Klippel Result Export to VACS

Application Note to the KLIPPEL QC + R&D SYSTEM

This Application Note describes how to transfer curve results stored in Klippel databases (such as log files from Klippel QC) into VACS, a widely used post processing tool for acoustic data.

Based on the Extraction Tool simple text files are extracted from a given number of Klippel result database files. Multiple curves and multiple databases can be processed in one run.

Meta information required by VACS is added automatically during the extraction process.

The extraction can be automated using a batch file further simplifying the process for large amount of data or periodical evaluation tasks.

Typical applications are post processing of TRF result curves or assessing production data from Klippel QC.
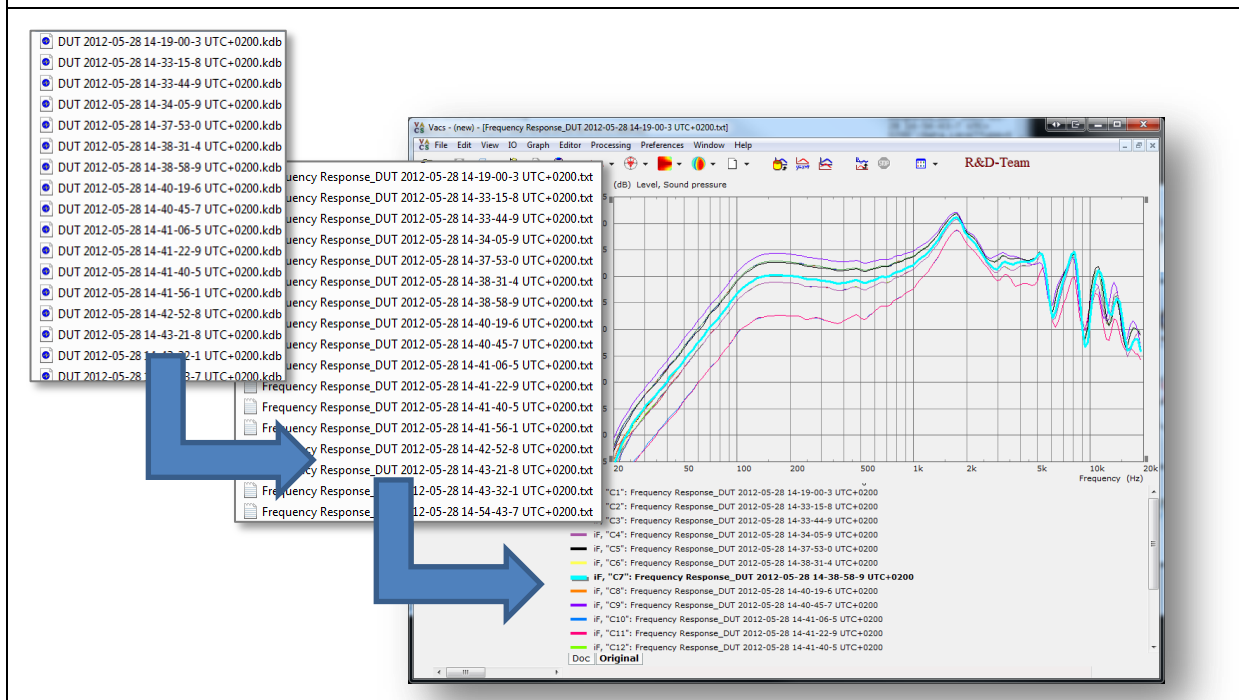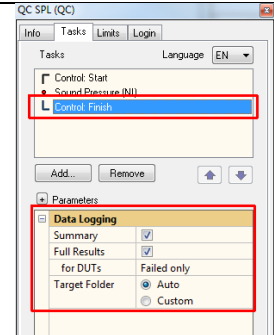

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Requirements

Logged database files from Klippel QC	The *KLIPPEL QC* System must be configured to write full result files that can be processed by the *Extraction Tool* module. This is enabled by default. The Full Results are database files comprising complete information about the test including verdicts and curve data. The *Control:Finish* task setup defines the logging:

The free of charge Klippel *db extract* tool which is used to extract and process the log data searches for log files in a user defined folder. Optionally also recursive search is available.

Please note that data logging is performed only if limits are present for all *QC* software versions below 4.0. |
| **Logged database files from Klippel R&D** | This application note demonstrates the *VACS* export based on *QC* results.

Since the data structure of *R&D* data is much more flexible (multiple operations in objects, folder inside one database; multiple databases), the selection of operation types, objects or curves needs to be adjusted according to the specific R&D application. |
| **Settings File** | A dedicated setting file for *db extract* (for *QC* data) is provided.

For *R&D* data this setting file may be used as well. However, specific rules to derive the exported file name and hence the curve name in *VACS* may be applied. |
| **Klippel Software** | The software package "AN52 – Software.zip" is required for this application note. It can be downloaded here.

The module is supported by

- Klippel *QC* software from version 2.8 and
- *R&D* software from version 202.52.

This application note was developed and tested with

- *db extract* (Help / About) version 1.313.202.85 |
| ***db extract* Installation for QC** | The *db extract* (*Extraction Tool*) is part of the *QC* software distribution. Before installing db extract, make sure that the QC software setup has been performed first.

On non-measurement PCs (without hardware connected), the Remote Configuration setup should be performed. In QC version 2 the batch file "QC Remote Configuration Setup.bat" should be used to do so. From QC version 3 the "QC Remote Configuration Setup" link on the first page of the *QC Install Guide* should be used. Now please follow the instructions below.

Click here if you want to switch to **QC Remote Configuration Setup** (installation without hardware).

To install *db extract* start *QC Engineer* and click *Check Installation* in *Tools* menu to open the *QC Install Guide*. If the setup has been performed successfully, the start page should show the link *Additional Tools* which leads you to the *db extract* setup.

No Production Analyzer hardware or dongle is required for this application note. |
| **Extraction Tool Installation for R&D** | The Extraction Tool is a part of the R&D distribution from version 206.

It was not included in previous distributions. In this case please download the latest version of the extraction tool from our website:

www.klippel.de/dm in section Software.

No Distortion Analyzer hardware or dongle is required. |
| **License** | There is no license required. This function is free of charge. |

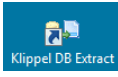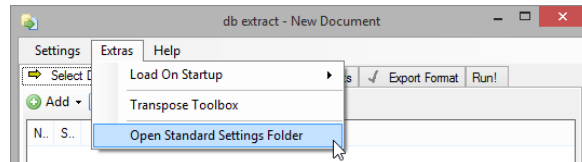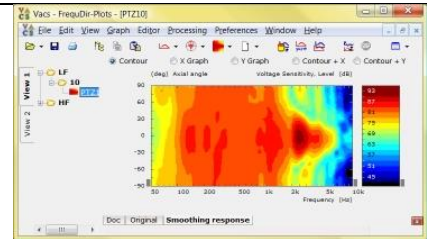| Installing *db extract* settings file	Unzip the software. Copy the settings file into the standard folder for *db extract* setting files:
	Windows XP:
	C:\Documents and Settings\All Users\Application Data\Klippel\ DataExtraction\StandardSettings
	Windows 7/8:
	C:\ProgramData\Klippel\DataExtraction\StandardSettings
	This folder is also accessible via the *Extras / Open Standard Settings Folder* in *db extract*.
	As soon as the settings file has been copied to the specified location, it may be loaded via *Settings / Load Standard Settings* menu.
VACS Software	*VACS* is a Visualizing Acoustics Software
	• working with transfer-functions,
	• to render data-sets as curves and contours,
	• to manipulate data with specialized processing tools,
	• to organize and document your design process.
	VACS is useful for the daily engineering, when data from the measurement chamber, simulation results and calculations need to be graphed, compared and prepared for a report.
	VACS is distributed and developed by *R&D Team*. This company is not related to KLIPPEL and completely independent. However, both companies try to keep the interfaces stable and synchronized in the future.
	The import as described in this application note was developed and tested with
	• *VACS* software version 0.9.11.b11; 1.2.1.b1
	Contact info@randteam.de for details and license information.

Step by Step Guide
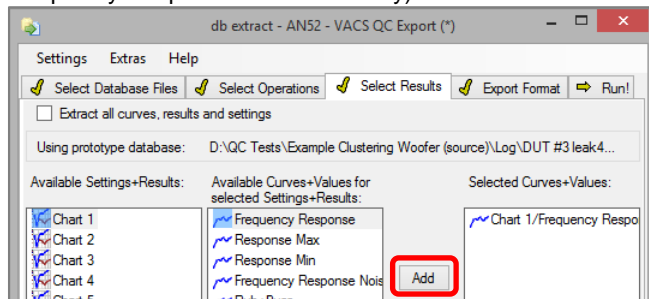
Data Extraction

- Start *db extract* by clicking the desktop icon

 Klippel DB Extract .

- Load the standard settings file *AN52 – VACS QC Export* via *Settings / Load Standard Settings*.
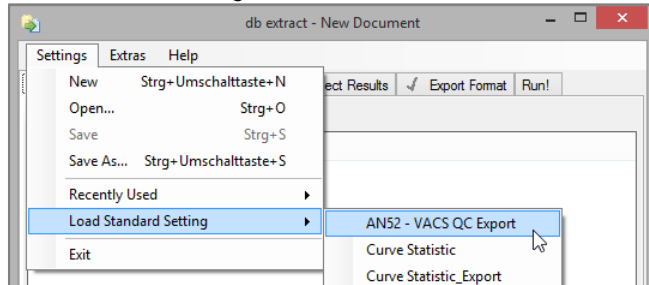
- Add the data folder of data you wish to export to *VACS*

An easy way to find the folder of logged QC data is:
Open QC-Start (Engineer). Select the test for import. Navigate to the menu View / Current Test (below *QC* 2 & 3) or *Test / Explore* (*QC* 4). An *Explorer* window will open showing the test folder.

You may drag the *log* folder and drop it (or a subset of log files) on the empty window of the *Select Database Files* pane of *db extract*.

- Select the requested result curves from the charts (in the example the Frequency Response is selected only):
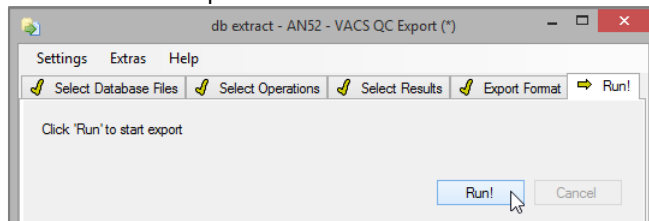

- (optional) Select a target folder for the results:
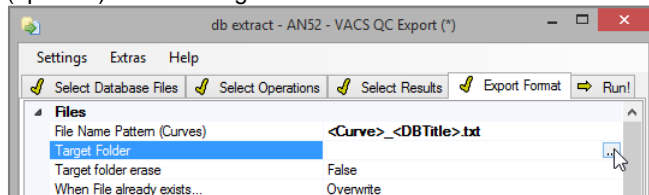
If no target folder is specified, a temporary folder is created automatically.

- *Run* the extraction process:

- You may save the current settings to a new *db extract settings file* via *Settings / Save*

- View the result files:
Press on the button *View Results*. An explorer window will open. Select all *.txt files (Ctrl+A) and copy them to the clip board (Ctrl+C). Do not include the *.extract.log file.

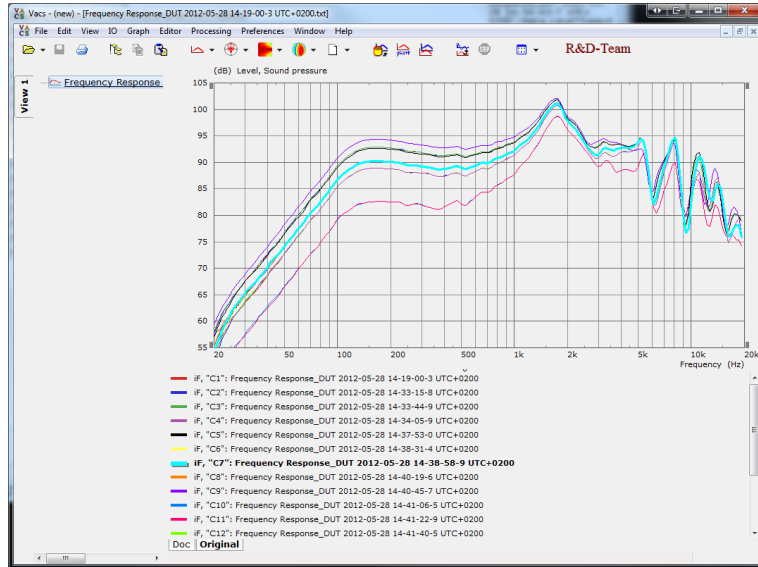| **Import in VACS**	• Open *VACS*
	• Simply drag the selected files from the explorer into the main *VACS* window
	or
	• Open a new Cartesian Form
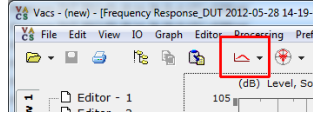
and paste (Ctrl+V) the data from the clipboard into VACS.

• The imported curves can now be processed with VACS functionality

Background

File Format Definition

VACS expects a dedicated file format for result curves. The general file format that is applied in this note is:

{Format Identifier}
{X Value 1} , {Y Value 1}
{X Value 2} , {Y Value 2}
{X Value 3} , {Y Value 3}
….
{X Value n}, {Y Value n}

Example:

Data_Legend='Response_DUT 1234'; Data_LevelType=SoundPressure;
        Data_Domain=Frequency; Data_Format=LeveldB
20.002311706543,   56.9290885925293
20.7077465057373,   58.4722633361816
21.438060760498,   59.6586761474609
22.1974048614502,   60.7092132568359
….

Note: The header must be defined in the first line. It is spread over 2 lines in the example above only for visibility.

Format Identifier

Format identifiers must be inserted into the exported file to control the appearance and interpretation of the curves within *VACS*.

Multiple format identifiers can be used in one line to define the data format in the file. In this case they should be separated by ";".

See the *VACS* online help. Search for "Import Control Settings" for further information. Such identifiers should be defined before the data values.

In the example above the following attributes are defined:

- *Data_Legend*: Title of curve, is extracted from the database name of the Klippel result database.

- *Data_LevelType*: Type of result. Controls the de-normalization during import from dB to values:
    o SoundPressure: For acoustic response data in dB
    o Rms: For electric response data (e.g. impedance)

- *Data_Domain*: Type of X-Axis data.

- *Data_Format*: Type of Y-Axis data:
    o *LeveldB*: For acoustic response data in dB
    o *Real*: For electric response data (e.g. impedance)

In *db extract*, identifiers are specified in the *Export Format* section:
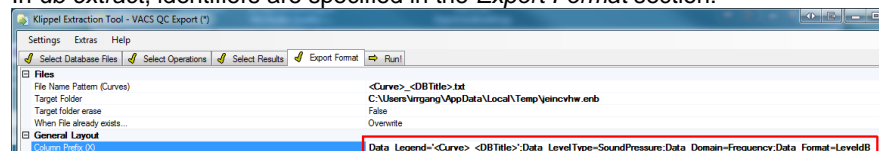
They can be modified for other data formats according to the *VACS* import syntax.

It is good practice to save new setting files for modified data formats.

Batch Processing

Data Extraction	The data extraction process can be automated. A template batch file is provided in the application note's software package.
	Replace the {}-tokens in the file with the applicable path definitions on your PC.
	This batch file uses two command line parameters as described in the file itself:
	• Parameter 1: <u>Absolute</u> path, where the KLIPPEL database files are located that shall be exported. (e.g. "d:\data\myData")
	• Parameter 2: <u>Relative</u> destination path (e.g. "vacs").
	The result of the batch file run is a new folder "vacs" in the specified database folder holding the result text files for importing to VACS.
	The resulting batch file may be called using *Windows Scheduler* on a regular basis.
VACS Import	Unfortunately, there is no known option to automate the import into VACS and to save the project within VACS at the moment.
	The most convenient way is to drag and drop directly into VACS.

References

VACS	Website: www.randteam.de
db extract	On-line manual of db extract (accessible via *db extract - Help – Content*). Recommended sections:
	• Reference / Command Line Parameters
	• Reference / Working with Settings Files
	• Reference / The DB extract User Interface / Define Export Format

Appendix: db extract settings file

Just copy this code into a file "Klippel2VACS.kxdbsettings" and load it into the db extract.
This example is set to export acoustic frequency response data in dB ref 20µPa.

```xml
<?xml version="1.0" encoding="utf-8"?>
<Sequence>
  <ExportFormatFilter>
    <ExportFormatSettings>
      <EFSSerialized xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
        <m_columnSeparator>","</m_columnSeparator>
        <m_prefixColumnsX>"Data_Legend='&lt;Curve&gt;_&lt;DBTitle&gt;';Data_LevelType=SoundPressure;Data_Domain=Frequency;Data_Format=LeveldB,"</m_prefixColumnsX>
        <m_prefixColumnsY>","</m_prefixColumnsY>
        <m_prefixColumnCount>2</m_prefixColumnCount>
      </EFSSerialized>
      <GridSettings>
        <GSSerialized xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
          <m_bEraseFolder>false</m_bEraseFolder>
          <m_curveFilePattern>"&lt;Curve&gt;_&lt;DBTitle&gt;.txt"</m_curveFilePattern>
          <m_customColumnSeparator>""</m_customColumnSeparator>
          <m_dateFormat>""</m_dateFormat>
          <m_headerRowStr>""</m_headerRowStr>
          <m_invalidCharReplacement>0</m_invalidCharReplacement>
          <m_outputFolder>""</m_outputFolder>
          <m_prefixColumnX>"Data_Legend='&lt;Curve&gt;_&lt;DBTitle&gt;';Data_LevelType=SoundPressure;Data_Domain=Frequency;Data_Format=LeveldB"</m_prefixColumnX>
          <m_prefixColumnY>""</m_prefixColumnY>
          <m_replaceNaN>""</m_replaceNaN>
          <m_timeFormat>""</m_timeFormat>
          <m_columnSeparator>Comma</m_columnSeparator>
          <m_decimalSeparator>Period</m_decimalSeparator>
          <m_fileOverwriteMode>Overwrite</m_fileOverwriteMode>
          <m_lineBreaks>Standard_CRLF</m_lineBreaks>
          <m_quoteChars>DoubleQuotes</m_quoteChars>
          <m_quoteMode>IfNecessary</m_quoteMode>
          <m_xAxisErrorMode>WriteEmptyRow</m_xAxisErrorMode>
          <m_xAxisMode>SharedXAxis</m_xAxisMode>
          <m_calFilterScript>""</m_calFilterScript>
          <m_bCalFilterDebug>false</m_bCalFilterDebug>
          <InterpolationOption>Empty</InterpolationOption>
          <Intpol_CustomOutOfRangeReplacement>""</Intpol_CustomOutOfRangeReplacement>
          <Intpol_LogSetting>Auto</Intpol_LogSetting>
          <Transpose>true</Transpose>
        </GSSerialized>
      </GridSettings>
    </ExportFormatSettings>
  </ExportFormatFilter>
  <ResultsFilter>
    <RFSerialized xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
      <m_extractAllCurves>false</m_extractAllCurves>
      <ResultInfo />
    </RFSerialized>
  </ResultsFilter>
  <OperationFilter>
    <OFSerialized xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
      <ExtractQcOnly>true</ExtractQcOnly>
      <m_operationFilters>
        <OperationFilterItem>
          <OFISerialized>
            <name>New Operation Filter</name>
            <conditions>
              <SerializedDictionary>
                <KeyValuePairs>
                  <Key>PathPattern</Key>
                  <Value>*</Value>
                </KeyValuePairs>
                <KeyValuePairs>
                  <Key>OperationType</Key>
                  <Value>AllowAll</Value>
                </KeyValuePairs>
              </SerializedDictionary>
            </conditions>
          </OFISerialized>
        </OperationFilterItem>
      </m_operationFilters>
    </OFSerialized>
  </OperationFilter>
  <DBFileFilter>
    <DBFFSerialized xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
      <m_dbFiles />
      <m_listFiles />
      <m_folders />
    </DBFFSerialized>
  </DBFileFilter>
</Sequence>
```