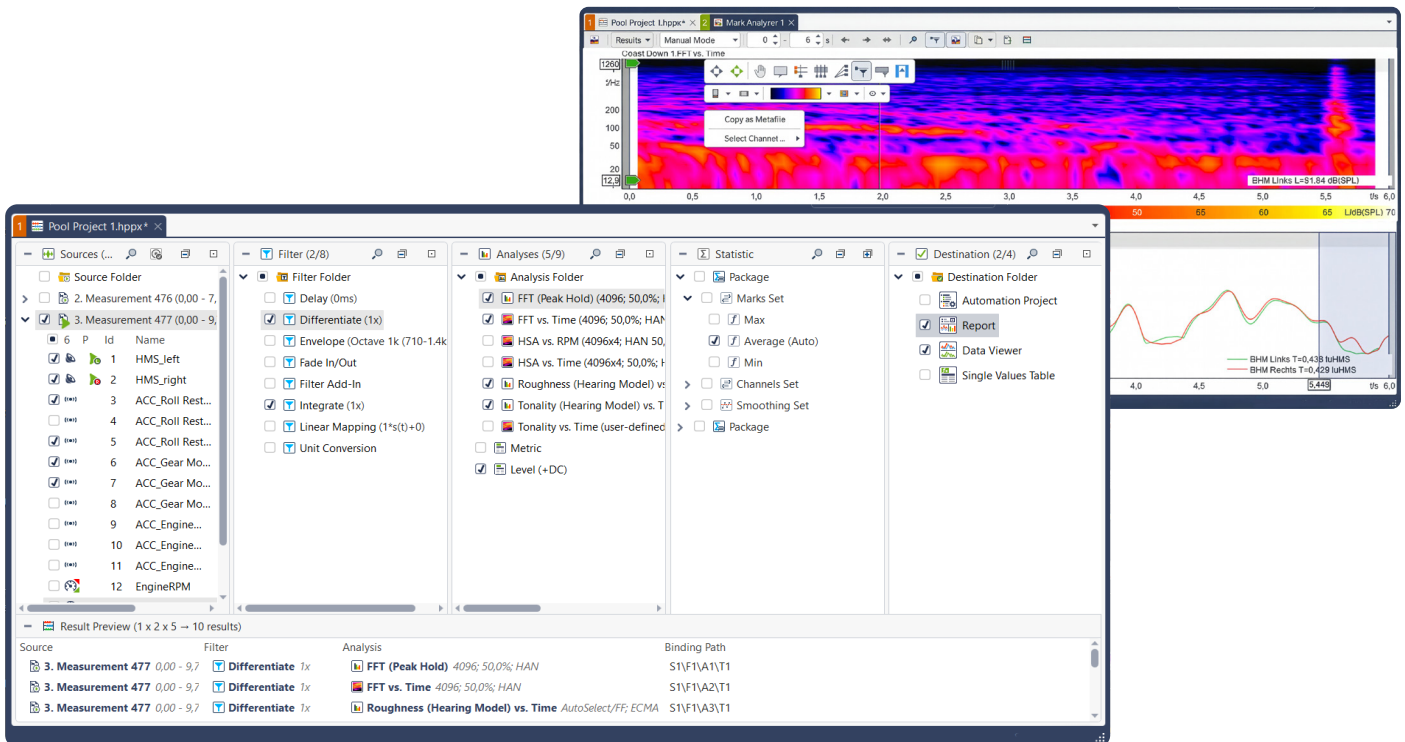




ArtemiS SUITE  
Project

Code 50010

# APR 010 Pool Project

The Pool Project is a central project of ArtemiS SUITE for the interactive processing, analysis, and visualization of acoustic and vibro-acoustic measurement data. Thanks to efficient data processing based on the cross-product logic, even complex projects can be implemented with ease. The project-oriented pool structure provides a clear overview of the individual processing steps, enabling intuitive operation.

# OVERVIEW

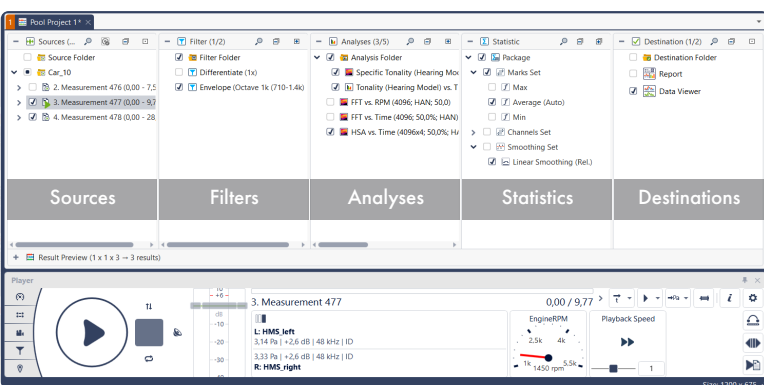
## APR 010 Pool Project

**Code 50010**

A Pool Project is divided into five clearly structured pools. This enables filtering, processing, and analysis tasks, as well as statistical evaluations and result presentation, to be configured and linked easily and interactively.

In the Data Pool, the marks relevant to the calculation are organized and activated. The desired filters, analyses, and other processing operations, as well as statistical methods, are defined in the respective Filter Pool, Analysis Pool, and Statistics Pool. The Destination Pool is used for visualization, result presentation, and result export.

In addition, the Mark Editor for defining mark limits based on time or reference quantities and the Mark Analyzer for interactive analysis of acoustic and vibro-acoustic measurement data are included.



## KEY FEATURES

The Pool Project provides:

- › a highly flexible pool structure for creating even complex processing workflows
- › interactive configuration of pools using filters, analyses, and additional processing operations, with more than 150 analyses available (the corresponding licenses are required)
- › processing based on cross-product logic for all enabled elements
- › combination with additional projects of ArtemiS SUITE for data presentation, Report generation, jury tests, and additional applications (the corresponding licenses are required)
- › integration of custom software applications via the ASX programming interfaces (the corresponding licenses are required)

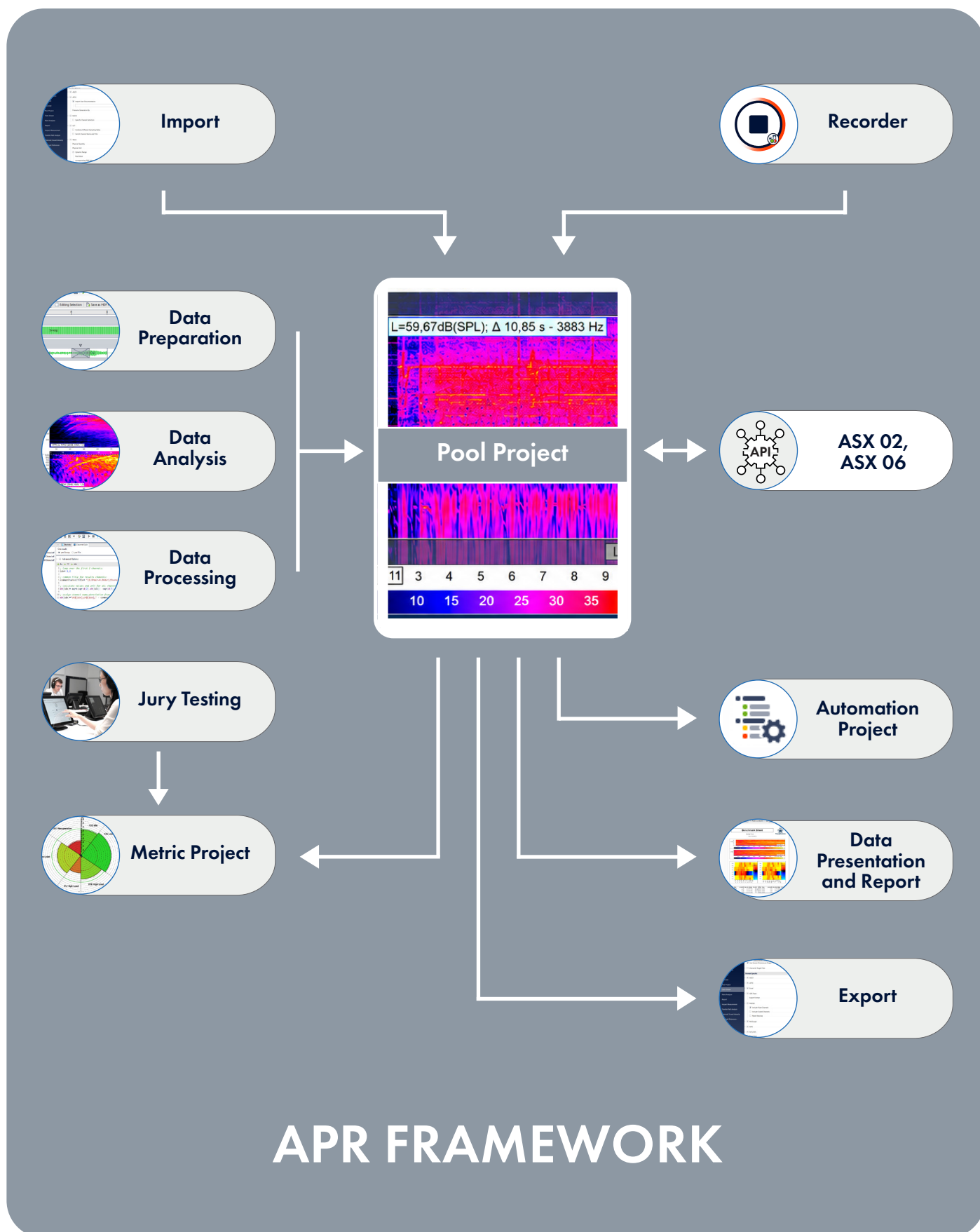
Included tools:

- › Mark Analyzer
- › Mark Editor

## APPLICATIONS

- › Customized configuration of dynamic, flexible, and easy-to-use analysis and processing solutions for a wide range of analysis tasks
- › Simplified data processing: each enabled processing and analysis task is applied to every enabled mark

# OVERVIEW

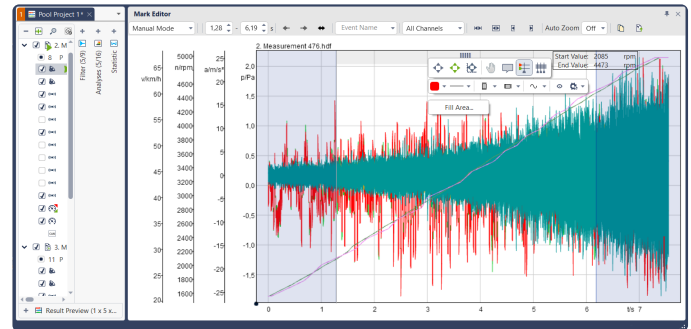


# FEATURES INCLUDED IN POOL PROJECT

## Mark Editor

The Mark Editor allows marks to be defined based on time or another control channel (analog or digital channels). Mark boundaries can be adjusted conveniently using the mouse or entered numerically.

When an RPM range is specified, the Mark Editor automatically determines the corresponding mark limits and allows easy switching between different RPM ramps within a signal. To simultaneously define multiple marks based on the selected control channel, the corresponding mark boundaries are displayed in a tabular view using bars.

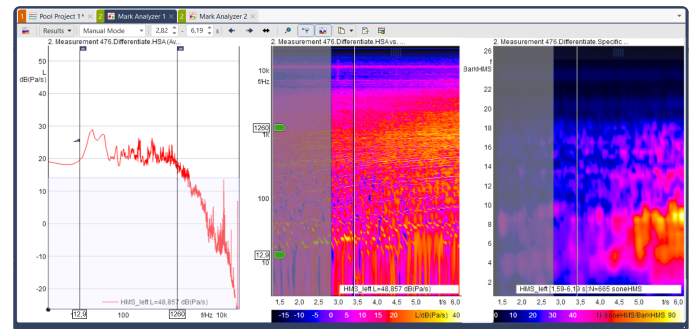


Mark Editor

## Mark Analyzer

The Mark Analyzer is used for interactive analysis and playback of time data within a Pool Project. Analysis results can already be analyzed acoustically and visually during playback.

The Properties tool window provides access to all parameters of the Mark Analyzer, as well as all mark, filter, and analysis parameters of the underlying analysis result. This data can be accessed and edited.



Mark Analyzer

# FEATURES INCLUDED IN APR FRAMEWORK

APR Framework includes the following core functions and processes that complement the Pool Project:

- › Navigator
- › Data Viewer
- › Player
- › User Documentation
- › Channel Editor
- › Single Values Table
- › Tolerance Scheme (Frequency Bands)
- › Sensor Library
- › Measurement Point Library
- › Video
- › Map
- › Calculation Project
- › FIR Filter Definition
- › Import and export functions:  
ASAM Transport Format, ASCII, MPEG Layer 3, Wave
- › Workbook
- › File Viewer

# FUNCTIONS – DETAILS

## Functions Included in Pool Project or in APR Framework

### SOURCE POOL

Supported formats

- › HDF
- › ATFX
- › DAT

Import functions

- › ASAM Transport Format
- › ASCII
- › MPEG Layer 3
- › Wave

Mark Editor

### FILTER POOL

Serial filter

### ANALYSIS POOL

Vibration-Dose Value  
(Single value)

Metrics (Single Value)

### STATISTICS POOL

Smoothing functions

### DESTINATION POOL

Data Viewer

Mark Analyzer

Calculation Project

Single Values Table

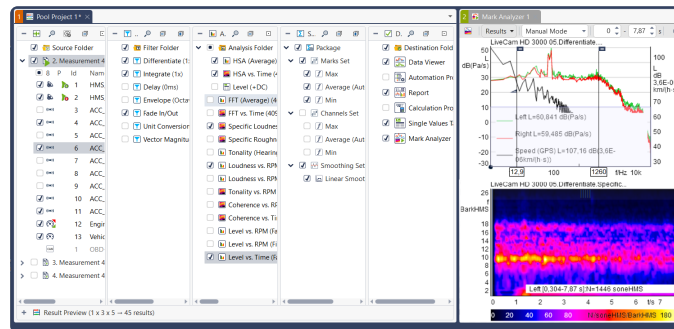
HEAD Data File

- › HDF
- › HSVX

Pool Result

Export functions

- › Excel
- › ASAM Transport Format
- › ASCII
- › MPEG Layer 3
- › Wave



## Functions Requiring a License

### SOURCE POOL

Advanced Import

- › MDF4 Import (ASP 707)
- › MTS-RPC Conversion (ASP 704)
- › UFF Conversion (ASP 705)

### FILTER POOL

Offline Filters (ASP 301)

- › Filter, processing, and pre-processing tools for input signals

Basic Analysis (ASP 001)

- › Frequency weighting

Data Processing Add-In API (ASX 06)

- › Implementation of custom filters

### ANALYSIS POOL

Basic Analysis (ASP 001)

- › Spectral, level, and additional analyses

Basic Analysis vs. Control Ch. (ASP 002)

- › Analyses from ASP 001 vs. Control Channel

Advanced Analysis (ASP 003)

- › Spectral analyses with high or variable frequency resolution and additional analyses

Advanced Analysis vs. Control Ch. (ASP 004)

- › Analyses from ASP 003 vs. Control Channel

Modulation Analysis (ASP 005)

- › Modulation analyses for examining modulated signals, such as frequency, strength, and time curve

Order Analysis (ASP 006)

- › Order analyses with variable DFT length, rpm-synchronous resampling, or time-domain averaging

Octave Analysis (ASP 007)

- › 1/n octave analyses based on recursive filters with high time resolution

Psychoacoustics – Basic Analysis (ASP 101)

- › Psychoacoustic analyses

Psychoacoustics – Basic Analysis vs. Control Channel (ASP 102)

- › Analyses from ASP 101 vs. Control Channel

Psychoacoustics - Adv. Analysis (ASP 103)

- › Sophisticated psychoacoustic analyses (Sottek Hearing Model)

Psychoacoustics - Adv. Analysis vs. Control Channel (ASP 104)

- › Analyses from ASP 103 vs. Control Channel

Speech Intelligibility Analysis (ASP 106)

- › Examination of speech intelligibility

Spectral Audio Feature Analysis (ASP 107)

- › Spectral feature analyses

Spectral Audio Feature Analysis vs. Control Channel (ASP 108)

- › Analyses from ASP 107 vs. Control Channel

LEAP Analysis (ASP 109)

- › Prediction of the listening effort based on acoustic parameters

System Analysis (ASP 201)

- › Transfer function, impulse response, coherence, correlation, etc.

System Analysis vs. Control Ch. (ASP 202)

- › Analyses from ASP 201 vs. Control Channel

Sound Power Analysis (ASP 203)

- › Standard-compliant determination of sound power in accordance with ISO series 3740

Data Preparation (ASP 302)

- › Single value from Documentation

Statistics (ASP 303)

- › Distribution from 2D/3D analysis, Percentiles from 2D analysis

Data Processing Add-In API (ASX 06)

- › Implementation of custom analyses

### STATISTICS POOL

Statistics (ASP 303)

- › Mark/channel merging by: minimum, maximum, median, mean, difference, quantile,  $\mu + n \cdot \sigma$ , sum

### DESTINATION POOL

Report (APR 020)

Automation Project (APR 050)

Advanced export

- › MDF4 Export (ASP 703)
- › MTS-RPC Conversion (ASP 704)
- › UFF Conversion (ASP 705)

## HEAD SYSTEM INTEGRATION AND EXTENSION (ASX)

# ASX Programming Interfaces

The programming interfaces enable you to integrate the Pool Project into your software applications and create solutions for specific requirements.

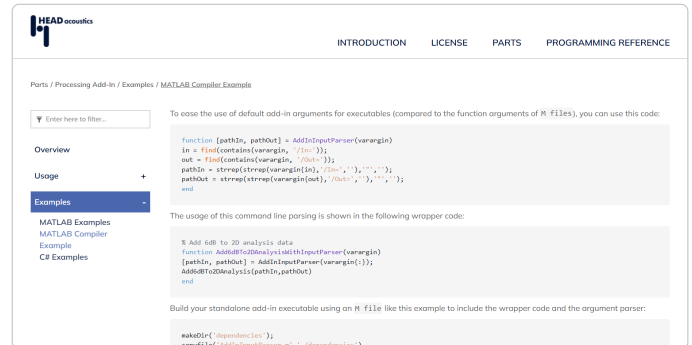
- › Data Processing Add-In API (ASX 06)

ASX 06 enables you to customize the signal flow and use custom signal processing routines, filters, and analyses in the Pool Project. Dedicated add-ins are available for various use cases.

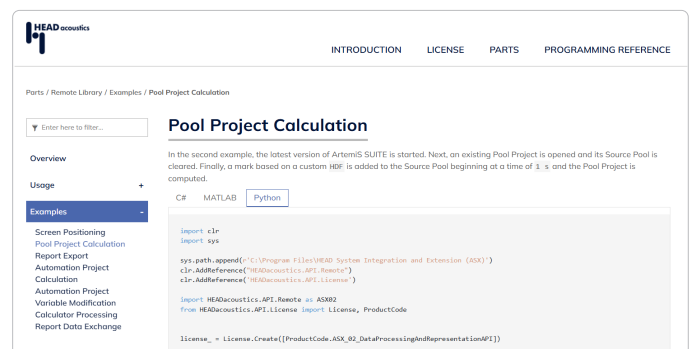
- › Data Processing and Representation API (ASX 02)

ASX 02 provides an interface to the remote control library. You can use it to control Pool Projects, including the processes they contain, and to integrate them into your workflow.

As a result, interaction with the Pool Project can be performed programmatically from within your own software solution, for example, using a custom graphical user interface (GUI).



MATLAB® programming example: Data Processing Add-In API



Python programming example: Data Processing and Representation API

# LICENSES AND OPTIONAL FEATURES

## General Requirements

| Code  | Product Name             | Description                                                                                                       |
|-------|--------------------------|-------------------------------------------------------------------------------------------------------------------|
| 50000 | APR 000<br>APR Framework | Basis of ArtemiS SUITE                                                                                            |
| 50010 | APR 010<br>Pool Project  | Central project of ArtemiS SUITE: Interactive workflow, ease of use, data processing based on cross-product logic |

## Optional Features

| Code  | Product Name                  | Description                                                                                                                        |
|-------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 50020 | APR 020<br>Report             | Central element of ArtemiS SUITE: display of filtered, analyzed, and statistically processed input signals in an individual Report |
| 50021 | APR 021<br>Comparison Report  | Project of ArtemiS SUITE: analysis and comparison of data using batch processing in a clearly arranged Report                      |
| 50040 | APR 040<br>Recorder           | Universal Recorder of ArtemiS SUITE for all types of measurements                                                                  |
| 50050 | APR 050<br>Automation Project | Central project of ArtemiS SUITE: One-time definition of processing steps, automatic execution and reuse for all subsequent data   |
| 50110 | APR 110<br>Playback Filters   | Interactive real-time filtering of time signals (including in the Mark Analyzer)                                                   |

Additional processes, analyses, and tools of ArtemiS SUITE (see data sheet ArtemiS SUITE Overview)

## Licenses Required for ASX 06

| Code | Product Name                         | Description                                                                       |
|------|--------------------------------------|-----------------------------------------------------------------------------------|
| 5096 | ASX 06<br>Data Processing Add-In API | ASX programming interface: use of custom filters and analyses in the Pool Project |
| 5091 | ASX 01<br>Data Access API            | Processing of HDF and HSVX files                                                  |

In addition, licenses for APR 000 and APR 010 are required to run Pool Projects with your custom analyses and filters. In addition, all ArtemiS SUITE analyses, filters, functions, and other processes must be licensed.

## Licenses Required for ASX 02

| Code | Product Name                                     | Description                                                                                                                                                                                                                   |
|------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5092 | ASX 02<br>Data Processing and Representation API | ASX programming interface: automated or interactive control of Pool Projects and Automation Projects, including the execution of Reports, exports, and other tasks from within your software; ArtemiS SUITE must be installed |

In addition, licenses for APR 000 and APR 010 are required to control Pool Projects from your software. In addition, all ArtemiS SUITE analyses, filters, functions, and other processes must be licensed.



## Contact Information

Ebertstraße 30a

52134 Herzogenrath, Germany

**Phone:** +49 2407 577-0

**E-Mail:** [sales@head-acoustics.com](mailto:sales@head-acoustics.com)

**Website:** [www.head-acoustics.com](http://www.head-acoustics.com)