



Structural Reanalysis System models in GeniE

Presentation and Workshop

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June 1 2011



MANAGING RISK

Limitations in FEM-import in earlier versions of GeniE

- Restrictions on using existing models.
- Models made in Preframe and Prefem not completely transferred to GeniE. Users had to do extra work in modeling.
- Impossible to keep FEM-numbering.
- New concept model and remeshing.

New functionalities in GeniE V5.3-10

- Process has been made much smoother for importing old models FEM files and SIN files (resultfiles)
- Possible to update properties like material, section and thickness.
- Possible to do code checking to the latest standards.

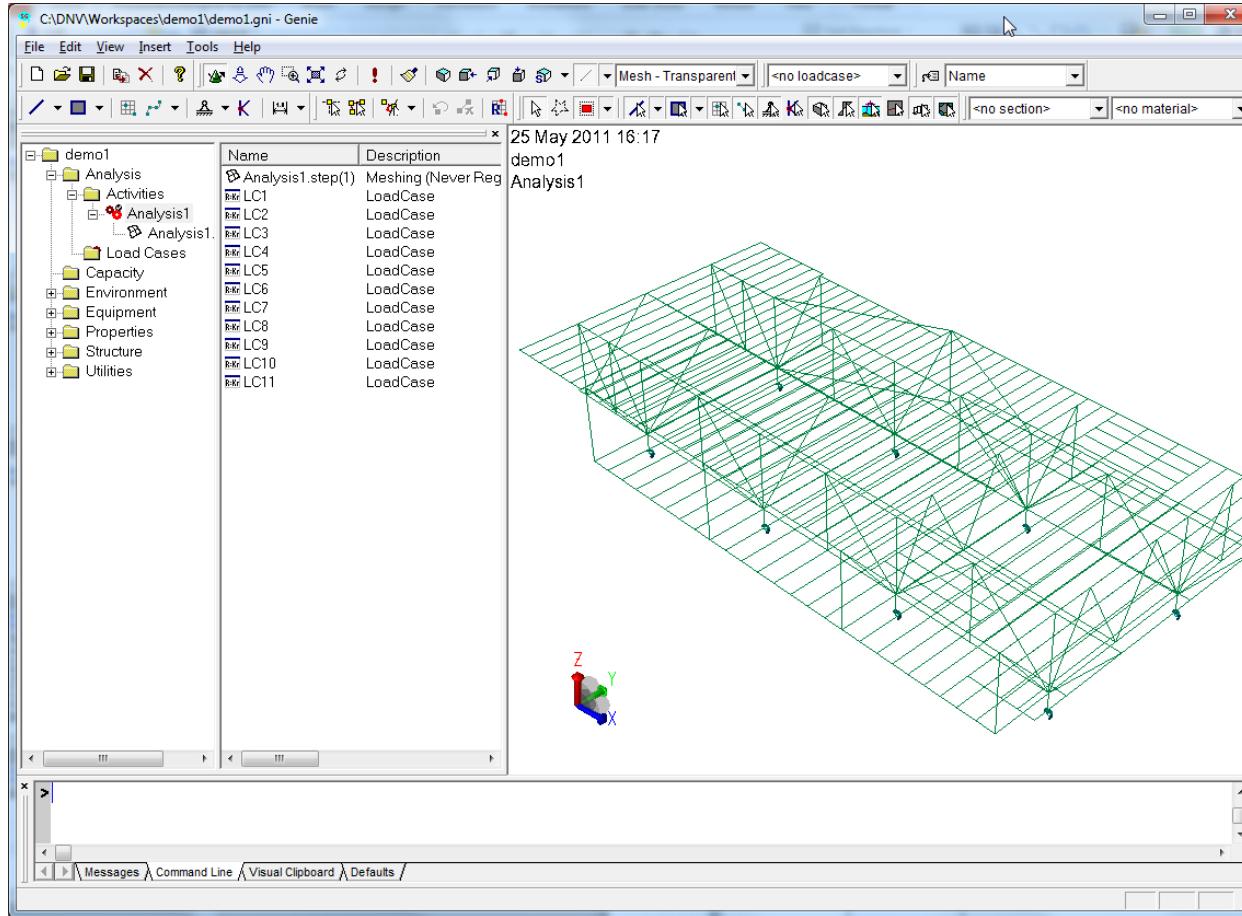
Demo 1 – Codecheck in GeniE on an old model

This demo will show how to import an old FEM- and SIN-file into GeniE. We will make a codecheck in GeniE without having to run a Sestra analysis in GeniE.

1. Import FEM-file T1.FEM into GeniE. The mesh can be shown.
2. Import resultfile R10.SIN. The results can be shown.
3. Do codecheck in GeniE (API). Codecheck results can be seen.

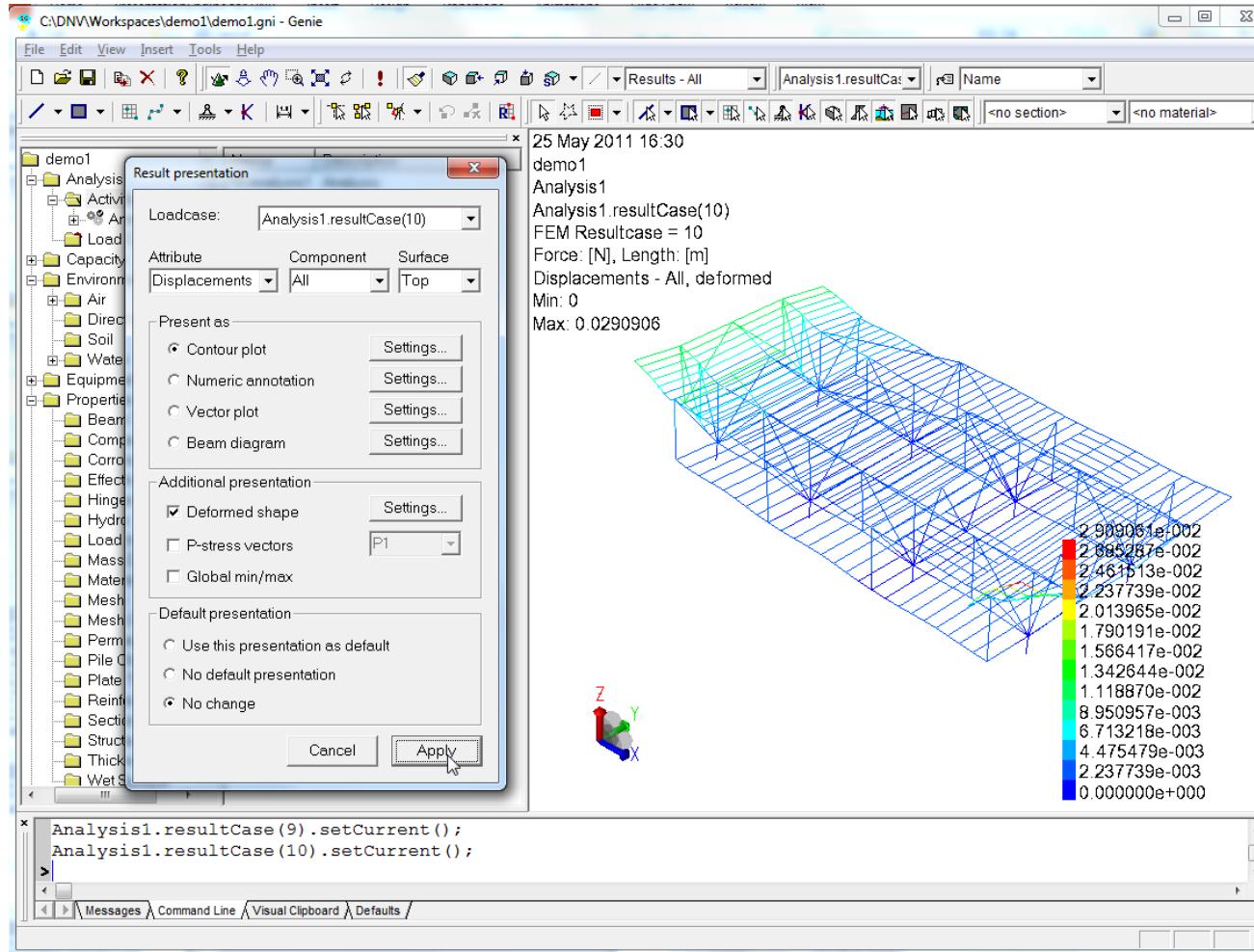
Demo 1 – Codecheck in GeniE on an old model

1. Import FEM-file T1.FEM into GeniE. The mesh can be seen.
This is an old FEM file created in 2001 using Prefem.



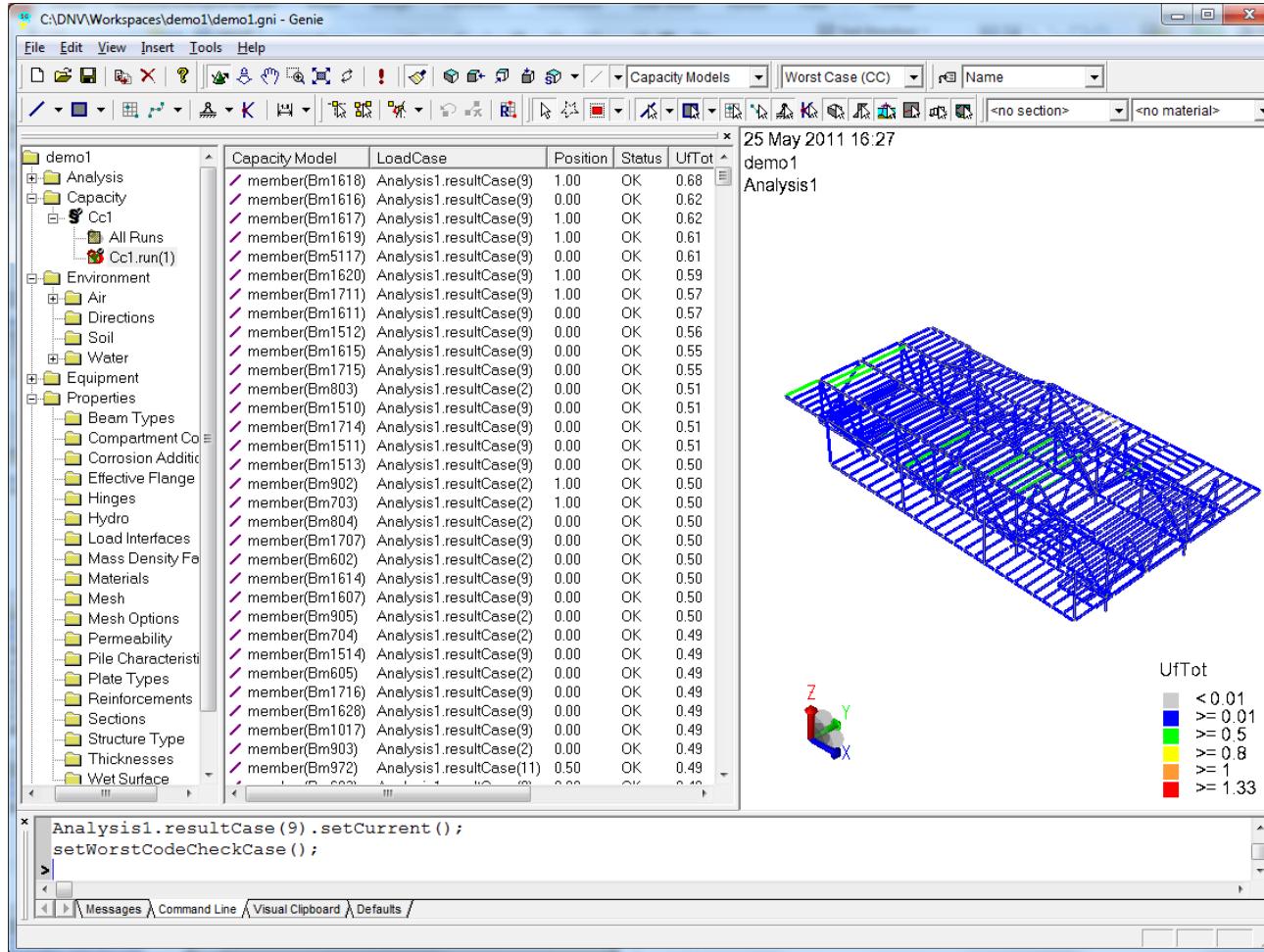
Demo 1 – Codecheck in GeniE on an old model

2. Import resultfile R10.SIN. The results can be seen.



Demo 1 – Codecheck in GeniE on an old model

3. Do codecheck in GeniE. Codecheck results can be seen.



Demo 2 – Superelements import

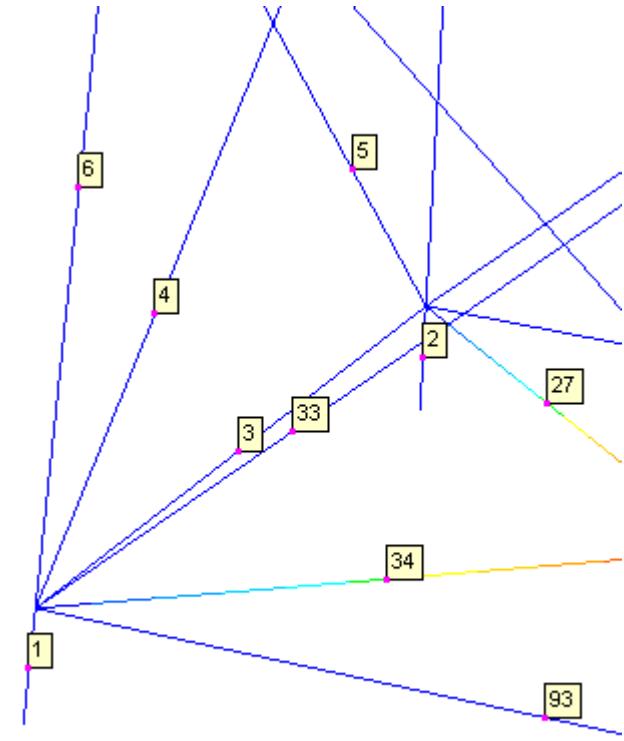
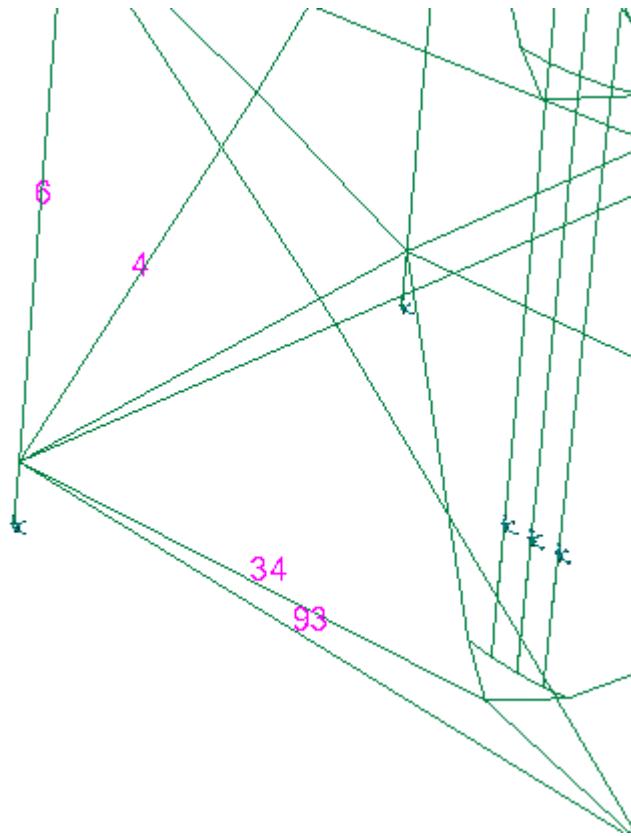
Changing properties, keeping element numbers

1. Import T1.FEM and results file for jacket model, inspect mesh with element numbers in GeniE and in Xtract, inspect results in Xtract and GeniE.
2. Update some properties, like section, materials or thicknesses.
3. Do a partial remesh.
4. Export FEM files from Genie for T1 model.
5. Assemble T1.FEM and T2.FEM to make T10.FEM, using Presel.
6. Run Wajac
7. Run Sestra
9. Open GeniE and import the new T1.FEM and R10.SIN.
10. Inspect the mesh and results, observe the differences compared to the model before properties were changed. Do codechecking.

Demo 2 – Superelements import

Changing properties, keeping element numbers

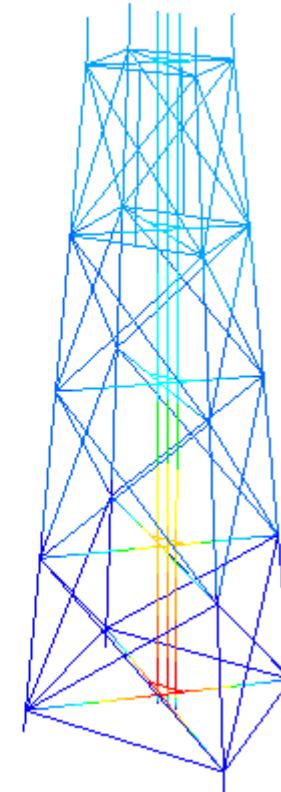
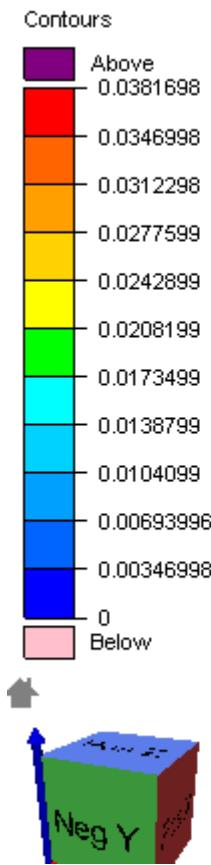
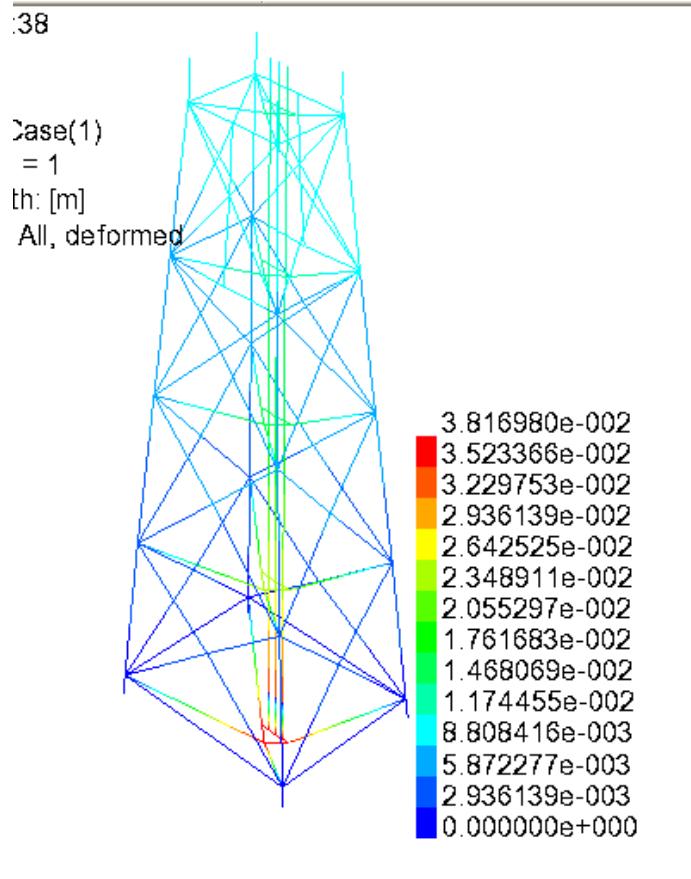
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Demo 2 – Superelements import

Changing properties, keeping element numbers

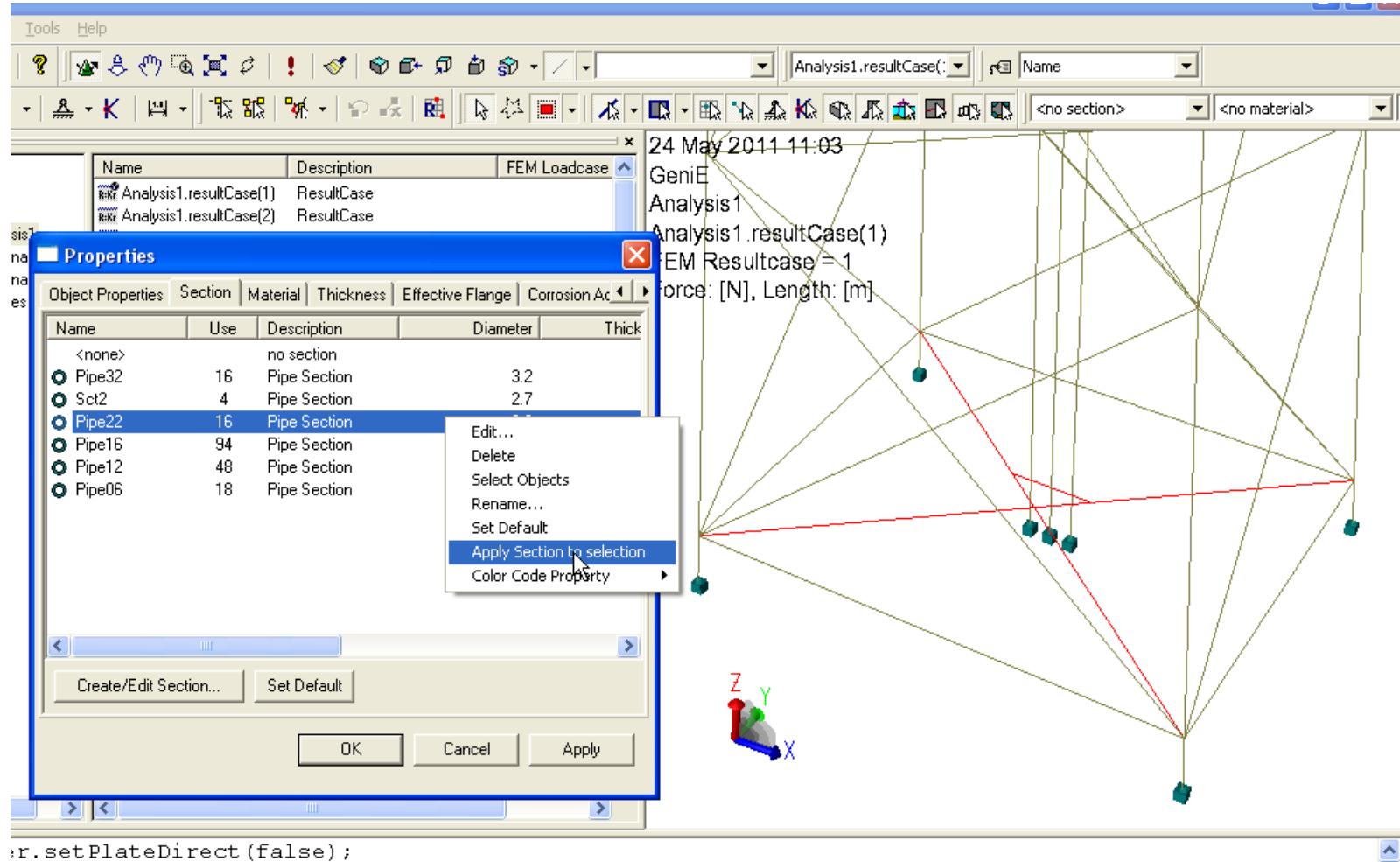
1. Import T1.FEM and results file for jacket model, inspect mesh with element numbers in GeniE and in Xtract, inspect results in Xtract and GeniE.



Demo 2 – Superelements import

Changing properties, like section, materials or thicknesses

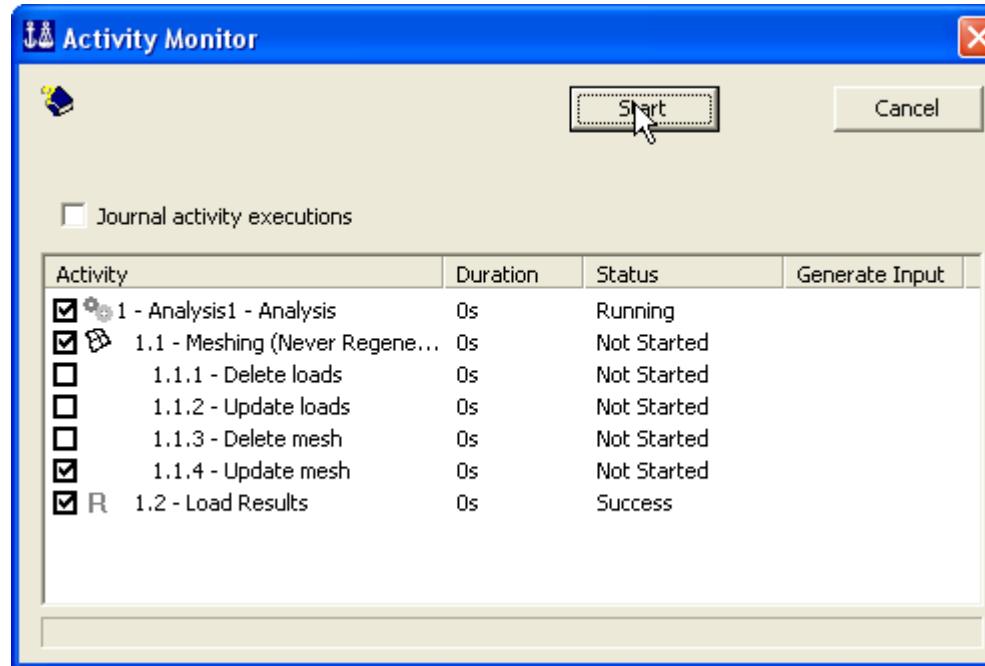
2. Update some properties, like section, materials or thicknesses.



Demo 2 – Superelements import

Changing properties, keeping element numbers

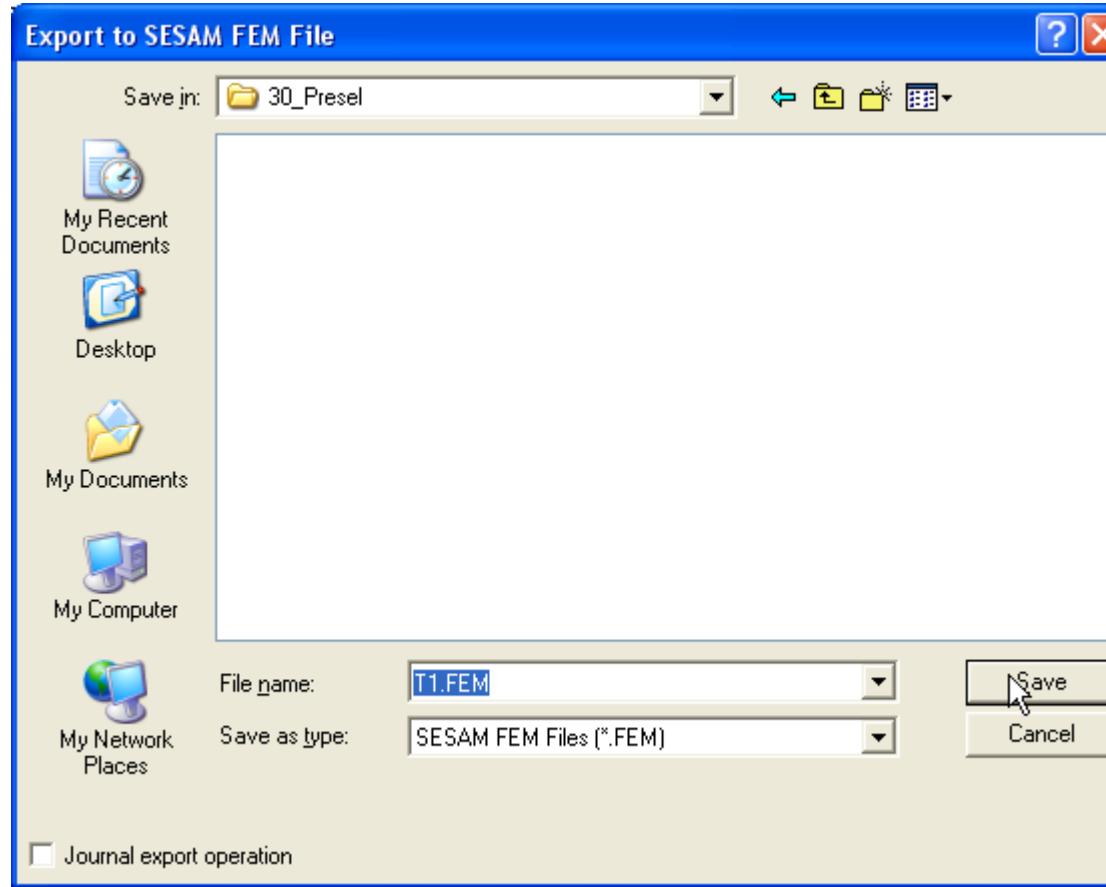
3. Do a partial remesh.



Demo 2 – Superelements import

Changing properties, keeping element numbers

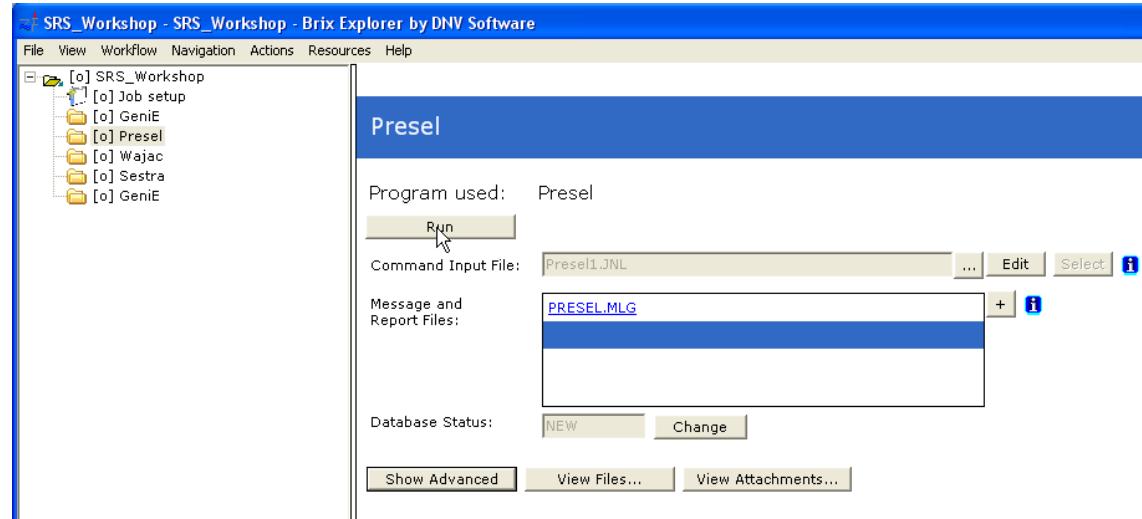
4. Export FEM files from Genie for T1 model.



Demo 2 – Superelements import

Changing properties, keeping element numbers

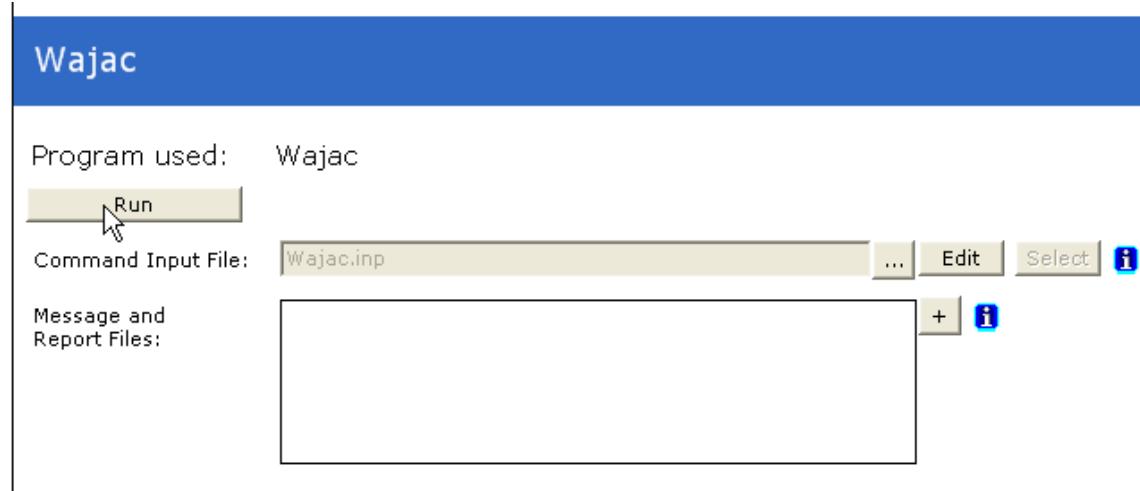
5. Assemble T1.FEM and T2.FEM to make T10.FEM, using Presel.



Demo 2 – Superelements import

Changing properties, keeping element numbers

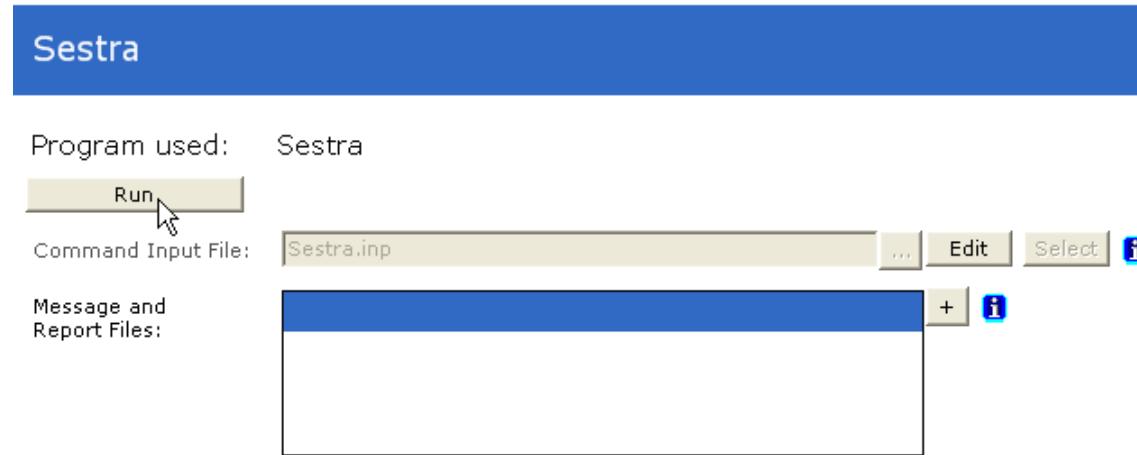
6. Run Wajac



Demo 2 – Superelements import

Changing properties, keeping element numbers

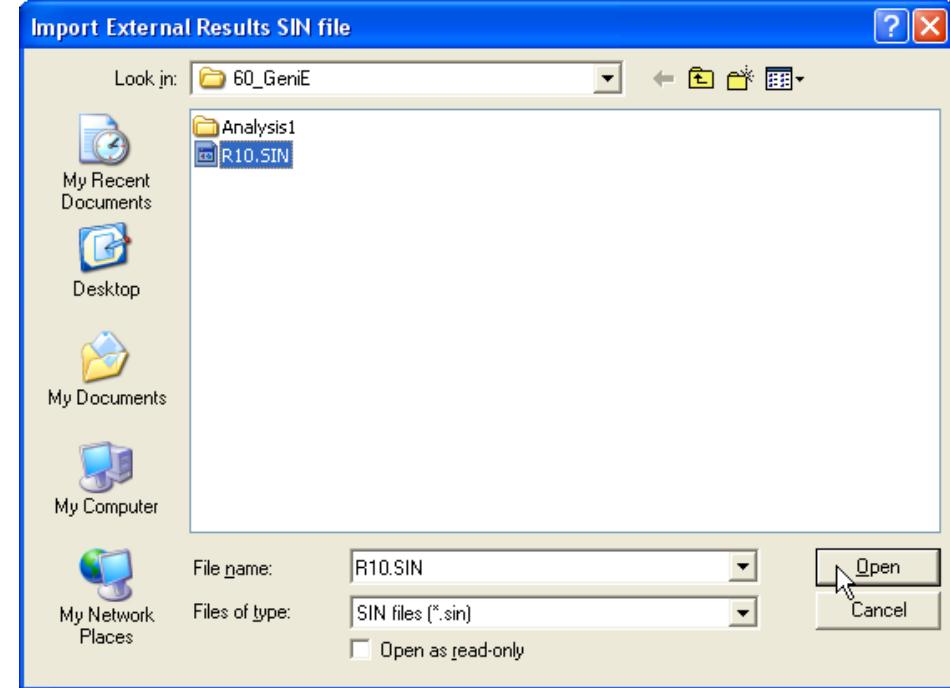
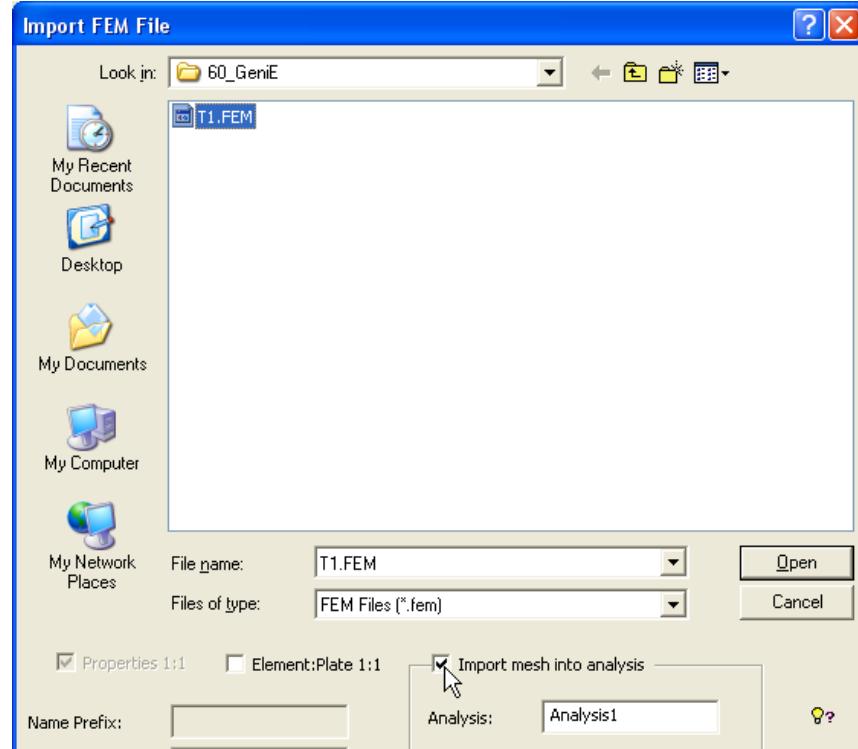
7. Run Sestra



Demo 2 – Superelements import

Changing properties, keeping element numbers

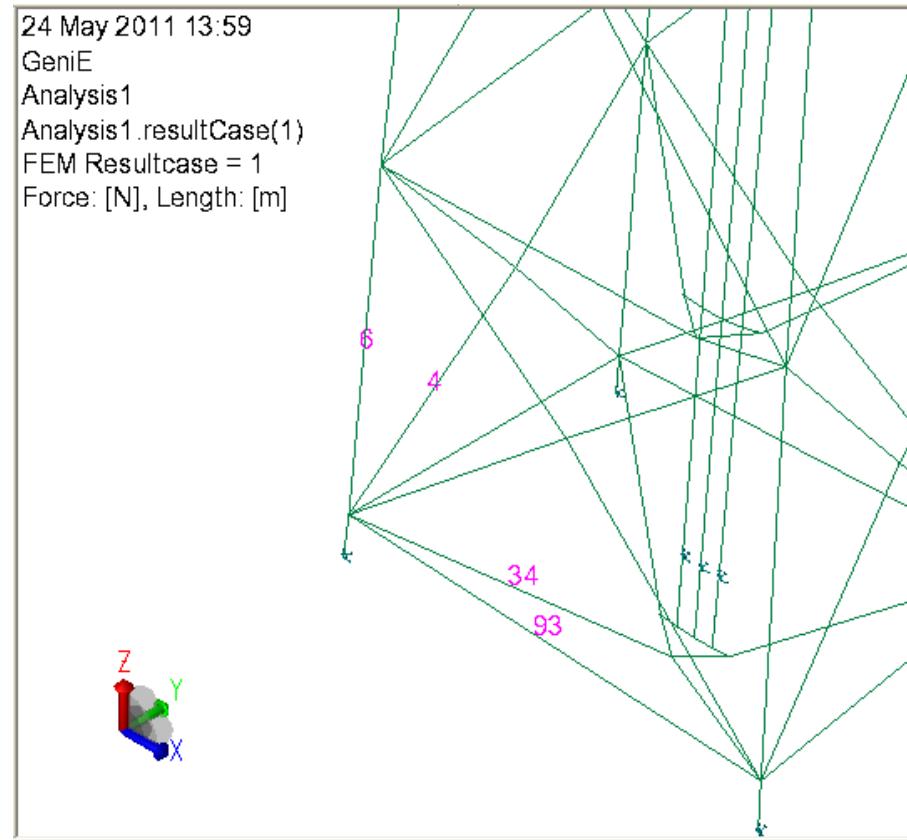
8. Open GeniE and import the new T1.FEM and R10.SIN.



Demo 2 – Superelements import

Changing properties, keeping element numbers

9. Inspect the mesh and results, observe the differences compared to the model before properties were changed. Do codechecking.



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Changing properties, keeping element numbers

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GeniE

Analysis1

Analysis1.resultCase(1)

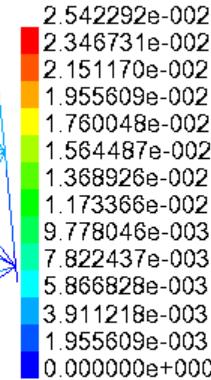
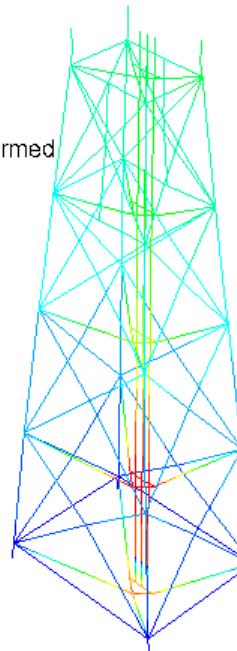
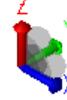
FEM Resultcase = 1

Force: [N], Length: [m]

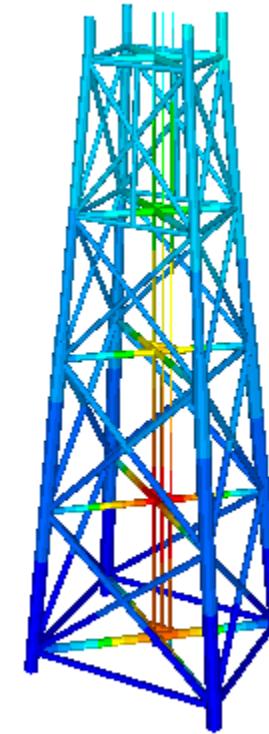
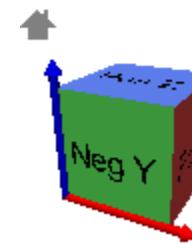
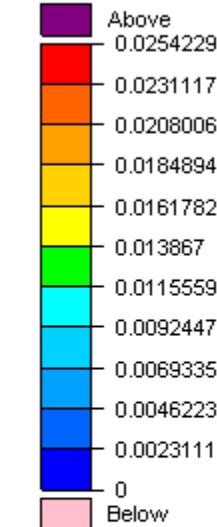
Displacements - All, deformed

Min: 0

Max: 0.0254229



Contours

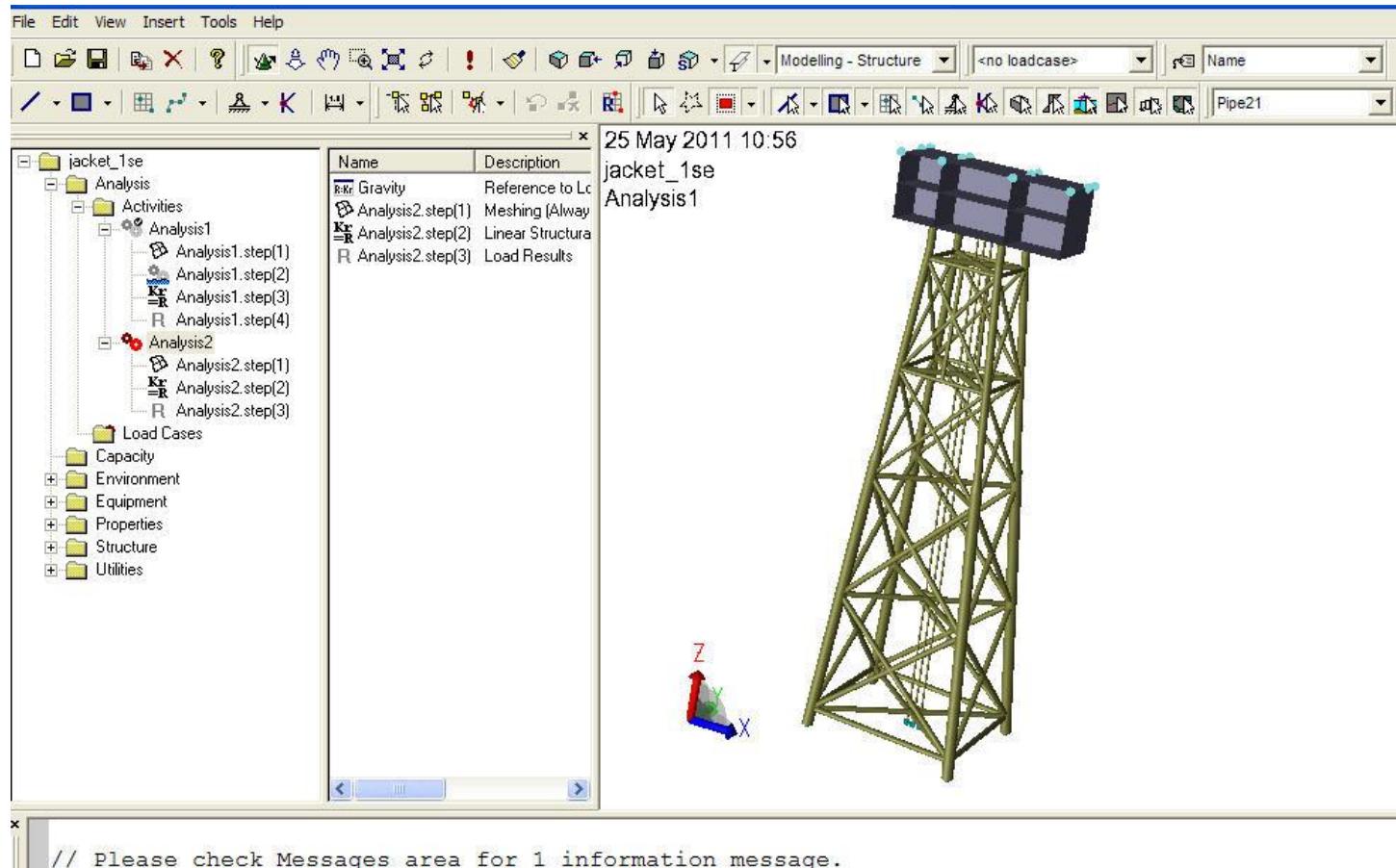


Demo 3 – Import dynamic results into GeniE

1. Initial workspace
2. Dynamic results file in Xtract
3. Prepost to merge both analyses
4. Results of merged in Xtract
5. Create static + dynamic resultcase combination in Xtract. (static + dynamic resultcase 1 (Phase angle: 30 deg)
6. See results for specific node (z-displacement)
7. New result combination in Prepost, static + dynamic resultcase 1 (Phase angle: 30 deg). Result in Xtract (lm5)
8. Import the initial FEM file + the new merged SIN file into GeniE. (lm6)

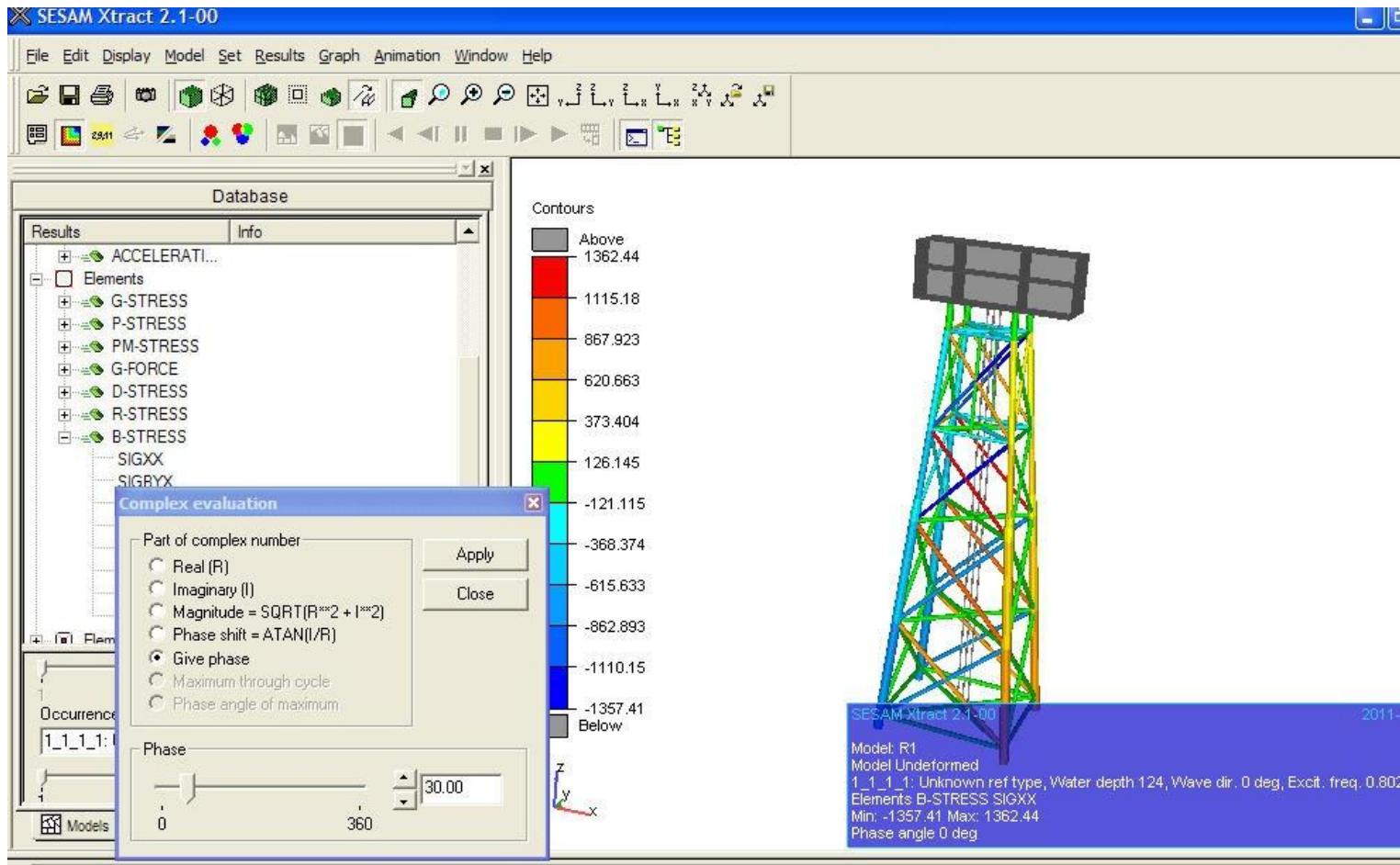
Demo 3 – Import dynamic results into GeniE

1. Initial workspace



Demo 3 – Import dynamic results into GeniE

2. Dynamic results file in Xtract

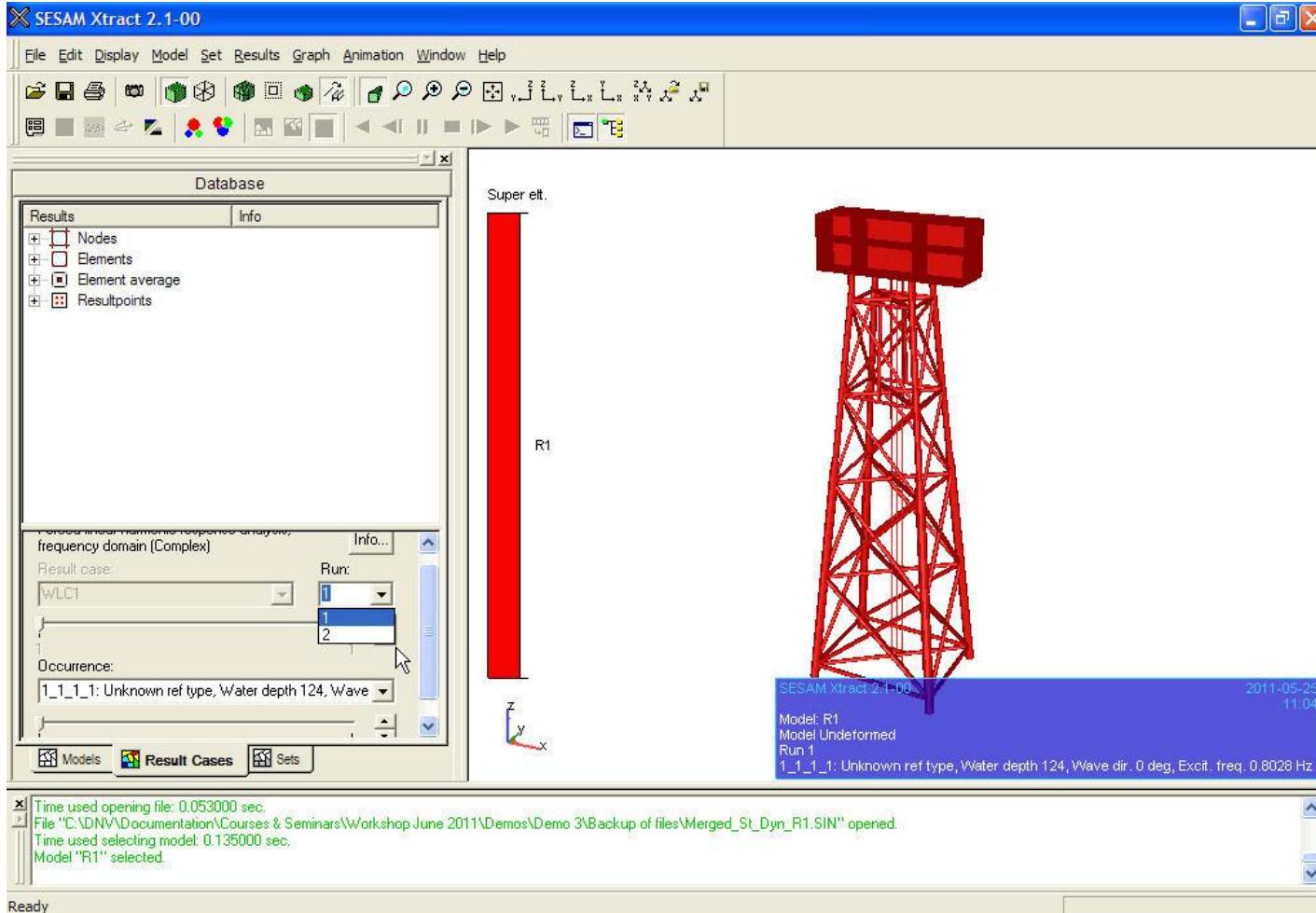


Demo 3 – Import dynamic results into GeniE

3. Prepost to merge both analyses.

Demo 3 – Import dynamic results into GeniE

4. Results of merged in Xtract

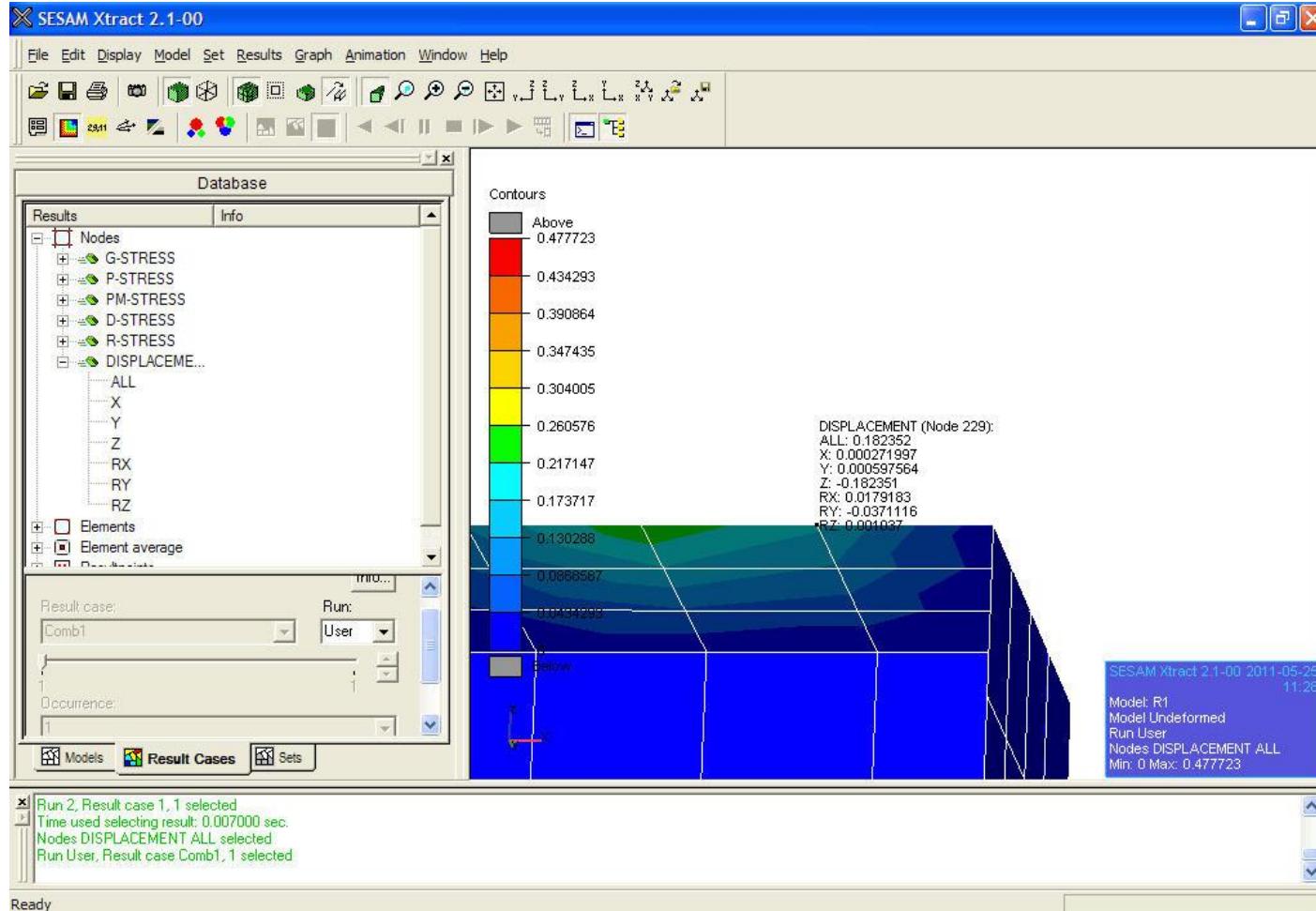


Demo 3 – Import dynamic results into GeniE

5. Create static + dynamic resultcase combination in Xtract. (static + dynamic resultcase 1 (Phase angle: 30 deg)).

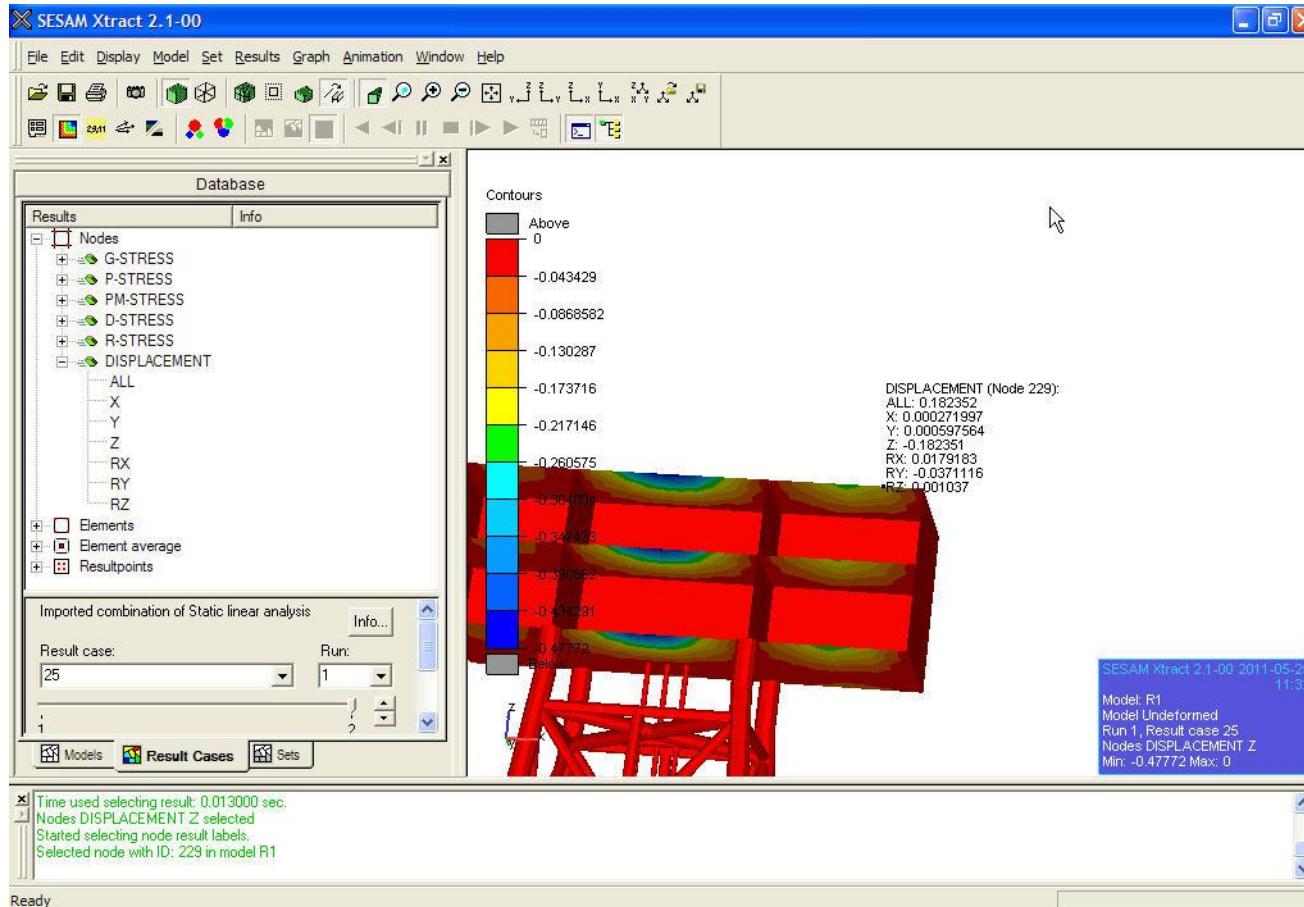
Demo 3 – Import dynamic results into GeniE

6. See results for specific node (z-displacement)



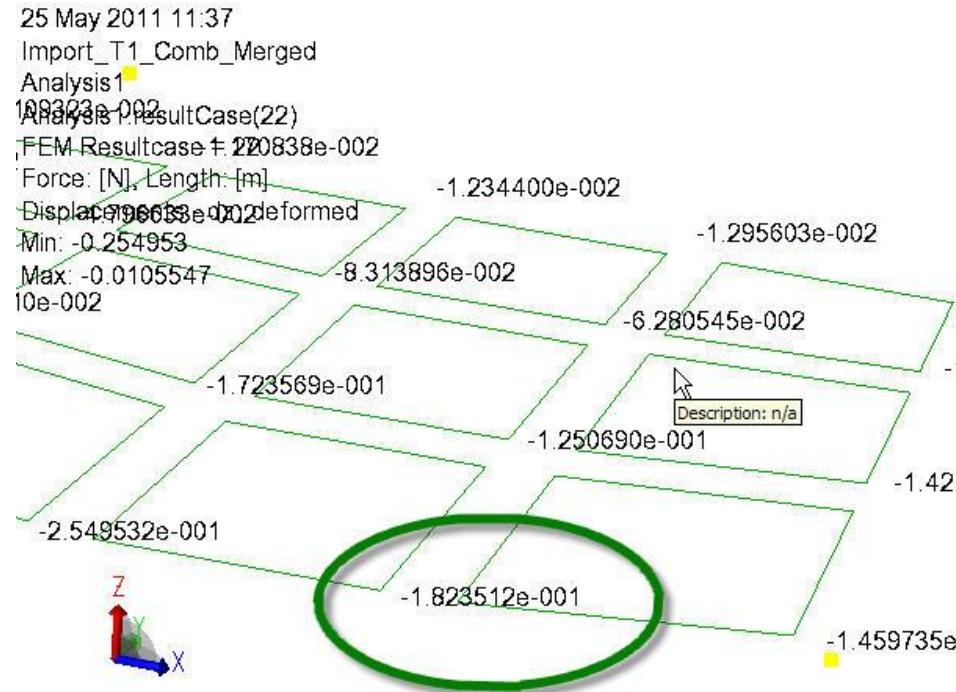
Demo 3 – Import dynamic results into GeniE

7. New result combination in Prepost, static + dynamic resultcase 1 (Phase angle: 30 deg). Result in Xtract



Demo 3 – Import dynamic results into GeniE

8. Import the initial FEM file + the new merged SIN file into GeniE.



Future Enhancements

- Possible to keep external node and element numbers even if you do changes to the model.
- Possible to do updates on the mesh without having to remesh.
- We keep working to maintain and improve stability and robustness.

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