Tolerance Scheme

Presentation of reference curves and threshold curves

Checkup of analysis results exceeding or falling below defined threshold curves
Tolerance Scheme

Motivation

- Thresholds specified by a norm, or resulting from specific demands, can be represented as so-called tolerance schemes in diagrams of ArtemiS SUITE. The tolerance schemes are curves, to which both their numerical values and a function (e.g., upper or lower threshold curve) are attributed.

- In working with a Pool Project you can check whether the result curve of an analysis exceeds or falls below a defined threshold curve. Any violation of the tolerance scheme can be displayed in the diagram or in reports.

- The described functionality of the Tolerance Scheme is available in ArtemiS SUITE since version 5 with ArtemiS SUITE module ASM00 (Basic Framework), ASM01 (Basic Analysis) and, for displaying the results in Reports, ASM02 (Basic Report).
A tolerance scheme is generated in a specific type of document of ArtemiS SUITE, which can be opened via New -> Tolerance Scheme.

In addition to the example curve, other curves can be inserted. The names, colors and designations of these curves are customizable.

Via Drag&Drop, even an analysis result can be used as a new tolerance curve in the diagram of the tolerance scheme.
The curve progression can be adjusted via the value table on the left side, which allows for free addition and editing of values for both the x and y axes.

The table values can e.g. be copied to Excel via the clipboard and can be edited in Excel using the available tools. Afterwards, the modified data is simply copied into the value table of either a new or the existing curve.

A linear interpolation (curve-fitting) is realized between the indicated sampling points.
Tolerance Scheme

- Via the context menu of the value table it is possible to shift ("offset") all y values of the marked sampling points by a defined value.

- In this way, curves can be raised or lowered very easily, allowing you to generate e.g., a scatter band by copying and shifting a limit curve.
In the Properties of the Tolerance Scheme you can define the physical quantities and units for both the abscissa and the ordinate.

If the required quantities are not provided in the list of available quantities, just add them via the Tools menu → Options of ArtemiS SUITE in the field Quantities and Units.

In a tolerance scheme it is only possible to allocate one quantity per axis.
Tolerance Scheme

- Curve colors and fill areas of the Tolerance Scheme are to be configured via the context menu of the diagram.

- If the Tolerance Scheme is displayed with the analysis results in a Data Viewer, Mark Analyzer or Report, the specified representation parameters are used.

- As soon as all preparations of a Tolerance Scheme have been completed, the document is saved and closed. Now it is available for use in diagrams to check for threshold violations.
An appropriate Tolerance Scheme can be selected via the Properties of the appropriate analysis in the Analysis Pool of a Pool Project in the ArtemiS SUITE.

In the field Tolerance of the Properties of the selected analysis, you assign the generated Tolerance Scheme and activate the Tolerance Check with the corresponding threshold curve, as needed.

The physical unities of the Tolerance Scheme must comply with those of the analysis results.
The assigned Tolerance Scheme and the analysis result are automatically represented in the Data Viewer or Mark Analyzer.

If Tolerance Check has been activated, its results can e.g., be represented as bound information in the legend of the diagram.

For representing the results of the Tolerance Check you can choose from various formats according to your technical requirements.
In the *Report*, diagrams can either be assigned to the analysis results or to *Tolerance Schemes*. For this purpose the mechanisms of data binding in the *Properties* of the diagram are used.

If you have checked the violation of a threshold curve, the results can be represented in the legend of the diagram or in text fields. Text fields provide a widened range of formatting functions and allow to add free text.
The Tolerance Scheme Editor for frequency bands allows generating tolerance curves in frequency bands (e.g., 3rd octave bands or octave bands).

The abscissa sampling points are automatically determined via the selected frequency band resolution and the adjusted frequency range.

The corresponding threshold values are discretely shown for the complete sub-band, which is addressed as X value via the relevant mid-band frequency.

The further usage in ArtemiS SUITE is in line with the usage of the afore-described Tolerance Scheme.