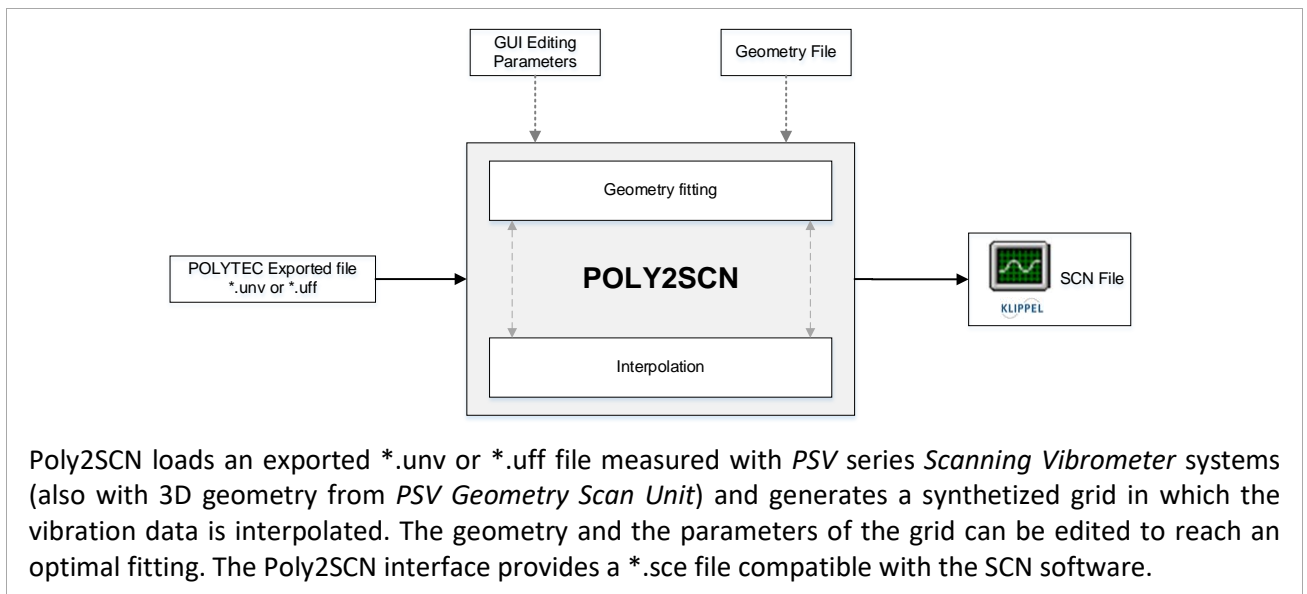
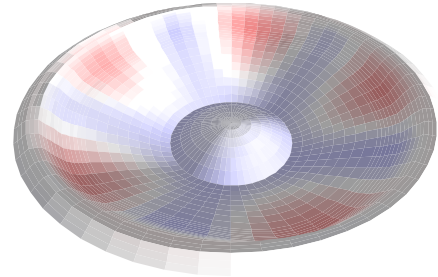


## FEATURES

- Merges 2D or 3D vibration-geometry data from Polytec scanning systems to the Klippel SCN Software
- Easy to use GUI for vibration and geometry data interpolation and optimal fitting

## FEATURES

- Take full advantage of the SCN Software features using external vibration measurement systems.

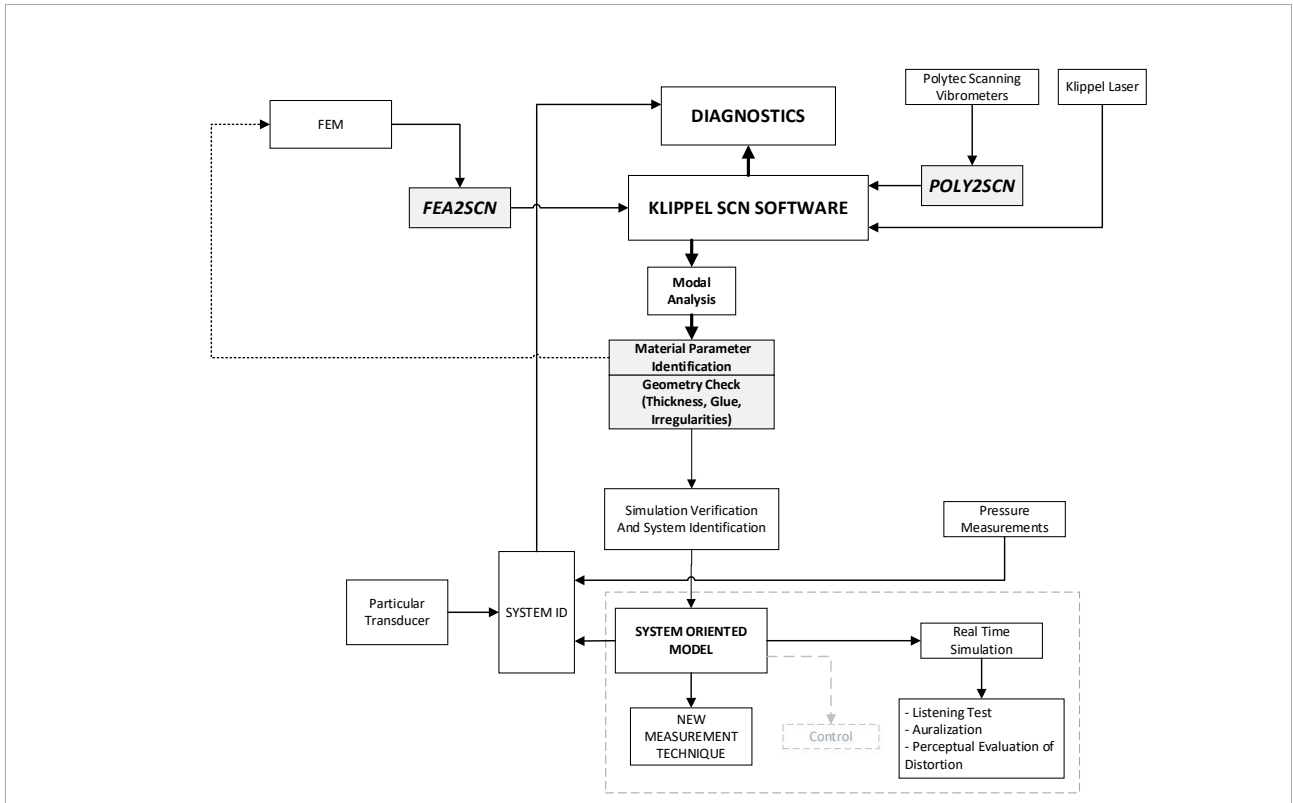


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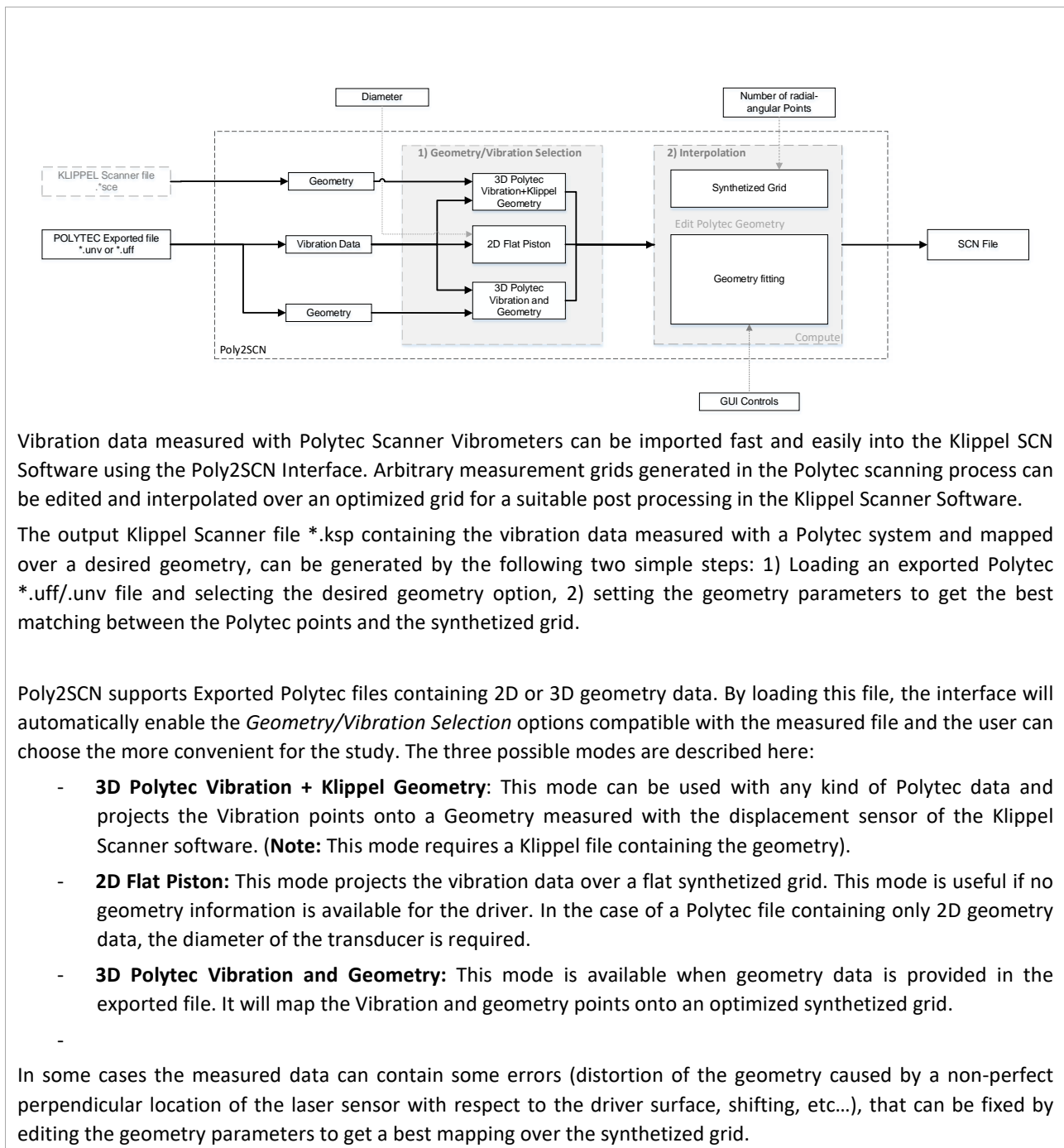
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1 General Overview



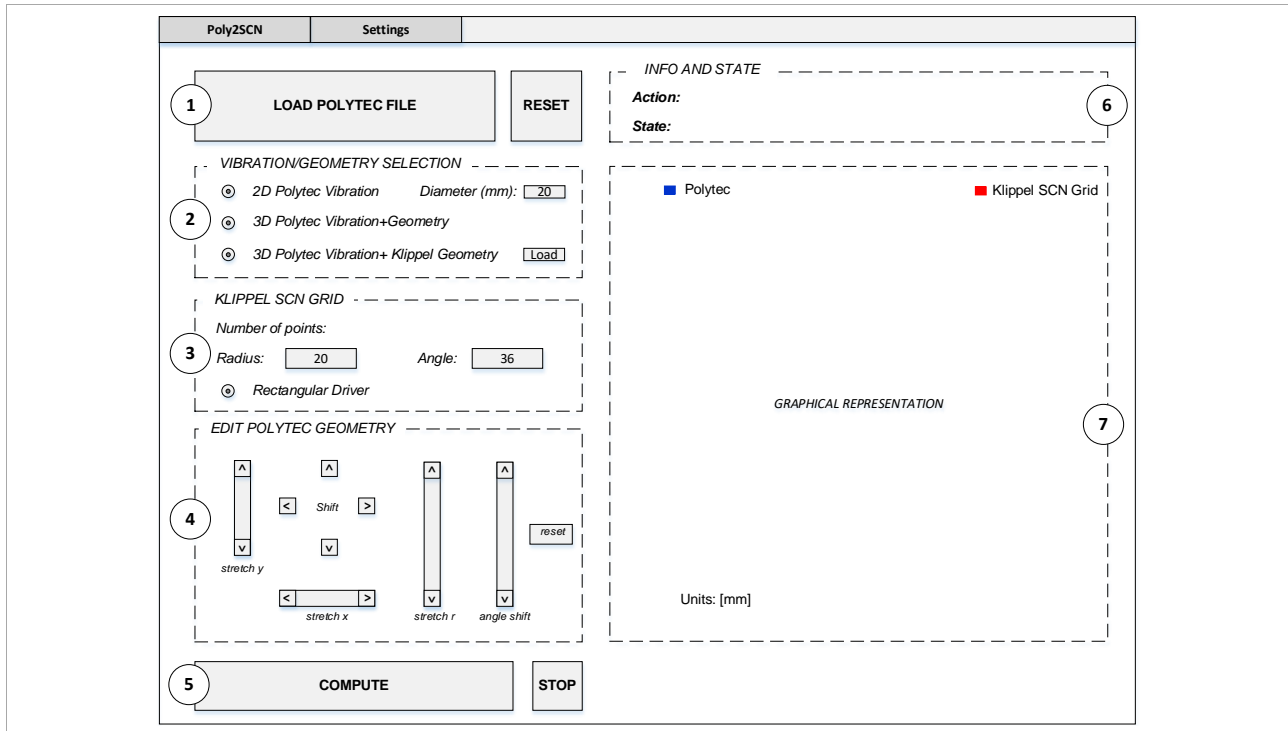
Finite Element Analysis (FEA) and other vibration modelling techniques, require accurate material parameters such as the Young’s modulus and the loss factor in function of frequency. In order to generate accurate dynamic simulations, the material parameters should be measured with high accuracy. Experimental and numerical modal analysis performed to the measured and simulated transducer are the basis for the fitting of the numerical model to reality. Using the *Poly2SCN* and *FEA2SCN* modules in combination with new parameter identification techniques, the material parameters of different components of the transducer can be measured and the simulations can be verified and validated. Valuable information for diagnostics can be collected during this process.

## 2 Functionality of the interface



<b>2.1 Input</b>		
<b>Input Data</b>	Vibration and [optional] geometry measurement data from Polytec <b>(1)</b>	*.unv/.uff Exported file. Contains the vibration and geometry data. ( <i>This file should contain only Velocity/Voltage Transfer function or Linear Velocity Response</i> ). The information contained in this file enables the different options for the data/geometry available in the interface.
	[Optional] Klippel Scanner file <b>(2)</b>	*.sce File Exported from Klippel Scanner software containing driver geometry. To be specified only when <i>3D Polytec Vibration + Klippel Geometry</i> mode is selected.
	Vibration/Geometry selection <b>(2)</b>	Three modes that can be used depending on the desired analysis to be performed and the availability of the data in the Polytec file. The vibration data can be mapped over a Klippel geometry, a flat piston or the geometry measured with a Polytec system.
<b>Input Variables</b>	Synth. Grid radius/angle resolution	Determines the number of radial/angular points to be exported in the output file.
	Diameter <b>(2)</b>	Diameter of the measured driver. To be specified only when <i>2D Polytec Vibration</i> mode is selected.
	Geometry shift and stretching <b>(4)</b>	Parameters to edit the geometry of the Polytec points allowing an optimal matching of the over the Synthetized grid.

### 3 Graphical user interface



### 4 Results

#### 4.1 Result Data

Export file

The interface will generate the \*.ksp Klippel Scanner Project file, the \*.sce and \*.bin files to be opened with the Klippel SCN Software in the same directory where the *Exported Polytec file* is located.

**Folder:** Polytec File folder\Data\_Base\_NAME\POLY2SCN\_results

**Files:** Operation\_NAME.sce and Operation\_NAME.bin

To open the file in the SCN Software Click on the Open File option in the window opened when the export process is finished.

Please refer to C5 Scanner Vibrometer Specification for more information.

## 5 File format

### 5.1 Input file

#### Polytec File

The interface needs universal file formats such as: \*.unv or \*.uff for the Polytec vibration data. So it is **important to export the Polytec scan as .unv or .uff data**.

The structure of this data is built in data blocks. The first block includes the measurement points of the loudspeaker scan. After that there is one vibration data block for each point. It is preferred that the vibration data is **exported as transfer function Voltage/Velocity**.

#### Polytec exported \*.unv - \*.uff File Structure

An example of the input file can be seen below:

```

-1          Dataset 151 - General Header of Universal file
151
2014_06_07_80mm_Breitbänder_PSV500.svd
PSV Version 9.0.3.4
07-Jun-14 14:08:17
None      None
PolyUFFExport 2.8.2.0 - Kompatibel zu SDRC
28-Jun-14 10:42:12

-1
-1          Dataset 164 - Units
164
1METRIC_ABS_(SI)      2
1.0000000000000000E+00 1.0000000000000000E+00 1.0000000000000000E+00
0.0000000000000000E+00

-1
-1          Dataset 2411 - GEOMETRY (Nodes)
2411
1 1 1 11
-6.9534004433080554e-04 5.1605958491563797e-02 -2.7718034107238054e-03
2 1 1 11
2.4228331167250872e-03 5.1549099385738373e-02 -4.5772365410812199e-04
3 1 1 11
2.4048734921962023e-03 4.8623610287904739e-02 -2.9360331245698035e-04
4 1 1 11
-5.8508937945589423e-04 4.8657890409231186e-02 -1.0229870676994324e-03
5 1 1 11
2.5152680464088917e-03 4.5695748180150986e-02 1.5698620118200779e-03

-1
-1          Dataset 58 - Vibration Data Data
58
Response Linear Spectrum
Vib Geschwindigkeit
07-Jun-14 14:08:17
2014_06_07_80mm_Breitbänder_PSV500.svd
NONE
12 3 1 0 NONE 1 3 NONE 1 3 ← Point Number
5 3198 1 1.87500e+01 6.25000e+00 0.00000e+00
18 0 0 0 Frequency Hz
11 0 0 0 Velocity m/s
0 0 0 0 NONE NONE
0 0 0 0 NONE NONE

-1.42804e-05 6.30821e-06 -1.34890e-05 1.47361e-05 6.36574e-05 4.53256e-05
4.01105e-05 -2.31319e-04 -9.40181e-05 -7.43785e-05 -8.81755e-05 -3.92700e-05
-9.49083e-05 -7.32225e-06 -1.14765e-04 1.66893e-05 -1.52490e-04 1.12681e-04

Frequency 1          Frequency 2          Frequency 3
Real & Imaginary    Real & Imaginary    Real & Imaginary
    
```

	<b>Important Note:</b> The Dataset 58 of the universal file may contain different kinds of measured data, like displacement, velocity acceleration or even energetic measures of those quantities; make sure that in the exporting process the data exported is <b>Velocity</b> or <b>Transfer function Velocity/Voltage</b> .
<b>Klippel File</b>	The geometry data measured with the Klippel SCN software must to be exported as ASCII file (*.sce). In this file there is a matrix "geometry" which includes the whole geometry information. Please refer to C5 Scanning Vibrometer Specification for more information.

Find explanations for symbols at:

<http://www.klippel.de/know-how/literature.html>

Last updated: 1.6.2017

