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MEETMED WEEK
09 – 11 MAY 2023
MARRAKESH - MOROCCO

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المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

meetMED

Mitigation Enabling Energy Transition in the MEDiterranean region

Cool Buildings in Morocco and the Planet

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May 11, 2023

Marrakesh

PLAN

- The current state of air conditioning in buildings in Morocco
- The footprint of air conditioners in the energy base
- The objectives for energy efficiency in buildings
- Regulatory challenges
- The actions and the Kigali amendment (environment and energy efficiency)
- Conclusion

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1. The current state of air conditioning in buildings in Morocco

- Mainly split systems operating in residedentiel and semi commercial
- Centralised systems in Buildings (CWS and DX)
- ON/OFF operations (high power consumption)
- Operating with HCFC and HFC refrigerants
- Ozone Depletion Potentiel and Global Warming Potentiel

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1. The current state of air conditioning in buildings in Morocco

- Increase in the number of housing units built in Morocco
- Demographic change
- The fall in the price of air conditioning units
- Higher ambiant temperature
- A 50% increase in installations by 2030 according to the World Bank

1. The current state of air conditioning in buildings in Morocco

COOLING IS AN NECESSITY AND NOT A LUXURY

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2. The footprint of air conditioners in the energy base

- Low energy performance
- High demand on power supply
- 70% of total energy consumed in homes is absorbed by AC
- Up to 50% of power consumed in building is absorbed by AC
- Use of F-GAS refrigerants

3. Regulatory challenges

Regulation on EER of Equipments

Catégorie	Mode de fonctionnement	Climatiseurs split et multi-Split	Climatiseurs monoblocs
Climatiseurs à condensation par air	Refroidissement	EER > 2,8	EER > 2,6
	Chauffage	COP > 3,2	COP > 3,0
Climatiseurs à condensation par eau	Refroidissement	EER > 3,1	EER > 3,8
	Chauffage	COP > 3,2	COP > 3,0

Building Comfort Regulations

Période	Température sèche	Humidité Relative
Été	26°C	60%
Hiver	20°C	55%

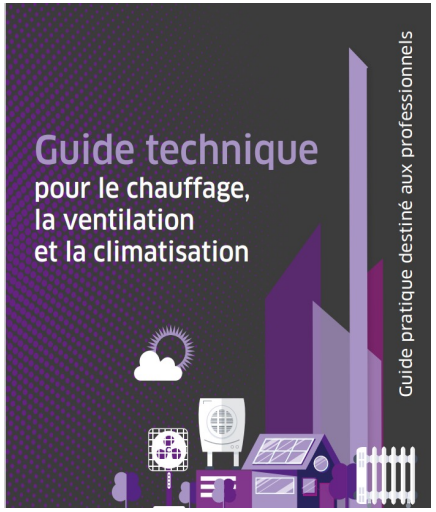
Source AMEE : Technical Guide for HVAC

4. The Kigali Amendment: Environment and Energy Efficiency

- Reduction and gradual replacement of HFC refrigerants
- The promotion of energy efficient systems
- Introduction of low-GWP Alternative refrigerants
- Use of natural but flammable refrigerants
- Up to 80% reduction by 2045 for developing countries.

5. Current actions in the field

- Disclosure of standards and rules of good practice
- Practical trainings and upskilling : Certification
- Encouragement of preventive and regular maintenance
- Development of guides for the proper use of air conditioners
- Closer collaboration :Architects; designer, consultants and property developers



Source AMEE : Technical Guide for HVAC

6. Opportunities

- The promotion of energy efficient AC units with inverter technology
- Use of centralised and optimised systems : DRV/VRV CWS
- Train and inform all stake holders: +1°C change in setting = +3% consumption
- Introduction of more naturel and low GWP Refrigerants
- Upskill the work force and regulate the sector

7. Some achievements from the design stage

Omrane Company Headquarters Chrafate
energy savings: 35% of heating needs and 14% of air conditioning

Project: Noria Oasis 484 tourist residence units (Marrakesh)
energy savings: 30% of heating needs and 62% of air conditioning

Source: AMEE: building models

Conclusion

- Good opportunites to change for the better
- Important changes to the industry : Tehnology and Regulation
- Use of more efficient equipment : up to 40% power savings
- Inform and involve all stakeholders : Design, Installation, Maintenance and Use
- Think and decide on LIFE CYCLE COST and not capital cost

Thank you

Any Questions?

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Together We Switch to Clean Energy

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This project is funded by the European Union

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