Method and tools of the energy results guarantee

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Synopsis of the guide

Part I
The energy results guarantee project
- Grounds for the methodology
- Typology of ERGs
- Key steps and principles associated tasks
- Analysis and consideration of risks
- Funding for ERG projects
- Insurability of projects
- Insertion of an ERG project in an asset development policy.

Part II
1. Tool 1: Audits and ERG, minimum requirements
2. Tool 1: Audits and ERG, minimum requirements
3. Tool 3: Commissioning
4. Tool 4: Measurement and verification of energy performance
5. Tool 5: Assistance tools
6. Tool 6: Collection of clauses

Part III
- Examples
- The Glossary
- The Bibliography

First contact
All readers

In-depth reading
Mainly intended for CAA, BE, companies

In-depth reading
All readers

For more information
All readers
Interest of the ERG

• Respond to a request from the contracting authority
  - that wants a guarantee of the energy savings generated by the work recommended

• Propose a thorough approach which enables:
  - The actual performance level achievable to be defined,
  - , uncertainty and risks taken by the actors of the project to be reduced step by step from feasibility studies to operation phase
  - The role and responsibilities of the actors within the project to be defined

• Propose a transparent measurement and verification protocol
  - Monitor the building’s performance changes
  - Check the announced performance is obtained
Need for an in-depth energy audit

• To reduce margins of uncertainty over forecast energy savings

• To have measures to check the savings have been achieved
In-depth energy audit

- Most possible accurate reading of technical and operation features

- Identification of the most influential parameters:
  - Sensitivity analysis methods

- Energy simulation of the building
  - Calibration of the model to get a faithful simulation of the building's behaviour
Commissioning

• Coordinate all stakeholders

• Define the control means for the actions carried out at all stages

• Facilitate the transfer of information and the updating of the technical documentation
Implementation of commissioning

• Members of the team:
  - a commissioning agent:
    • responsible for coordinating the commissioning tasks.
  - the contracting authority (or their representative)
  - the manager of the building
  - the representatives of the design, implementation, installation teams, etc.
  - the spokesman for the occupants (if possible)
Objectives of the measurement and verification plan

• Specify and structure the measuring device

• Record the measures in contractual documentation

• Require the provider to apply the principles and rules adopted.

• Finally, identify improvement or correction needs
IPMVP contributions to the M&V plan

1. **In the design phase**
   - Measure the energy consumed during a reference period
   - Analyse this consumption to build a model

2. **In the operational phase**
   - measure the energy consumed during a contractual period: contractual proof period

3. **calculate using the model**
   - what the consumption would have been in the follow-up period, if the work had not been carried out

4. **subtract the actual consumption in the proof period from whichever would have been without the energy conservation measures**
How to assess actual consumption gains

**ECO** = \( \hat{E}_{\text{post}} - E_{\text{post}} \)

\( \hat{E}_{\text{ante}} = f(\text{Conditions}_{\text{ante}}) \)

\( \hat{E}_{\text{post}} = f(\text{Conditions}_{\text{post}}) \)

100 MWh

30 MWh

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Introduction to the guide: method and tools of the energy results guarantee
Methodology can be adapted to different types of situations

- High involvement of the Contracting authority
- Low involvement of the Contracting authority

- multiple ERG Work plan
- Single ERG

- Precis and binding control system
- Imprecise and tolerant control system

Choice of contracting mode
Choice of the nature of the project
Choice of the method
Selecting the contracting scheme

Example of Diagram No. 1

Example of Diagram No. 2

Missions contracting authority
ESCO missions (Energy services company)
Programme
EXE <-> Project <-> DD <-> IDW
Works / operation

Missions contracting authority
ESCO missions (Energy services company)
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EXE <-> Project <-> DD <-> IDW
Works / Operation

Time of the companies consultation
Provisional commitment
EPM Contract

Time of the companies consultation
EPM Contract
ICF habitat: Operation Schiltigheim

• **Motivation**
  - Link design, implementation and operation to ensure energy performance.
  - Test third-party investment

• **Lesson**
  - Competitive dialogue: Very rewarding step
    • Do not restrict the dialogue to investments but also discuss operating conditions
  - M&V plan:
    • Insufficient control of the IPMVP (option D)
  - Positive results in terms of:
    • improvement of the service and comfort of tenants
    • Change in the management method to “project mode”
Centre Region: Energy Performance Contract in 18 secondary schools

• **Motivation**
  - Political will to be exemplary

• **Lesson**
  - Competitive dialogue
    • Assessment criteria: performance commitment level and overall cost
    • Commitment: 10% in the first year, 25% in the second and 42% thereafter
  - M&V plan:
    • Defined by the provider and discussed during the competitive dialogue
    • Cost: €1 M or 6% of the energy saving
  - Results
    • 15% gain in the first year → bonus of 5%
    • 20% in the second → malus of 5%
    • 20% of the investment reimbursed by energy savings
Conclusion

• The results guarantee responds to a need of contracting authorities

• It requires a strict methodology, whose pillars are:
  - an in-depth energy audit
    • to accurately define the reference situation and the consumption reduction commitment;
  - a commissioning approach
    • to ensure the conformity of the actions with the objectives
    • to coordinate all actors from the design to operation;
  - a measurement and verification protocol of performance, clear, transparent and understandable by all actors