

The Renewable Energy House in Brussels, Belgium

**Europe's Head Quarter for
Renewable Energy**

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Building Description

- 3 storey office building, approximately 2000m² effective area, located in Rue d'Arlon 63-65, Brussels
- Houses approximately 45 people
- Building 120 years old
- Renovation to energy saving house inaugurated in 22 March 2006
- **100% energy renewable energy used in heating and cooling achieved**

Energy Measures

Biomass Energy

4No. 115 m deep
geothermal heating and
cooling systems

Solar thermal
cooling systems - 60m²
thermal collectors

Heat insulation -15 cm
thick mineral wool
insulator for the roof ,
7cm ESP on the
exterior wall and high
efficient double glazed
windows

Electricity production with PV

Energy Production

- Biomass Energy – 80 kW
- Solar Thermal Collectors - 42Kw Energy
- Geothermal – 25 kW Energy
- Electricity production with PV – 3 Kw

Anticipated annual energy consumption efficiency of 50% in comparison to a *reference building*

Future Plans and Challenges

- Future plans to have 100% renewable energy supply by increasing PV installations and other renewable sources of electricity
- Challenges faced include:
 - Limited flexibility in implementing energy saving technologies in existing building
 - Building considered historical monument thus some restriction in altering design
 - Building shadowed by other tall buildings, no direct south facing roof
 - Limited roof area for solar thermal collectors

Conclusion

- Good example of 100% renewable energy applied to heating and cooling
- Good example to show possibilities of making old existing buildings sustainable
- Good example of efficient use of Type III material and resources in using Biomass Energy
- For buildings to be considered “truly” sustainable, should also consider hidden flaws in the whole life cycle and not just finished product

References

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