« Energy and Innovation » in Historic Houses

16 October 2009, 2.00 -6.30 pm
Palais des Académies- Rue Ducale, 1-1000 Bruxelles

Conference organised by the Union of European Historic Houses Associations

Conference

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Introduction by **Ghislain d'URSEL(GdU),** Executive president of the **Union of European Historic Houses Associations (UEHHA)**.

From 2:10 to 3:15 pm, FIRST PANEL: Energy savings in buildings: A European perspective

Moderator*:* James **HERVEY-BATHURST (JHB)**, Vice-President UEHHA

1. **Introduction with climatologic views,** Jean P. **MALINGREAU (JPM)**, Head of Unit Joint Research Centre (JRC) of the European Commission

2. **The EPBD,** Tatiana **MARQUEZ-URIARTE (TMU)**, DG TREN, European Commission

3. **The exception for listed monuments ?,** Dr. Léon **LOCK (LL)**

4. **The evaluation of EPBD requirements,** Hugh **GARRATT (HG)**, FRICS

5. **Integration of Energy Performance Certificates into Valuations Market Value,** Michael **MACBRIEN (MMB)**, Advisor to TEGoVA

Question time

From 3.45 to 5.45 pm, SECOND PANEL: Reducing and transforming our energy use: Technological innovations

Insulation:

6. **General approach,** Selma **HARRINGTON (SH)**, Architect RIAI/ACE
7. **Windows**, Jean-François **OUTIN (JFO)**, CEO Saint-Just (Saint-Gobain Group)

Question time

8. **Windows**, Hans-Hermann **HACKLÄNDER (HHH)**, Antikhaus-Historische Fenster GmbH

Sustainable energy sources:

9. **Photovoltaic/solar panels,** Maroussia **WORONOFF (MW)**, Office Manager Selfsun
10. **Woodburning central heating,** Jean-Marc **JOSSART (JMJ)**, Secretary General AEBIOM
11. **Chimney sleeves,** Enrico M. **REMONDINI (EMR)**, CEO and Xavier **MORLAT (XM)**, Commercial Director, Beca Engineering France
12. **Chandeliers lighting and the European directive: new challenges!,** Louis –Pierre **DENIL (LPD)**, Galerie Louis-Pierre

Best practice:

13. **Castle Howard**, The Hon. Simon **HOWARD (SM)**

Award

Introduction by Ghislain d'URSEL(GdU), Executive president of UEHHA

GdU opened the conference by warmly welcoming and thanking all the participants, speakers and sponsors present for this occasion. He then briefly presented the Palais des Académies, where the event was taking place, and set out its broader framework.

The President introduced the subjects to be covered by the two panels of the conference would deal with. The first one would be devoted to the Energy Performance of Buildings Directive (EPBD) and its current implications for historic houses, listed heritage buildings being currently exempt from the EU EPBD requirements in most EU member states. The very hot issue of the suppression of this "exception" would also be addressed, since it could have dramatic consequences on historic houses. Already implemented in most member states, the Directive also raises several issues concerning non-listed historic buildings, which fall under the EPBD spectrum. Its requirements could have a dangerous impact on the architecture and authenticity of these buildings, which have an exceptional value both in terms of historic and cultural heritage. Two other aspects would also have to be discussed in this context: the evaluation of the energy performance of buildings and the issue of the Energy Performance Certificate (EPC).

As GdU explained, the second panel would present the new and innovative techniques available on the market and applicable to buildings to reduce their energy consumption. There are two options to achieve a significant reduction in energy consumption: insulation techniques on one hand and the use of renewable energy sources on the other hand.

GdU stressed that the biggest challenge in this context was to apply insulation techniques which respect the authenticity of the buildings and at the same time meet health and quality requirements both for the buildings and their occupants.

The President then handed over to JHB, the Vice President of the UEHHA, who would moderate the discussion throughout the two panels. The latter started his moderation by reminding us that 20% of all owners of historic houses have already invested in renewable energy sources. He then introduced the first speaker of the first panel, JPM, who would discuss the issue of Climate Change to try and overcome the most common prejudices surrounding it.

From 2:10 to 3:15 pm, FIRST PANEL: Energy savings in Buildings: A European perspective

1. Introduction with climatologic views, Jean P. MALINGREAU (JPM), Head of Unit Joint Research Centre (JRC) of the European Commission

JPM started his presentation by exposing what was commonly understood under the denomination "Climate Change": *a physical process in which a change in the chemical composition of the atmosphere, due to human activity leads to a rise in air temperature (green house effect) which in turn lead to changes in climate patterns.*

As he explained, some current scientific models try to predict the exact number of degrees of the temperature rise under the global warming effect, and consequently, try to predict the changes in the oceans and ecosystems dynamics which derive from this temperature rise. JPM further detailed this aspect by explaining that since the earth functions as one single entity, the slightest change in one of its elements can lead to changes in all the others, i.e. if the global temperature rises, it can lead to changes in other phenomena (wind patterns, ocean circulation etc.) and ecosystems around the world will adapt, profit or suffer from such changes. Other models try to predict the weather patterns which will be associated with such possible climate change. According to JPM, these models are essential since *we don't live in the climate but we live in the weather.* As he said, *the climate is global and the weather, local.*

Without denying the existence of Climate Change and its serious implications for human kind, JMP then made it very clear that we should not forget there are still many uncertainties linked to this issue and that we should, therefore, stop trying to blame Climate Change for everything. Whenever an extreme meteorological event takes place (tsunami, floods, storms, droughts, etc), our explanation for it is that the event is a "consequence of climate change", which is, in JMP's view, not always the case. In this context, he gave the example of the hurricane Katrina which devastated New Orleans in 2005. Climate Change or not, scientists had already predicted a disaster of such a scale in that part of world and knew it was meant to happen at some point because of other structural reasons, that had nothing to do with Climate Change. Unfortunately, as JMP underlined, the most common reaction regarding this event was to blame Climate Change for it.

He then further developed this idea by emphasising the fact that the impacts of droughts for example are more often the result of our incapacity to feed the needy than the result of Climate Change. In that sense, future climate change may exacerbate a negative situation that already exists for other reasons.

Moreover, another important aspect regarding this issue is the difficulty to have one comprehensive and precise answer to the question of the impact of Climate Change. As JPM explained, we know that changing weather will have, and already has, an impact on our lives in many ways. However, what we are not sure about is the balance of the positive and negative impacts that Climate Change may bring about. We usually only see the bad consequences Climate Change might have.
What if it also had positive effects?, JMP asked. One crucial factor in assessing these impacts is the speed of change.

Finally, to conclude his presentation, JMP reminded us of the EU's ambitious goals in terms of energy consumption and greenhouse gas emissions. Indeed, the EU has committed itself to having a share of 20% of its total energy consumption coming from renewable energy sources by 2020. The EU would also be ready to commit itself to a 30% reduction in greenhouse gas emissions if other developed countries agreed to join in.

If other countries don't join this trend, JPM pointed out that a 30% reduction in Europe's greenhouse gas emissions would account for only 10% of the necessary reduction to avoid meeting the critical threshold of a 2°C temperature rise. That doesn't mean Europe shouldn't do anything. On the contrary, according to JPM, Europe should take the leading role in "greening" the global economy. Moreover, as he then stated, we all have a major role to play in this process. Landowners must contribute through carbon sequestration in biomass and better farming practices, owners of historic houses or buildings need to apply good insulation techniques and all of us, citizens, must put our governments under pressure and convince them to take action.

2. The EPBD, Tatiana MARQUEZ-URIARTE (TMU), DG TREN, European Commission

TMU started her presentation by referring to the previous speaker's conclusions and recalling the EU goals in terms of energy consumption (1), greenhouse gas emissions (2) and renewable energy sources (3), or, in other words, by presenting the so-called "20-20-20 EU policy by 2020".

1. A 20% reduction of EU energy consumption
2. A 20% reduction of EU greenhouse gas emissions
3. An increase in the use of renewable energy sources to reach a share of 20% of the EU total energy consumption (this share amounts to 8,5% today)

Why is this relevant for buildings in general?, asked TMU. As she explained, the building sector in Europe is responsible for 36% of the EU's CO2 emissions, and 40% of its energy use. Moreover, the building sector accounts for 9% of EU's GDP, 8% of employment and € 2 trillion annual turnover. In the light of these facts and figures, and according to TMU, it is evident that the building sector concerns a very large number of European citizens.

TMU then continued her presentation by focussing on the Energy Performance of Buildings Directive (EPBD) and on how it finds its place in the EU legal framework. The EPBD has to be understood as part of a comprehensive set of legislation to enhance energy efficiency: the Directive on the promotion of cogeneration, the Directive on the promotion of the use of energy from renewable sources, the Directive for the taxation of energy products and electricity, etc.

TMU then further detailed the content, the implications and the recast of the EPBD. In terms of content and implications, the Directive offers a holistic approach towards more energy efficient buildings and includes specific requirements to be met at the national and regional levels (not at the EU level). In other words, as TMU explained, the member states have to commit to the Directive by implementing the following elements:

- A methodology to calculate and rate the energy performance of buildings
- Minimum energy performance standards for new and for existing buildings that undergo major renovation
- Energy performance certificates
- Regular inspections of heating and air-conditioning systems

Regarding the recast of the Directive that is currently taking place, TMU identified the differences between the new Directive and the current one. From a general point of view, she pointed out that the principles of the existing requirements are maintained, but intensified and clarified, with the member states still being responsible for their implementation. In terms of modifications, the new Directive will include a benchmarking system to achieve cost-optimal levels which all member states will have to reach after 2017 and the elimination of the 1000 m² threshold for buildings when they undergo a major renovation. The "after recast" Directive will also imply the elimination or lowering (to 250 m²) of this threshold for the display of Energy Performance Certificates in public buildings and for the assessment on the installation of alternative systems for new buildings[1].

[1] In the current Directive, the display of Energy Performance Certificates and the assessment on installation of alternative systems for new buildings are compulsory only for buildings with a larger surface than 1000m².

As TMU underlined, the new Directive will also aim at strengthening the role and the quality of energy performance certificates, through quality checks and the use of the performance indicator in advertisements for sale or rent. The Directive is also meant to achieve increased visibility of these certificates by their display in public and frequently visited buildings above 250 m² and when properties are being advertised on the market. In other words, one of the goals of the EPBD is to address the public sector in the context of energy efficiency to act as a leading example.

TMU then developed some of the EPBD long-term perspectives such as stimulating the market entry of low/zero carbon and energy efficient buildings (passive houses), supporting financially only the measures that have reached levels beyond the cost-optimal ones (after 2014), requiring member states to provide more information about the Directive to their citizens and assuring a clarification of the provisions and definitions included in the EPBD.

To conclude the discussion on the EPBD recast, TMU pointed out some of the results the new Directive should achieve such as, a 5 to 6% energy saving of the EU total energy consumption, a 5% saving of the EU total CO2 emissions and the creation of between 280,000 and 450,000 new jobs.

Finally, to end her presentation, TMU informed the audience about some recent initiatives launched by the European Commission in the context of energy efficiency such as the "Smart Cities initiative" (adopted on 7th October 2009) or the Reviewed EU Action Plan on energy saving (2009-2010). The "Smart Cities initiative" aims at creating the conditions to trigger the mass market take-up of energy efficiency technologies[2]. As TMU explained, it is meant to create a network of between 20 and 30 cities which invest in several industrial initiatives on wind, solar, carbon capture and storage, etc.

[2]http://ec.europa.eu/energy/technology/set_plan/doc/2009_comm_investing_development_low_carbon_technologies_en.pdf

3. The exception for listed monuments ?, Dr. Léon Lock (LL)

As an introduction to his presentation, LL started by warning us about the cultural crisis we are facing today. A crisis, he said, as large, if not worse, than the one caused by the Second World War. He is convinced that if we don't intervene today, within ten years, it will be too late and we will have *permanently and irrevocably disfigured 95% of pre-WWII architecture.* In his view, the most threatening aspect concerns windows. In the context of the conference, He focused on the adaptation (or not) of windows to new energy saving expectations. To illustrate this point, he reminded us, based on a series of pictures, of some historical and architectural features about windows.

Until the 1920s and even later, glass was not manufactured with techniques achieving perfect or near-perfect flatness. The traditional way of manufacturing glass enabled to achieve a subtle impression of impreciseness, *as if looking at a water surface that is stirred by a breeze*, as LL described. Another way to achieve specific proportions and visual effects is to work on the wood of the window frameworks. By describing these two aspects, his aim was to point out how important the contribution of windows is to the overall aspect of buildings. Unfortunately, this is not always taken into account in the construction or transformation of new buildings. The replacement of simple glazing with double glazing is in some cases, a real catastrophe both in terms of architectural and cultural value for historic buildings, whether listed or not. Worse, in his view, is the replacement of wood, iron or even aluminium window frames with ones made of UPVC.

He justified this statement by emphasising two negative aspects of UPVC. On the one hand, it is a disaster, he said, culturally, because of the loss of woodwork, which was in some cases, very valuable. On the other hand, UPVC is also a disastrous material in terms of environmental protection, UPVC not being able to last for longer than one or two decades. This implies the complete replacement of the windows at a rate that has historically never happened. To underline this point, he gave the example of high quality wood used for window frames that can last several for hundreds of years. Can we allow ourselves to replace window frames made in such wood?, he asked.

Wood is however also problematic today for two reasons. Firstly, as he explained, because today few joiners are able to shape window frames to historic shapes. Secondly, there is the problem of finding quality wood, that has become increasingly difficult. Therefore, in most cases, he sees full preservation with as little replacement as possible, as the most viable solution, culturally, economically and environmentally.

LL then raised the issue of the energy efficiency of historic houses and of the need (or not) to update our old buildings. He asked the following questions: Are they really so energy inefficient? Do we need an exception for listed buildings so as to keep a token on our past? Do we accept that besides protected listed buildings, disastrous management of our built heritage destroys all architectural value of our non-listed heritage? As an answer to these questions, he suggested that instead of replacing what we have with low quality and inappropriate alternatives, we should look at what we have and analyse it precisely. That means, in his view, that we have to stop making hypothetical calculations about the energy consumption of old buildings. He recommended looking at what the buildings consume in practice, including in the equation the fact that some buildings are not used all year round and that some parts are not even heated.

He concluded his presentation by informing us once again about the urgency of the situation for our entire built heritage, not just for the listed buildings.

4. The evaluation of EPBD requirements, Hugh GARRATT (HG), FRICS

The presentation of HG, qualified in law and surveying, dealt with energy efficiency in buildings with an emphasis on how the Energy Performance of Buildings Directive (EPBD) affects heritage property.

As HG reminded us, the objective of this Directive is to improve the energy efficiency of Europe's building stock and to reduce carbon emissions in line with the Kyoto Protocol. Since 50% of our carbon emissions arise from buildings, i.e. more than the emissions from industry and transport combined, the management of buildings and their energy consumption will play a very significant role in meeting our carbon targets. However, as HG pointed out, the vast majority of our building stock is not new and has not been built or adapted recently to modern standards of energy efficiency.

To illustrate this point HG showed us a series of thermal images revealing the state of fairly typical housing in terms of insulation and heat loss. He underlined more specifically some common cases of heat losses up a chimney, out through a wall, out at the base of a building because there is no insulation barrier at the edge of the floor slab, through single-glazed windows, etc.

His aim was to demonstrate that if the property sector is to play its part in meeting ambitious goals in terms of carbon emissions reduction[3], property managers across Europe will have to rectify millions of defects, which will be very expensive and, at times, technically difficult to do, or even impossible. Indeed, in his view, many buildings are not capable of becoming efficient, at least not without uneconomic treatment.

In this context, HG reminded us that the EPBD is one of the first pieces of "energy-efficiency legislation" we see in the property sector. He focused especially on a relevant article for owners of existing buildings.

Article 6
Existing Buildings
"Member states shall take the necessary measures to ensure that when buildings with a total useful floor area over 1000m2 undergo major renovation, their energy performance is upgraded in order to meet minimum requirements in so far as this is technically, functionally and economically feasible. Member States shall derive these minimum energy performance requirements on the basis of the energy performance requirements set for buildings in accordance with Article 4. The requirements may be set either for the renovated building as a whole or for the renovated systems or components when these are part of a renovation to be carried out within a limited time period, with the abovementioned objective of improving the overall energy performance of the building."*

**Article 4 sets out the energy performance requirements and includes an opt-out for certain classes of building.*

One of the exceptions to article 6 concerns *"buildings and monuments officially protected as part of a designated environment or <u>because of their special architectural or historic merit</u>, <u>where compliance with the requirements would unacceptably alter their character or</u>*

[3] He referred more specifically to President Obama's announcement at the G8 in L'Aquila (Italy) in July, about a legally binding agreement for the developed world to reduce its carbon emissions by 80% by 2050.

appearance."

In other words, when large buildings (over 1,000 m² net-internal) are renovated, or partly renovated, the energy performance of the renovated portion is to be upgraded to meet minimum standards *so far as is feasible*, unless excused on heritage grounds.

HG then expressed his scepticism regarding the Directive. He does not think that it will because it isn't clear enough and isn't tough enough. He then briefly analysed the forthcoming modifications the EPBD might undergo, i.e. the "EPBD recast". The recast will include, among other things, a provision requiring a 'display energy certificate', showing how much energy was used in the building in the previous year. This certificate will have to be displayed in every public building over 250 sq m. Definitions will also be set for low and zero carbon ("LZC") buildings, penalties will be introduced for non-compliance (HG reminded us that the UK already had penalties), etc. (The recast has already been detailed by TMU from the DG TREN- European Commission in her presentation).

HG continued his presentation by exposing some case studies and buildings he is currently working on. He then described a diagram showing how heat can be efficiently distributed for a variety of uses such as under-floor heating, radiator circuits, and domestic hot water; and can be obtained from the cheapest source available, whether it is solar-thermal, ground-source, or fossil fuel. A calorifier (or accumulator) is required at the heart of this system, which has been retro-fitted to a number of traditional properties and reduces dependence on fossil fuels by more than 50%.

As a conclusion to his presentation, HG stated that the best ways to improve energy-efficiency vary from property to property but that the common factor is *the need to grasp the nettle and cut emissions*. He then invited the participants of the conference to address him any question they might have concerning their buildings restoration, redevelopment and upgrading to minimum energy efficiency standards.

5. Integration of Energy Performance Certificates into Valuations and Market Value, Michael MACBRIEN (MMB), Director General of the European Property Federation and Advisor to TEGoVA, The European Group of Valuers Associations

MMB started his presentation by going straight to the point of interest for owners of historic houses: the recast of the EPBD and more specifically the Parliament amendment to the Article including the exception for historic houses. MMB warned the UEHHA and the audience that the Parliament would fight to keep this amendment in the directive. The next trialogue between the Commission, the Parliament and the Council regarding the EPBD recast would be held on 3rd November. Time to act was therefore limited and the UEHHA should take action now, as MMB advised, if it wanted its voice to be heard in this process.

In order to make everyone aware of what is in fact meant when talking about this problematic amendment, MMB showed the audience its exact wording.

Recast of EPBD – **Article 4(2)(a)** : "Member States may decide not to set or apply the requirements referred to in paragraph 1 for the following categories of buildings.

Council version (current version)
(a) Buildings officially protected as part of a designated environment or because of their special architectural or historic merit, where compliance with the minimum energy performance requirements would unacceptably alter their character or appearance;

Parliament Amendment
(a) Buildings officially protected as part of a designated environment or because of their special architectural or historic merit, ***in so far as*** compliance with ***a specific*** minimum energy performance ***requirement*** would unacceptably alter their character or appearance;

MMB then switched to another issue related to the EPBD but more relevant to TEGoVA: Energy Performance Certificates (EPCs). They will also undergo the following modifications under the EPBD recast. To clarify the differences between the current situation regarding EPCs and the potential new one, MMB underlined the few elements that are likely to change.

The Energy Performance Certificate (EPC) obligations under the current Directive (Directive 2002/91/EC):

- EPCs must be **made available** every time a building is constructed, sold or rented out.
- The certificate must contain **reference values** making it possible to assess and compare the energy performance of the building.
- The EPC must contain **recommendations** for the cost-effective improvement of the energy performance of the building.

The Energy Performance Certificate (EPC) obligations under the recast of the Directive

- EPC to be handed over to prospective buyer at point of first enquiry
- Sellers and landlords to be ***« encouraged »*** to mention the EPC's energy performance indicator ('Grade A', 'Grade G', etc.) in their advertisements
- Common certification ***« model » or « scheme »*** for commercial buildings, a first important step in harmonising the certificates Europe-wide, the result of a two-year campaign by ELO, EPF and TEGoVA.

Concerning the last point on "Common certification *model or scheme*", MMB explained that for the moment there is a huge problem related to it. It is very difficult to compare the member states' practices in assessing the energy performance of buildings, and without an EPC common to all member states, it will remain very difficult to achieve real progress in energy performance evaluation and comparison.

As MMB further detailed, it is up to valuers to make the most of the Directive and realise its full energy efficiency potential. However, it is not easy because of the existing gap between EPCs and existing valuation practices. MMB identified specific issues related to this gap:

- No direct link between the valuation and the EPC, i.e. the energy performance indicators presented in the EPC need interpretation
- It remains to be decided which parts of the EPC should be integrated into property valuation.
- The quantification of cost indicators for specific energy-efficient building improvements, etc. is not a valuer's task, this falls to building construction engineers and energy experts.
- There is a knowledge gap between valuers and energy experts (valuers don't know much about energy efficiency and energy experts don't know what valuers need).

MMB then identified another problem, still related the heterogeneity of EPCs across the member states and the EPBD recast. Indeed, a Europe-wide comparison and guidance are limited due to a lack of detail in the Directive and the resulting partial dependence on diverging national regulations:

- Different types of indicators used in EPCs (e.g. net heat demand, final energy demand, carbon dioxide emission)
- The general heterogeneity of EPCs (different illustration and labelling)
- Differences in value composition of energy performance indicators (e.g. final energy consumption) used in EPCs
- Different calculation schemes and methodologies for EPCs

However, all things considered, the fact that the EPBD recast requires the implementation of a "Common certification *model or scheme* for commercial buildings" is, as MMB already underlined, a good step in the right direction. As a suggestion to achieve a harmonised valuation system, MMB presented one of TEGoVA's sources of inspiration in this field: the IMMOVALUE Project's guidance on how valuers across the European Union can address EPCs. This project suggests for example that, if the EPCs data seems plausible, the valuer can use the following data in comparison to national and European energy standards, to the property being valued:

- Energy quality in general: Energy level, energy consumption, primary energy demand
- Costs of the required energy to operate the whole building

- Type of energy sources used
- Year of construction: what was the standard at the time
- Age of the technical equipment
- Energy refurbishment required by the existing audits and its cost

As a conclusion, MMB emphasised how much TEGoVA is betting on an increasing value of EPCs. TEGoVA will integrate the best ideas into its European Valuation Standards, Minimum Education Requirements and 'Recognised European Valuer' scheme so that its 120,000 valuers across Europe work together to raise understanding of energy efficiency and integrate energy performance into the valuation and, gradually, the market value of the building. As MMB explained, EU and national policy will accelerate the trend in this context. The Finnish government's plan to link property taxation to the building's energy performance for example is a move in the right direction. This, as MMB explained, reinforces the imperative need for reliable EPCs.

Question time

A few reactions from the audience then arose.

The first reaction was from Ghislain d'Ursel.

The second reaction came from Philippe Toussaint. The latter wanted to underline that a distinction should be made between buildings pre and post WWII. The reason for this distinction is in his view the fact that before WWII, energy prices were very low, compared to after WWII (until today) where they are high. He then noted that energy efficiency requirements will in his opinion automatically lead to tax rises for those who don't commit to them, forcing them to transform their buildings sometimes in terrible ways. He then referred to the presentation of Leon Lock (LL) and added that *old buildings breathe. If they stop breathing, they die.*

LL then responded to this by reminding us again that the "whole equation" of a building's energy consumption should be taken into account. In other words, he suggested we should talk in terms of measures and not evaluation. *Let us measure what a building really uses and not what it might use.*

From 3.45 to 5.45 pm, SECOND PANEL: Reducing and transforming our energy use: Technological innovations

6. General approach, Selma HARRINGTON (SH), Architect RIAI/ACE

For the conference purpose, SH entitled her presentation: Insulation upgrade in the context of energy efficiency and conservation principles. SH started by setting the scene by enumerating the common problems in historic buildings: high maintenance and heating costs, the lack of contemporary comfort of use, higher and more inefficient energy consumption, the issue of CO2 emissions and their impact on the environment, the decay of building fabric due to climatic influence and aging.

SH then briefly recalled the requirements of the EPBD regarding historic houses before exposing her recommended approach to an insulation upgrade in historic buildings. Firstly, she recommended that historic houses should be studied and understood on a case-by-case basis and that conservation principles should be respected. Secondly, she suggested that an anlysis of the condition and variations in the building fabric itself should be conducted.Thirdly, she reminded us that heating requirements and fuel consumption estimates may vary from case to case and that we should take this variation into account. Finally, she advised us to reconsider the "software-driven" recommendations based on an "industry standard" approach by not automatically adopting it.

In her opinion, there is a real need to understand the intrinsic value of historic buildings before making any decision regarding a possible transformation. Since the end of WWII, historic houses have been considered as "shared cultural value" or "common good" and the issues related to them (their preservation, renovation,..) have therefore been recognised. In this context, SH also underlined that, according to relevant studies, the energy performance of some historic houses is not as bad as one might think. On the contrary, the performance of some buildings, if they are aided by non-intrusive upgrade measures, could even be rated as "good".

SH then enumerated the different important international conservation guidelines, which inform the legal framework of historic houses conservation. She focused more specifically on the Venice Charter, ICOMOS 1964 (the International Council of Monuments and Sites) and the Australia ICOMOS Charter for Places of Cultural Significance , also known as the Burra Charter . To summarise the contribution of international conventions, SH explained that they gave enough scope for careful balance between the need to protect the physical, material, historic and cultural value of the built heritage and the need to adequatly respond to the use of historic buildings and requirements of contemporary comfort for the buildings' occupants. She then further developped this last point by giving a list of physical factors related to comfort of use in historic houses. These factors are :

- Daylight and sunlight aspects
- Orientation, exposure of the building envelope to the external climatic influence
- Heating
- Thermal mass & insulation level of internal space
- Natural ventilation
- Moisture/dampness/condensation control/prevention of mould growth

- Composition and porosity of materials and building components
- Air and wind tightness of the building.

She then moved to the tools available for the energy performance assessment in buildings, prior to undertaking any work. These methods cover different types of surveys and tests: a survey of the whole building and its components and services, the DEAP/NEAP/SBEM analysis and recommendations, air pressure testing, thermal imaging and In-situ U-value assessments.

Going back to the core issue of her presentation, - insulation, SH started to detail the different techniques available to upgrade insulation, from the roof and attic to the walls, with internal and external insulation. To achieve better insulation, work can be done on external and internal wall finishes, mindful of the impact of new work on the skirting, wall paneling, window boards, reveals; architraves, dado and picture rails, cornices. Insulation upgrade needs to be coordinated with the analysis of performance in the heating, alarm, fire protection, moisture and condensation control, etc.

In terms of materials, SH listed the new options available on the market: natural hemp, sheep's wool, wood fibre, nano-technology renders and paints. The desired qualities of these new materials are: thermal conductivity and adequate U-values, breathability, suitable thickness, the natural character of the material and its pliability to allow prevention of thermal bridging. In the case of nano-technology renders and paints, SH detailed more specifically the case of "Thermilate Eco friendly render & paint", which appears to offer many of the desired qualities :- it is 89% more energy efficient than any other plaster or render, it is environmentally friendly, made from natural materials, allows buildings to breathe, it can be applied at varied thicknesses from 10-40 mm, etc.

As a conclusion, SH reminded us that, in her opinion, insulation upgrade should be dealt with in a case-by-case with holistic approach. She also reminded us that there is a need for understanding the traditional skills, materials and techniques, combined with new requirements, applications and methods. These are presented as challenges but also new opportunities to owners and occupants of historic buildings, conservation architects and other specialists, who are responsible to survey, record, document and sustain traditional skills, whilst creatively embracing innovation. Finally, she mentioned that we shouldn't forget the role that local authorities and governments have to play in creating incentives and support.

7. Windows, Jean-François OUTIN (JFO), CEO Saint-Just (Saint-Gobain Group)

As an introduction to this presentation, JFO gave a few facts and figures concerning the company. Saint Just is a branch of Saint-Gobain Glass, specialised in the production of glass and restoration works. Saint-Gobain is among the 100 first industrial groups in the world. Saint-Gobain is established in 59 countries, with a total of 209, 000 employees and 14 Research and Development (R & D) centres. It is a world leader in his sector.

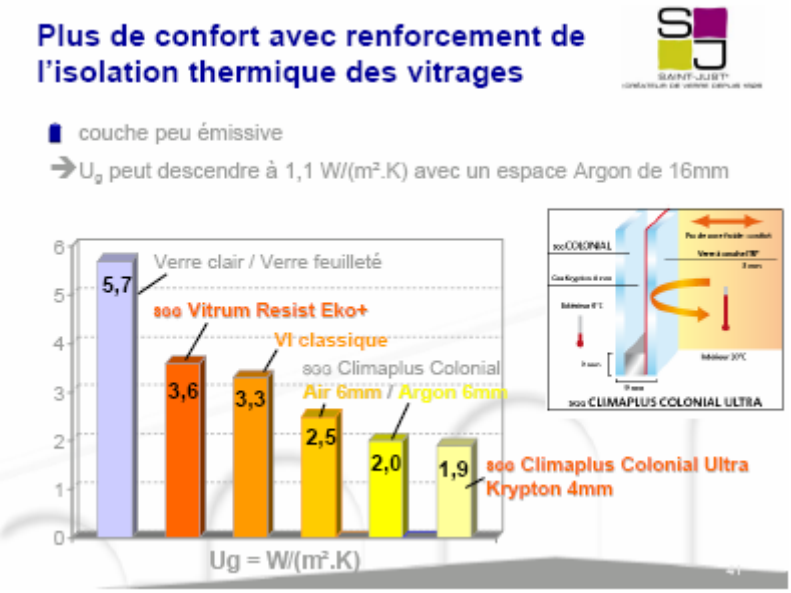
The Glass branch of Saint-Gobain, Saint-Gobain Glass, is split into 4 sectors:

1. Saint-Gobain Glass: primary glass production. Flat glass and coated glass production
2. Saint-Gobain Glass Solutions: processing and distribution for the building industry and household appliances (fire-resistant, vitroceramic, optics, etc)
3. Saint-Gobain Solar: solar energy solutions (solar mirrors, coated products, roofs and PV façades, etc)
4. Saint-Gobain Sekurit: processing for the automotive and transport industries (Autover-replacement glazing for cars, glazing for the aviation and railway industries and industrial and bulletproof vehicles)

This brief presentation of Saint-Gobain Glass was meant to show the full range of its activities and products. Saint-Gobain is specialised in big projects, as JFO showed, like the Skywalk in the USA (over the Grand Canyon), the Orangerie (France), the Ruby Plaza (Hanoï) or the Aspire Tower (Doha), but is also concerned with preservation and restoration projects.

Saint-Just, en entity of Saint-Gobain Glass France, is a real specialist in terms of production and development of an efficient type of glass (on the aesthetic, thermal and security levels) suitable for listed buildings in Europe, thanks to its expertise in "restoration glass". As JFO further explained, Saint-Just also works together with the framing industry to guarantee the best aesthetic results. To manufacture this glass, one of the techniques used is the "Verre soufflé" technique, which combines traditional and high-tech means. In this context, JFO explained the fusion cycle of this type of glass and how it is manufactured in practice.

JFO then moved to the concrete solutions Saint-Just has to offer for the insulation of restoration glass. The main range of products Saint-Just commercialises in this context is the "V. SGG CLIMAPLUS COLONIAL" range (SGG Vitrum resist colonial, SGG climaplus colonial + version ULTRA, SGG Vitrum resist noble, etc.). This type of glass can be understood as a "double-glazing restoration glass". As JFO explained, it is in between single and double glazing. Thanks to an efficient glass basis and a thin layer of restoration glass over this basis, it has the advantages of double-glazing in terms of insulation and energy efficiency and the advantages of single glazing in terms of aesthetics.



According to JFO, the installation of such a glass can reduce energy costs by 4 and with a thickness of only 9 mm, it also assures the preservation of the historic window aspect. To guarantee a perfect installation, Saint-Just has its own training programme, to be able to rely on a fully-trained technical team of installers. They are the only ones allowed to install the glass.

Finally, to conclude his presentation, JFO summarized the assets of Saint-Just. They place on the market high quality products made in France, they rely on modern industrial tools and the support of a large and important industrial group (Saint-Gobain) and they also enjoy the help from Saint-Gobain in terms of R&D. As an illustration of its success, Saint-Just just has to enumerate the world-wide references it benefits from today (Restaurant "La tour d'argent" in Tokyo, Casino project in Las Vegas, "Laduree Bar" in Paris,…).

Question time

A couple of questions and reactions then arose from the audience.

-*What is the pay-back time of an investment in Saint-Just glass?*

JFO couldn't give a specific and precise time period because such calculations involve a case-by-case study. It is indeed difficult to assess the pay back time because it depends on a large number of factors. However, there was one figure JFO insisted upon: the reduction by 4 of the energy costs.

- *Nothing has been said about "secondary glass" to achieve better insulation?*

JFO knew about this technique, consisting in placing one glass behind the other with a gap in between, but since it is a Saint-Just specificity, he didn't further comment on the topic.

8. Windows, Hans-Hermann HACKLÄNDER (HHH), Antikhaus- Historische Fenster GmbH

The aim of HHH's presentation was to illustrate some aspects of thermal insulation in historic windows.

As he explained, when historic buildings were first built, the main focus was on the principles of aesthetic design. In other words, building measures to save energy were a very minor concern and hardly featured in the thinking of the master builders of those times. More specifically, the design of building frontages and thus also the construction of windows was governed by concepts of "harmony and beauty" and their style symbolised the characteristic features or their period of origin. In this context, he further detailed the construction of windows. The size of windows, their proportions, subdivisions and distribution across the building determined its representative character. This went far beyond the actual functionality of a window.

According to HHH, since then, the situation has undergone a total reversal. The demand for "style" and "beauty" has been replaced by the maxims of functionality and efficiency. As he described, *the gulf between these two sets of guiding principles underlines the conflict currently faced by most of the window industry*. He then underlined that innovations in window manufacturing, in machinery and technology as well as in the use of new materials, almost exclusively focus on modern architecture. It was therefore left to a small number of window manufacturers and architects to take on the area of "Historic windows and energy saving measures" and to develop suitable concepts and the necessary know-how.

One of his main concerns in this context is that coordinated communication between the industry, architects, craftsmen, builders and the concerns of restorers has long been neglected and is still today. As he explained, there has been no such thing as a common approach to all concerned parties. Even today, he said, these deficits still exist in the relationships between conservationists, manufacturers and craftsmen. In response to that, individual companies, most of them with roots in the field of building restoration, have taken up this matter and attempted to develop it further on their own initiative.

In his opinion, at the centre of all this lies the question of the future combination of preservationist requirements with building measures to ensure affordable energy in historic buildings. Such a combination is achievable, as proven by his own experiences and many successfully completed building projects. HHH then developed the possible measures that can be taken for windows in historic buildings in order to achieve energy savings.

As he reminded us, the major source of energy loss in a house is the lack of window insulation; for that reason, the thermal insulation of windows deserves careful and balanced consideration. Basically, Historische Fenster- Antikhaus offers four different options for the implementation of energy saving concepts for historic windows. Before any further steps are taken, the windows need to be checked thoroughly for tightness, closability and functionality of the window fittings, and these findings need to be documented.

He then developed briefly 4 individual options.

Option 1:
Restoring the paintwork and fittings and repairing the wooden structure of the existing window as well as replacing the panes with a special single glass panel, known as K-glass

or energy-saving glass.

Result: The traditional wooden structures and the appearance of the window are preserved, but the energy-saving effect is low and in our experience generally insufficient; neither safety-related nor sound-insulating measures can be implemented. Only to be recommended if the wooden structure is sufficiently sound. Cost-benefit ratio is only satisfactory because of short energy saving.

Option 2:
Restoring the paintwork and fittings and repairing the wooden structure of the existing window. Insertion of a slim heat – absorbing glass with a high insulation value. Replacement of any wooden crossbars with so called "Vienna muntins". The spacers between the two panes of glass can be painted in window colour.

Result: Preservation of the traditional window structures and the appearance of the window furniture. High thermal insulation value. Good cost-benefit ratio. This option should only be used if the wood and the windows are still sufficiently sound and the wood of the window wings sufficiently deep to permit such work.

Option 3:
Exact faithful reproduction of the existing window with insulating glass, with no or very minor deviation from the original. The old window mounting will be restored and re-used or replaced by new fittings not visible from the outside.

Result: Exact (or nearly) preservation of the old window and wooden structures, very high thermal insulation value, ability to meet any requirement regarding safety or sound insulation, thermal breaks to the brickwork can be installed to modern standards. Cost-benefit very good, because there are no costs arising from restoring the old windows. Particularly recommended in case of defective quality of the windows or the wood.

Option 4:
Restoring the paintwork and furniture and repairing the wooden structure of the existing window, then fitting behind it a second insulated window of identical style and with wood of the same dimensions and profiles. Such window is known as a box-type or double-layered window.

Result: The existing window is retained in the original form, very high thermal insulation value, implementation of any required safety or sound insulation measures, very impressive visual appearance. In the long term: Good cost-benefit ratio. Only suitable for buildings with sufficient wall - rebate depth. All of these possible options always have to be looked at in detail and decided upon after an inspection in each individual case.

As a conclusion, HHH recalled that historic buildings represent some of each nation's major cultural assets. With the significant impact they have on their immediate and wider surroundings, they also represent an economic factor which is not to be underestimated. According the HHH, in order to make their upkeep and maintenance possible, our politicians are requested to create a legal framework for these special cases of energy conservation and to provide the necessary financial backing.

9. Photovoltaic/solar panels, Maroussia WONOROFF (MW), Office Manager Selfsun

MW's presentation dealt with « solar energy integration into historical monuments ». She started by briefly presenting the company in which she is an office manager, Selfsun. Created 30 years ago, Selfsun is one of the oldest "green" companies in Belgium. It currently focuses on photovoltaic panels. As she explained, a distinction should be made between the latter and solar thermal panels. Photovoltaic panels capture the light energy from the sun to generate electricity; solar thermal panels for their part, capture the heat from the sun for heating houses, the water, etc.

To set the scene, MW then gave us a few facts and figures concerning solar energy production. An average family uses up to 3600 Kwh per year. 1 sqm of photovoltaic panels produces +/- 100 kWh per year, so about 36 sqm are needed to cover the needs of a typical household. One of the main advantages of photovoltaic panels is to become partly energy self-sufficient. Realistically, the panels cannot cover one's entire energy consumption but can certainly help one become his own electricity provider for part of one's energy needs. The longevity of the panels is estimated at around 25 years, which is longer than what many may think. In Belgium, installing solar panels also means that one can claim subsidies from their region, specific loans to the bank, accumulate green certificates, etc, in addition, of course, to energy costs reduction due to the solar energy production itself. The pay back period can range from 5 to 10 years (depending on the region and the specificity of the project).

MW then moved to the main purpose of her presentation: solar energy integration into historic houses. One of the questions which is often raised, is whether the owners of historic houses are allowed to install solar panels on their roof. MW then presented the specific solutions provided by Selfsun in this context. New technologies exist today to achieve an optimal integration (eg solar tiles, solar slates), which respect the aesthetic of the building. In her opinion, this is probably the best solution in the case of a full renovation. If only part of the roof is being renovated, the only problem would be the colour difference between the old tiles or slates and the solar ones, which for the moment only exist in black on the market.

Another problem which may arise is the fact that the historic house might not present any optimal orientation to install solar panels. More generally, each building has its own specificities, which have to be taken into account, especially as far as historic houses are concerned, where 4 aspects have to be respected: historical, architectural, ethical and aesthetic. As MW explained, this is the reason why Selfsun advises to conduct an energy audit prior to any work.

What happens in case of a non-optimal orientation of the main building or if it is "untouchable"? Usually, Selfsun tries to find alternative solutions, for example installing panels on secondary buildings. To illustrate this, MW gave the example of a potential project on the roof of a secondary building of Hex Castle.

As a conclusion, MW reminded us that the solutions Selfsun provides are based on the respect of the site itself. There are no "one-size fits all" solutions and against all expectations, historic houses offer actually more space for creativity than other buildings. Each situation has its own specificities but new technologies allow us to find the best solutions.

10. Woodburning central heating, Jean-Marc JOSSART (JMJ), Secretary General AEBIOM

JMJ started by presenting AEBIOM, the European Biomass Association. The latter represents and promotes the interests of bioenergy stakeholders. It is a federation of 33 national associations and more than 70 companies. The main activities of AEBIOM are lobbying, organising workshops, publishing newsletters, launching projects, etc. It is based in Brussels, in the "Renewable Energy House".

The rest of JMJ's presentation dealt essentially with woodburning central heating. He sees it as a complementary energy source to solar energy for example. Heating with wood presents many positive aspects, the most obvious being the fact that it is a renewable energy source, and therefore support the fight against Climate Change. It also promotes the forest by-products, local employment and the regional economy. Last but not least, woodburning central heating, as suggested in the name, has to be provided with wood, which is a cheap and stable-priced fuel. However, as JMS explained, it doesn't have only advantages. On the negative side, he listed 4 points: the high price of some appliances, the storage issue, the small autonomy of some appliances and the periodic cleaning of ashes.

The wood itself, used as fuel, can be provided in different forms: woods logs, wood chips or pellets. The main problematic aspect with woodburning central heating in a house is the storage, although according to JMJ, many possibilities exist to store wood chips and pellets (underground storage for example). Wood can be used in different appliances such as wood log stoves, pellets stoves and pellets boilers. To clarify the efficiency and autonomy of each type of fuel, JMJ made a brief comparison between different alternatives in heating with wood.

Type	**Efficiency (%)**	**Autonomy (h)**
Open fire	5 – 10	2 – 3
Insert	40 – 80	5 – 10
Wood logs stove	70 – 90	6 – 12
Automatic stove	80 – 90	24 +
Wood logs boiler	50 – 80	12 – 24
Wood chips boiler	70 – 90	Up to several months
Pellets boiler	70 - 90	Up to several months

He then moved on to give us a concrete example of the use of renewable energy sources in general: the Renewable Energy House in Brussels. It was inaugurated on 22 March 2006 and with a 2800 m² office surface, 3 large townhouses, 100 members of staff and 15 associations, represents today the headquarters of the European renewable energy sector. Moreover, as a listed building in an urban environment, it demonstrates that the use of renewable energy sources is feasible in historic houses.

As JMJ demonstrated, this house is the illustration of an ambitious energy concept. 100 % of the energy for heating is renewable (wood pellets, solar thermal, geothermal), it limits thermal exchanges, it hosts energy performant equipments and allows heat recovery to take place.

As a conclusion, JMJ encouraged the owners of historic houses to follow the path of renewable energies, starting with wood heating, as it has been done for the Renewable Energy House in Brussels.

11. Chimney sleeves, Enrico M. REMONDINI (EMR), CEO and Xavier MORLAT (XM), Commercial Director, Beca Engineering France

This presentation was given alternatively by XM and EMR. They took turns in describing the products of Beca Engineering France and what kind of implications they have for historic houses.

XM started by presenting the company. Active in Europe and preparing to develop the USA market, Beca Engineering France is a French subsidiary of the Milan-based Italian manufacturer Beca Engineering srl.
It has two main missions: developing technologies for the re-lining of all types of ducts (smokes, sewer, metheoric waters, primary waters, no-dig cable and optic fibers laying, industry, marine, etc.) and implementing a world-wide distribution method for all Beca products, in partnership with professional operators of each specific field and geographic area.

The invention of chimney sleeves, also called smoke-ducts sleeves, in the present form of BECA products, is Italian. It's aim is to refurbish ducts from the inside, thus avoiding major and extensive masonry works and resulting damages to existing buildings, esp. historic ones. As XM explained, it refurbishes all types of fumes ducts without destroying the existing ones (such as gaz/oil heaters or wood burning chimneys – "cheminées à bois"). At this point EMR took over to explain the 6 steps of the refurbishment itself.

1. Inspection with video camera
2. Installing innox fittings and introducing the sleeve
3. Installing top and bottom ends fittings for inflation
4. Air-inflation of the sleeve. The sleeve meets the exact shape of the duct walls
5. Steam inflation (approximately 2 hours) to catalyze the sleeve
6. Cutting of the sleeve exceeding top and bottom ends.

To illustrate these 6 steps, EMR further detailed the process of installing the chimney sleeves and described each step based on a series of explanatory pictures. The chimney sleeves are available in two main types of products: the Fitfire, for gas and oil burners, forced ventilation, kitchen hoods, etc. with a temperature lower than 300°C, and the HT 1000, for wood and coal fireplaces, pellets stoves, ovens, furnaces and industrial applications, with an operational temperature which can reach 1000°C. Fitfire is made out of glass fiber and a water-based thermosetting resin, therefore environmentally friendly and safe for human manipulation. HT1000 is made out of ceramics materials and thermosetting resins, prevents chimneys flue fires and is totally inert after installation.

As XM explained, in the event of a flue fire, an insurance survey always leads to a compulsory lining of a chimney, and to a subsequent large reduction of its section. This fact leads to a compulsory installation of a closed fireplace. HT1000 always avoids section reduction of ducts, allowing ongoing safe use of traditional open fireplaces. Other advantages of BECA products in general are the fact that BECA thermo-setting sleeves are a monolithic block (can be up to +150 m. tall) without junctions, they avoid major masonry works, they can be quickly installed (24 to max 48 hours), and that they fully comply with EU regulations. Moreover, in some cases, BECA products are the one and only technically applicable solution. Finally, as a conclusion, both XM and EMR emphasized the fact that it is the most economically reasonable solution.

12. Chandeliers lighting and the European directive: new challenges!, Louis –Pierre DENIL (LPD), Galerie Louis-Pierre

LPD is passionate about antique chandeliers. He is therefore very concerned about the government ban on certain light bulbs, which don't comply with new energy efficiency requirements. His presentation dealt with a solution to this problem: the LED decorative retrofit lighting, which provides modern lighting in Historical Settings. As LPD explained, the main advantage of this lamp is that it consumes less energy and produces and the same time equal or greater light. Although there are no perfect solutions available on the market, LED lighting represents, in his opinion, the best option. In his context, LPD listed its main advantages:

- "Plug and play" : LED lighting doesn't require additional equipment such as transformers or drivers
- It is available in standard socket sizes and voltage (E14, E27, 230V)
- It is available in decorative candle forms

To further underline the positives aspects of LED lighting, LPD made a brief comparison with incandescent lamps.

- LED lighting is more energy efficient, i.e. less energy is needed to produce equal or greater light (10-150 lumens/watt)
- With an average lifetime of 50,000 hours, it has a greater lifetime (up to 50-60 times greater) than incandescent lamps.
- It doesn't emit utraviolet light, so it doesn't cause any damage to paintings and textiles.

LPD then detailed some technical aspects regarding the LED lighting and the ways in which its "light quality" can be assessed. Two indexes are used in this context, the Colour Rendering Index (CRI) and the Correlated Colour Temperature (CCT). This first one ranges from 0 to 100 and measures the similarity to sunlight. Most LEDs currently have a CRI between 70 and 95 (Halogen's CRI is 100) The second one aims at describing the warmth or the coolness of the light produced and is expressed in degrees Kelvin. Most LEDs range from 2,700 to 3000 – "Warm white"- up to 5,000 K –"Cool White". From 3,500 to 4,500 K is "Neutral White". Halogen's CCT is 3,200 K.

As a conclusion, LPD underlined the fact that LEDs are developing very rapidly, most of LED products being considered out of date within 6 months. He also reminded us, that although they don't represent the perfect solution for historic houses, they are still improving (their price and energy consumption are dropping) and they do offer a good compromise between aesthetics and compliance with energy efficiency requirements.

13. Castle Howard, The Hon. Simon HOWARD (SH)

The presentation of the Hon. Simon Howard aimed at showing examples of best practices in a historic house in terms of energy savings and efficient management. While showing pictures of Castle Howard, SH started by recalling a couple of historical facts about the Castle. It was built between 1699 and 1810. In 2002, SH started to look at how they could cut costs and improve their carbon footprint. To achieve this goal, as SH explained, they employed a consultant but they also commissioned the Carbon Trust to produce a report. They produced a report that was very helpful. It provided advice on the following;

- Improving heat retention in the house through better insulation and draft proofing of windows –

- improving insulation;

- electricity consumption and how to reduce same through simple processes such as altering all settings on our computers, of which there are 50 + in the business, changing all the lighting in the house to energy saving light bulbs; checking the settings on time clocks, fridges, and other electrical equipment;

-waste management – how they should deal with different types of waste such as paper, cardboard, glass, plastic, bones from the butchery, and waste food from the catering operation;

-heating systems and the replacement of the oil fired boiler system.

SH underlined that most of what they were told was common sense, but it was useful to have the opinion of someone from the outside who was fully trained in his subject and had no ulterior motive. To make a decision on what changes would be undertaken, SH gathered, recorded and interpreted information and data. As he emphasized, no decision can be made at Castle Howard without going through that process. Moreover, he explained that when planning a project, he and his family identify all those who will be affected by it and involve them as far as possible.

The next stages of the project are the costing, and where possible the search for grants. SH made it very clear in this context that aesthetics need not be compromised. Fire detectors are unsightly on ceilings and wireless technology is used where needed.

SH then addressed the issue of light bulbs – *here it appears we're all in the same boat*!, he said.

They started by carrying out a light bulb audit. This revealed that they we were using 38 different types of light bulb including incandescent, tungsten halogens, fluorescents, low voltage and even small car bulbs, the latter being put in display cabinets during the 1950s! The total bulb count was just over 1400 bulbs. SH then explained that, from this information, they decided that we would tackle the incandescent replacement first. There were over 220 of these. They looked at the CFLs (Compact fluorescent light) that were available, but found that the equivalent wattages produced a lower light level, but much more to the point, that the colour was aesthetically totally unacceptable. They then identified a tungsten halogen energy saving bulb.

This uses 30% lower energy than the incandescent and the light produced is aesthetically acceptable. They therefore opted for these and over a period of a few days replaced all the incandescent in the house.

SH then further detailed the changes that had been made in terms of lighting. The second type of bulb they focused on was the small bayonet candle bulb that fits in chandeliers and sconces. Castle Howard had over 400 of them. As SH explained, they were available in the CFL form, but their appearance, their awful colour light output, and their cost made them unacceptable. Surprisingly, the only provider of small bayonet low energy tungsten halogen candle bulbs, with one single distributor in Britain, was Chinese. They therefore decided to replace all the incandescent candle bulbs with these low energy bulbs at a reasonable cost. SH then highlighted their one major remaining problem: the replacement of over 270 incandescent tubular picture lights.

The second example SH wanted to share with the audience was the replacement of their oil fired boiler system. It is their latest and most important project. As he explained, the system was using approximately 85,000 litres of fuel per annum. The recommendation from the consultant and the Carbon Trust was for a wood burning system. SH was also interested in the development of ground source heat, so discussions continued in parallel. A feasibility study on a wood burning system was undertaken and the project taken as far as obtaining planning permission from the local authority. However, as SH explained, the high expenditure required for a refurbished and enlarged boiler house, as well as some concerns over the running costs of the system resulted in the project being abandoned.

They therefore focused on the ground source heat option. After a thorough study and experiment, the conclusion they SH reached was that if a ground source heating system was to be introduced, then it would work, and at the same time drastically reduce the estate's overall consumption in oil with all the resulting benefits that would entail.

SH then moved on to explain that the project involved draining and dredging the silt from the pond immediately to the north of the main house. 6 kilometres of pipe in coils were then positioned on the lake bed. Pipes were then run at 1m depth from the pond to the house, c.250m,, which were then connected to two heat pumps in the basement of the house, and these were then coupled to the existing heating system.

The resulting system now provides the hot water and the heating for the main house. SH and his family have only been running it for a short a time, but they can already see the reduction in Kwh usage and KgCO2 emissions.

As a conclusion, SH gave a few financial figures on the whole project. The latter cost nearly 170,000 Euros, but since they received a CERT grant through Scottish Electric of 51,000 Euros, a North Yorkshire Moors grant of 11,000 Euros through their Sustainable Development Fund, and an interest free loan, repayable over three years, from the Carbon Trust of 60,000 Euros, payback on the project should be 6 years or less.

Award

As a UEHHA tradition, the President GdU gave the annual UEHHA award to the owner of a historic house, considered as an example of best practice.

The award was given to the Hon. Simon Howard, based on the remarkable work he has undertaken in his Castle to cut on carbon emissions, increase energy savings and reduce their carbon footprint.

Closure

To close the conference, GdU thanked very warmly all the speakers for their very interesting presentations, the participants for their presence and the sponsors for their support. He then invited everyone to the cocktail drink, which was being served.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