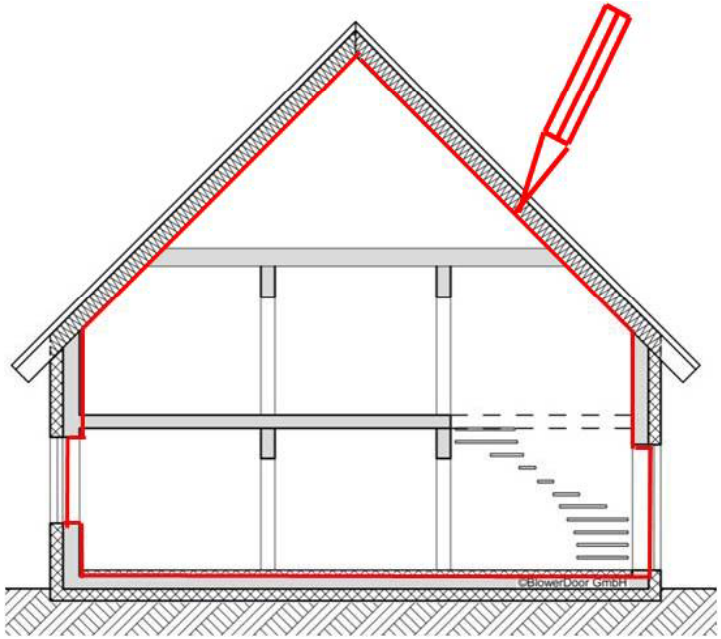
The way to good air tightness: The air barrier design



„ A house is built by wisdom and preserved by reason.“

Advantages of airtight construction

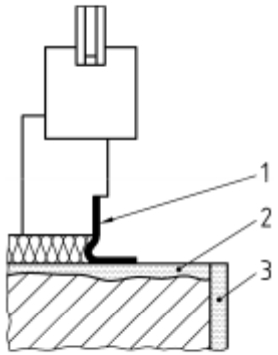
- Ensuring energy efficiency
- Protection against convectively caused structural damage
- Improvement of sound insulation
- Prerequisite for proper functioning of ventilation systems
- Ensuring good indoor air quality
- Functioning smoke and fire protection
- Increased living comfort by avoiding draughts

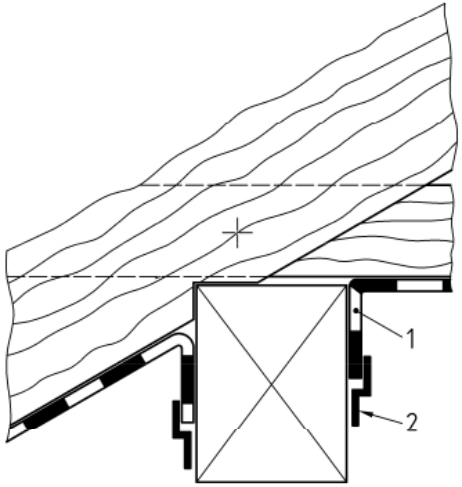
Source: Rabenau / Hannoversche Allgemeine Zeitung

If you know how to do – it is easy

For examples shows the German standard DIN 4108-7 the design of important details as

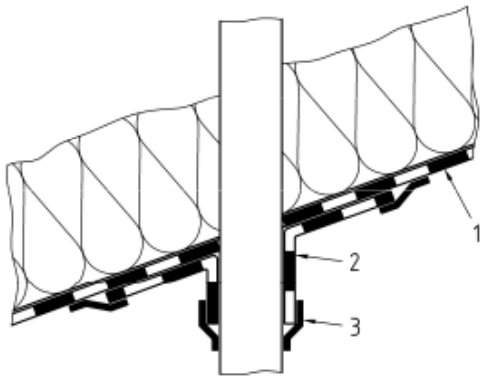
- demands
- materials
- design
- example details





Legend
1 air barrier membrane
2 single-sided tape

Example for connecting the air barrier membranes to a purlin/roof beam.

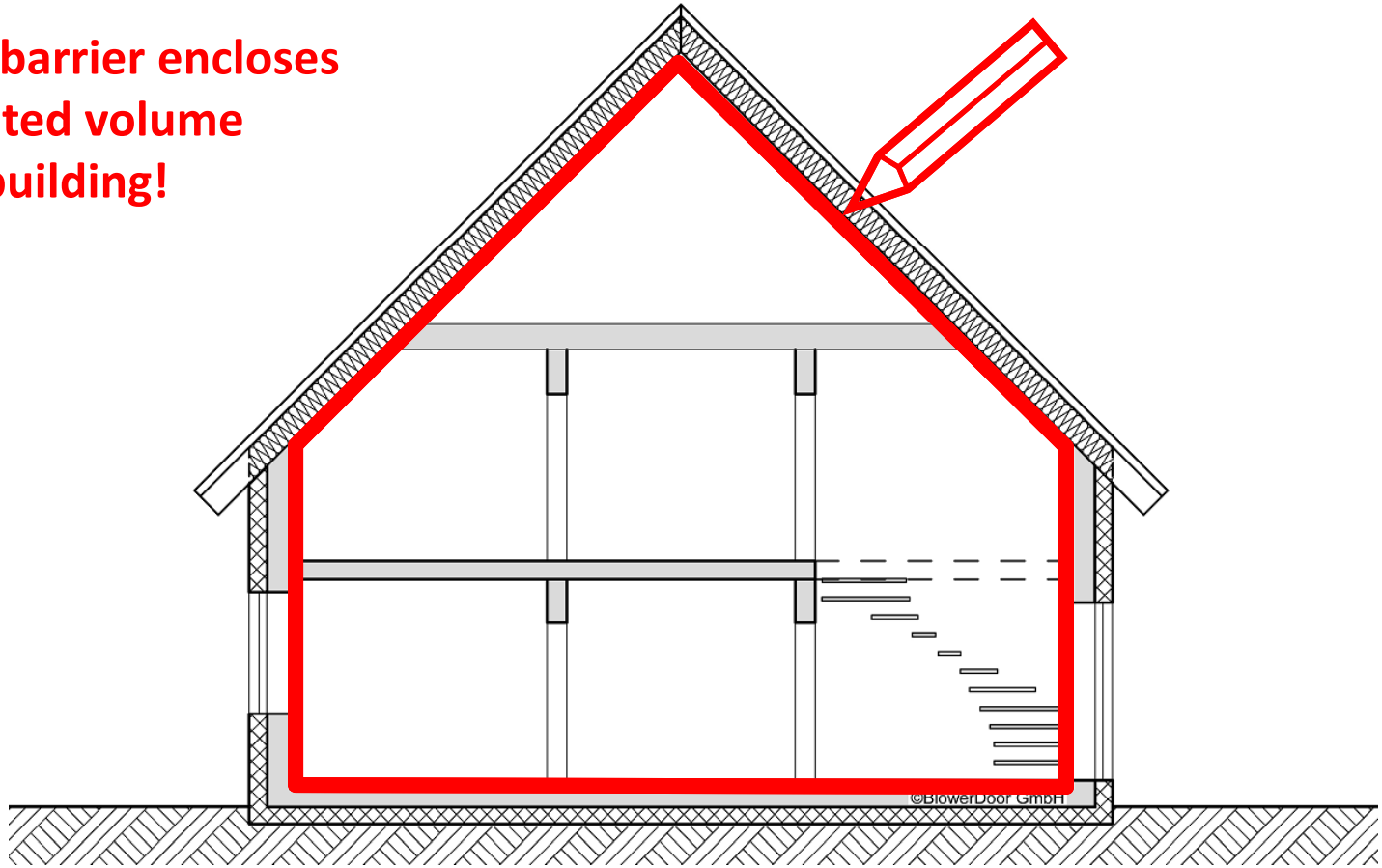


Preparation of the air barrier design

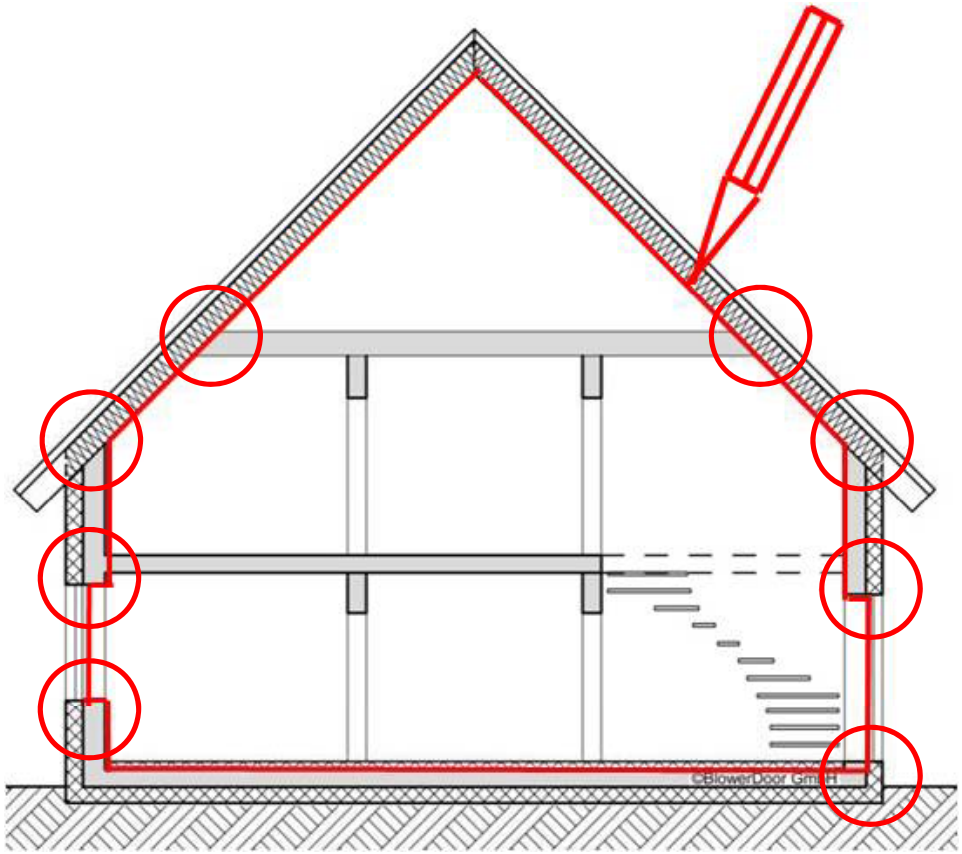
- **Planning the air barrier**
  - Planning rough concept
  - Establishing a detailed plan of the air barrier
- **Request for quotation and commissioning**
- **Interdisciplinary coordination meeting**
- **Monitoring the execution**

Rough planning: Drawing red line in plans

The air barrier encloses the heated volume of the building!



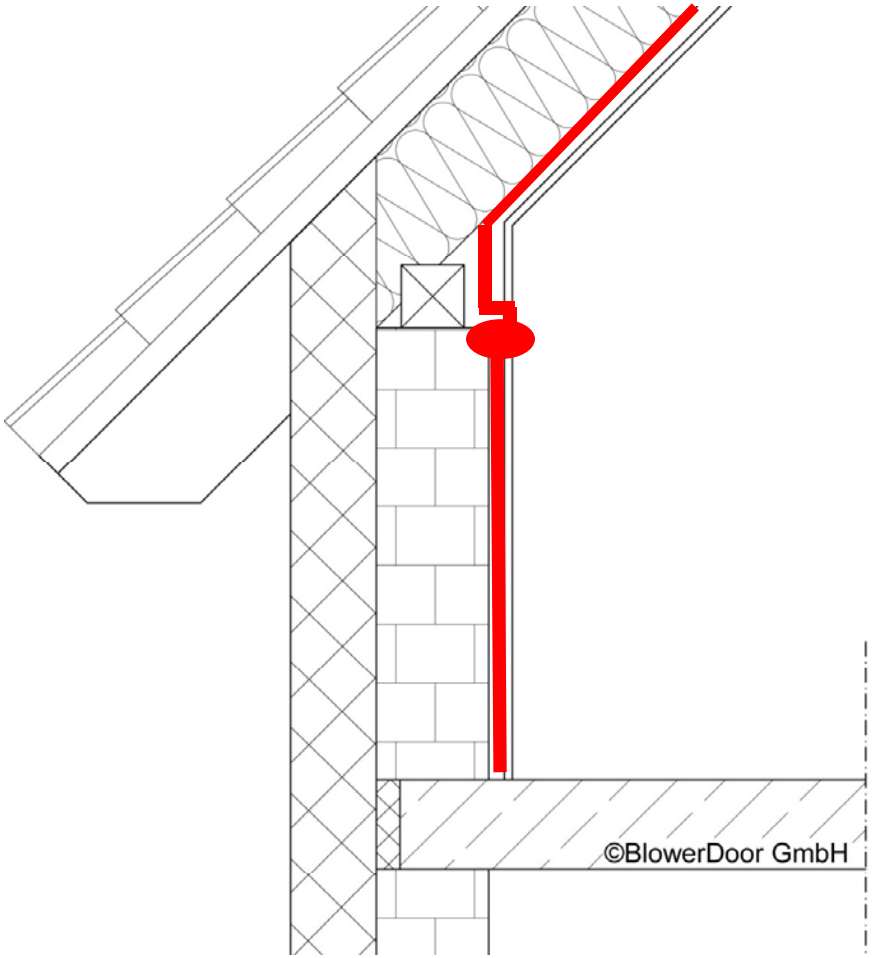
Localization of relevant details

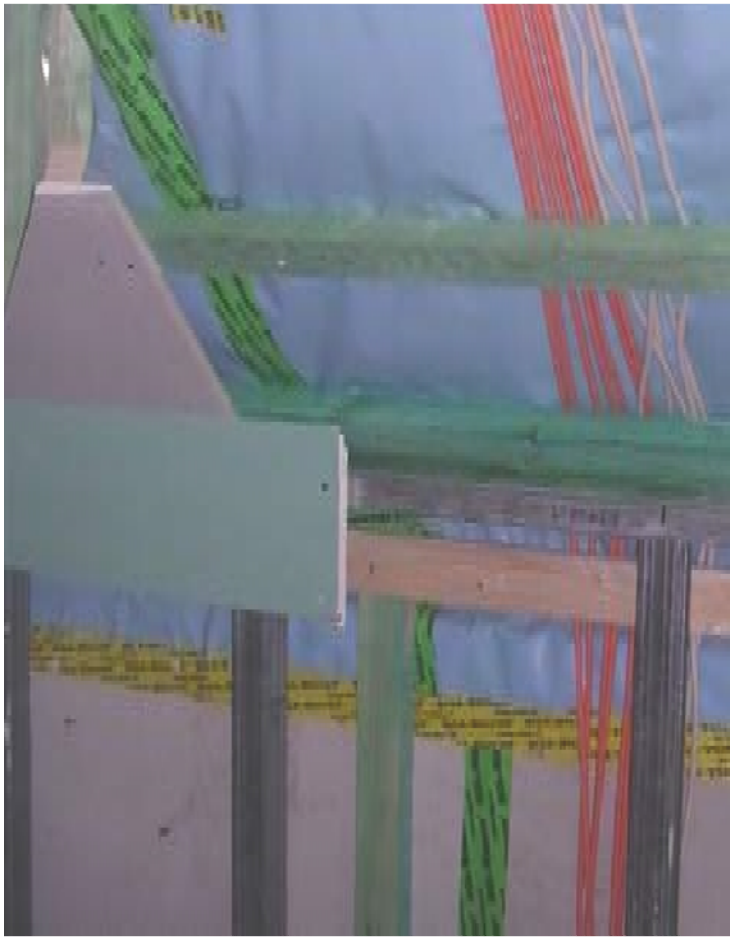


air barrier

detailed planning necessary

Detailed planning: Component transitions / material changes





Detailed planning: Cable and Pipe lead-through

Product examples for airtight lead-throughs

Source: proclima, Kaiser, Eisedicht

Detailed planning: Building equipment

Closed kitchen hood outlet

Kitchen hood in operation

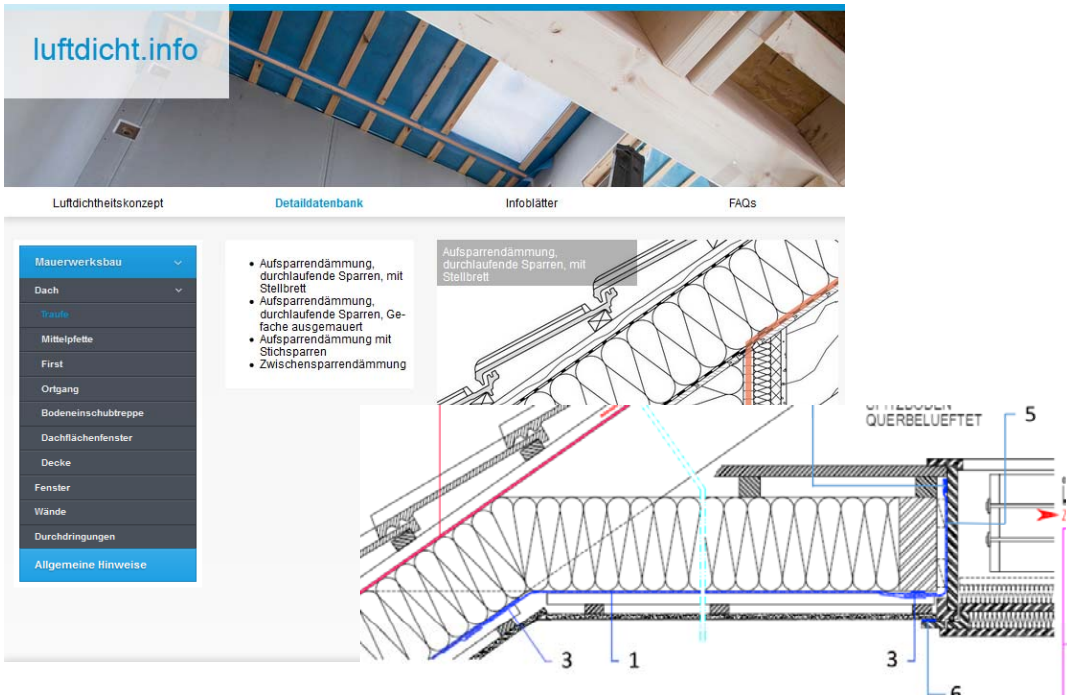
Source: Company "Naber", Nordhorn, Germany

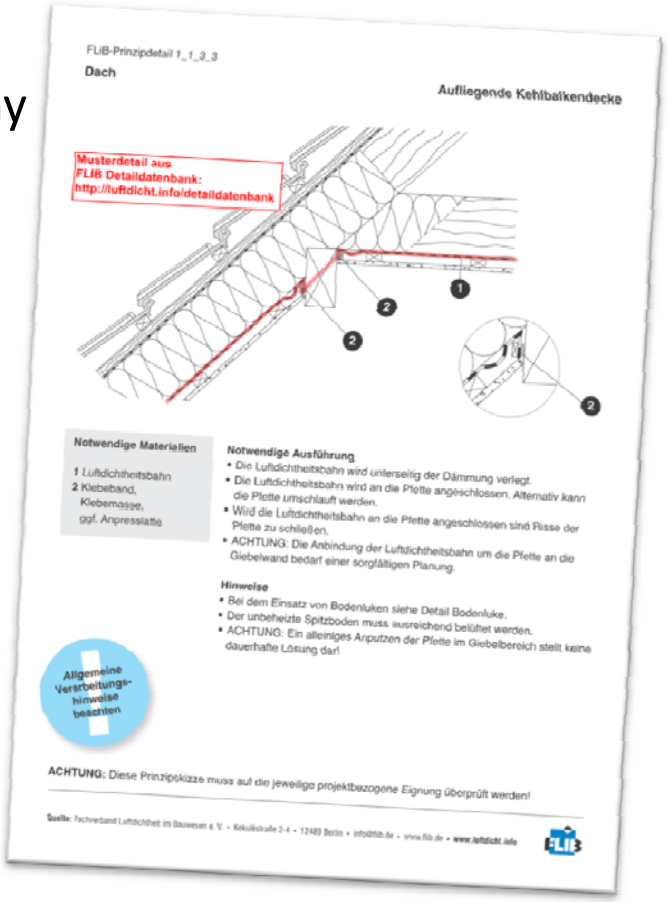
Heating boilers and Chimneys should always be planned independent of room air.

Detailed database of the FLiB*

*) Fachverband für Luftdichtheit im Bauwesen;
Association of Airtightness in Architecture, Germany

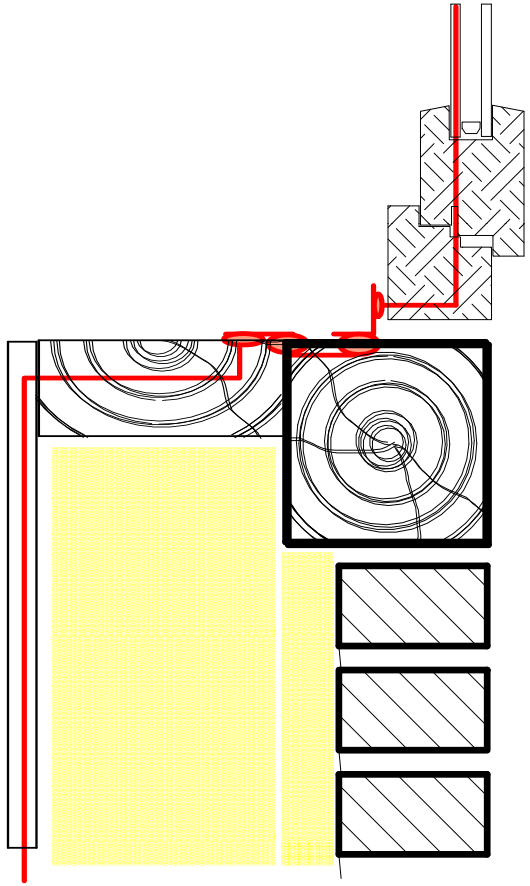
https://www.luftdicht.info/grobkonzept.php





Detailed planning: Example of refurbishment

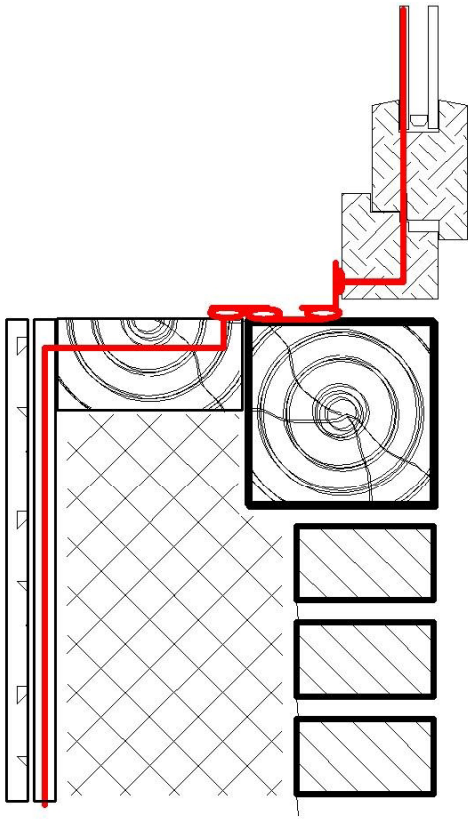
Remediation measures:
New windows and insulation



Requirements for the air barrier design

- Detailed drawings
- Materials to be used
- Special instructions for execution
- Name the persons responsible

Quality control during the construction phase

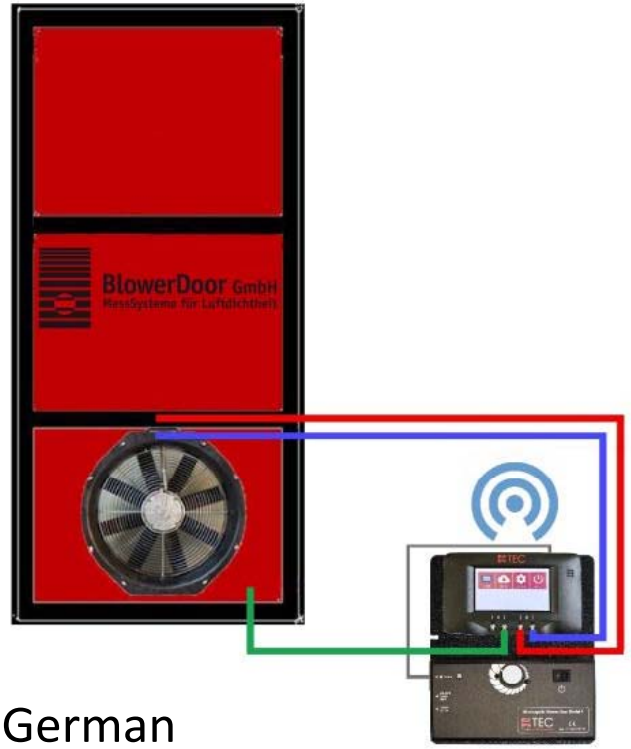


”Planning without control is pointless, control without planning impossible.“

(Jürgen Wild)

Quality control during the construction phase

Leakage detection with thermal anemometer



- Quality inspection recommended by KfW (German state-owned development bank)
- Low-cost and reliable proof of quality for building owners
- Acceptance serves to secure the contractor.

Quality control and BlowerDoor final measurement

Visual inspection

Monitoring during construction process: BlowerDoor test at depressurization

BlowerDoor final measurement according to ISO 9972 or DIN EN 13829

Literature and Links (in German language)

- Guideline for air barrier concept (May 2019)
- FLiB Air Barrier Concept (Juli 2019)
  with examples
  → https://www.flib.de/publikationen.php
  (from: Fachverband für Luftdichtheit im Bauwesen (FLiB e. V.) ; Association of Airtightness in Architecture, Germany)
- Information about a good air barrier design
  → https://www.luftdicht.info/

Ask the BlowerDoor Team
for a brochure for no charge
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