

ArtemiS SUITE
Project

Code 50190

APR 190 Sound Engineering Project

With the interactive Sound Engineering Project of ArtemiS SUITE, undesired noise components can be quickly and easily identified, specific sound components and orders can be selectively removed or synthesized, and target sounds can be created based on the users requirements.

OVERVIEW

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The Sound Engineering Project provides processes to interactively filter a single recording, to add constant frequency components to it, to time-variantly attenuate, amplify, or completely replace orders, to add new order courses to it, and to remove transient components from it.

The available processing tools are excellently suited to highlight subtle effects in recordings. All operations can be performed interactively and resemble the workflow of graphic image processing. This enables the Sound Engineering Project to be used by less experienced users to develop target sounds from real measurements.

KEY FEATURES

Interactive modification of recordings

Processing tools

- › Eraser
- › Brush
- › IIR filter, IIR order filter
- › Target order
- › Order generator

Easy workflow via the graphic user interface

Simple highlighting of subtle effects in recordings

Manipulation of amplitude curves for frequencies and orders and immediate acoustic and visual feedback after each change

Addition of noise for a natural acoustic rendition of areas where significant portions have been removed by filtering

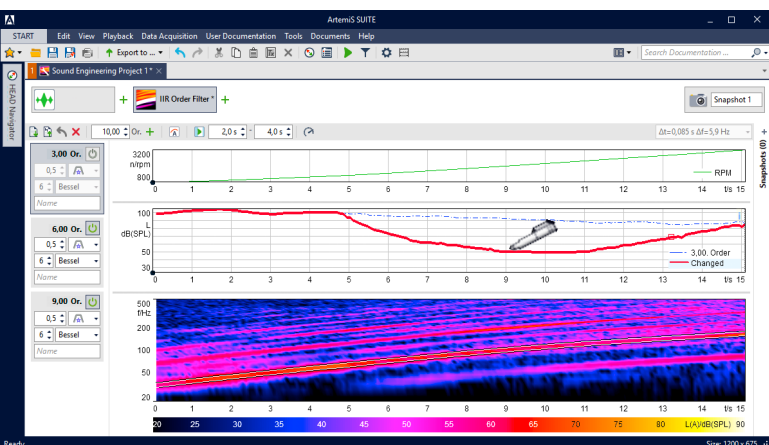
Remove, edit, synthesize, or add complete or parts of engine orders with editable, time-variant level course

Snapshot functionality

Save multiple processing stages for A/B comparisons, etc.

APPLICATIONS

- › Sound engineering tasks
- › Sound design
- › Interactive and variable filtering of annoying noises
- › Designing target sound from a real measurement
- › Generation of sample data for listening tests with the jury testing software SQala (APR 500 is required)



DETAILS

The interactive operation resembles the workflow of graphic image processing. All manipulations become immediately effective both visually and acoustically, enabling the users to shape the sound interactively.

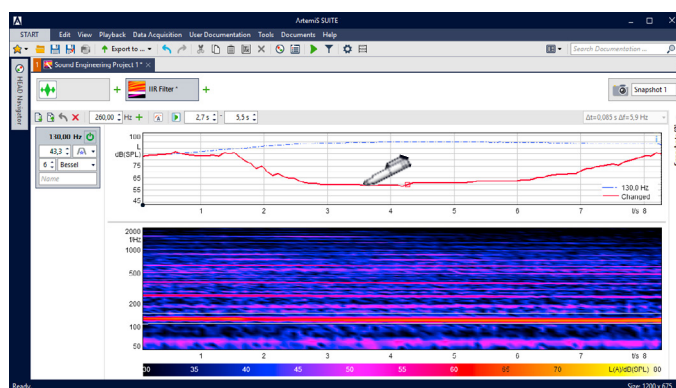
Processing tools

The core of the Sound Engineering Project are the processes (IIR and FIR filters, generators, and synthesis tools). Their workflow resembles image processing, enabling users to manipulate sounds graphically in the diagram. Any number of processes can be applied, modified, removed, changed, and saved as a sequence.

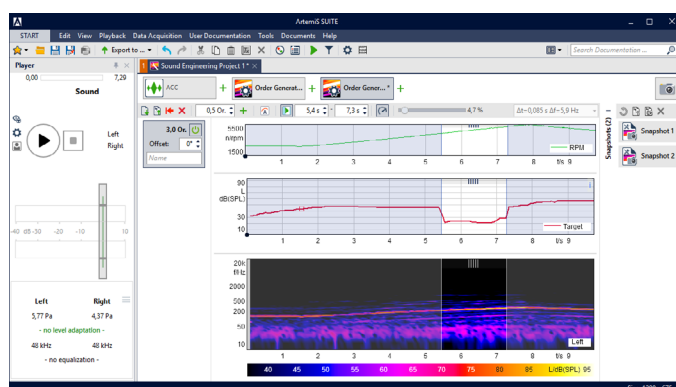
- › Time-variant FIR filters (Eraser, Brush)
 - › Universal filter for removing or emphasizing sound components
 - › Graphical creation of multiple filter tools in the spectrogram (Eraser)
 - › Defining Target Levels and Minimum Levels for attenuation and amplification (Brush)
 - › Manually adjustable size (frequency and time range) for each filter
 - › Addition of suitable noise signals in partial areas of the spectrogram to compensate for attenuated areas
- › Time-dependent IIR filters
 - › Manipulation of sounds or very narrow-band sound components
 - › Manual (e.g. graphic) modification of the level course of a frequency component
 - › Copying of modified level courses for use with other filters

For RPM-based processes, the RPM vs. Time Diagram is available. Furthermore the A-weighting can be activated or deactivated.

- › RPM-dependent IIR order filters
 - › Manipulation of RPM-dependent sounds (orders) by means of time-dependent IIR filters based on a reference quantity
 - › Manual (e.g. graphic) modification of the level course of an order component
 - › Copying of modified level courses for use with other filters



In the Level vs. Time diagram, the original level curve is shown as a blue line (when present) and the curve modified by filtering as a red line. With the pencil cursor, the red line can be partially or entirely re-drawn at any time.



The level course can be drawn with the mouse in the Level vs. Time diagram and added or replaced in the corresponding signal. Additionally when applicable, the RPM course of the selected reference quantity channel can be displayed as RPM vs. Time diagram.

- › Creation of new orders or order curves (determining the target order)
 - › Based on order analysis and re-synthesis
 - › Manual editing of the synthetical orders
 - › Manual (e.g., graphic) modification of the level course of an order component
 - › Copying of order curves for use with other filters
 - › Requires RPM pulse information
- › Generating of new orders without pulse information (Order Generator)
 - › RPM-based sine generator
 - › Adjustable phase offset
 - › Manual (e.g., graphic) modification of the level course of an order component
 - › Copying of order curves for use with other filters

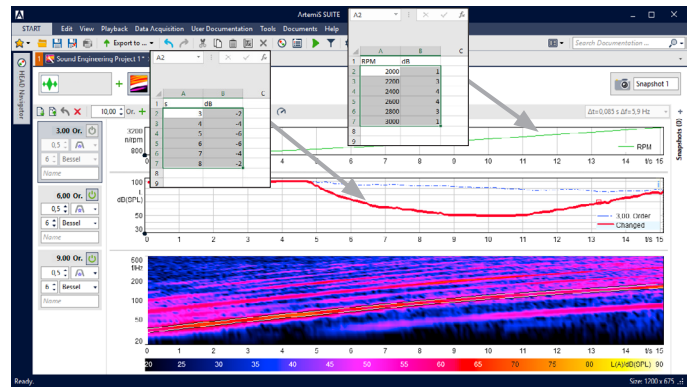
Snapshot functionality

The snapshot function enables the user to save and restore sequences with all changes at any time.

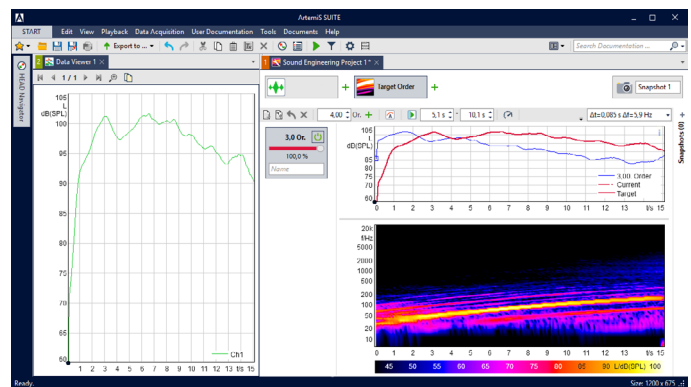
Interactive processing

The interactive workflow consisting of several consecutive steps offers many advantages:

- › By proceeding step by step, a structured and thus faster workflow is greatly facilitated
- › The graphical workflow inspired by image processing ensures easy operation
- › The immediate acoustic and visual feedback enables the user to verify the results of their manipulations immediately
- › Since sequences can be saved and played back at any time, the user can interactively identify even subtle, minimal differences via direct A/B comparisons



Values can be copied directly or via drag and drop from Microsoft Excel or from HDF files into the RPM vs. Time or Level vs. Time diagram in order to use them for amplifying or attenuating the existing level course.



The configured course of the target order or the order generator, or the differences between the edited and the original course of the IIR order or IIR frequency can be saved and re-used.



The current state of all active and inactive processes (complete processing sequences) can be saved as Snapshot. The Snapshots will be visualized as tile in the Snapshots bar.

File requirements:

The Sound Engineering Project enables users to process one- or two-channel files with a length of up to five minutes.

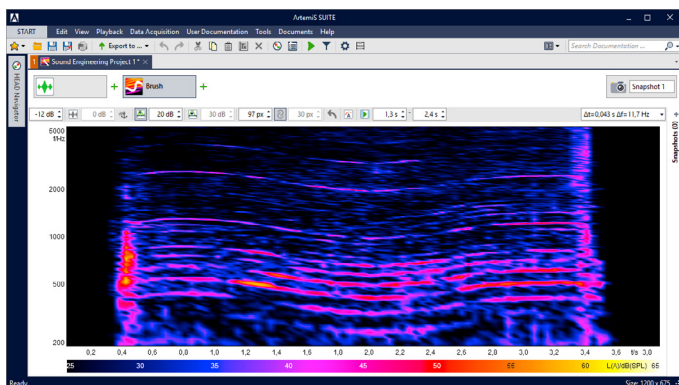
EXAMPLES

BRUSH

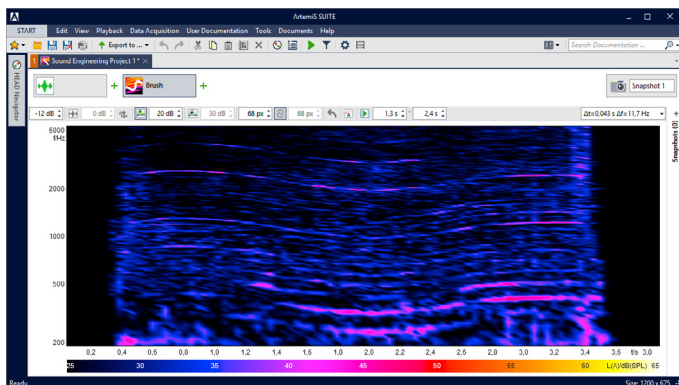
By means of the Brush, users can intuitively „draw“ in an FFT vs. Time spectrogram known from the handling of graphical software. This enables to select the focused acoustical signal components very easily, and to increase or decrease them individually. For comfortable operation different settings can be used, e.g.:

- › the option „Minimum Level“ secures that signal parts with a lower level are not changed
- › the option „Target Level“ enables signal parts to be attenuated respectively amplified to a specified value

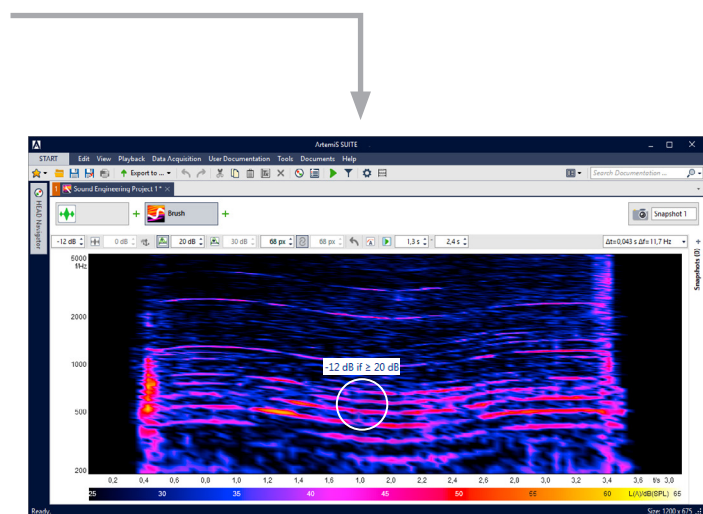
The optical changes will then be converted into appropriate filters so that the users are able to get immediate feedback in the Player. Additionally users can insert noise parts from another position in the spectrogram into these areas to create a more realistic overall result.



Using the Brush tool, several interfering signal parts are to be removed from the sound event.



All interfering signal parts are removed from the sound event. After this, the new signal can be exported and be used for listening tests and much more.

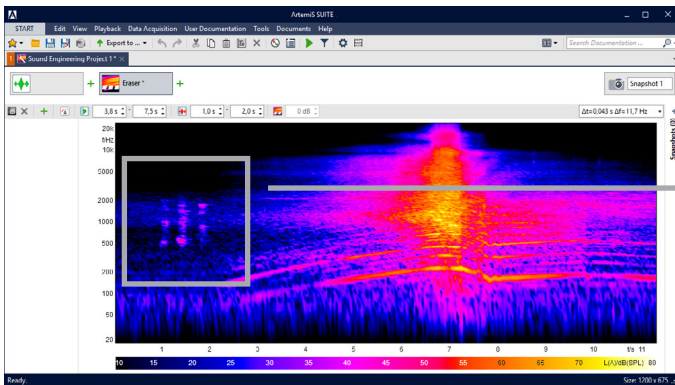


By means of the cursor, users are able to "draw" in the spectrogram to remove any interfering signal part quickly and precisely with an attenuation of 25 dB. The Minimum Level set to 15 dB prevents all signal parts below this specified value to be changed.

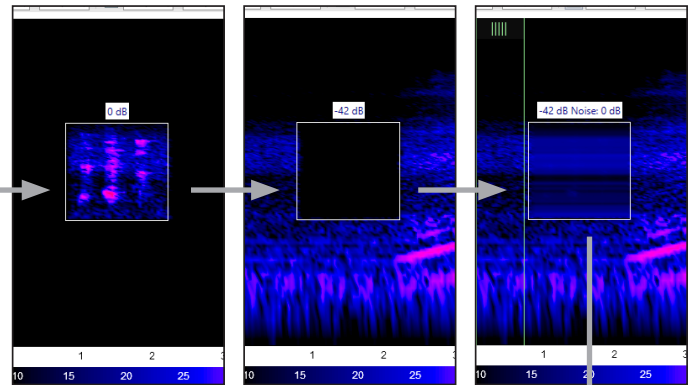
ERASER

The Eraser can be used to define time frequency areas in the FFT vs. Time spectrogram, whose level shall be increased or attenuated individually.

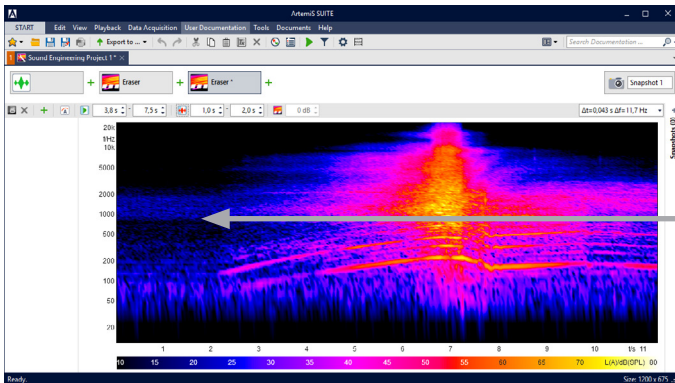
The position and the limits of the area can be adjusted via the mouse whereby even non-rectangular shapes are possible. The amplification or attenuation for the chosen area can be set e.g. via the mouse wheel. In addition, noise components from another position in the spectrogram can also be inserted into this area to achieve a more realistic overall result.



A disturbing noise fragment is to be removed from the sound event.



With the Eraser, the disturbing noise is identified by reducing the levels of the surrounding frequency and time ranges (left figure). Then the disturbing noise fragment is removed by reducing its level by 42 dB (middle figure), and the resulting acoustic "gap" is filled with uniform noise (right figure).



The disturbing noise fragment has been removed from the sound event, and the resulting "gap" that would otherwise irritate the listener has been filled with uniform noise.

Required: APR 000 Framework (Code 50000)



Contact Information

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