

Long-term measurements of pressure differences at buildings due to external influences



What we want to know!

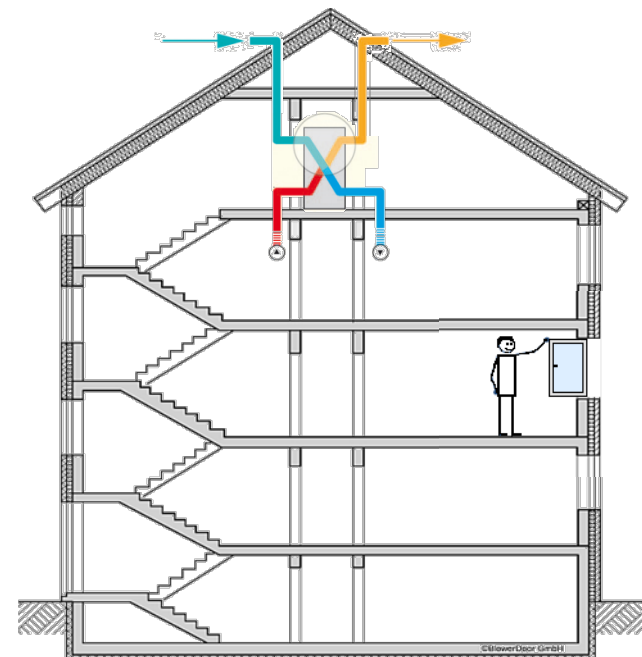
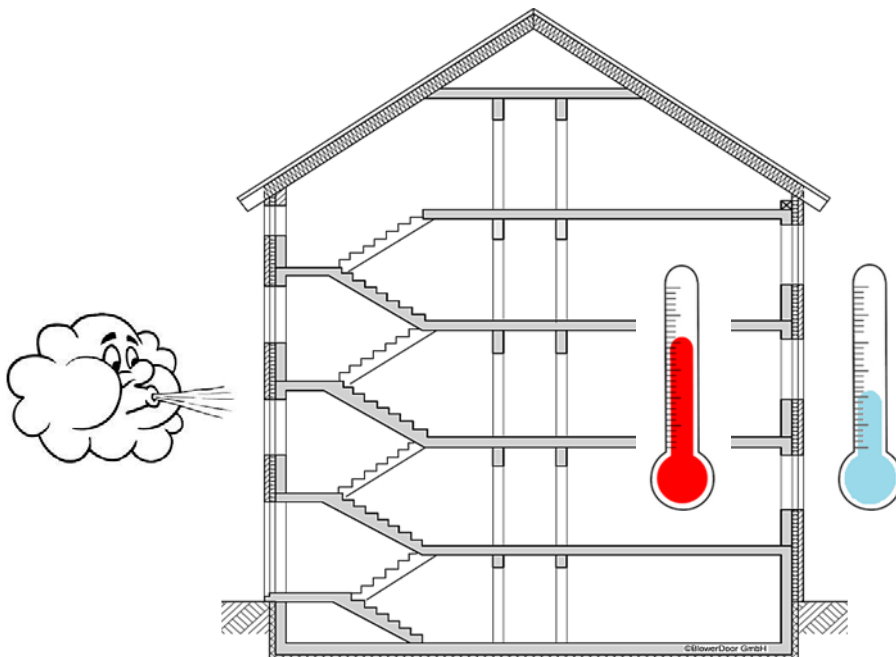
More knowledge about the actual pressures
on the building envelope caused by ...

... wind

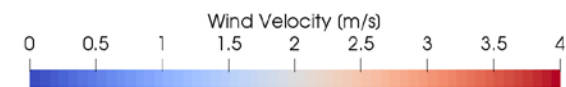
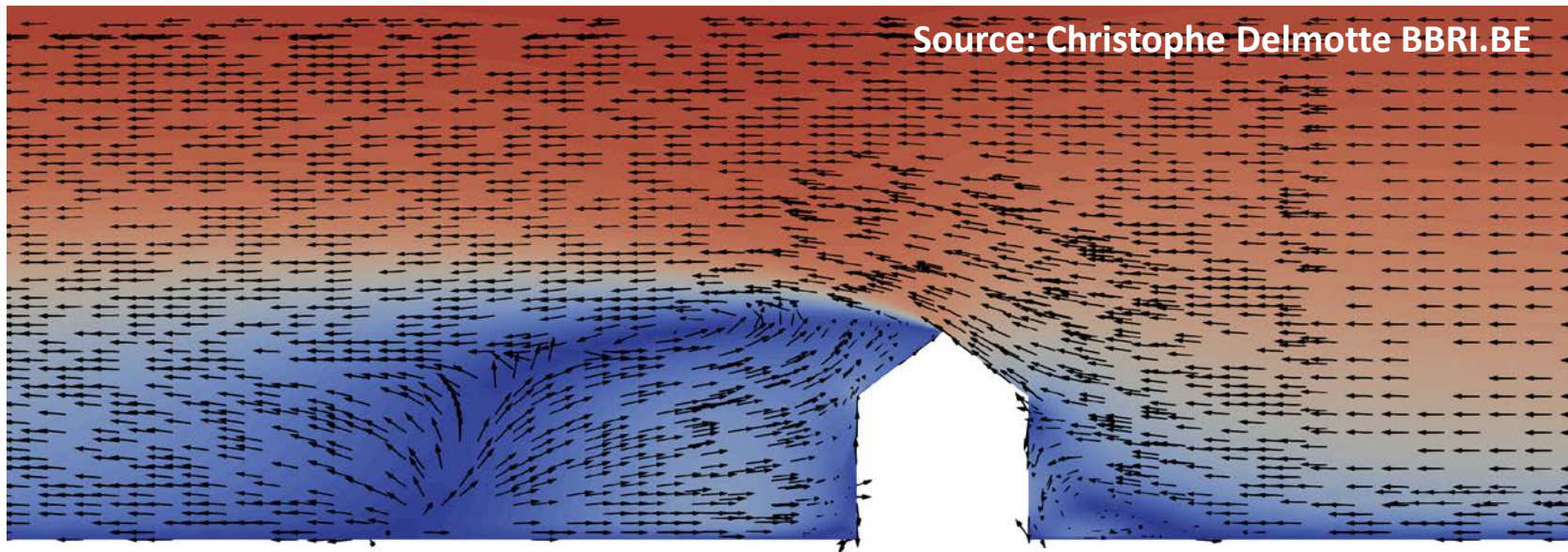
... thermal
effect

... ventilation
systems

... user's
behavior



Measuring principle



Influences such as wind generate different pressures on the different sides of the building. These pressure differences on one or more exterior walls can be recorded over a longer period of time with measuring intervals of 1 second or less.

Set-up with differential pressure gauge and capillary tube



Measurement of the pressure difference on an exterior wall



Input measuring point on the room side of the exterior wall

Comparison point or reference measuring point on the outside of the exterior wall. On the outside it is protected against penetrating water.

Measuring instruments and software for long-term recording of pressure differences on the building envelope

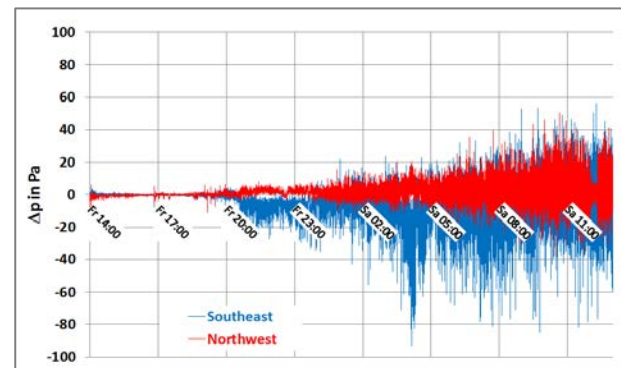
DG-700 or DG-1000

with two differential pressure channels and highest accuracy

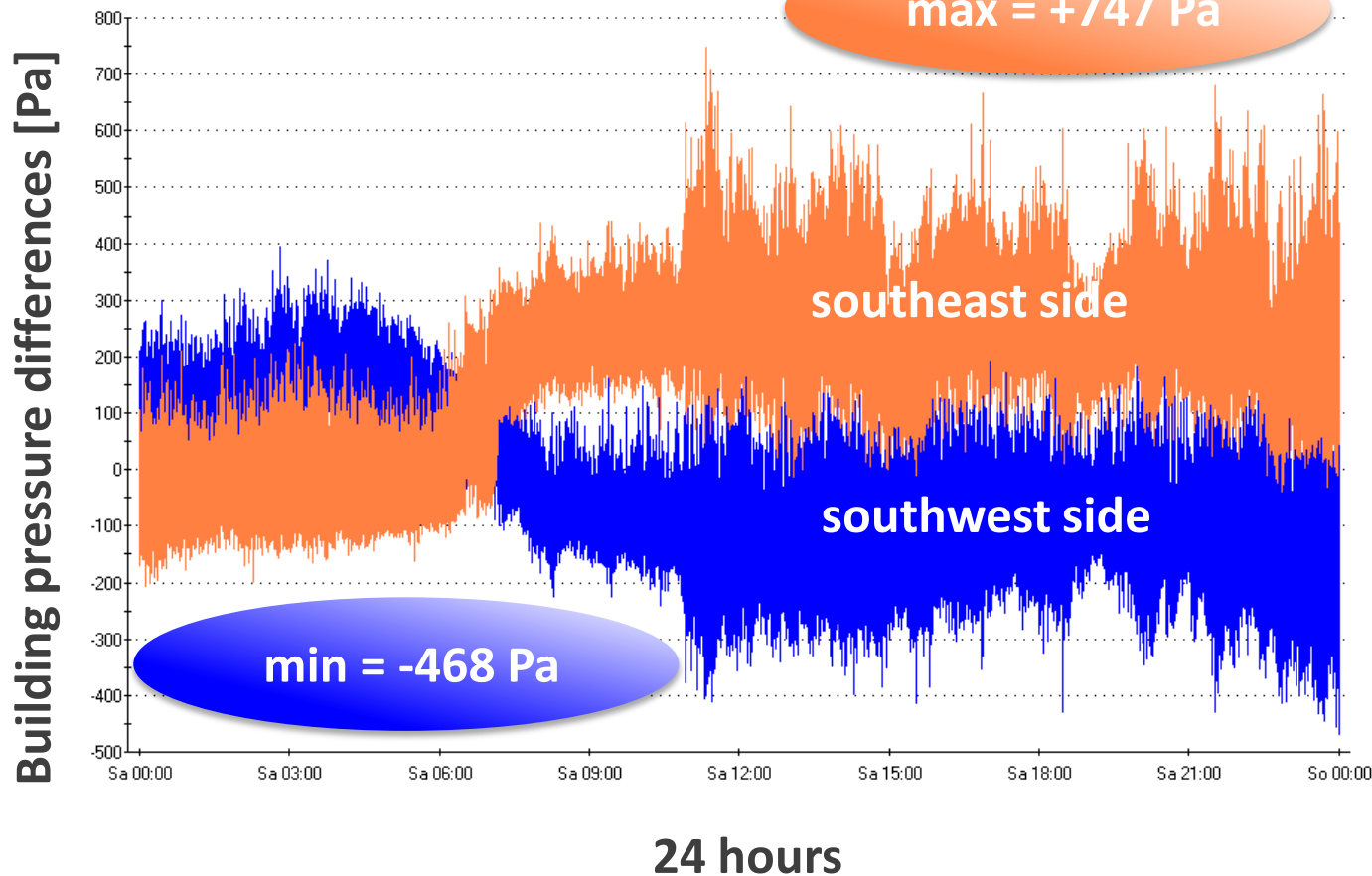


Software *TECLOG4*

for recording and data analysis of pressure differences



Building pressure fluctuations during storms (lighthouse on Helgoland)

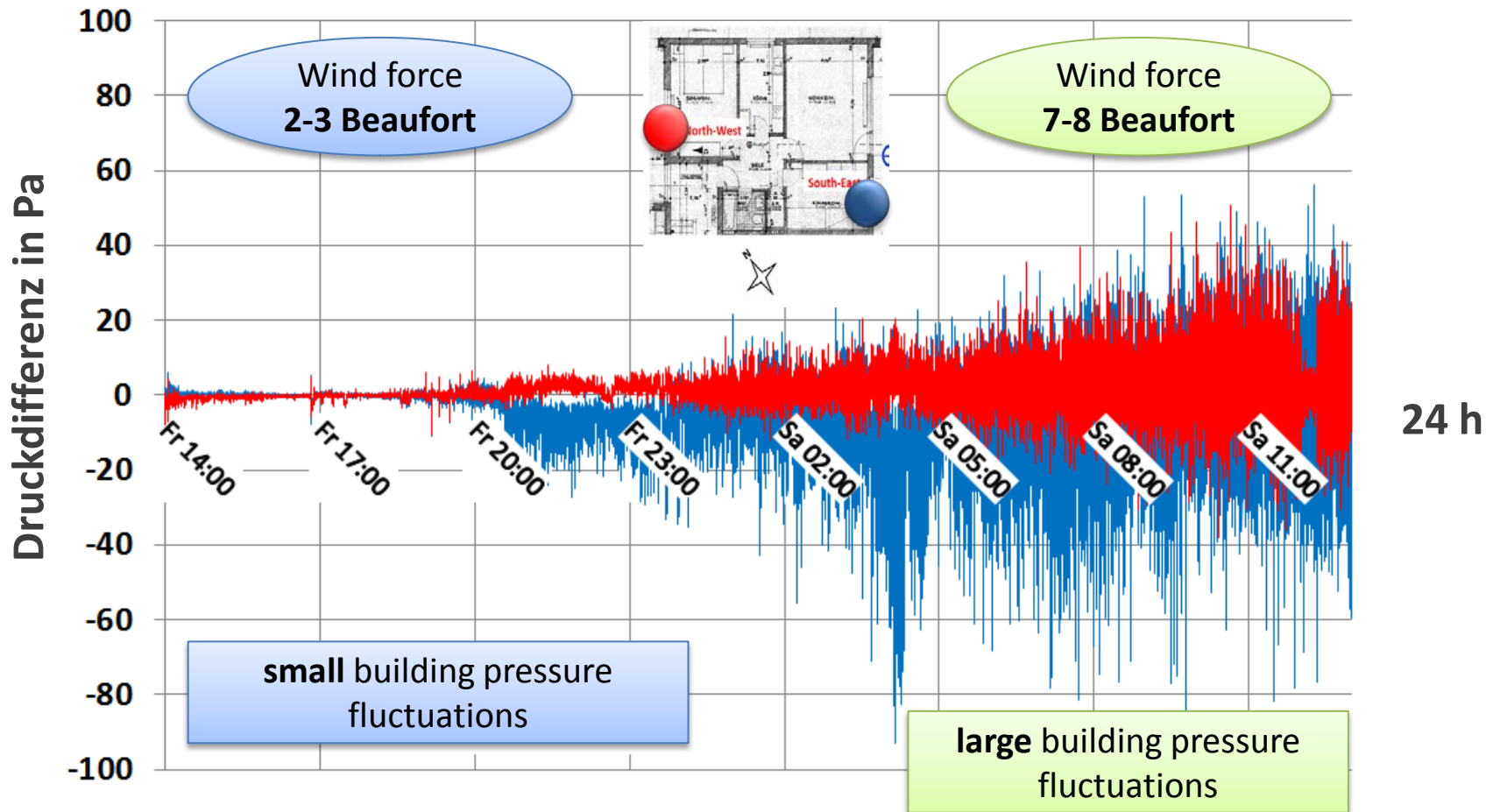


Two measuring points on the top level of the lighthouse.
Measuring interval:
0.1 second

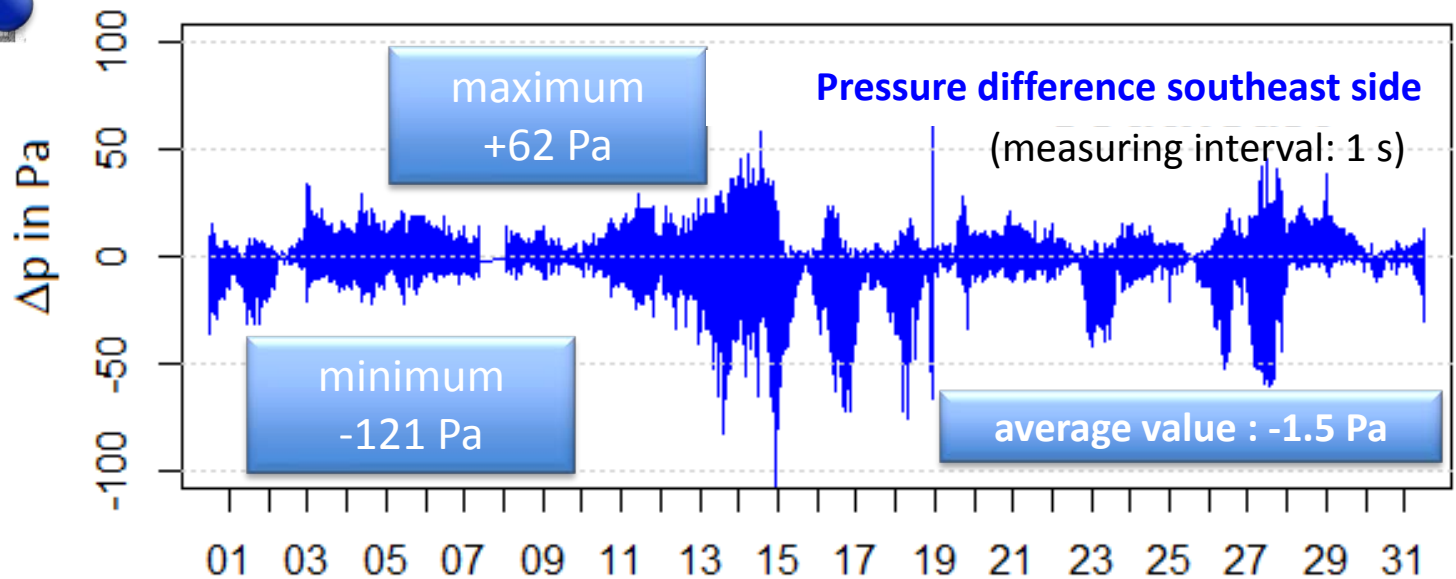


Differential pressures on two apartment walls due to wind

Measuring points on the northwest and southeast side of the apartment (1st floor), measuring interval: 1 s



Measurement data of an exterior wall of an apartment over 31 days



Literature

- Solcher, Rolfsmeier, Simons: Natural Pressure Differential – Infiltration Through Wind Results of a Long-Term Measurement, AIVC Conference 2017
- Solcher, Rolfsmeier: Natürliche Differenzdrücke über die Gebäudehülle – Ergebnisse von Langzeitmessungen, Passivhaustagung 2018

