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MESco ANSYS Channel Partner

pdfPost Tutorial

# pdfPost & ANSYS Workbench extension (v2) for starters.

This tutorial shows how to convert ANSYS Mechanical simulation data to 3D PDF using pdfPost and ANSYS Mechanical ACT extension. Our goal is, to create PDF document with valve geometry and two 3D result plots. First one, showing elemental mean equivalent stress results and second one, showing nodal total deformation. Final 3D plots are attached at the end of this document. We hope, that following tasks will be clear after this tutorial:

- how to check, enable and install ACT plug-in in Workbench environment;
- how to use basic features of pdfPost plot result object in ANSYS Mechanical environment;
- how to export ANSYS Mechanical data to pdfPost;
- how to define and change plot settings in pdfPost environment;
- how to create 3D PDF document;
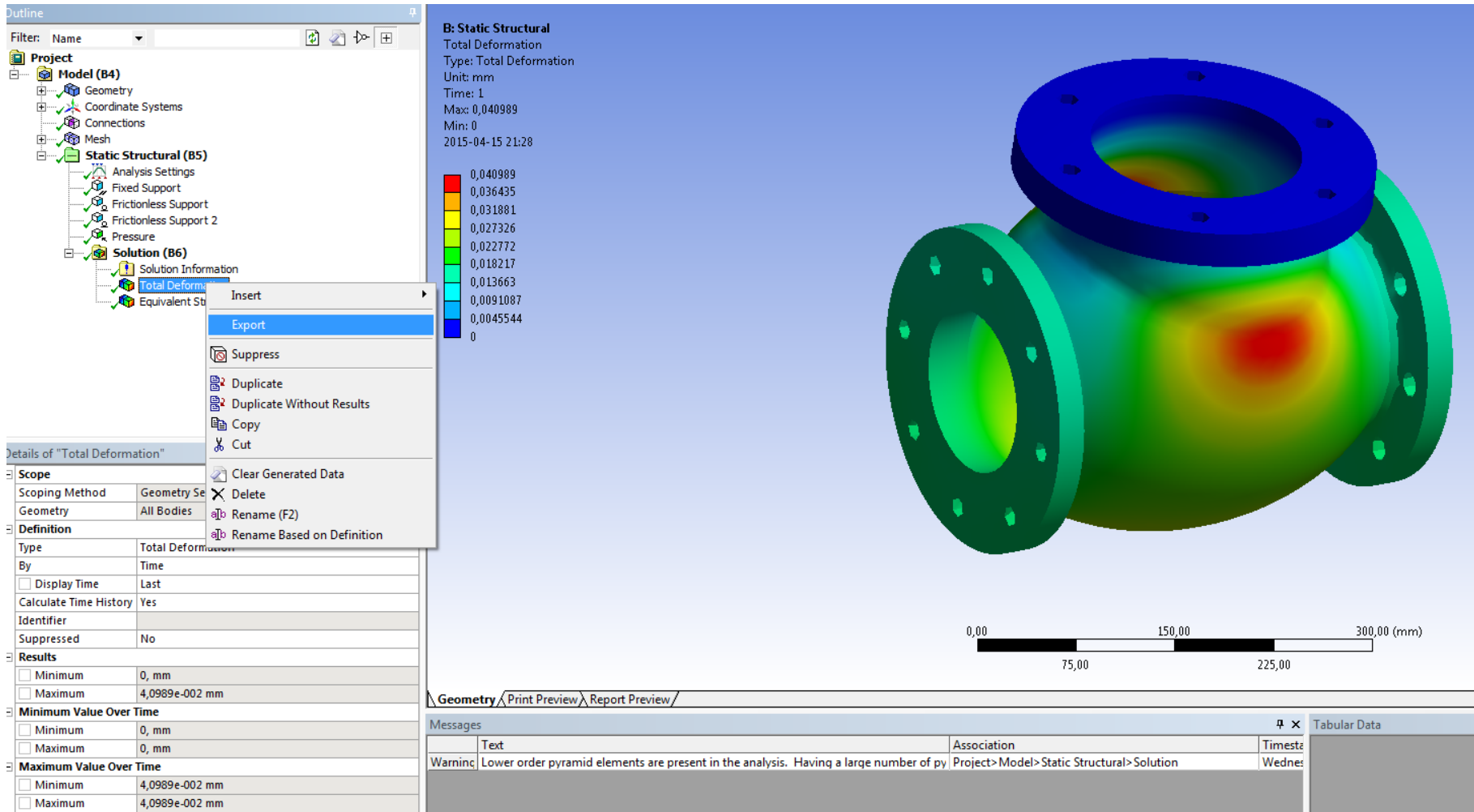
1. **Plug-in installation**
    a. Unzip "valve1.zip" file to desired location.
    b. Run "valve1.wbpj" in ANSYS Workbench 15.0 or higher.
    c. Check, if ANSYS Workbench plug-in is installed on your system by selecting "Manage Extensions" from "Extensions" top menu.
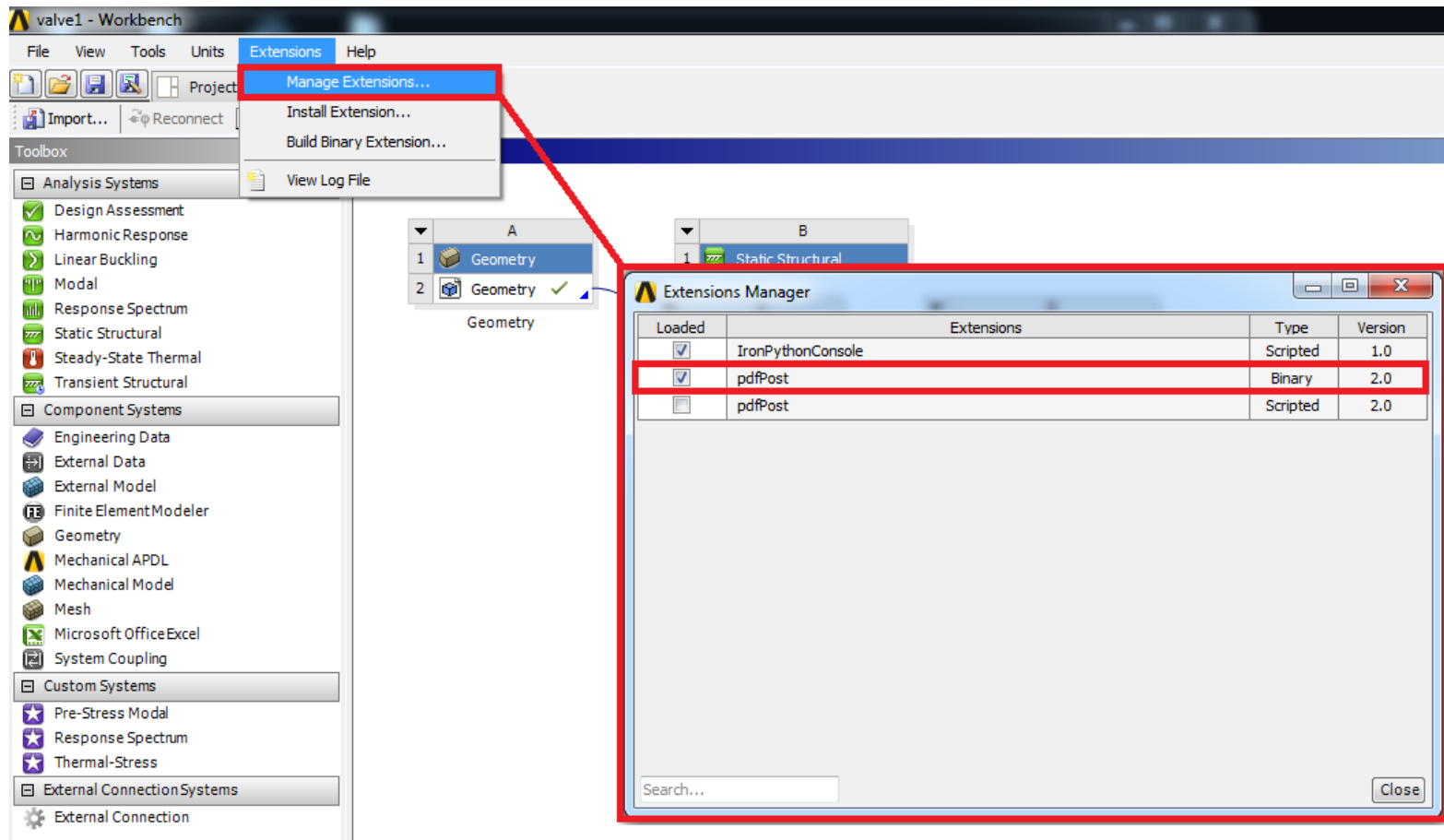
    d. If the plug-in is not installed, use "Install Extension..." from "Extensions" top menu and select pdfPost plug-in file (*.wbex).

2. pdfPost plot result objects

a. Double click on "Setup" to open ANSYS Mechanical and solve the model.

b. Right-click on "Total deformation" result object and select "Export".

c. Using File Dialog, navigate to the project's "user_files" directory and save the data as "usum.txt".

d. Repeat steps b & c on "Equivalent Stress" result object. Note, that "Integration Point Results" -> "Display Option" is set to "Elemental Mean". Use "seqv.txt" as a filename.

e. Right click on Solution and select "pdfPost plot" result object.

f. Prompted, select "seqv.txt" from "user_files" directory. In object properties, set "Input Type" to "Element" and "Project Name" to "valve_seqv".

g. Create another "pdfPost plot" result object and select "usum.txt" this time. In object properties, set "Export only values" to "Yes" and "Input Type" to "Nodal Averaged". "Project Name" set to "valve_usum".

Details of "pdfPost USUM"	卫
Geometry	
Scoping Method	All Bodies
Definition	
Project Name	valve_usum
Working Directory	C:\Calc\valve\valve1_files\user_files\
By	Time
☐ Display Time	Last
Plot Properties	
Plot Title	pdfPost document
Plot Description	pdfPost plot
Results Files	usum.txt
Displacement Scale	0
Vertical Axis	Y
Export only values?	Yes
Input Type	Nodal Averaged
Options	
Geometry Units	Meters [m]
Preserve U3D	No
Results	
☐ Minimum	
☐ Maximum	

h. Evaluate results. Following files should be present in In "user_files" directory:

  i.   exported CSV "usum.txt" and "seqv.txt" files;

  ii. valve_seqv.elem - elements file;

  iii. valve_seqv.node - nodes file;

  iv. valve_seqv.cm - components file;

  v.   valve_seqv.value - mean elemental values;

  vi. valve_usum.value - nodal deformation values;

  vii. valve_seqv.xml - project configuration file;

3. **pdfPost project configuration**
   a. Open pdfPost and load (Ctrl+L) "valve_seqv.xml" configuration file.
   b. Only one plot is defined, since for Total Deformation "Export only values" option was selected. For better presentation change "Color Legend". Right click on "Color Legend" input and select "rangeRainbow9_64.xml". This legend allows you to use 9 primary colors and 6-8 s secondary in-between each color. Using "Send to Legend Manager" option you may check and modify (if necessary) color legend. Finally, set the "Plot Description" to "Eqv. stress [MPa]".
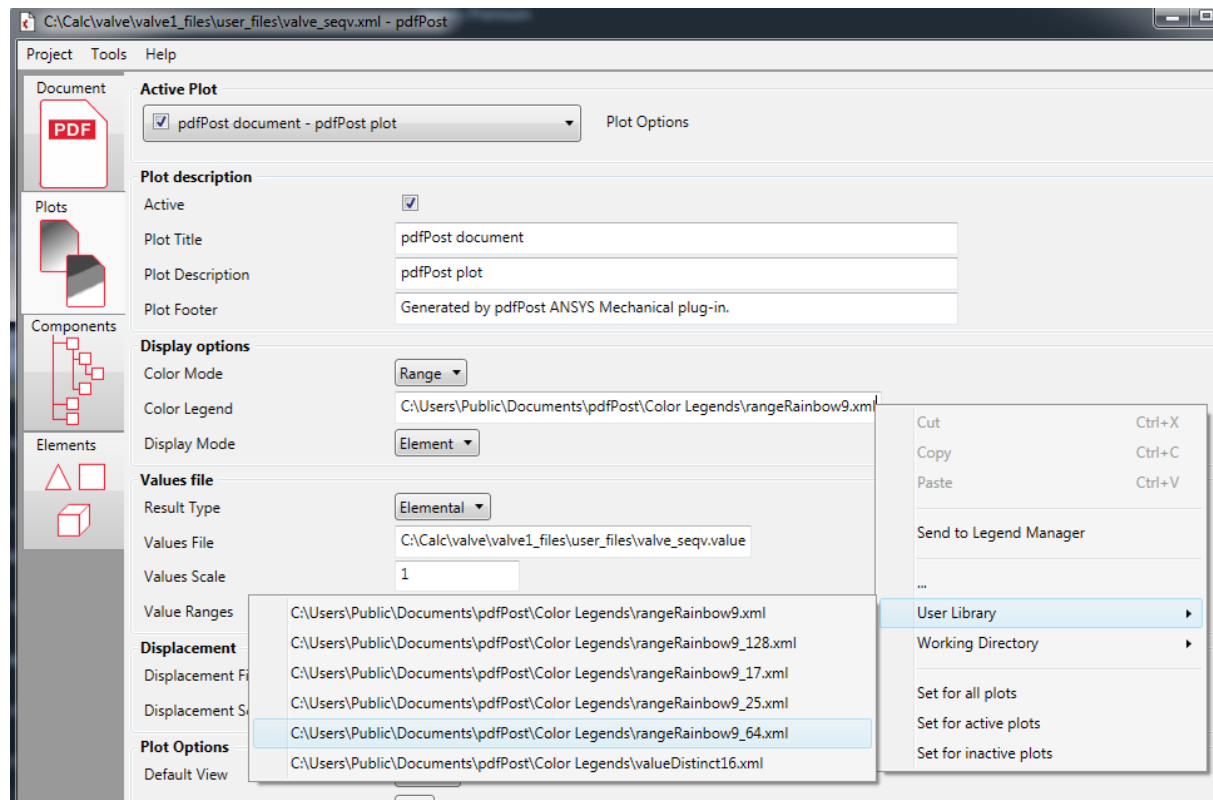
   c. Click on "Plot Options" and select "Duplicate Plot" (Ctrl+D) option. pdfPost will move to the new plot automatically.

d. Right click on "Values File" input and select "valve_usum.value". Other input modes (typing and pasting) are also available.
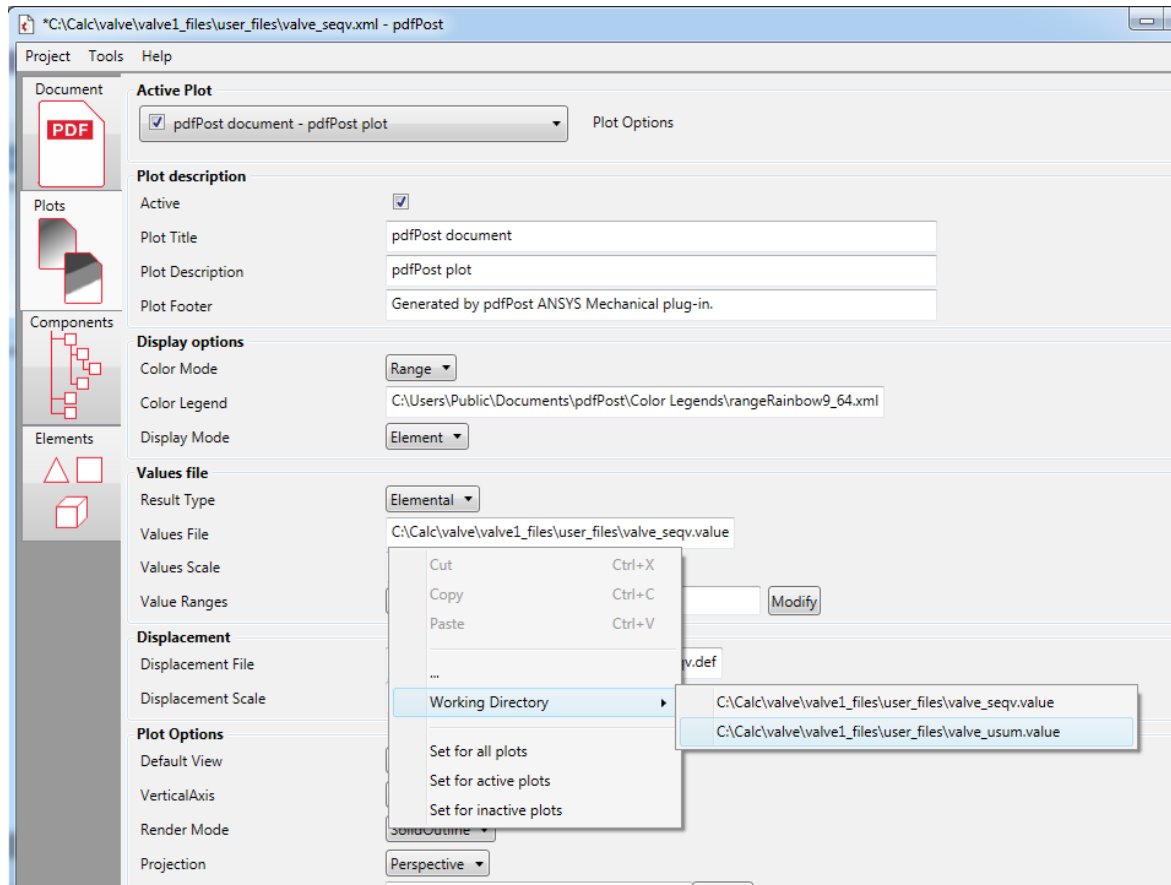
e. Change "Display Mode" to "StandardGradient" and "Result Type" to nodal. Change description to "Total Deformation [mm]".
f. For smooth results, change "Color Legend" to "rangeRainbow9_128.xml".
g. Save changes (Ctrl+S) and start conversion (Ctrl+P) using "Project" menu.
h. PDF is ready in "user_files" directory. You can open it using Windows Explorer or "Output File" context menu (Ctrl+Shift+O) in "Document" tab.

pdfPost document

Eqv. Stress [MPa]

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pdfPost converter 1.5

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ANSYS Mechanical Plug-in
in cooperation with MESco

Click to activate 3D content

N/A	(black)
0.534	(blue)
7.505	(light blue)
14.477	(cyan)
21.449	(turquoise)
28.421	(green)
35.393	(light green)
42.365	(yellow)
49.337	(orange)
56.309	(red)
63.281	

pdfPost document

Total Deformation [mm]

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Click to activate 3D content

N/A
0.000
0.005
0.009
0.014
0.018
0.023
0.027
0.032
0.036
0.041