

Status on the ground – experiences in 9 EU countries

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QUALICHeCK approach

Status on the ground

- Existing data analyses report based on 31 previous studies:
 - Measured performance
 - Reliability of input data
 - Quality of the works
 - Compliance frameworks
- 10 new data collection studies from 9 focus countries



Mikk Maivel, Kalle Kuusk, Raimo Simson, Jarek Kurnitski, Targo Kalamees (Tallinn University of Technology, Estonia)

QUALICHeCK approach

Status on the ground

- Technology areas covered:
 - Transmission characteristics and air tightness
 - Ventilation systems
 - Summer thermal comfort solutions
 - Renewable systems (heat pumps, thermal solar, PV)



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New data collection studies on

- EP compliance and EPC input data quality (5 studies)
 - Site visits
 - Check of design documentation
 - New EPC calculation
- Summer thermal comfort compliance (1 study)
 - Measurements, design documentation, temperature simulations
- Reliability of EPC issued with different methods (1 study)
- Transmission characteristics related studies (3 studies)
 - Cavity insulation: quality framework for cavity wall insulation
 - Windows: input data on window thermal performance
 - U-values compliance

→ Reports and factsheets: <http://qualicheck-platform.eu/>

Some findings: **Compliance frameworks**

- Compliance frameworks should comprise building design **and** as-built condition of the building
- Often, final design, construction and as built energy performance of buildings is not under control, i.e. **compliance is controlled until issuing the building permit**
- Many countries do not have control mechanisms for:
 - Final design/production information
 - Design changes during construction
 - Commissioning

→ **As-built energy performance often not known**

4 out of 9 countries have compliance frameworks extended to final design and construction and commissioning phases

| Assessment type ^a → | Calculated (asset) | | Measured (operational) |
|--------------------------------|--------------------|----------------|---------------------------|
| Sub-type ^a → | Design | | Actual |
| Typical time frame → | Building permit | | <2 years after completion |
| Used for EPC → | Yes | No | Yes |
| Country ↓ | | | |
| AT | • | | |
| BE | | | • |
| CY | • | | |
| EE | • | | |
| ES | | • | • |
| FR | | • ^b | • |
| GR | • | | |
| RO | | • ^b | • |
| SE | | • ^b | • |

^a Defined in FDIS ISO 52000-1:2016 (Energy performance of buildings — Overarching EPB assessment – Part 1: General framework and procedures)

^b Not based on EPC method

Some findings: **Measured performance**

- Poor ventilation could be seen as a major European problem: ventilation rates and noise typically did not comply
- Ductwork air tightness an issue in Central Europe, not any more in North Europe
- Building leakage showed both good and bad examples
- Limited data on transmission characteristics (mostly inconclusive, additional studies needed)
- Heat pumps, solar thermal and other renewables showed good performance if certified installers etc. schemes applied
- Limited data on summer thermal comfort – addressed only in a half of studied building codes

Conclusions

- In many countries a development with 5 year intervals can be seen: new requirements and procedures 2007, 2012 launched
- Legislative changes are to be supported with relevant compliance procedures, supervision, commissioning, performance measurements, piloting, model solutions, guidelines, training ...
- Learning curves must be respected
- Compliance frameworks are to be extended in many countries in order to be able to assess **as-built performance**
 - in about half of studied countries control mechanisms address only the building permit phase
 - consider issuing the EPC for the completed building, e.g. linked with permit of use

Thank you for your attention!

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