ArtemiS SUITE
PRoject

Code 50000

APR 000 APR Framework

APR 000 Framework is the basis of ArtemiS SUITE and connects the various projects, analyses, and signal processing functions to a consistent unit. Its clear user interface enables an easy and uniform control of ArtemiS SUITE compositions individually adapted to the users current tasks. In addition, APR 000 includes several central functions.

OVERVIEW

APR 000
APR Framework

Code 50000

APR Framework APR 000 is required for each ArtemiS SUITE composition. It connects ArtemiS SUITE Projects (APR), such as Pool Projects or Automation Projects, more than 150 analyses, and various signal processing tools (ASP) to a consistent unit.

APR Framework provides a clear user interface. Several central functions, such as HEAD Navigator , Player, Data Viewer, User Documentation, Sensor Library, native ATFX support are included.

Depending on the tasks, users can freely combine the various APRs and ASPs for acquisition, playback, editing, analysis, and presentation with each other and thus realize flexible solutions.

KEY FEATURES

Basis for using the modular ArtemiS SUITE software

Included central functions
› HEAD Navigator (central navigation tool)
› Native ATFX support (ATF-XML)
› Player
› Data Viewer
› User and System Documentation
› Channel Editor
› Sensor Library
› Measurement Point Library
› Tolerance Scheme
› Frequency Band Tolerance Scheme
› Import and export options
› Quantity System
› Calculation Project
› Video Viewer
› Map Viewer
› Pulse Sensor Geometry Editor
› HEAD Interactive Diagram for using the diagram functionality of ArtemiS SUITE in PowerPoint

APPLICATIONS

› Sound and vibration analysis
› Troubleshooting
› Sound-Engineering
› Modal analysis, operating vibrations, structural dynamics
› Test bench acoustics
› Jury Testing
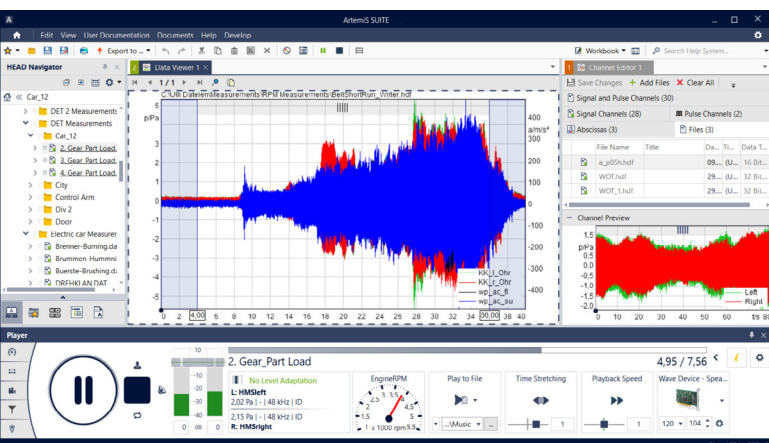
AT A GLANCE

Based on APR Framework, multiple ArtemiS SUITE Projects (APR) and ArtemiS SUITE Signal Processing (ASP) are available to form individual solutions. Each APR and ASP provides several analyses, tools, or processings.

Projects (APR)

PROJECTS FOR VERSATILE USAGE

› Pool Project (APR 010)
› Report (APR 020)
› Database (APR 030)
› Recorder (APR 040)
› Automation Project (APR 050)
› RPM Generator (APR 080)
› Compact Analysis Project (APR 100)
› Playback Filters (APR 110)
› Sound Engineering Project (APR 190)
› HDF Tools (APR 200)
› Signal Generator Project (APR 210)
› Standardized Test Project (APR 220)
› Sound Intensity Measurement (APR 300)

PROJECTS FOR MODAL ANALYSIS

› ODS Project (APR 400)
› Shape Comparison Project (APR 410)
› Modal Analysis Project (APR 420)
› Impact Measurement (APR 430)

PROJECTS FOR JURY TESTING (SQala)

› Jury Testing - SQala Basic (APR 500)

PROJECT FOR SOUND QUALITY INDEX

› Metric Project (APR 570)

PROJECT FOR TRANSFER PATH ANALYSIS

› TPA Project (APR 620)
› TPA Data Acquisition (APR 610)

APR Framework

Signal Processing (ASP)

ANALYSES FOR VERSATILE USE

› Basic Analysis (ASP 001)
› Basic Analysis vs. Control Channel (ASP 002)
› Advanced Analysis (ASP 003)
› Advanced Analysis vs. Control Channel (ASP 004)
› Modulation Analysis (ASP 005)
› Order Analysis (ASP 006)
› Octave Analysis (ASP 007)

PSYCHOACOUSTIC ANALYSES

› Psychoacoustics - Basic Analysis (ASP 101)
› Psychoacoustics - Basic Analysis vs. Control Channel (ASP 102)
› Psychoacoustics - Adv. Analysis (ASP 103)
› Psychoacoustics - Adv. Analysis vs. Control Channel (ASP 104)
› Speech Intelligibility Analysis (ASP 106)

DATA PREPARATION

› Offline Filters (ASP 301)
› Data Preparation (ASP 302)
› Statistics (ASP 303)
› Batch RPM Generator (ASP 304)
› Channel Calculation (ASP 305)

FORMATS

› MDM Recording (ASP 702)
› MDF4 Export (ASP 703)
› MTS-RTC Conversion (ASP 704)
› UFF Conversion (ASP 705)
› DATaRec 4 Support (ASP 701)
› MECALC Support (ASP 706)

SPECIAL ANALYSES

› System Analysis (ASP 201)
› System Analysis vs. Control Channel (ASP 202)
› Sound Power Analysis (ASP 203)

DECODERS

› Basic Decoder (ASP 801)

JURY TESTING SQALA

› Jury Testing - SQala Net (ASP 501)
› Jury Testing - SQala Server (ASP 502)

DETAILS

APR Framework enables users to control all ArtemiS SUITE operations intuitively. The individual tool windows can be docked, hidden (auto hide), and placed freely on the screen independently of the main window (or even on a separate monitor) as desired. User-defined layouts enable easy and fast switching between customized working environments.

INCLUDED IN APR 000

HEAD Navigator

The HEAD Navigator is the central navigation tool. It enables users to directly access data, to play back files with the Player, or to pass them to any of the functional areas. For example, analysis results can be displayed in a Data Viewer, channel information can be corrected in a Channel Editor, or data can be processed in an Automation Project (APR 050 is required) directly from the HEAD Navigator.

Data Viewer

The Data Viewer can display time signals and analysis results in one or several customizable diagrams on one or multiple pages. With the Result Routing, analysis results can be easily and conveniently distributed to the various diagrams.

Other results can be added to an existing Data Viewer via drag-and-drop, for example, from the Recent Results for a quick comparison.

Various cursors are available in the Data Viewer, which enable information to be attached to curves, abscissa and ordinate values and harmonics to be read, or single value results to be determined for any section of a diagram.
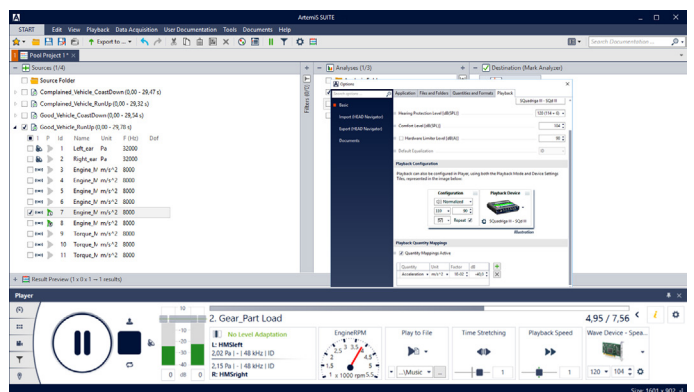
Player

The Player is used for interactive playback of airborne signals as well as other signals with comparable levels. Both the playback level (per channel) and the playback speed can be adjusted. A simple click on the desired position on the playback bar specifies the playback position.
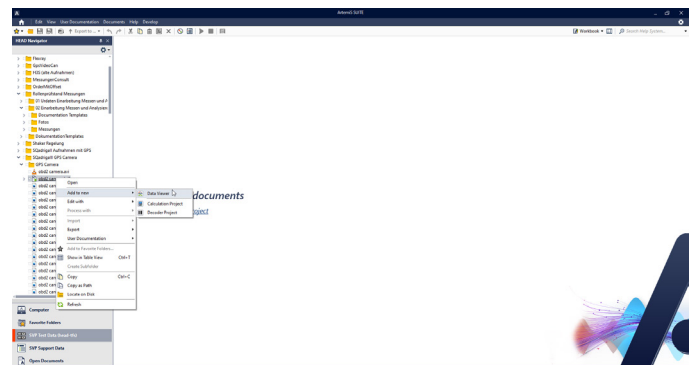
HEAD Navigator
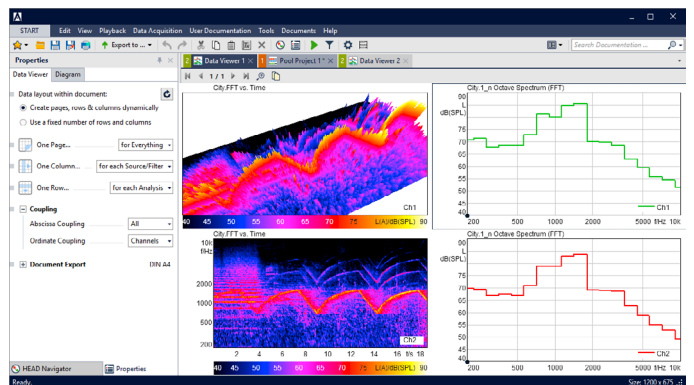
Data Viewer

Player

User Documentation

User Documentation in ArtemiS SUITE can be used to document files and folders and is an important prerequisite for efficient data and information management.

The documentation can be created quickly and with little effort using Documentation Templates. User Documentation can be seamlessly used with the Recorder of ArtemiS SUITE (APR 040 is required), for example.

Channel Editor

The Channel Editor enables the convenient editing of channel properties and signals of one or several HDF files. In addition, the rotation of the measurement coordinate system can be corrected according to a Measurement Point Library.

The desired customizations can be carried out very efficiently, thanks to

› a clearly arranged display of the properties in a table,

› various sorting options,

› multiple selection.

Sensor Library

ArtemiS SUITE contains a comprehensive database of about 1200 sensors (microphones, acceleration sensors, impact hammers, etc.). New sensors can be created and saved quickly and conveniently. Users can create custom Sensor Libraries, for example, for real-time filtering (APR 110 is required), or for impact measurements (APR 430 is required). Furthermore, a Sensor Library can be imported in the Recorder (APR 040 is required).
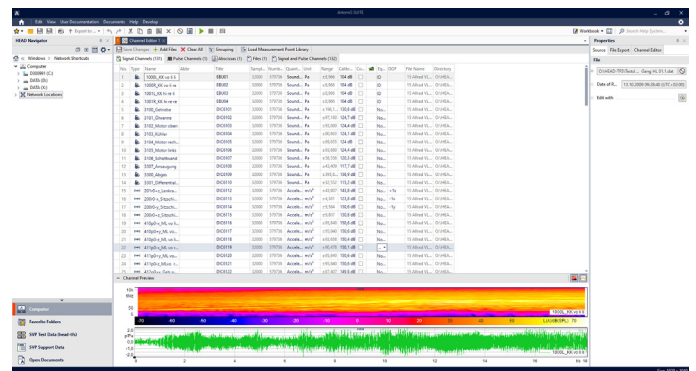
Calculation Project

A Calculation Project enables statistical evaluations of already existing analysis results. As a special feature, an adjustable smoothing function is available, e.g., for creating scatter bands.
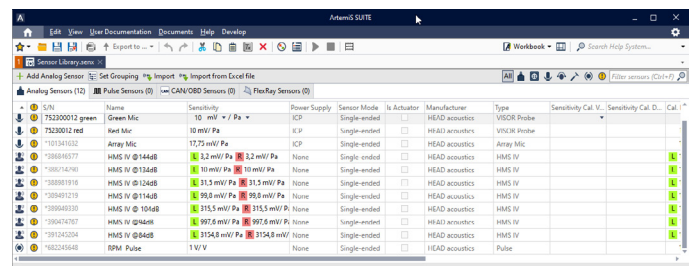
ASP 303 is required to use the statistics functions.

Channel Calculation (ASP 305 is required) extends the Calculation Project so that each channel can also be processed individually via a script.
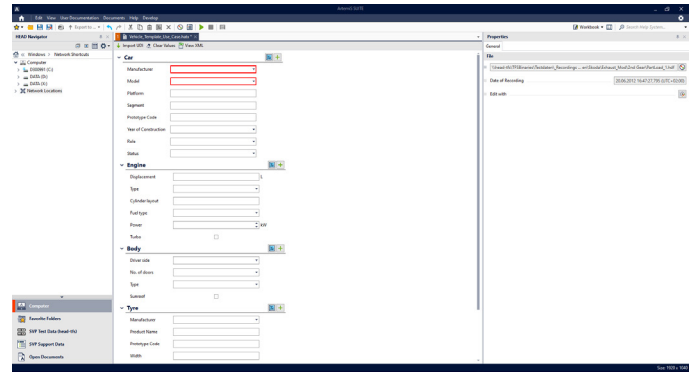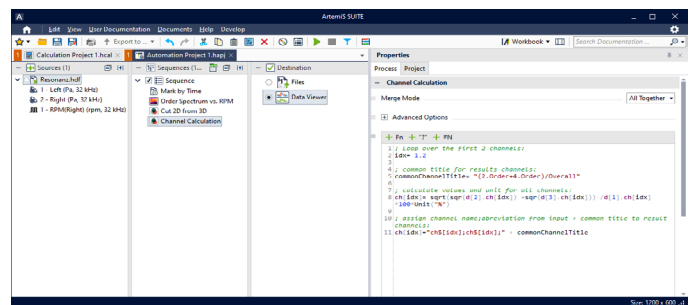

*User Documentation*

Channel Editor

Sensor Library

Calculation Project

Map Viewer

With SQobold, SQuadriga III, and HEAD*lab*, users can record navigation satellite system data in order to document test drives, acoustic environmental measurements, etc. The Map Viewer converts the coded navigation satellite system channel into a track and displays the distance covered on an interactive OpenStreetMap. When playing the audio file, the corresponding position on the displayed map moves synchronously in the Map Viewer. This enables to determine the exact position of the noise event, in order to associate, e.g., acoustic characteristics with certain street surfaces.

In addition, analysis results vs. time (2D) can be overlaid on the track in color-coded form.

A internet connection is required to receive the OpenStreetMap data.
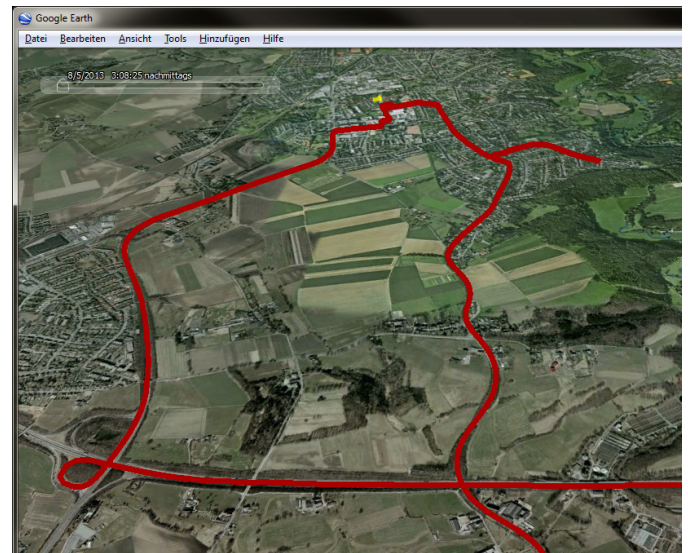
Map Viewer: Example of a graphical representation of extracted navigation satellite system data in Google Earth (ASP 801 is required).

Tolerance Scheme, Frequency Band Tolerance Scheme

A Tolerance Scheme enables custom reference curves to be specified and displayed automatically in analysis results. The tolerance curves can be created from existing 2D analysis results simply by drag-and-drop, for example, from the HEAD Navigator into a Tolerance Scheme. A Frequency Band Tolerance Scheme is used for the definition and editing of limit and target value curves being composed of frequency bands
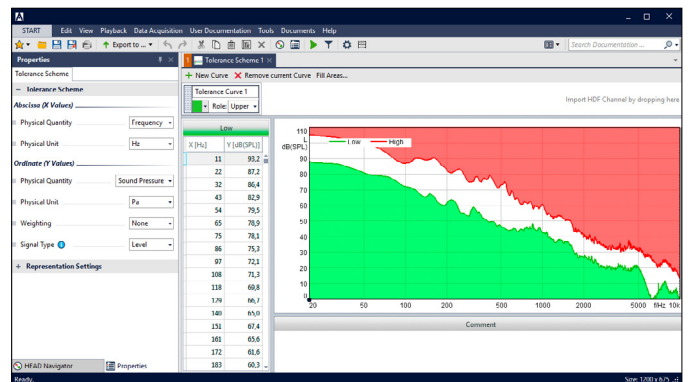
Tolerance Scheme

## Native ATFX support without conversion

ArtemiS SUITE provides native support of ATFX files. By means of the HEAD Navigator, users can switch between the visualization of the original ATFX file structure (Native View) or a clear structure that corresponds to the visualization of HDF files (HEAD View). The latter is perfomed without modifying the ATFX files.

Measurement Point Library

Measurement points are used to define points on measurement objects, where quantities can be recorded by triax or other sensors.

Measurement Point Library

In order to make the measurement setup more secure, users define the measurement points with the Measurement Point Library in advance and specify them precisely in a 2D or 3D grid model. The construction of grid models is very easy.

Users define their measurement points directly with the Measurement Point Library by entering the coordinates, and connecting the points manually with lines to a model. In addition, users can define the individual measurement points with Excel according to a predefined scheme.
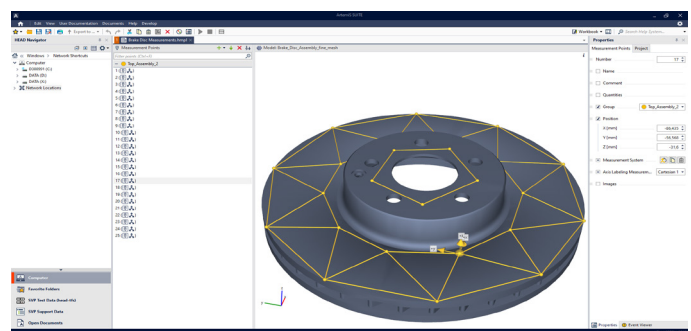
Each measurement point can be specified, labeled, provided with images, and much more. For visual control, users zoom, turn, tilt, etc. the model at any time.

Measurement points can also be defined without an exact position, for instance, if a general description of the desired measurement position is sufficient or if it serves for the consideration of quantities to be measured without location reference.

Even a larger number of measurement points can be clearly displayed. To do this, the measurement points can be combined into measurement groups with corresponding names as well as group colors and be displayed or hidden together.

For further processing in other modules of ArtemiS SUITE, the measurement groups can be used to interpolate all model points belonging to the same measurement group in one step, for example.

If a CAD model of the measurement object or simulation data are available, they can be imported and merged. The following formats are supported: various CAD models (*.brep, *.jt, *.iges, *.step, *.stl), ME'scope projects (*.vtprj, *.vtmax), Excel workbooks (*.xls, *.xlsx), UFF models (*.uff, *.unv), Punch (*.pch), ANSYS (*.out) and Abaqus models (*.dat), as well as PERMAS files (*.dato.gz). If there are too many data points, data reduction is possible.

The completed models can be used with the Recorder of ArtemiS SUITE or other ArtemiS SUITE projects (APR 400, APR 410, APR 420, APR 430). The Recorder connects sensors, frontend connectors, and the measurement points of the measurement object with each other very quickly and safely. This significantly optimizes the entire measurement setup.

Export options (*.jt, *.iges, *.igs, *.step, *.stp, *.stl) can be used to make the 3D models available to other programs.

Import and export functions

Several import and export options are available: ASCII (*.asc, *.csv, *.txt), ATFX (*.atfx), MP3 (*.mp3), and Wave (*.wav).

Excel is imported via the CSV format. Using a template, the header can be configured extensively. For export to Excel (*.xlsx, *.xls), no installation of Excel is required.

Individual diagrams or entire pages of a Data Viewer can be exported to PPTX or PDF format or as image files (PNG, TIFF, JPEG, GIF). PowerPoint or Adobe Acrobat need not be installed.

Video Viewer

Videos, recorded with SQobold and SQuadriga III, can be played back with the Video Viewer synchronized with the audio playback.

The combination of video and acoustic analysis enables the documentation of measurement setups, environmental or operating conditions. Interesting sound components, recorded on a test bench, during test drives, a soundwalk, etc., can be assigned to the respective movement states or environments.

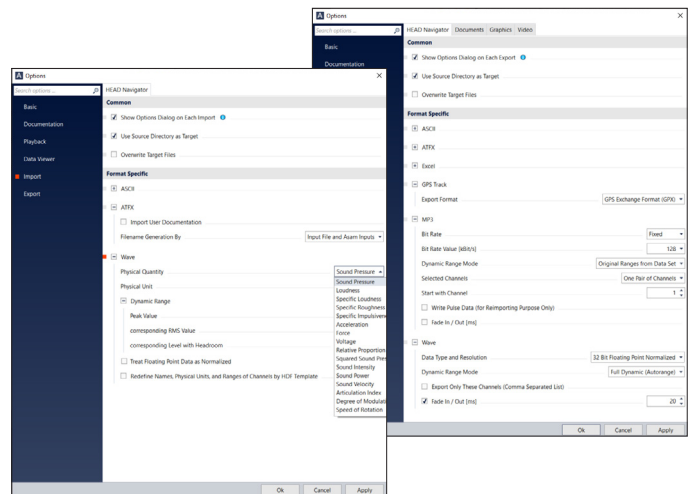## Combining Video Viewer, Map Viewer, and acoustic playback

SQobold and SQuadriga III measurements enable users to combine Video Viewer and Map Viewer as well as acoustic playback and analysis synchronously and interactively. With a single click on any point of the video or the navigation satellite system track or when changing the playback speed, all other settings are automatically synchronized.

Single Values Table

The Single Values Table serves for the tabular representation of the single values of (filtered, analyzed, and statistically processed) input signals, e.g., from the Destination Pool of a Pool Project.

Single Values Table

Options: Import, Export

Options

ArtemiS SUITE offers an intelligent cache management and further options to adjust physical quantities, the language, and much more to individual needs.

Workbook

Using the Workbook, the current work state can be saved and restored later on.

File Viewer

The quick view can be used to display various file formats: HDF, DAT, BMP, EMF, GIF, JPG, PNG, WMF, HTM, HTML, XML, PDF, ...).

Options: Quantities and Formats, Basics

FIR Filter Definition

An FIR Filter Definition contains transfer functions and parameters from which the required impulse responses are formed during the filtering of time signals.
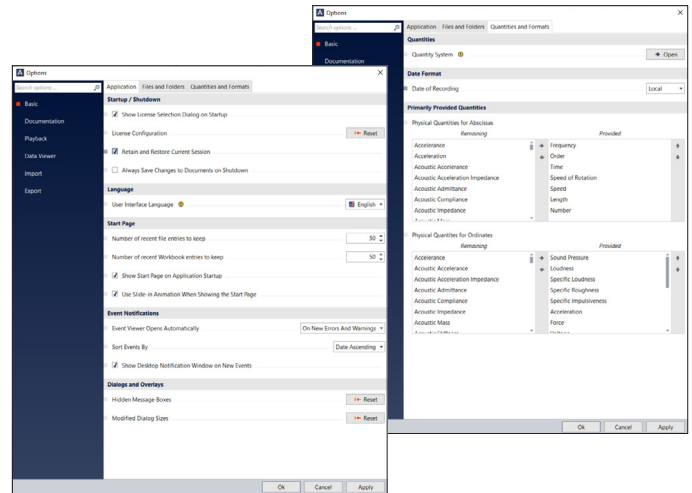
HEAD Frontend Reader

HEAD Frontend Reader can be used to transfer files stored on SQuadriga oder DATaRec 4 to a computer and convert these into HDF files.

PowerPoint Add-In: HEAD Interactive Diagram

HEAD Interactive Diagram is a PowerPoint add-in from HEAD acoustics that enables users to embed ArtemiS SUITE diagrams in PowerPoint (32 bit only) and to keep using the diagram functionality provided by ArtemiS SUITE (zoom, scaling, cursor function).

PowerPoint presentations with interactive diagrams are created using the PowerPoint export function of Artemis SUITE. Displaying the presentation requires only PowerPoint with the HEAD Interactive Diagram add-in.

Cutting, copying, and pasting within a presentation is possible. It is also possible to insert additional pages into existing presentations using the export function of ArtemiS SUITE.

SYSTEM REQUIREMENTS

› Windows 11 x64
(Pro, Enterprise, Education; version: 21H2 or newer; languages: US, Western European)

or:

Windows 10 x64
(Pro, Enterprise, Education; version: 1809 or newer; languages: US, Western European)

› Xeon E5-1680, Core i7-7700, Core i5-8250U, Ryzen 5 1500X, Ryzen 5 2500U (recommended: Core i7-9700KF, Core i9-9980HK, Ryzen 5 3600, Ryzen 9 4900HS)

› 8 GB RAM (recommended: 16 GB)

› DirectX 9.0c-compliant graphics adapter with 512 MB (recommended: 2 GB)

› Display with WXGA resolution (1366 x 768) (recommended: FHD resolution (1920 x 1080))

› .NET Framework 4.8

› HASP dongle driver

› HEAD USB driver (optional)

› Microsoft 365 x86, Microsoft Office 2021 x86, Microsoft Office 2019 x86, Microsoft Office 2016 x86 (optional)

In order to install software and drivers from HEAD acoustics, administrator rights are required. To operate the software, only standard user rights are needed.

FREE OPERATING PROCESSES

Various operating processes that can be used with ArtemiS SUITE and ASX solutions (HEAD System Integration and Extension) can be used free-of-charge and do not need to be licensed.

In ArtemiS SUITE, the following processes can be embedded and applied without licenses in Automation Projects, some of them in Standardized Test Projects and Metric Projects, too:

› Apply ATFX Documentation Template
› Apply Documentation Template
› Apply Template HDF
› Calculate Documentation Field
› Remove Channels
› Delete Documentation
› Export 16 Bit HDF
› ASCII Text (ASC)
› ASAM Transport Format (ATFX)
› Excel Workbook (XLSX)
› MPEG Layer 3 (MP3)
› Wave (WAV)
› Find Data Sets in ATFX
› Find Files in Directory
› Import ASCII Text Format

› Import ASAM Transport File (ATFX)
› Import MP3
› Import Wave (WAV)
› Representation Settings 2D
› Representation Settings 3D
› Representation Settings Sampled
› Reset Abscissa
› Select by Documentation
› Select by File Name
› Select Channels
› Select Subset
› Set Documentation Field
› Single Value Tolerance
› Vibration Dose (Single Value)

HEAD acoustics

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