

# Airtightness concept

# 1. What is the need for an airtightness concept

In order to have good building constructions, building envelope has to be built air tight to avoid moisture getting into wall construction and insulation.

This is why national EP Regulation demands a durable airtight building envelope including the joints according recognised rules of engineering. German standard DIN 4108-7 *Air tightness of buildings – Requirements, recommendations and examples for planning and performance* is a good guideline but still needs support to become accepted among building experts. In many cases airtightness concept is considered as a "red line" marking the airtightness layer in construction drawings. But this is just a small part of the whole concept. Building airtight means taking care of joints and connection as reliable airtight materials are on the market for quite some time.

Some funding banks demand an airtightness concept of the energy consultant. So FLiB tried to support by giving out a guildeline and establishing a databank with construction details.



Figure 1: Building airtight means taking care of the connections!

## 2. What is an airtightness concept

A general scheme of an airtightness concept contains of:

Demarcation of the airtight layer and what has to be considered

The beginning of the planning process in order to bring penetrations, joints and connections to the necessary minimum.

Relevant details



The relevant details are listed in a checklist and marked in the drawings or a scheme.

### **Materials**

All materials of the airtightness layer incl. their location incl. joints and connections are established.

#### Execution

Details are to be described in a way they can be implemented technically, they are attached as annexes to the airtightness concept. Details can be received from FLiB-database. Details of the database include: A neutral scheme, a description of the required design and materials, a reference to possible shortcomings if performed improperly

### Tendering and placing

Tendering must include the specific description of the details to get comparable offers.

### Check of work

Work needs to be checked before it is covered by other craftsmen.

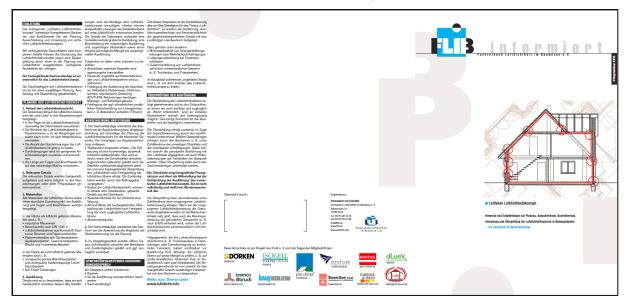


Figure 2: Guideline airtightness concept describes what needs to be done to build airtight

## 3. How does FLiB support

*Guideline airtightness concept* can be received under www.luftdicht.info. It supports energy consultants, craftsmen and building owners establishing an airtightness concept in new built and refurbished single family houses.

To support planning process construction details are published in a databank. The first release contains the most popular details needed: Roof and wall construction, mounting external windows and doors and penetrations of the airtightness layer.

A checklist on the guideline makes the evaluation of the work easier.



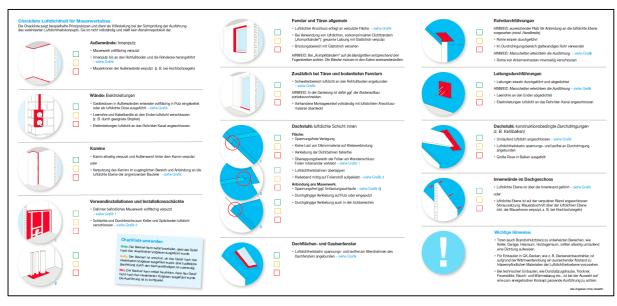
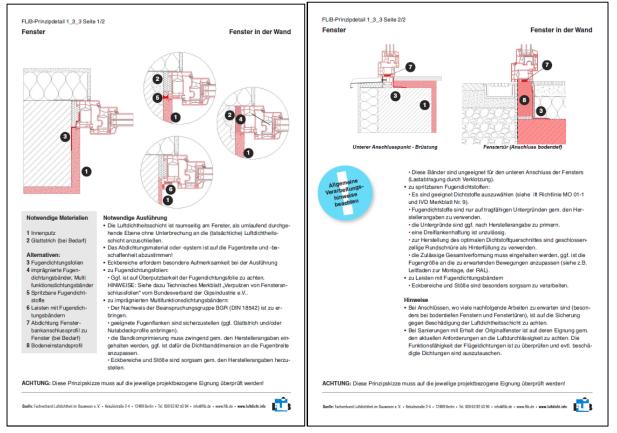


Figure 3: Guideline airtightness concept gives a checklist for common construction details



## 4. Example of a construction detail

Figure 5: Construction detail window

Large graphics show were the airtightness layer is situated in the specific detail. In addition the specific point of the connection is magnified.



Windows can be attached to walls in different ways: Tape, expandable sealing tape, mastic or a sealing bar.

Every connection needs to be defined carefully to have a proper surface for a durable connection. I.e. expandable sealing tape needs a defined gap. Although it is able to expand five times of its compressed size, it is only allowed to be mounted in a much smaller gap because it is the compression that is needed to make it air tight. This is why in refurbishment before mounting a new window on the window reveal a layer of plaster must be applied.

Additional hints are given that do not belong to air tightness directly but need to be mentioned to make work easier.

More information on www.luftdicht.info.