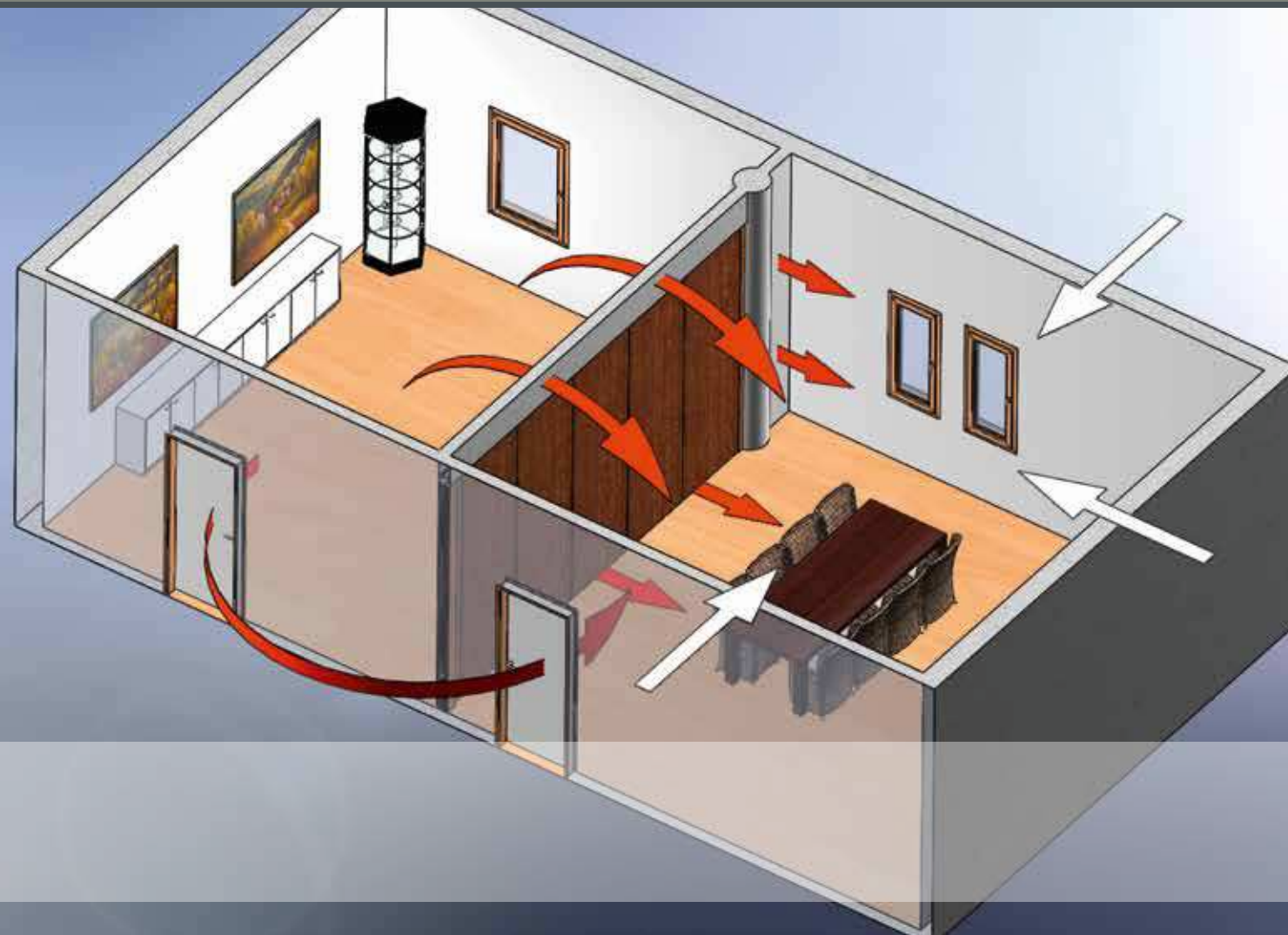




Sound insulation for movable walls
Data sheet 9/2012



Basics of movable walls: acoustics and optics

Our movable walls enable optimal options for the technically-sophisticated and design-oriented spatial separation of conference rooms, training rooms, classrooms, etc. Particular emphasis is placed in this respect on the effective achievement of the necessary sound insulation.

It is only in this way that the spaces created can actually be used in a completely self-sufficient manner, as desired in visual and acoustic terms.

The level of sound insulation when installed depends significantly on the following four factors:

1. The sound reduction index $R_{w,P}$, as determined in the laboratory according to DIN-EN 20140 Nüsing has developed movable walls displaying values of up to $R_{w,P}$ 59 dB in the laboratory.

2. Sound insulation losses between the laboratory value and the site

According to DIN 4109 and VDI guideline 3728 results, losses of about 10 dB occur. The demands placed on movable walls must be accordingly higher.

According to DIN 4109, walls between classrooms must be at least $R_{w,B}$ 47 dB. Taking into account the expected sound insulation losses of 10 dB, a laboratory value of min. $R_{w,P}$ 57 dB should be advertised and required.

3. Sound transmission through flanking elements such as ceilings, floors, walls, windows, façades. The sound insulation of the movable walls when installed is only as good as the weakest flanking component.

In this respect, please refer the following versions given on acoustic data sheet 209089-01.

4. Doors, special elements, glass cut-outs and rail junctions in mobile walls lead to sound insulation losses. Please contact us at the planning stage. In many cases, a solution can be found in advance. Acoustically designed, movable walls reach their full potential if the flanking elements are executed accordingly. For particularly high sound-insulation requirements, we recommend the help of an acoustician in collaboration with our sound insulation experts.

With intensive consultation in the planning phase, excellent sound insulation when installed can be achieved.

$R_{w,P}$ = Weighted sound reduction index of components on their own, as measured on the test bench without flanking sound transmission

$R'_{w,B}$ = Resulting sound reduction index when installed with flanking transmission via flanking elements and other indirect pathways, measured when installed

$R_{w,B}$ = Rated apparent sound reduction index of components on their own for a final measurement when installed, without flanking or other indirect transmissions



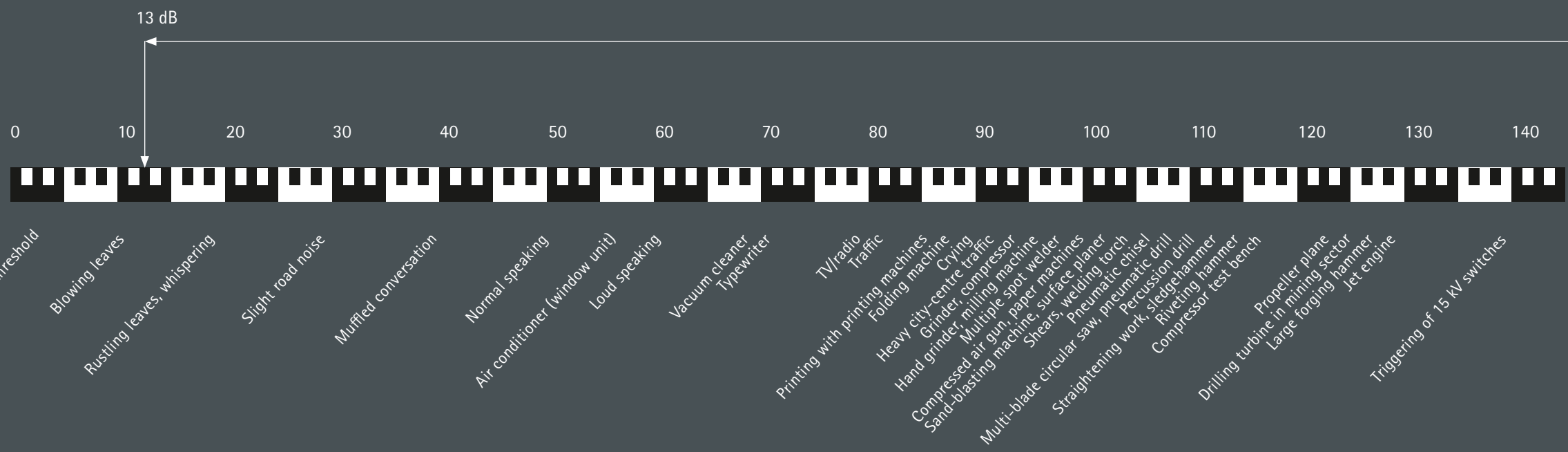
In large lecture halls especially, acoustics and sound insulation plays an important role. Accordingly, we equip movable walls used for training and lecture rooms with specially-developed materials and thus achieve the best results.



An important factor in achieving optimum sound insulation is the impermeability of the wall and floor closings of the mobile elements. The pressure balks

of our movable walls are under a constant pressure of 2000 N per linear metre thanks to the integrated microprocessor control used in the EASYmatic operation system.

Sound level comparable to the classification of the allowable emissions



Example, for an approximate determination of sound insulation for the movable wall

Loud speaking approx. 60 dB/A
 Mobile wall requirement $R_{w,P}$ 57 dB less
 Allowance for tolerance approx. 10 dB
 At the structure approx. $R'_{w,B}$ 47 dB
 With a remainder of approx. 13 dB
 (With the remaining 13 dB (approx.), „blowing leaves“ can still be heard)

In this example you can see how important high sound insulation of the movable wall is. It is therefore essential to ensure the sound-insulation compliance of the flanking components.

Acoustic data sheet no. 209089-01

Acoustic data sheet no.209089-01 the required sound insulation of longitudinal components flanking mobile Nüsing movable walls



Purpose of this data sheet

The sound insulation of a movable wall when installed is dependent on the following factors:

- Sound reduction index of the movable wall
- Longitudinal sound insulation index of the flanking components
- Other transmissions via indirect pathways (e.g. through ventilation ducts, cable ducts or the like)

This data sheet is intended to determine the longitudinal sound reduction index required for flanking elements.

Prerequisites for the application of the data sheet:
see back of this data sheet

Required longitudinal sound reduction index of the flanking components.

The required longitudinal sound reduction index of the flanking components is dependent on the end mobile partitions and need to be 3-8 dB above the sound reduction index required for movable walls when installed.

For movable walls of various dimensions, the required longitudinal sound reduction index is shown on the attached data sheet. At intermediate values, the higher value is to be considered.

The above data sheet has been prepared with great care, to the best of our knowledge and belief.

Rheine, 20.02.2009 Hi/BB
KÖTTER Consulting Engineers KG

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Annex

Data sheet with the required longitudinal sound reduction indexes



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For the purposes of this data sheet, the following conditions are required:

- The calculated value of the sound reduction index of the movable wall without sound transmission via flanking elements (RW,R) must be 10 dB above the desired sound reduction index achieved when installed.
- The area of the movable wall is equal to the interface between the rooms.
- There must be no transmissions via indirect pathways (e.g. via ventilation ducts, floor channels or the like) or the transmissions via indirect pathways must be so small that they can be ignored when considering sound insulation.

In the event of deviations from these conditions, calculations must be carried out on an individual basis.

For calculated values for required longitudinal sound reduction index (RL, W, R,), see table!

Ceilings, under-ceilings, floors

Height of movable wall (m)	RL,w,R (dB)
2.50	R' _w +8
2.75	R' _w +8
3.00	R' _w +7
3.25	R' _w +7
3.50	R' _w +6
3.75	R' _w +6
4.00	R' _w +6
4.25	R' _w +6
4.50	R' _w +5
4.75	R' _w +5
5.00	R' _w +5
5.25	R' _w +5
5.50	R' _w +5
5.75	R' _w +4
6.00	R' _w +4
6.25	R' _w +4
6.50	R' _w +4

Walls, windows, façades

Width of movable wall (m)	RL,w,R (dB)
04.00	R' _w +8
04.50	R' _w +7
05.00	R' _w +7
05.50	R' _w +7
06.00	R' _w +6
06.50	R' _w +6
07.00	R' _w +6
07.50	R' _w +5
08.00	R' _w +5
08.50	R' _w +5
09.00	R' _w +4
09.50	R' _w +4
10.00	R' _w +4
10.50	R' _w +4
11.00	R' _w +4
11.50	R' _w +3
12.00	R' _w +3
12.50	R' _w +3
13.00	R' _w +3
13.50	R' _w +3
14.00	R' _w +3

R'_w△ desired sound insulation index of the movable wall when installed.



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