

1. BassCreator®



Low frequency reproduction from sound systems in bars and discotheques can cause environmental problems that in many cases turn out to be difficult to solve. Propagation of low frequency energy from one room to another is often caused by resonating walls and floors. In order to correct this, extensive and costly modifications in the construction of buildings are often necessary, while adequate insulation for higher frequencies in the same acoustic environment typically requires much less effort. In many cases, the greater part of the total cost involved with an insulation job is spent on the low frequency insulation.

Apart from financial considerations, making the necessary structural modifications in certain buildings is often virtually impossible, for instance because they are protected monuments, or because safety regulations are in the way.

In these cases, the BassCreator provides an affordable alternative for an expensive low frequency insulation job. As will be explained later the BassCreator has the ability to substantially reduce the low frequency energy, radiated by the target system, while maintaining sonic quality to a near-original level. A gain of about 6-10 dB(A) in allowable level in the venue can be achieved with the applied techniques. In practice there a lot of venues where the needed gain in allowable level is more than 10 dB(A). In those situations structural measures needs to be applied first before using the BassCreator.

How does it work?

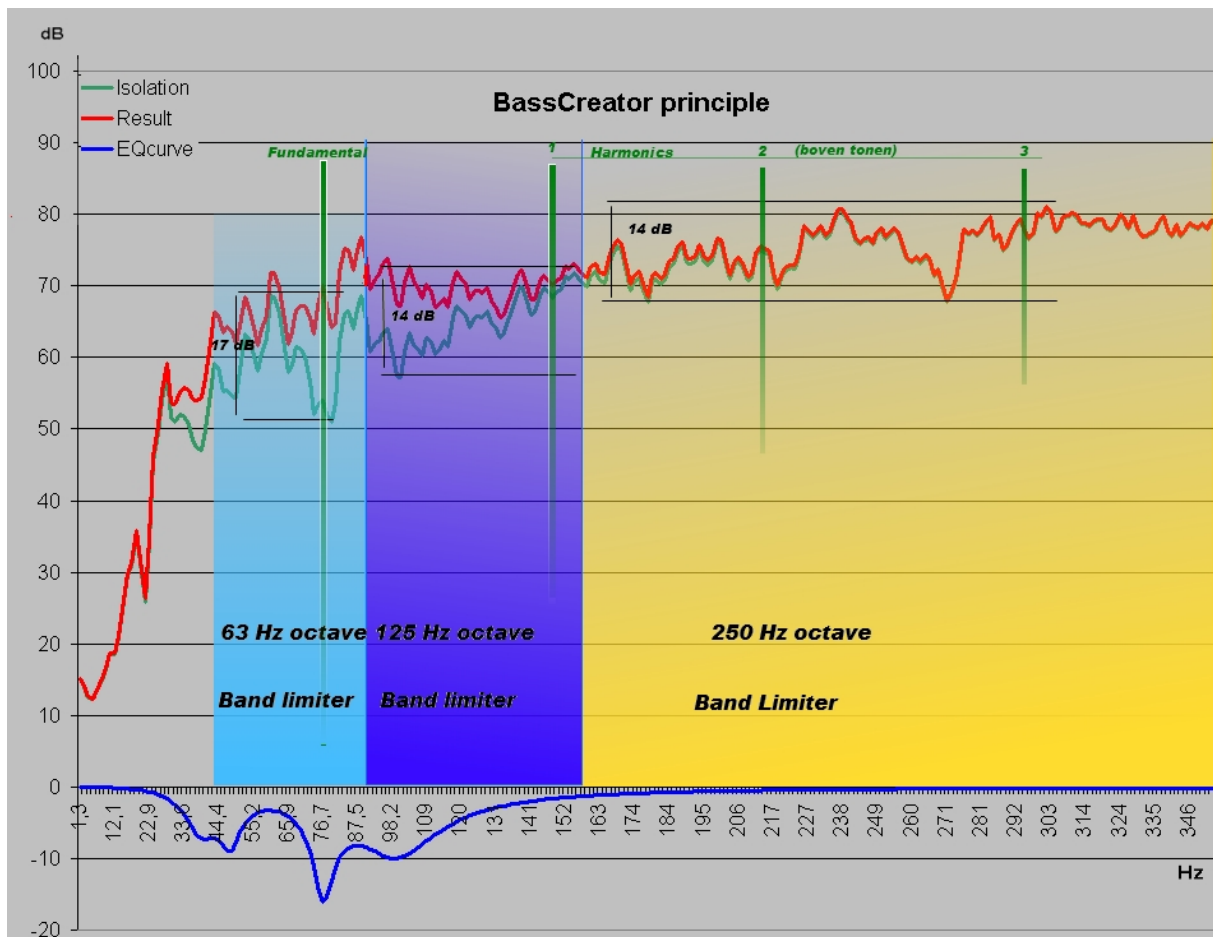
The gain in allowable level combined with inconceivable limiting security of a BassCreator is achieved by 3 techniques.

1. High resolution measurement
2. Virtual bass compensation
3. Spectral and overall limiting

High resolution measurement

In most cases allowable sound levels inside a venue are based on sound insulation measurements done by an acoustical engineer. Those measurements are done in octaves or occasionally in 3rd of octaves. As buildings resonate at certain frequencies the isolation inside an octave can have great variances. Figure 1 illustrates this. In this real life example of a measurement in high resolution of 1 Hz the difference in isolation (the green line) is 17 dB for the 63 Hz octave band (light blue). For the 125 Hz octave band (dark blue) the difference is 14 dB. This means if we apply an equalization filter to the source signal (Music) we can use this variance to allow higher levels by following the high resolution isolation curve instead of the average value in this situation. In this case with the applied equalization filter (blue line) we gain at the 63 Hz octave band 8,6 dB and at the 125 Hz octave band 5,4 dB and at the 250 Hz band 0,4 dB. The red line in the graph represents the resulting new isolation curve.

Figure 1: BassCreator principle



Virtual bass compensation

When removing information of the music (source) signal it is clear that the influence on the musical quality will be noticeable. In the above example we made a gap in the source signal from 74 Hz to 80 Hz. The BassCreator has a tool, the BassCreator algorithm where it is named after, to compensate for this gap by using the principle of the missing fundamental. You can give a listener the impression of hearing a certain frequency by generating a pattern of harmonics (boven tonen) of this certain frequency. In our example we need a fundamental frequency of 77 Hz to compensate the gap in the source signal. We can achieve this by generating the harmonics (144 Hz, 221 Hz, 298 Hz, 375 Hz.....) The green vertical lines in the graph.

Spectral and overall limiting

As the device is designed to a sound limiting device in venues like clubs and bars we need to be certain that the allowable levels in the neighbourhood are not exceeded. Therefore the BassCreator has 3 free tuneable band peak limiters and levellers. The peak limiters take care of sudden increases in level in an octave band afterwards the leveller in that band adjust the level to the allowable level in that octave band. If necessary a limit can be set to the overall level.

Unique Features

- Spectral limiting at a high resolution
- Scheduler for events with different levels like day, evening, night, weekly or regular festivities during a year.
- Two zone limiting (1 with BassCreator compensation algorithm)
- Security by password and a cover with sealable bolts.
- High audio quality (dynamic range above 110 dB)
- Cost effective solution

Bestandsnaam: BassCreator2eng
Map: C:\Documents and Settings\mvk\Local Settings\Temporary
Internet Files\OLK174
Sjabloon: C:\Documents and Settings\mvk\Application
Data\Microsoft\Sjablonen\Normal.dot
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