency and very good environmentally-aware construction in all the urban forms used in Brussels. The Request for Proposals proved to be a tremendous boost for Brussels. This paved the way for an equally ambitious draft Government declaration in 2009.

The *Call for Exemplary Buildings* showed that passive design is feasible at a very reasonable cost. What better example to show that passive design is accessible than the 3% extra cost for the Aéropolis II offices? The reality is not that claimed by the property sector three years ago. We have not had to conduct any scientific study to prove it, but rather the market itself demonstrates this principle right here and now.

Does Bruxelles Environnement also set the example?

We are going even further with our project for the Bruxelles Environnement headquarters. This is an ambitious project, but not according to the passive standard. The cross-party agreement allowed us to upgrade and conform to the passive standard, in the knowledge that the tertiary debate remained rather delicate. We have a parametric study that has allowed us to draw certain conclusions, but still don't have a large-scale test on major tertiary commercial. The transition from small to large scale was for us, and the promoter, something of a risk. Studies performed to date on this project confirm the idea that there is no reason why we cannot move on to even bigger buildings. The conclusion we draw from a seminar on this subject given by Laurence de Hemptinne [see below - ed] is that the property sector has got the message, investors want assurances to ensure that their buildings do not depreciate. Basically, they want to "go green".

So is the movement well and truly launched?

For the time being in Brussels, we still need strong examples and good prospects, for example by working with powerful agencies such as the European Commission as part of the "Urbain-Loi" project, for which the master plan provides for new large buildings. We believe there is a great opportunity to put some consistency between what the Commission proposes and what it could actually do. This is all the moreso since if anything ground-breaking could arise, it will happen when passive design is already being applied. It would be inconsistent to construct a building that does not meet the standards of the time, while the climate debate will be even "hotter" than it already is now.

Where do we stand with the decision to build all new public buildings according to passive standards?

For passive design and its application in the Brussels Region, decisions are in the process of being made. Three examples of this are: the SDRB has decided to incorporate passive requirements in new construction and low-energy requirements for housing renovations in its benchmark specifications, based on the known criteria from the PHPP calculation. Christophe Doulkeridis, Secretary of State for Housing in the Brussels-Capital has announced that all new social housing will be passive. Finally, in future neighbourhood contract schemes to be launched in 2010, the intention is also to refer to the passive standard.

Won't there be any resistance to this from some quarters?

When we negotiated this measure, we thought our partners would consider it rather extreme. It has certainly been the subject of negotiations, but the partners have agreed in principle because, ultimately, in their towns, passive is already in place. The passive standard is already well implanted in towns in Brussels and in the Walloon region, where it is possible to find inexpensive social housing.

This is another good example that we are not talking about something that is merely "hip and trendy". We can see that even in social housing, it is possible to do wonderful things that are still affordable.

Will there be any further *Calls for Exemplary Buildings*?

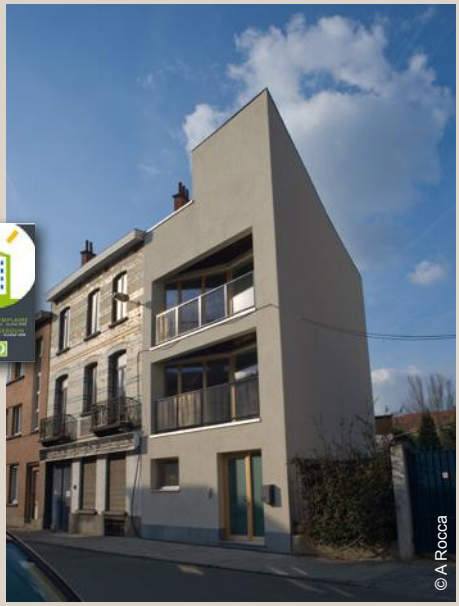
We will be continuing with our *Calls for Exemplary Buildings* next year, because we always carry on with something if it works well. Exemplary buildings are helping to create a critical mass, which serves as an example for the market, for architects, business, project owners, and other interested parties. They are also used to developing various renovation practices. We would also like to get some showpiece passive housing, and I really believe we will try to do just that if the opportunity arises.

Are Brussels-based companies ready?

In Brussels, our challenge for the future also encompasses jobs, the environment and sustainable construction. We need to make every effort to train the construction industry to ensure that the whole sector do work according to passive design principles in the future, from design to financing and implementation, in the form of business clusters, to fully achieve very low energy renovations for houses and apartment buildings.. This is the direction policy will take for the next five years." ►

1. Société de Développement Régional Bruxellois - Brussels Regional Development Association.

Office building in Brussels
Passive retrofitting of 3 173 m², in the prestigious avenue Louise.
arch : www.A2M.be
and www.Moreno.lu



First passive houses in Brussels
This 2 duplex were the first one built in the capital in... 2008 !
arch : www.inescamacho.com

political reasons for certification

be.passive interviews Ismail Daoud, Adviser on Sustainable Construction in the office of Brussels Minister Evelyne Huytebroeck, responsible for the Environment, Energy and Urban Renewal.

Why do the authorities want to establish certification for environmental quality in construction?

With a strong policy for encouraging excellence in the environment and energy for buildings as practised in Brussels, we require a reliable and incontestable tool for assessing the sustainability of high-performance buildings. This simplifies the comparison of real buildings and counteracts the tendency for greenwashing that we sometimes see in property development.

A number of labels and certifications are competing in the market. Doesn't this risk some level of confusion?

With Belgium's experience and expertise of the 117 buildings that won the *Calls for Exemplary Buildings 2007-2009*, we have an unparalleled source of information that has enabled us to test methods such as BREEAM and Valideo. The result of these tests brings us to conclude that there is value in each method, but they need to evolve to better reflect the quality of high performance buildings as they emerge today in the Brussels region and all over Belgium. We decided to develop a "Green Building" certification and labelling procedure which combines the qualities of the "Exemplary Buildings" system and the Valideo system, while at the same time being compatible with Breeam.

We therefore have a system corresponding to our own culture of building and renovating, while offering Breeam compatibility for owners who need this type of international recognition for their investors. We are continuing to move in this direction in Brussels, but this work, based on accumulated experience and expertise, is also open to Flanders and the Walloon region, as well as the relevant professional federations.

Labels (excluding passive) often measure a wide variety of parameters - the internal weightings make the end result sometimes difficult to read. Isn't this counterproductive with regards to the visibility of buildings that want to see themselves as exemplary?

The "green building" certification and labelling system that

79 passive houses in N-O-H
On the Bruyn street, the houses commanded by the brussels's CPAS are rising.
arch : www.pblondel.be

Day nursery for 48 children
This 815m² nursery also is a winner of the Call for Exemplary Building.
arch : www.mdw-architecture.com

8 appartments, day nursery and facilities in Molenbeek
2 150 m² for a sustainable neighbourhood
arch : www.b-architecten.be

we are implementing has to meet several requirements. It is based on three elements: the list of criteria evaluated, the determination of methods for assessing each criterion, and the weighting to be given to each criterion.

The expression of the result may translate into an overall index and thematic indices. It will therefore be possible to assess a building from different points of view. It seems to me that it is the weighting that is crucial, and this will mean political choices moreso than technical ones, the aim being to establish a value system that pulls the whole market up on both energy criteria and other sustainability criteria. This type of information on environmental performance can be used precisely in the case of competitions or tenders by setting minimum standards in each area covered, as well as the overall requirement minimum.

We often hear that certification is driven by industry and that is why its level of excellence is not very high. What do you think of the part played by the construction sector in the development of labels and targets to reach?

In the system we propose, even if the private sector is involved, it is the authorities that have the responsibility to define the sustainability of a building and therefore the weighting given to any particular criterion. What we propose is to develop an initial set of references as requested by the authorities. Secondly, once operational and managed by an external structure responsible for maintaining it, the authorities should ensure its development and have a blocking minority to prevent any drift away from the original intentions.

Do you think that the label should spread wider across society or should it become the preserve of new professionals?

Insofar as energy and environmental policies have to achieve firm results and figures, it is becoming essential to have systems for evaluating actual performance, as opposed to assumed performance, when constructing or renovating a building. This is a question of policy credibility and above all a mechanism of transparency with regards to the occupier buyer or tenant.

It is true that we need to calibrate the certification and labelling system in such a way that bears reasonable costs in proportion to the size of the building.

The system to be set up in Brussels will be able to be used widely while remaining specific to the needs of the construction sector. "Green building" certification will target large buildings (tertiary sector, or collective housing). The "Green Building" label will be a lighter version of the certification, and therefore less costly, and be used more in the private housing sector. There will also be a free self-assessment tool, but whose accuracy will merely be an indication. This tool will be used rather than giving applicants for labelling or certification a broad estimate of the score that could be reached. With these elements, applicants will be better able to decide whether to enter a process of paid labelling or certification. ■

the impact of the "green wave" on property

text
Laurence de Hemptinne

At a recent property seminar[1], Evelyne Huytebroeck, the Brussels Minister for the Environment and Energy, pointed out that in the Brussels cross-party agreement, the Region set a goal to reduce greenhouse gases emissions by 30% by 2025.

"But", the Minister emphasised, "in Brussels, 70% of gas emissions are caused by buildings, and specifically to heating and cooling these buildings!". Conclusion: there have to be serious changes made in buildings.

Before an audience of nearly 350 property professionals, the Minister provided an update on major reforms planned in this area. The most spectacular measure is clearly the passive standard becoming binding on all new buildings from 2015! In Brussels, where the coefficient E is used to quantify the energy performance of buildings, a building has a passive factor E45 to E35. But office buildings which are currently the most energy-efficient have a coefficient of E75. This shows the tremendous amount of work needed on the part of architects, and especially the changes that need to be made within the minds of future building occupants.

Reactions

During the round table discussion following the presentation by Evelyn Huytebroeck, several property industry representatives emphasised that they were not opposed to this ambitious regional policy and that, technically, anything was possible - even though the challenge is huge. In contrast, said a promoter, "we must avoid imposing stricter conditions on Brussels than in other regions, as has been done, for example, by creating tax offices only in the Brussels region, which has driven many companies away ... ". This will require coordination between the regions, which is what Evelyne Huytebroeck wants. Another suggestion from professionals: why not create tax incentives for occupants of office buildings who opt for low CO_2 emitters, such as a property tax reduction, as happens with cars.

Is green building cost-effective?

Another important theme: is making buildings "green", or energy-efficient cost-efficient now? So to the question "is a green building rented out more easily?". Pierre Collette, partner at Cushman & Wakefield, said without hesitation that "in a market in crisis as it is now, nobody will pay more money to rent a green building. However, buildings which are not energy-efficient will suffer a low rating." Are green buildings more attractive to investors? The answer is even clearer. Investors have confirmed that, to their minds, the energy performance of buildings - most are certified by a green label (BREEAM, Valideo, HQE, etc.) - has become a crucial consideration for purchase. In other words, a low-scoring building has virtually no chance of pleasing investors!

Within a matter of months, the market has completely changed. Not only are green buildings cost-efficient, but they are becoming essential. This is a conclusion that is sure to worry all building owners with no green credentials. ■

1. L'impact de la vague verte sur l'immobilier organisé le 7 octobre dernier par Editions & Séminaires Laurence de Hemptinne SA (www.editionsetseminaires.be).

View of the room:
Almost 350 people from the property sector came to learn about the regulations being prepared in order to reduce the environmental impact of buildings which emit large amounts of CO_2.

View of the round table:
Right to left: Louis de Halleux, Fidentia; Pierre Collette, Cushman & Wakefield; Yves Pianet, Bureau Seco; Didrik van Caloen, UPSI and Banimmo; Laurence de Hemptinne, seminar organiser and leader; Evelyne Huytebroeck, Brussels Minister for the Environment; Steven Beckers, architect at Art & Build; Nicolas Lutgé, CBRE Investors; Sophie Le Clercq, JCX and CIT Blaton.

be.passive presents

housing

text
Julie Willem

photo
Stijn Bollaert