

Stavanger Kulturskole og Katedralskole

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The new premises for the Stavanger Kulturskole and the Katedralskole in Stavanger have been built on the harbour front of Stavanger, next to the new concert house. The Kulturskole is the school for education in arts for children and the Katedralskole is a secondary school focusing on art education. The new premises for the schools hence include performance halls, rehearsal halls and rooms, black boxes and studio spaces. The different applications require different solutions for most rooms, and it's possible to adjust the acoustics in almost every room by using textiles. Sound insulation has been considered for the usage of the rooms and their adjacent rooms.

1 Introduction



Figure 1: The new concert hall, Stavanger Kulturskole, Sandvigå 24 and Stavanger Katedralskole

The Kulturskole is the school for education in arts for children aged 8 to 18, and most classes are usually held after the primary schools closing time. The main focus area is to teach the students how to play a musical instrument of their choice.

The Katedralskole is a secondary school focusing on art education. The classes cover subjects about acting, dancing and music.

Together with the construction of the new Concert Hall in Stavanger, two schools for children and youths have been moved to the same area. As with the Stavanger Concert hall project, the acoustics is handled by the same team, Kahle Acoustics (BEL), Akukon Ltd (FIN) and Sinus AS (NOR).

2 Stavanger Katedralskole, “Plong”

Located near the new concert hall in Stavanger, Stavanger Katedralskole is in the new center for arts and music. The school is built according to the Norwegian Standard NS8175. In addition sound insulation and room acoustics has been refined for selected rooms. The school opened early in 2012.

The school is equipped with the following:

- Rehearsal room.
- Dance hall
- Black box
- Studio with recording rooms
- Ensemble rehearsal room
- Class rooms and auditoriums
- Concert hall

2.1 Rehearsal rooms

All rooms for rehearsal of music have a certain amount of fixed absorption. This amount varies from room to room, and is depending on the use of the room. E.g. rooms for electrical instruments and percussion instruments have more fixed absorption than rooms for acoustic instruments.

The fixed absorption is mostly based on mineral wool absorbers. However, in rooms for instruments with low sound power levels, the fixed absorption is based on perforated gypsum.

All rehearsal rooms also variable acoustics based on textiles on a rail. The textiles usually can cover up to two walls, and are hanging approx. 10 cm from the wall.

Like for fixed absorption the rehearsal rooms for loud instruments like percussion instruments are more insulated than more silent instruments. The most insulated rooms have $R'w \approx 70-75$ dB, the others have a requirement of $R'w = 64$ dB.

2.2 Black box

The black box is used for drama; for education and performances. The walls are perforated steel with 10 cm mineral wool behind it. In addition all walls can be covered with a black, absorbing textile.

2.3 Concert hall

The concert hall has a base area of 280 m² and a ceiling height of 8.8 m. The moveable seating rows have absorbing chairs and allows the hall to be used a wide range of performances.

The reverberation time is relatively low, but long enough to support a piano or flute concert. In addition the hall has variable absorbers in form of motorized textiles.

The side walls in the concert hall and back wall on the stage is constructed to be diffusing. Steel boxes are cut diagonally and each side tilted the opposite way, see Figure 2. The lower part of the side walls are hinged so they can be tilted when needed (like when the stage is used for acoustic instruments).



Figure 2: Diffusing elements in the concert hall



Figure 3: The hinged doors on the side walls on the stage (before the hall was finished)

3 Stavanger Kulturskole, “Pling”

Stavanger Kulturskole is located next to the red side of the new Stavanger Concert hall. This school is not yet finished, but will open in a couple months.

The school will have the following available for the students:

- Small concert hall for chamber music
- Three black boxes
- Studios
- Rehearsal rooms

The “regular” rooms (studios, black boxes and rehearsal rooms) are constructed in the same manner as in Stavanger Katedralskole. The rooms will have a certain amount of fixed absorption and rail mounted textiles for variable acoustics.

The small chamber music hall will be used for rehearsal and for small concerts. The rehearsals and concerts it will typically be used for single musicians to small and middle big ensembles. Both acoustic and amplified instruments will be used and the absorption can therefore be heavily adjusted with textiles. The hall is constructed like a small shoebox with heavily diffusing walls and ceiling. There is no fixed scene which gives the room maximum flexibility.