



Get started with SDC Verifier



30 Dec 2020
version 2020.0.2

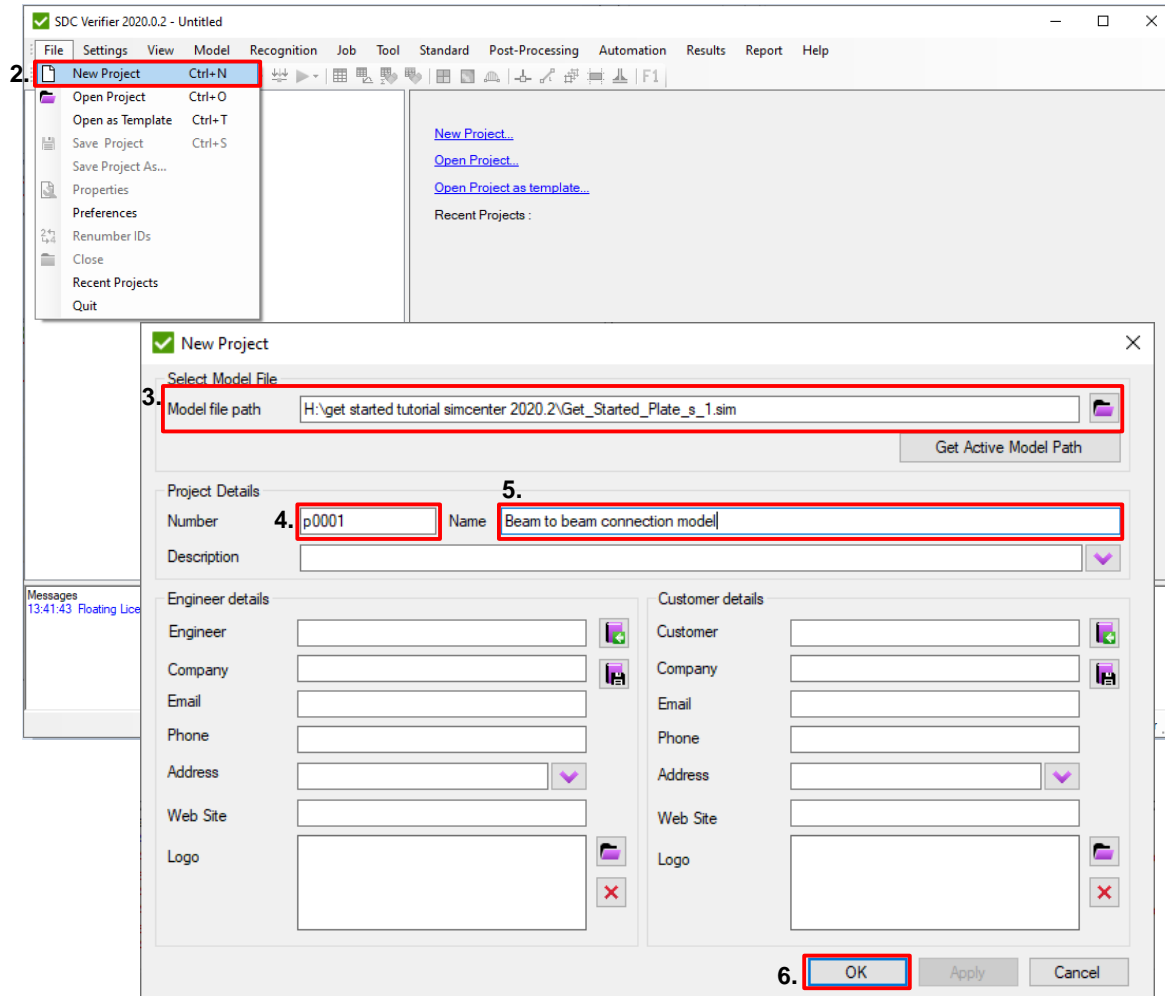
SDC Verifier is a powerful Simcenter add-on that helps verify structures according to standards and generates full calculations reports.

This step-by-step tutorial is designed to *get you started* with main SDC Verifier features:

- ▶ Creating new project;
- ▶ Create Individual Loads, Combinations and Envelop;
- ▶ Define Views;
- ▶ Model Setup report;
- ▶ Calculation report;
- ▶ Open as template feature;

Create new project

- 1 Launch **SDC Verifier 2020.0.2** for **Simcenter** 
- 2 Execute *File - New Project*.
- 3 Press  and select ***Get_Started_Plate_s_1.sim*** model.
- 4 Number: **p0001**
- 5 Name: **Beam-to-beam connection model**
- 6 Press *OK*



Job explanation

1

Title: **Linear Static Analysis.**

2

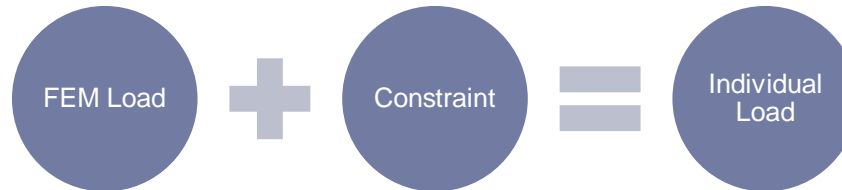
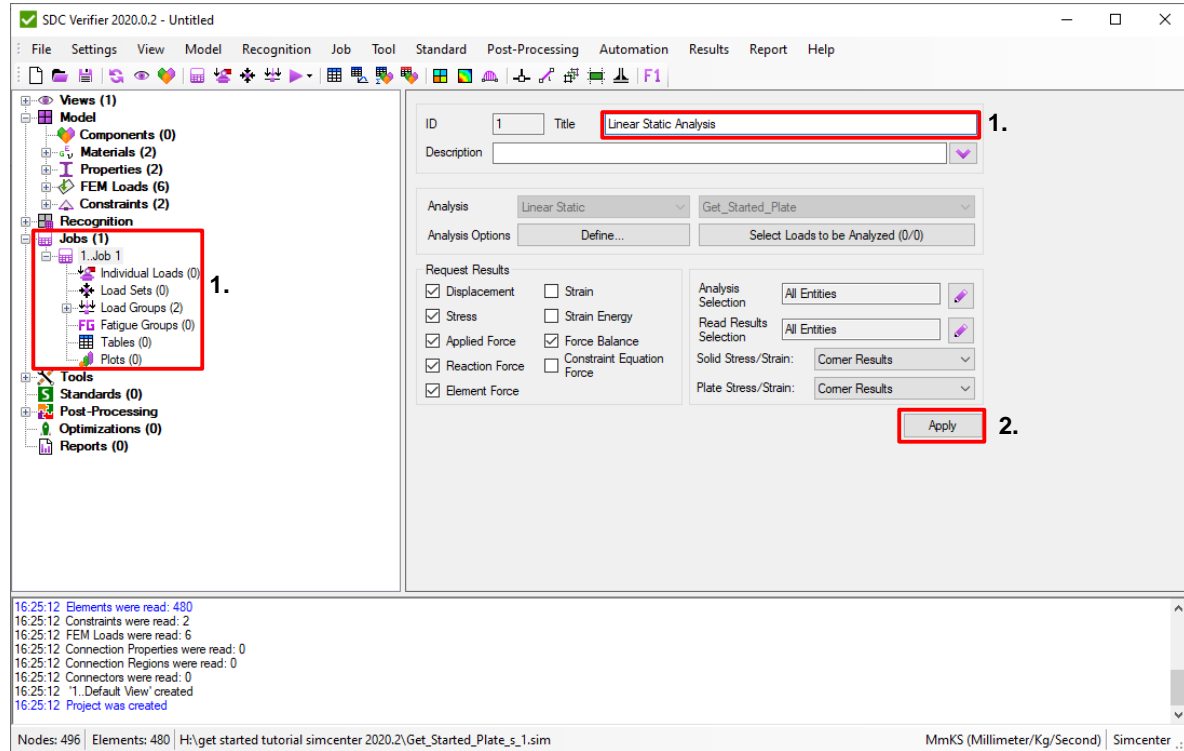
Press *Apply*.

Job – calculation set that contains analysis with options, boundary conditions, load combinations, envelopes and tables/plots.

Individual Loads = FEM load + Constraint.
Boundary condition + Output Set;

Load Sets – combination of individual loads with factors;

Load Groups (envelop – worst results among loads)



Create individual loads.

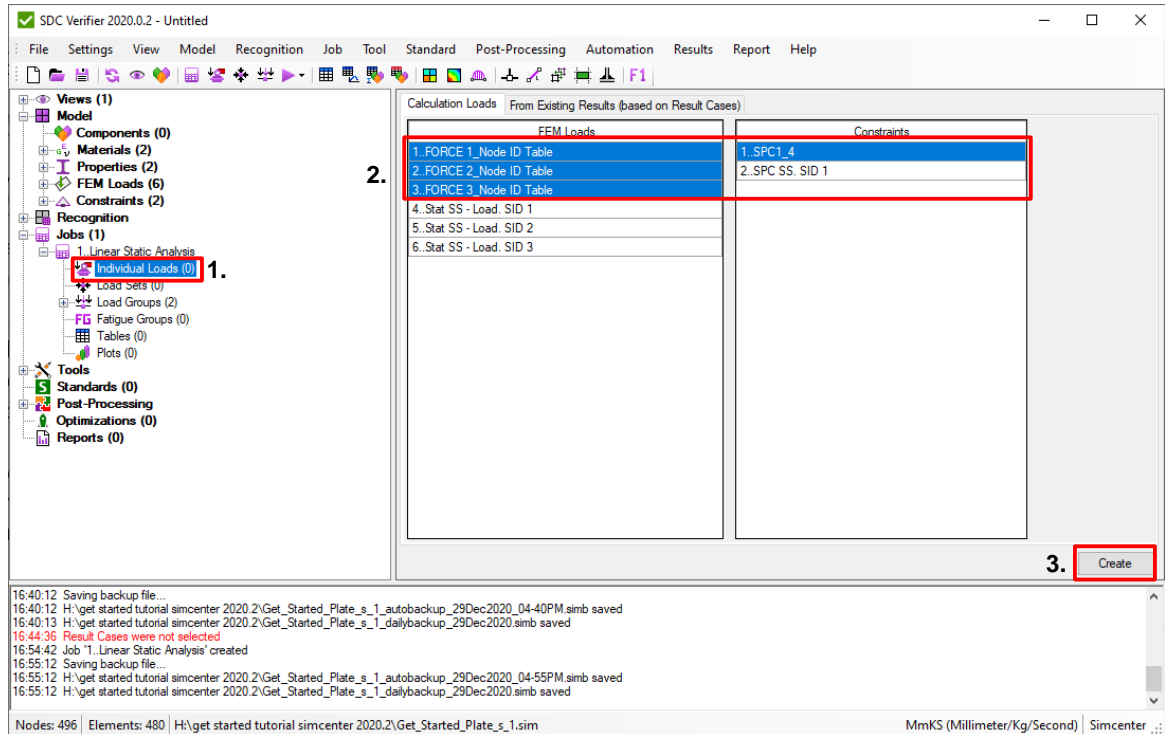
1 Select *Individual Loads* in the *Model Tree*.

2 Select *FEM Loads* with IDs 1-3 and *Constraints* with ID 1.

3 Press *Create*.

Individual Loads will be created automatically from combinations of all selected FEM Loads and Constraints. In our case 3 Individual loads.

If the model already contains Output Sets it is possible to create Individual Loads based on results without boundary conditions (see next slide).



Note: Use option "Inertia Relief" to create Individual Loads based on FEM Loads only (without constraint).

Create individual loads from existing results.

This slide demonstrates alternative method how to create individual loads based on Result Cases. Tutorial model does not contain any results yet, steps from this slide should be skipped.

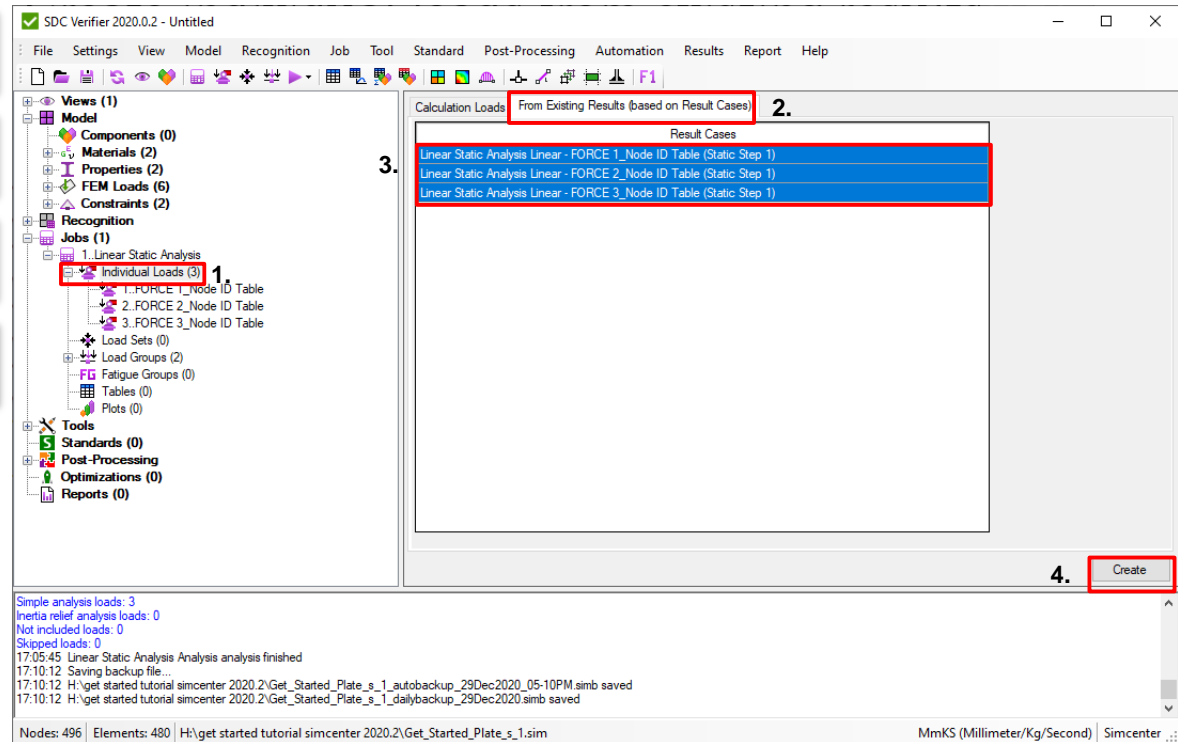
1. Activate *Individual Loads* in the *Model Tree*.

2. Select *From Existing results* option.


3. Select all Result Cases.

4. Press *Create*.

3 Individual Loads will be created based on 3 Result Cases

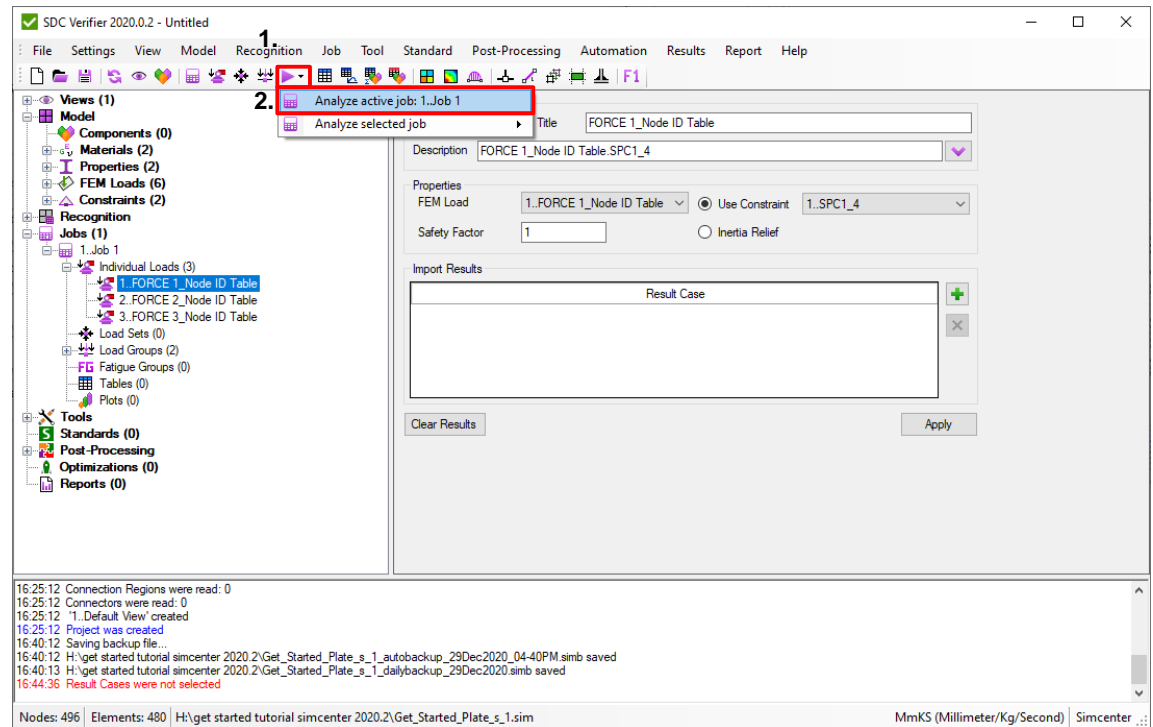
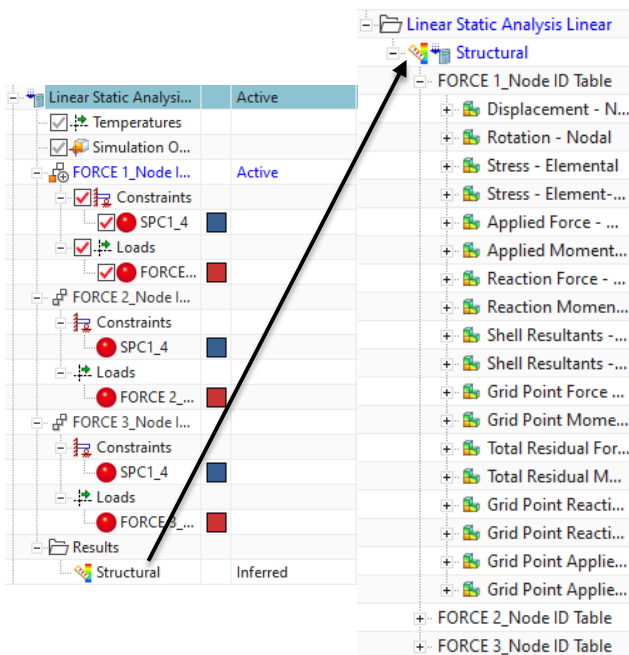


Analyze Job

1 Press  on toolbar to analyze job.

2 Select *Analyze active job*

Solution with 3 cases will be created and run.
Result Cases will be automatically linked to
analyzed Individual Loads after analysis is
finished.




Note: If Individual Loads were created based on
Output Sets running analysis is not required.

Create load combinations (Logic LS)

1 Activate *Load Sets* in the *Model* tree.

2 Title: **All_combinations**

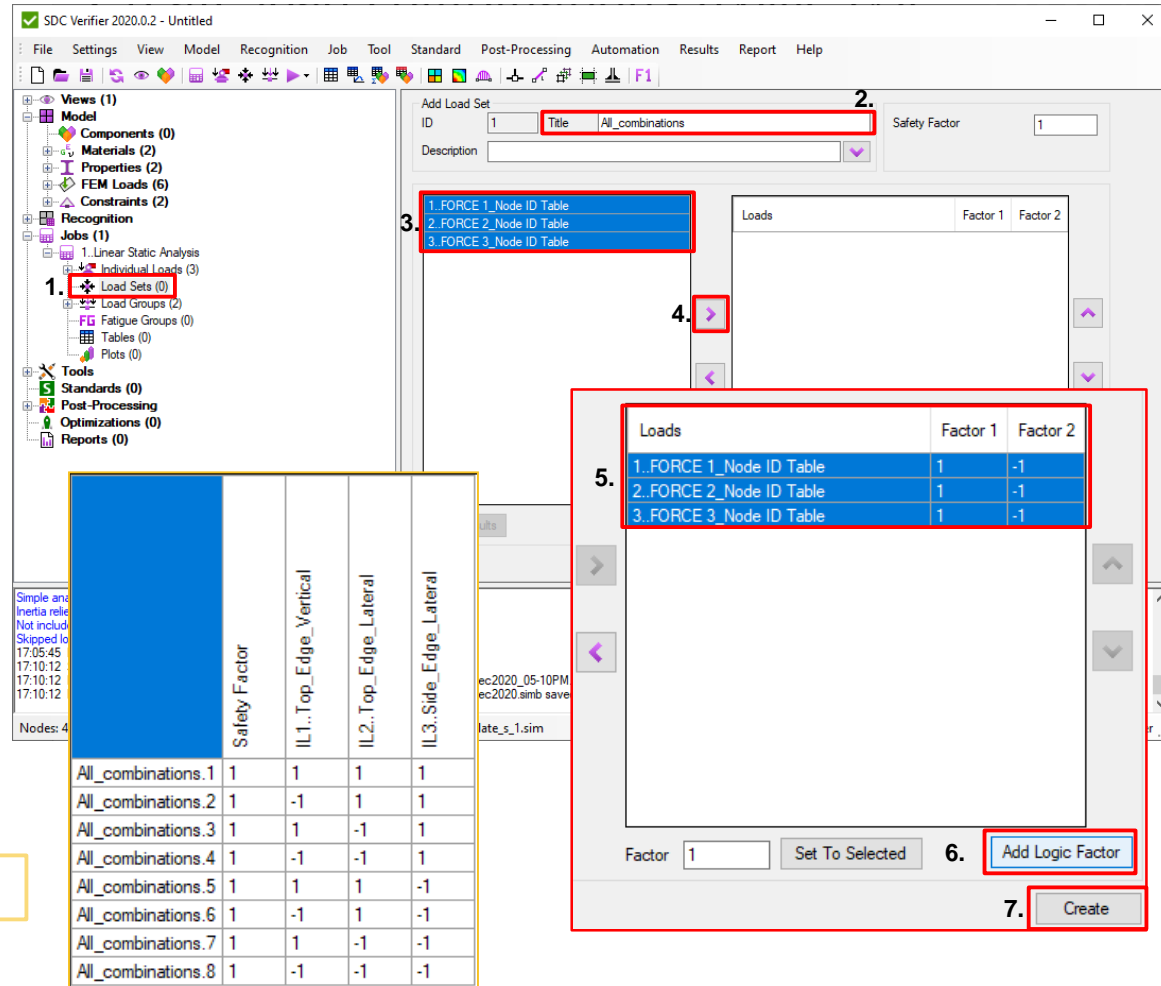
3 Select all Individual Loads from the list of loads.

4 Press  to add items to load set.

5 Select all Individual Loads from the list of loads.

6 Press *Add Logic Factor* (each item will be added with positive and negative factor).


7 Press *Create*



SDC Verifier 2020.0.2 - Untitled


File Settings View Model Recognition Job Tool Standard Post-Processing Automation Results Report Help

Views (1)
Model
Components (0)
Materials (2)
Properties (2)
FEM Loads (6)
Constraints (2)
Recognition
Jobs (1)
1. Linear Static Analysis
1. Individual Loads (3)
1. Load Sets (0)
1. Load Groups (0)
1. Fatigue Groups (0)
1. Tables (0)
1. Plots (0)
Tools
Standards (0)
Post-Processing
Optimizations (0)
Reports (0)

1.  Load Sets (0)

2. Title: **All_combinations**

3. 1. FORCE 1_Node ID Table
2. FORCE 2_Node ID Table
3. FORCE 3_Node ID Table

4. 

5.

Loads	Factor 1	Factor 2
1. FORCE 1_Node ID Table	1	-1
2. FORCE 2_Node ID Table	1	-1
3. FORCE 3_Node ID Table	1	-1

6. **Add Logic Factor**

7. **Create**

	Safety Factor	IL1..Top_Edge_Vertical	IL2..Top_Edge_Lateral	IL3.Side_Edge_Lateral
All_combinations.1	1	1	1	1
All_combinations.2	1	-1	1	1
All_combinations.3	1	1	-1	1
All_combinations.4	1	-1	-1	1
All_combinations.5	1	1	1	-1
All_combinations.6	1	-1	1	-1
All_combinations.7	1	1	-1	-1
All_combinations.8	1	-1	-1	-1

List of the created Load Sets

Edit Multiple Load Sets. Modify factors

1

Execute *Edit multiple* in the *Load Sets* node in the *Model* tree.

2

Select cells for All_combinations with IDs 1-4 in column IL3

3

Factor: **1.1**. Press **Set**

4

Select cells for All_combinations with IDs 5-8 in column IL3

5

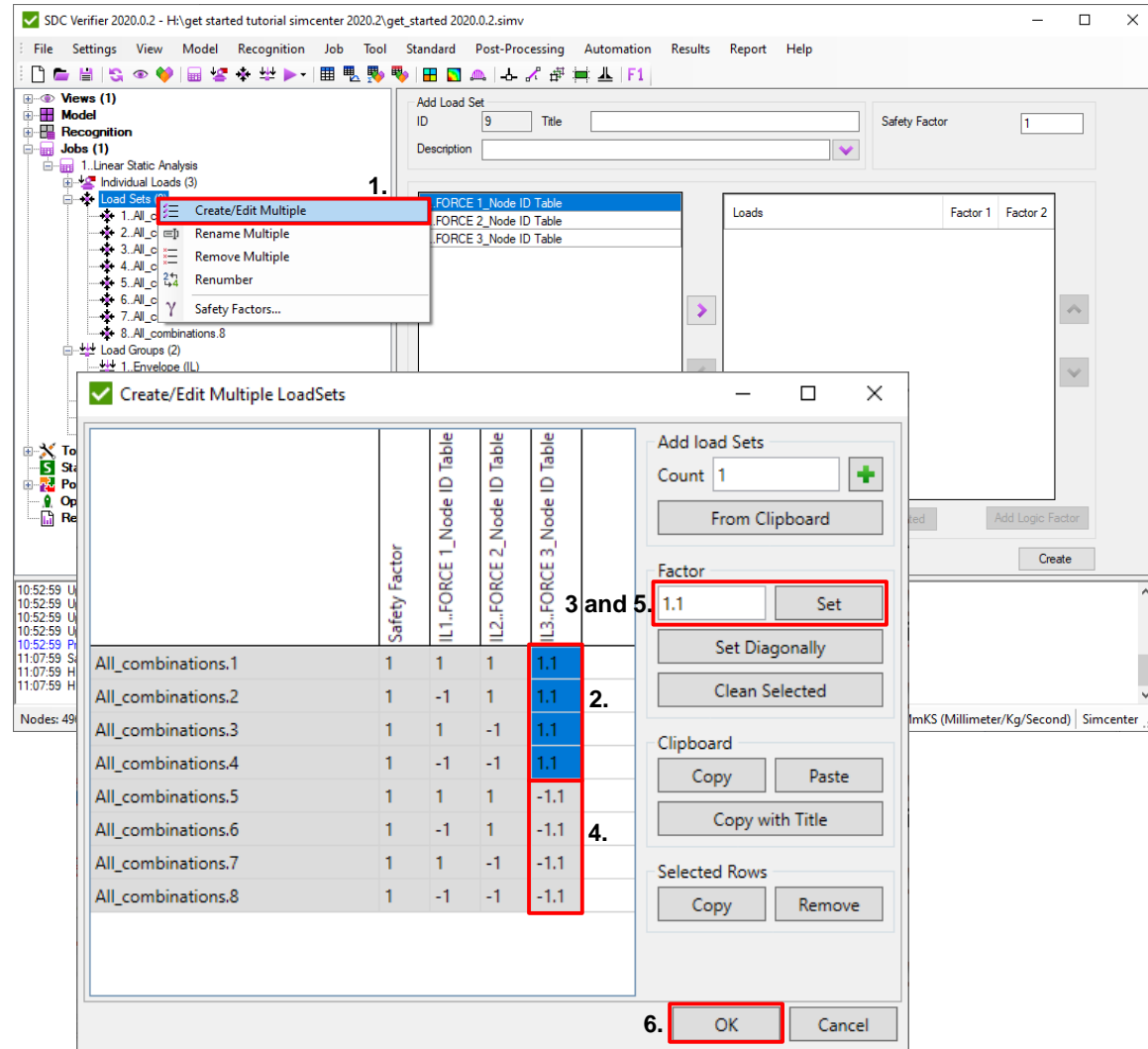
Factor: **-1.1**. Press **Set**

6

Press **OK**.

Tip: It is possible to export/import table to excel using *Copy* and *Paste* buttons.

All_combinations 1	1	1	1	1.1
All_combinations 2	1	-1	1	1.1
All_combinations 3	1	1	-1	1.1
All_combinations 4	1	-1	-1	1.1
All_combinations 5	1	1	1	-1.1
All_combinations 6	1	-1	1	-1.1
All_combinations 7	1	1	-1	-1.1
All_combinations 8	1	-1	-1	-1.1




Create Load Group (Envelop)

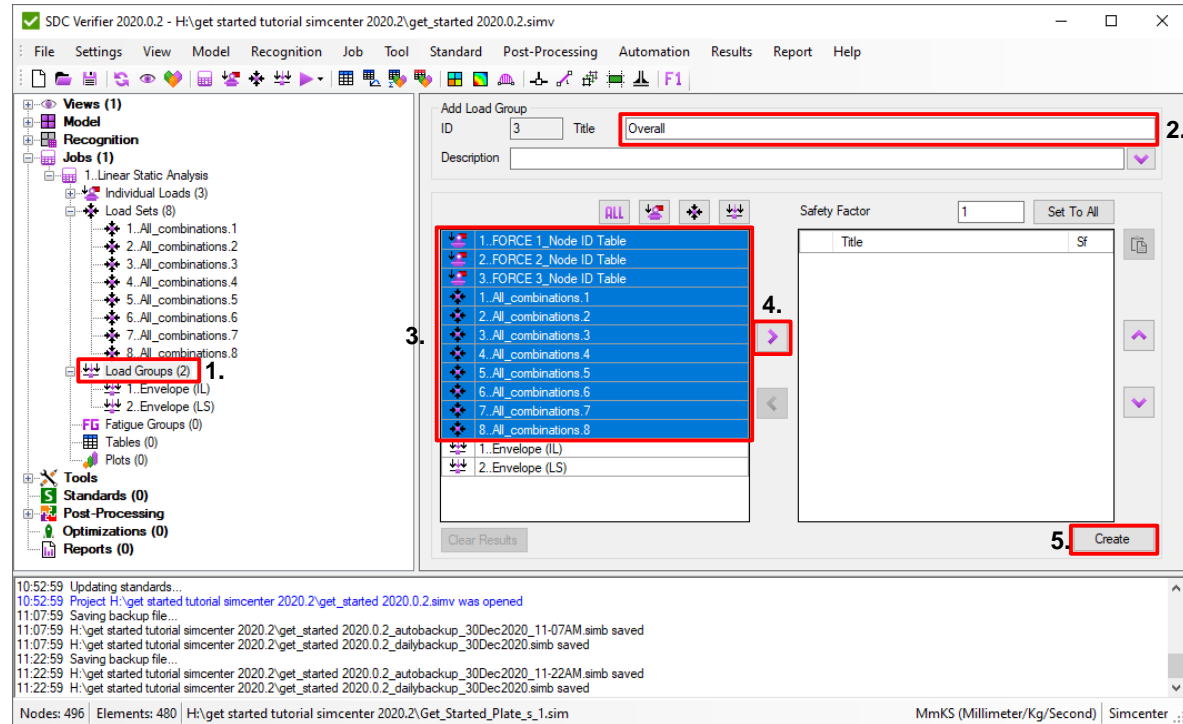
1 Activate *Load Groups* node in the *Model* tree.

2 Title: **Overall**

3 Select all Loads from the list of loads except Envelope (IL) and Envelope (LS).

4 Press  to move selected Loads to Load Group.

5 Press *Create*.



Load Group is envelope for Individual Loads, Load Sets, and other Load Groups. It allows to determine minimum, maximum and absolute values of stresses, displacements, forces, etc.

Create 2 general Views for plots

1. Locate Model in Simcenter as shown on pic. Front View.

2. Execute *View – Add* from context menu

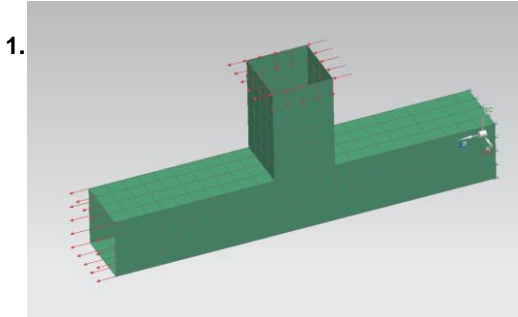
3. Title: **Front View**. Press *OK*.

4. Locate the Model in Simcenter as shown on pic. Back View.

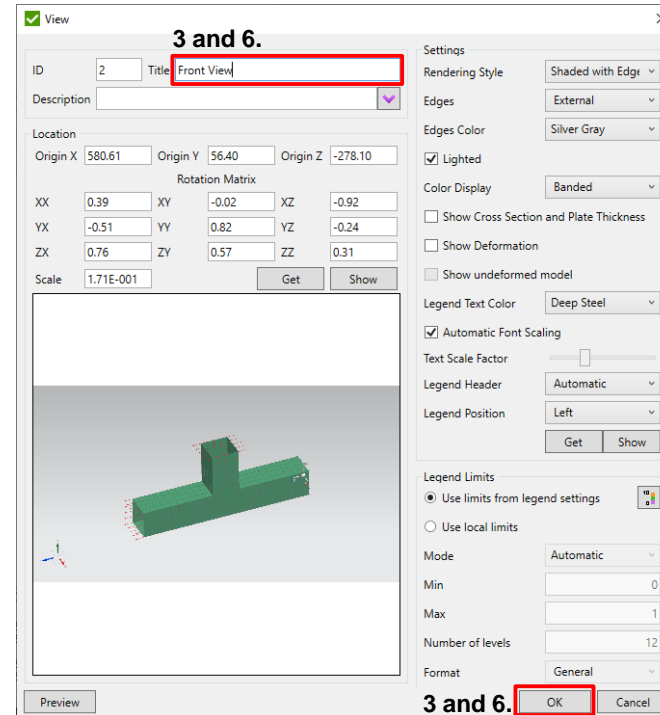
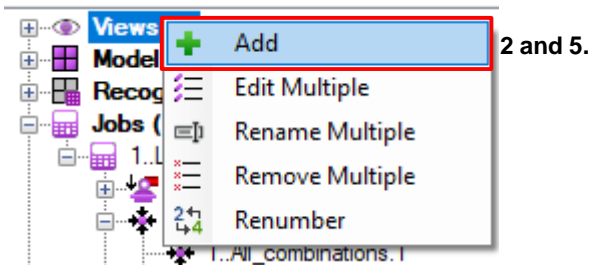
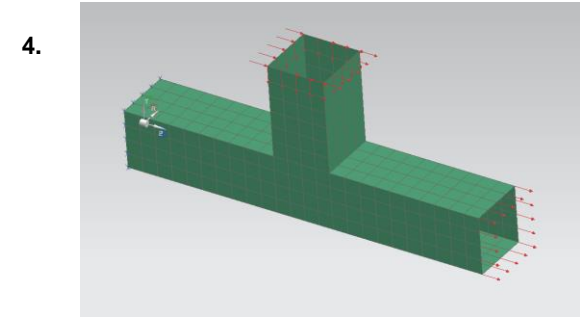
5. Execute *View – Add* from context menu

6. Title: **Back View**. Press *OK*.

Front View



Back View



Create 2 detailed Views

1. Locate Model in Simcenter as shown on pic. Front Detail.

2. Execute *View – Add* from context menu

3. Title: **Front Detail**. Press *OK*.

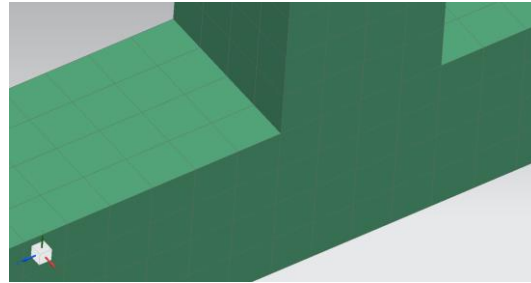
4. Locate the Model in Simcenter as shown on pic. Back Detail.

5. Execute *View – Add* from context menu

6. Title: **Back Detail**. Press *OK*.

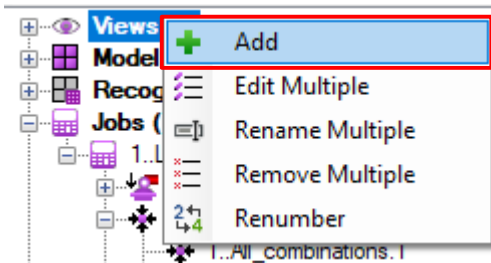
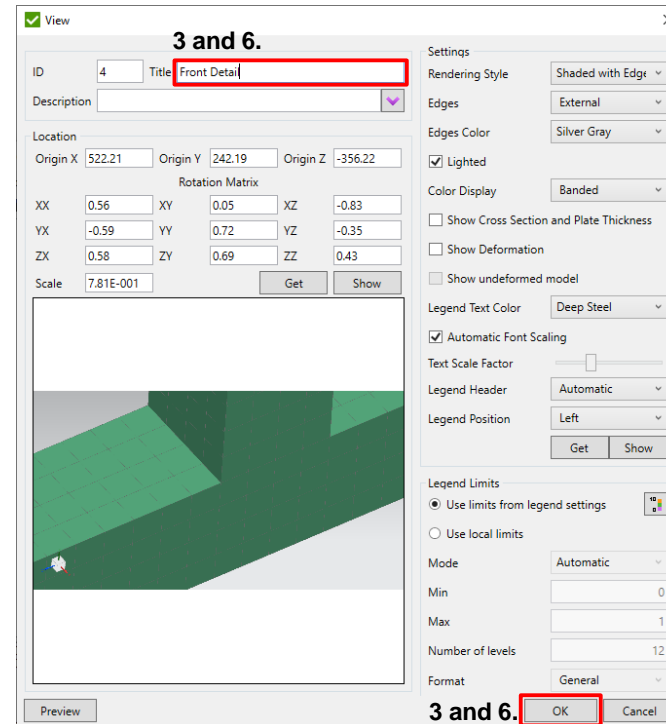
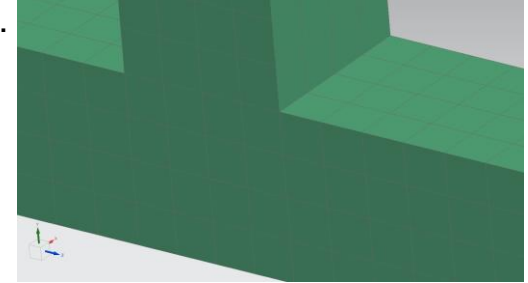
Front Detail

1.



Back Detail


4.




2 and 5.

Report Wizard – Model Setup report

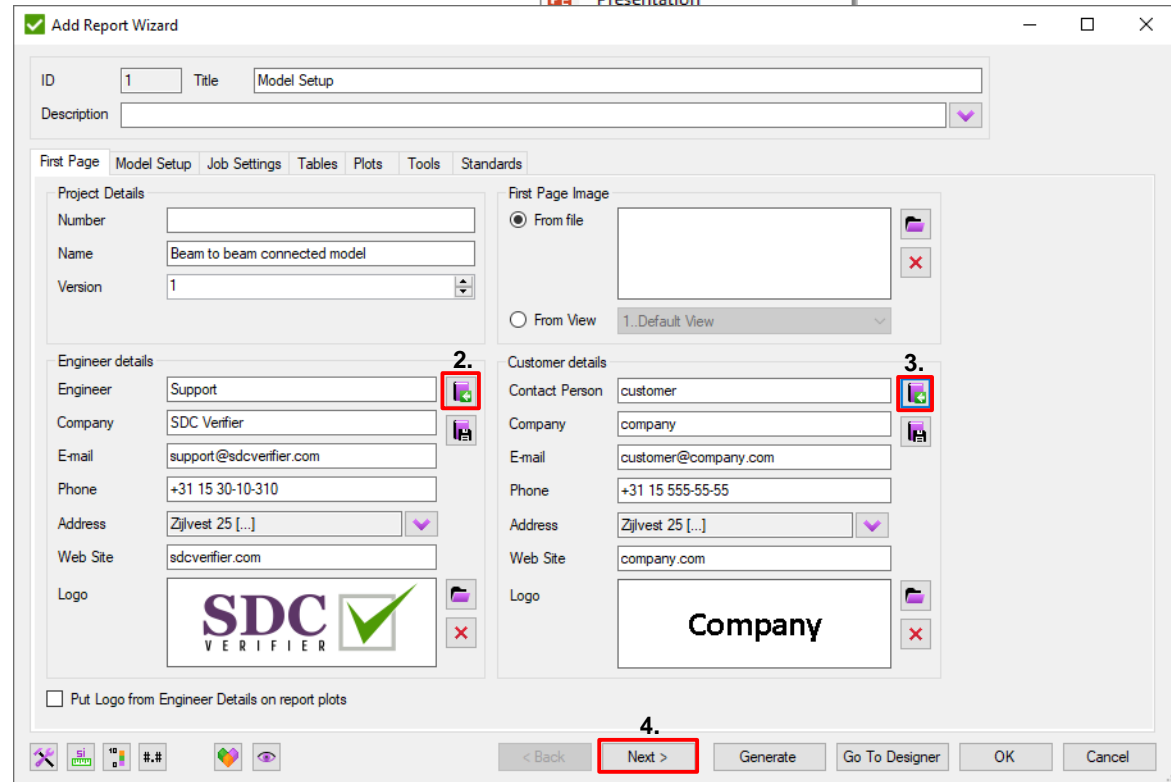
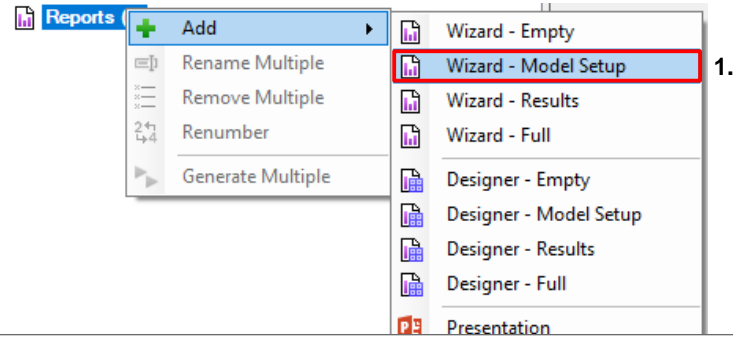
1 Execute Add -> Wizard - Model Setup from Reports in the Model tree.

2 Press  and select Support Engineer from the library

3 Press  and select Customer from the library

4 Press Next.

Note: Engineer and customer information is used on the report's first page and in footer (company name and logo).



2.

3.

4.

Model Setup options

1

Press *Generate*.

✓ Add Report Wizard

ID: 1 Title: Model Setup

Description:

First Page | Model Setup | Job Settings | Tables | Plots | Tools | Standards

☒ Preface
☒ Model Information

Full Model Description

☒ Include

☒ Materials (2/2) ☒ Plot Full (detailed for each material)

☒ Properties (2/2) ☒ Plot Full (detailed for each property)

☒ Components (0/0) ☒ Plot

☒ Constraints (2/2) ☒ Plot

☒ FEM Loads (6/6) ☒ Plot

Preview Mode: Highlight

Recognition Tools

☐ Include

☐ Beam Member Finder Brief (overview table and plot)

☐ Weld Finder Brief (overview table and plot)

☐ Panel Finder

☒ Sections X (0/0) 1.Default View

☒ Sections Y (0/0) 1.Default View

☒ Sections Z (0/0) 1.Default View

☒ Sections Custom (0/0) 1.Default View

None

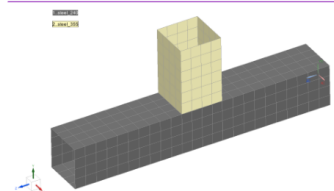
Next > **1. Generate** Go To Designer OK Cancel



Model Setup

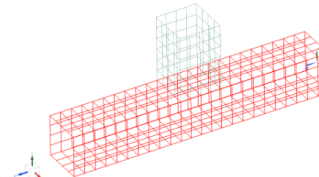
Beam to beam connected model

Material Label Plot (All Entities, v1)



1..steel_240

Property	Value
Elements	384
Mass [kg]	71.59
Gravity Center [mm]	[0.00; 0.00; 800.00]
Young Modulus [NPa]	210000000.00
Shear Modulus [NPa]	0
Poisson Ratio	0.30
Shear [NPa]	0
Mass Density [kg/mm ³]	7.850e-06
Tensile Strength [NPa]	0
Yield Stress [NPa]	0




Model setup report has been generated with a default view and opened in MS Word. Using the *Report Designer* you can print out the report without any text editor installed.

Create calculation report


1

Execute **Add** -> **Wizard - Empty** on **Reports** in the **Model** tree.

2

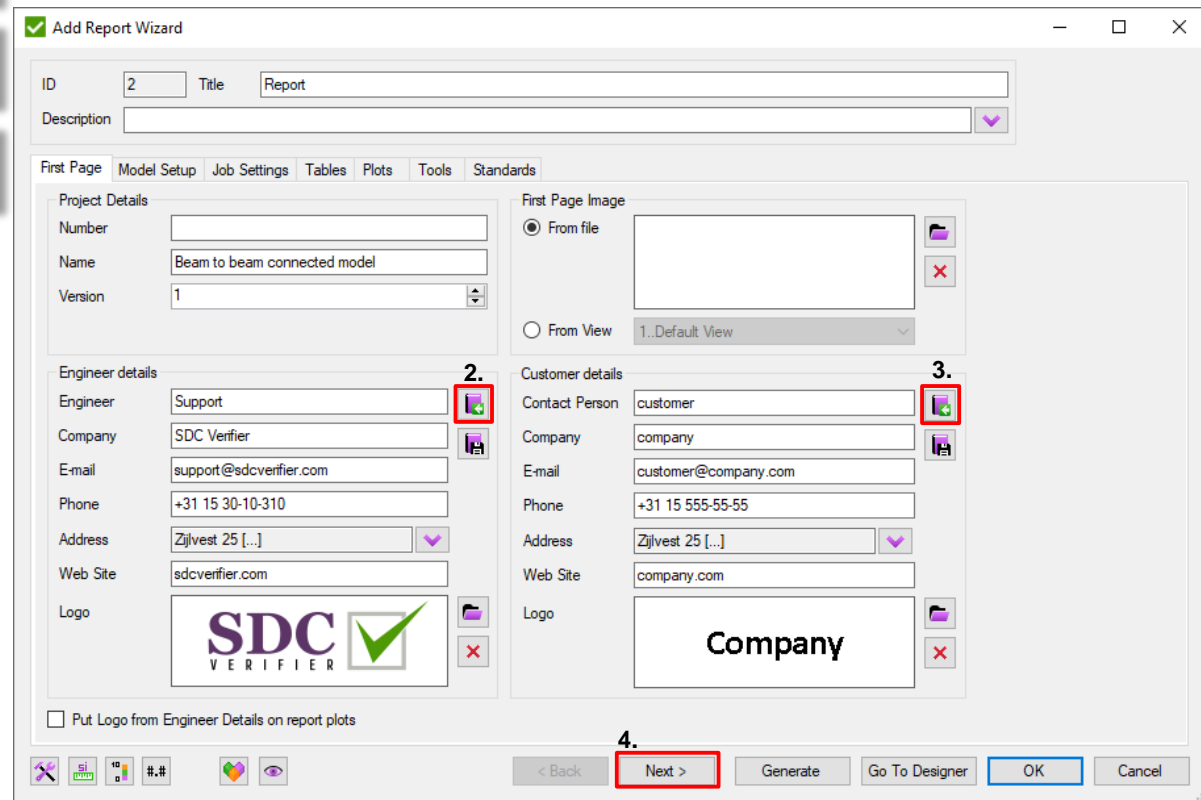
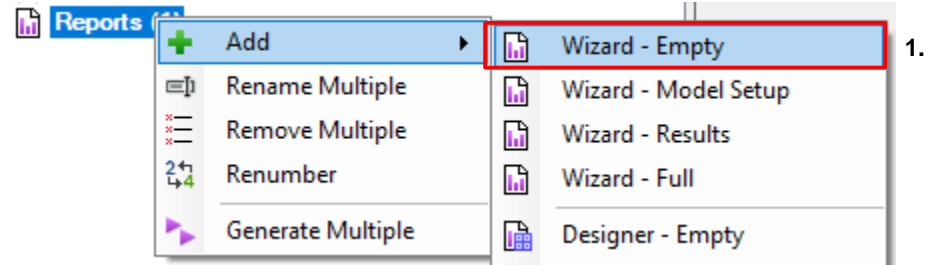
Press  and select **Support Engineer** from the library

3

Press  and select **Customer** from the library

4

Press **Next** 2 times.



2.

3.

4.

Next >

Predefined Job Tables

1 Jobs: **ON**

2 Plot Individual Loads: **ON**

3 Include Sum of Forces: **ON**

4 Press *Next*.

Add Report Wizard

ID: 2 Title: Report Description:

First Page Model Setup Job Settings **Tables** Plots Tools Standards

1. ☒ Include Jobs

1..Linear Static Analysis

Job Settings

☐ Job Description

2. ☒ Plot Individual Load

☐ Modes Table for Individual Loads and Load Sets

☐ Include Contents

☐ Individual Loads Content

☐ Load Sets Content

☐ Load Groups Content

Advanced Tables (Overall)

3. ☒ Include Sum of Forces

☒ Individual Loads Applied Forces

☒ Individual Loads Reaction Forces

☒ Load Sets Applied Forces

☒ Load Sets Reaction Forces

☐ Absolute Maximum Displacement

☐ Individual Load

☐ Load Set

☐ Load Group

☐ Absolute Maximum Str

☐ Individual Load

☐ Load Set

☐ Load Group

Advanced Tables (For Each Load)

☐ Include Sum Of Forces

☒ Individual Load Reaction Forces

☒ Load Set Reaction Forces

☐ Stress Over All Properties

☐ Individual Load

☐ Load Set

☐ Load Group

☐ Stress Over All Compo

☐ Individual Load

☐ Load Set

☐ Load Group

☐ Automatically sort tables and plots by result category


All Nor

< Back **Next >** Generate Go To Designer OK Cancel

Add displacements plots

1 Click on *Plots* in the Toolbar.

2 Select All Loads from the list.

3 Press  to add contour plot.

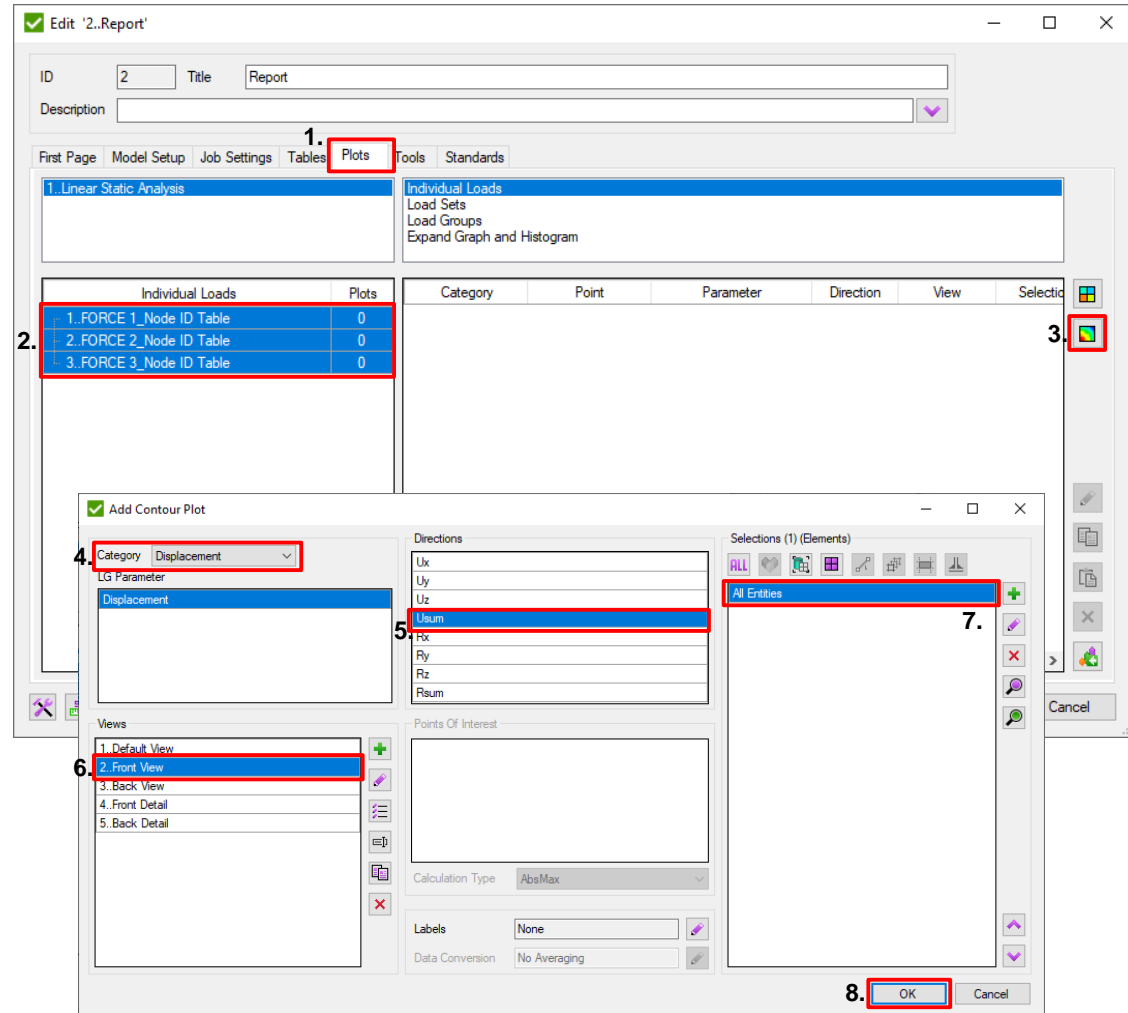
4 *Category: Displacement*

5 *Direction: Usum*

6 *Views: Front View*


7 *Selection: All Elements*

8 Press *OK*.



Add stress plots

1 Select All Loads from the list.

2 Press  to add criteria plots.

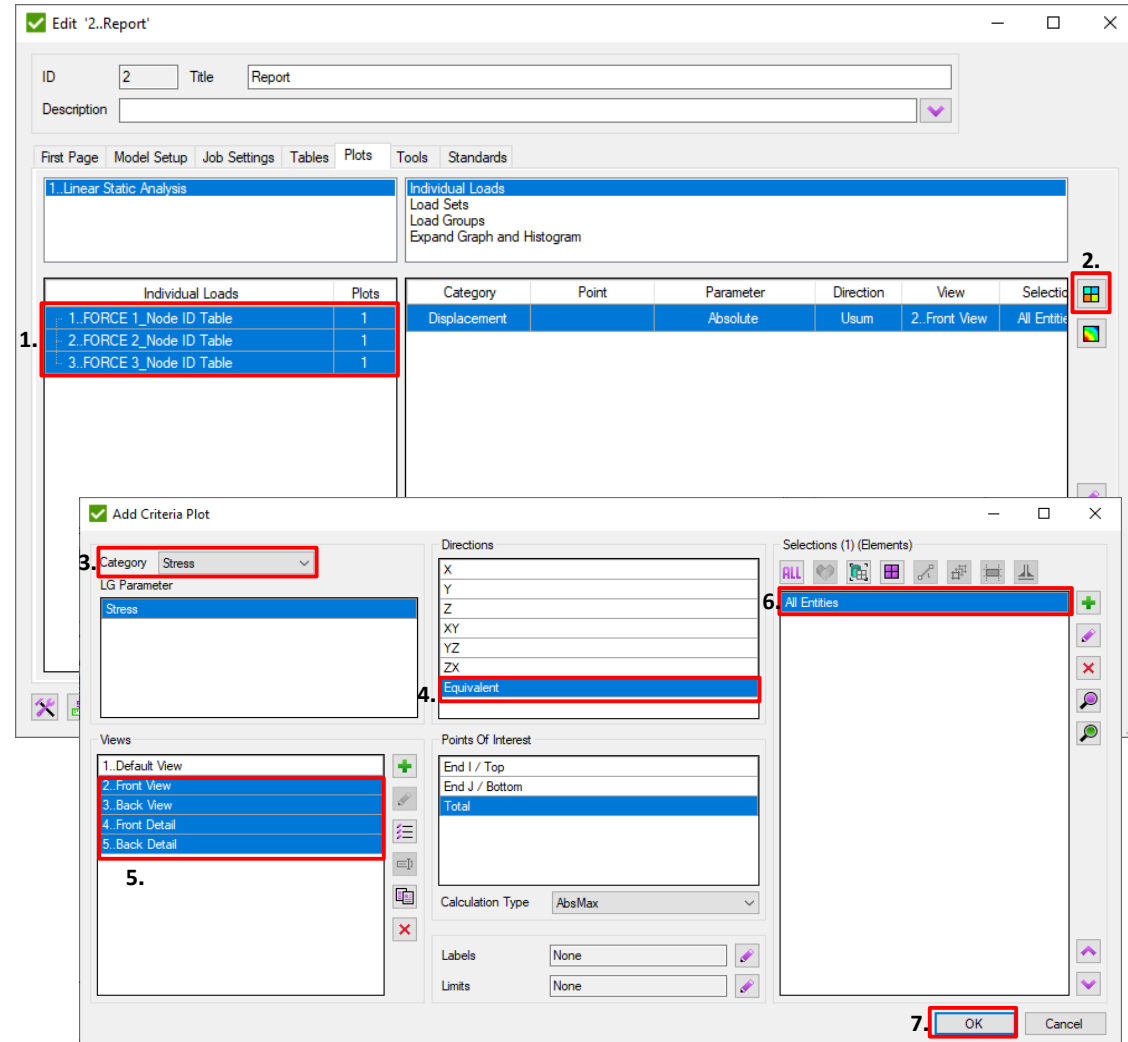
3 *Category: Stress*

4 *Direction: Equivalent.*




5 Select 4 Views: ID from 2 to 5

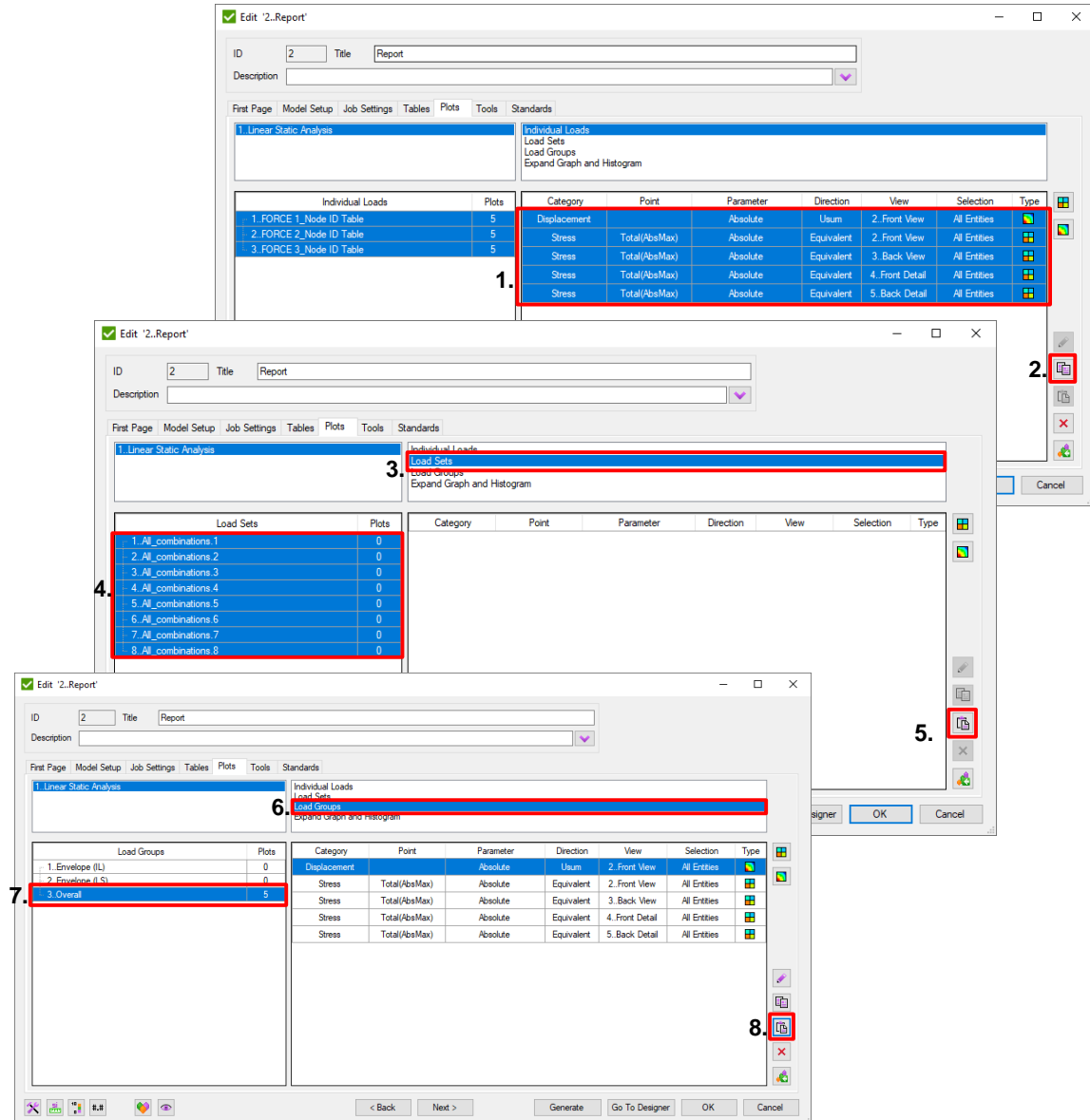
6 *Selection: All Elements*

7 Press OK.



Copy plots to Load Sets and Load Groups

- 1 Select all plots from the list.
- 2 Press  to copy plot to clipboard.
- 3 Plot Type: **Load Sets**
- 4 Select all loads sets.
- 5 Press  to paste.
- 6 Plot Type: **Load Groups**
- 7 Select **Overall** Load Group.
- 8 Press  to paste.



The screenshots illustrate the steps for copying plots to Load Sets and Load Groups in the SDC Verifier software.

Screenshot 1 (Top): The 'Edit Report' dialog is shown with the 'Plots' tab selected. The 'Individual Loads' table lists three plots: '1. FORCE 1_Node ID Table', '2. FORCE 2_Node ID Table', and '3. FORCE 3_Node ID Table'. The 'Load Sets' table is empty. The 'Load Groups' table is also empty. The 'Category' table shows the details for the selected plots.

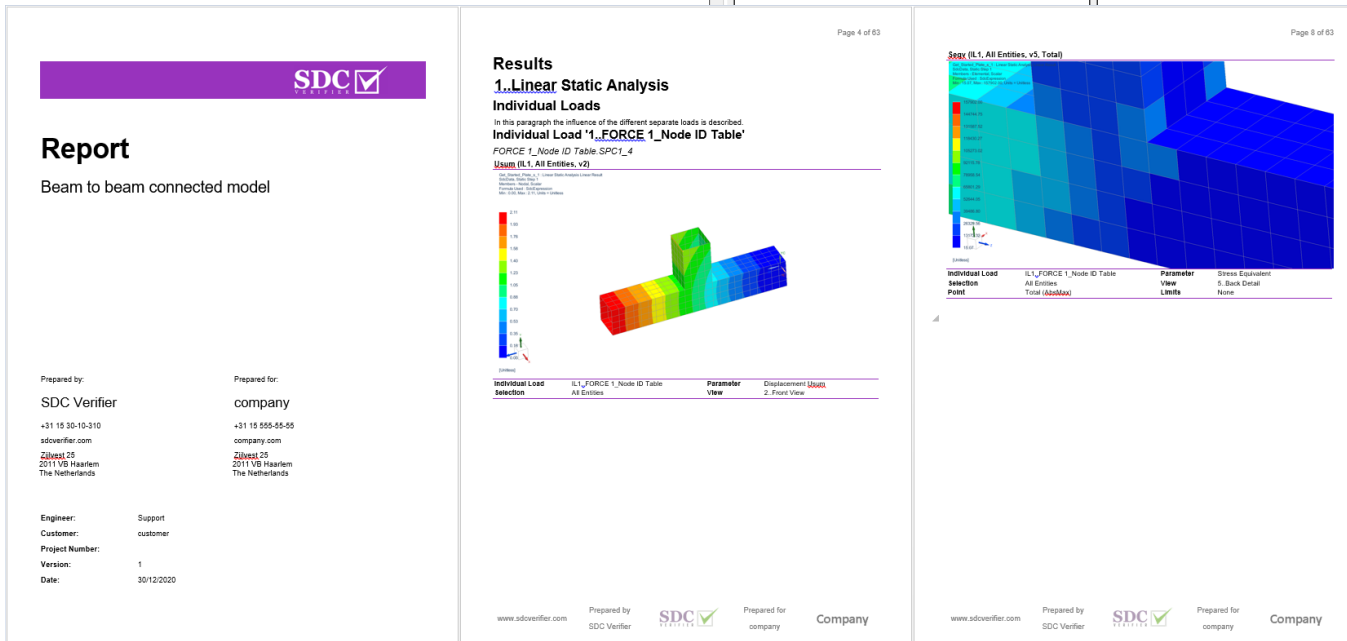
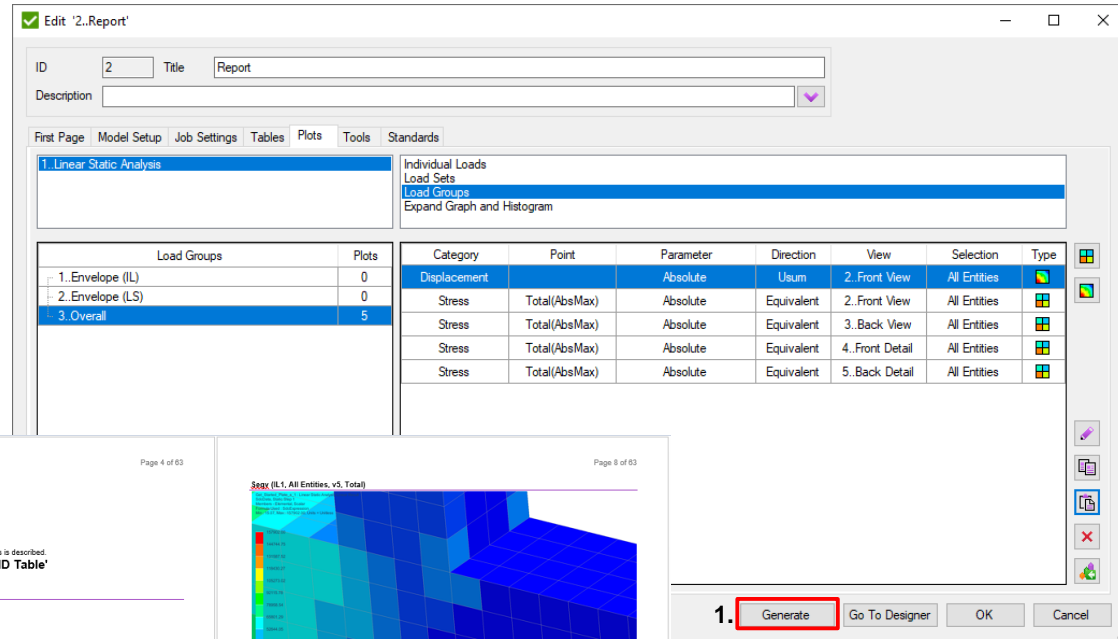
Screenshot 2 (Middle): The 'Edit Report' dialog is shown with the 'Plots' tab selected. The 'Load Sets' table is now populated with eight entries: '1. All_combinations.1', '2. All_combinations.2', '3. All_combinations.3', '4. All_combinations.4', '5. All_combinations.5', '6. All_combinations.6', '7. All_combinations.7', and '8. All_combinations.8'. The 'Load Groups' table is still empty. The 'Category' table shows the details for the selected plots.

Screenshot 3 (Bottom): The 'Edit Report' dialog is shown with the 'Plots' tab selected. The 'Load Groups' table is now populated with three entries: '1. Envelope (LL)', '2. Envelope (LS)', and '3. Overall'. The 'Load Sets' table is still empty. The 'Category' table shows the details for the selected plots.

Result Report Generation


1

Press *Generate*.

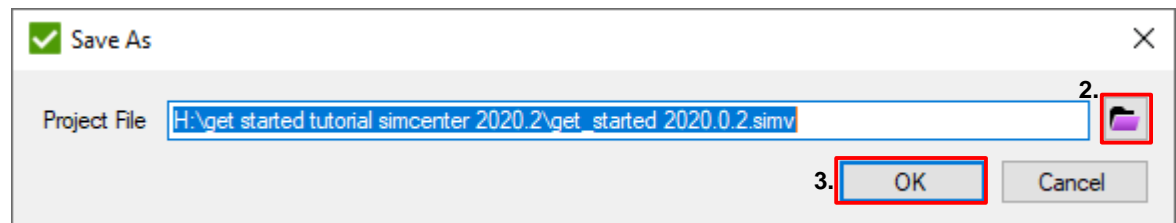
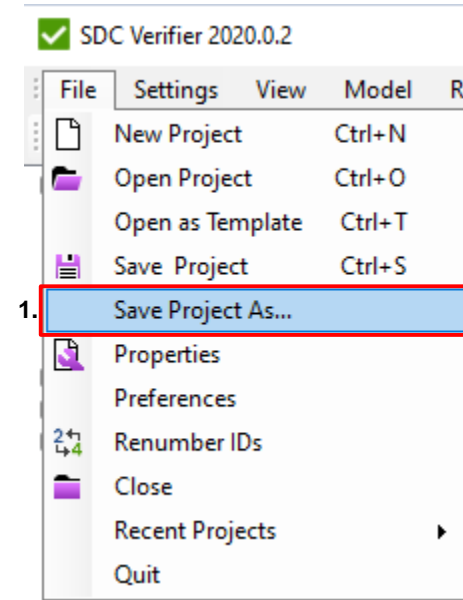


Save SDC project

1 Execute *File - Save Project As*

2 Press  to browse location and define the filename

3 Press *OK*



Open As Template – solid model

Open As Template features allows to reuse project for similar Simcenter model. In our case a solid model with same boundary conditions

1 Execute File - Open as Template.

2 Template Project: **Get_Started_Plate.simv**

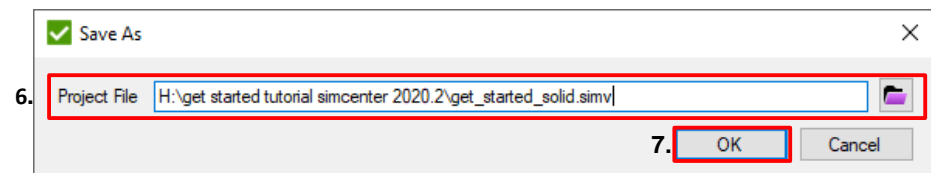
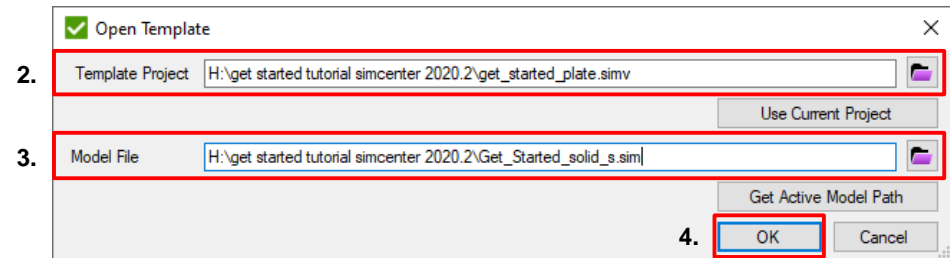
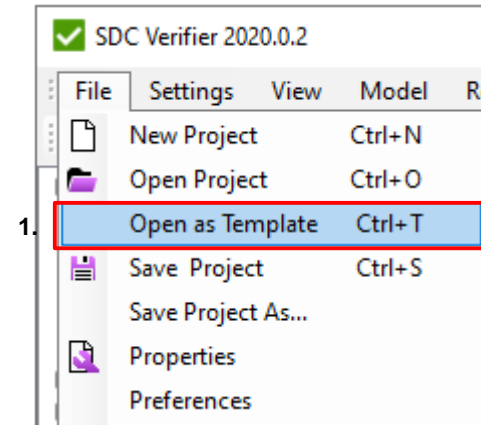
3 Model File: **Get_Started_solid_s.sim**

4 Press OK.



5 Execute File - Save Project as

6 Project File: **Get_Started_solid.simv**

7 Press OK.



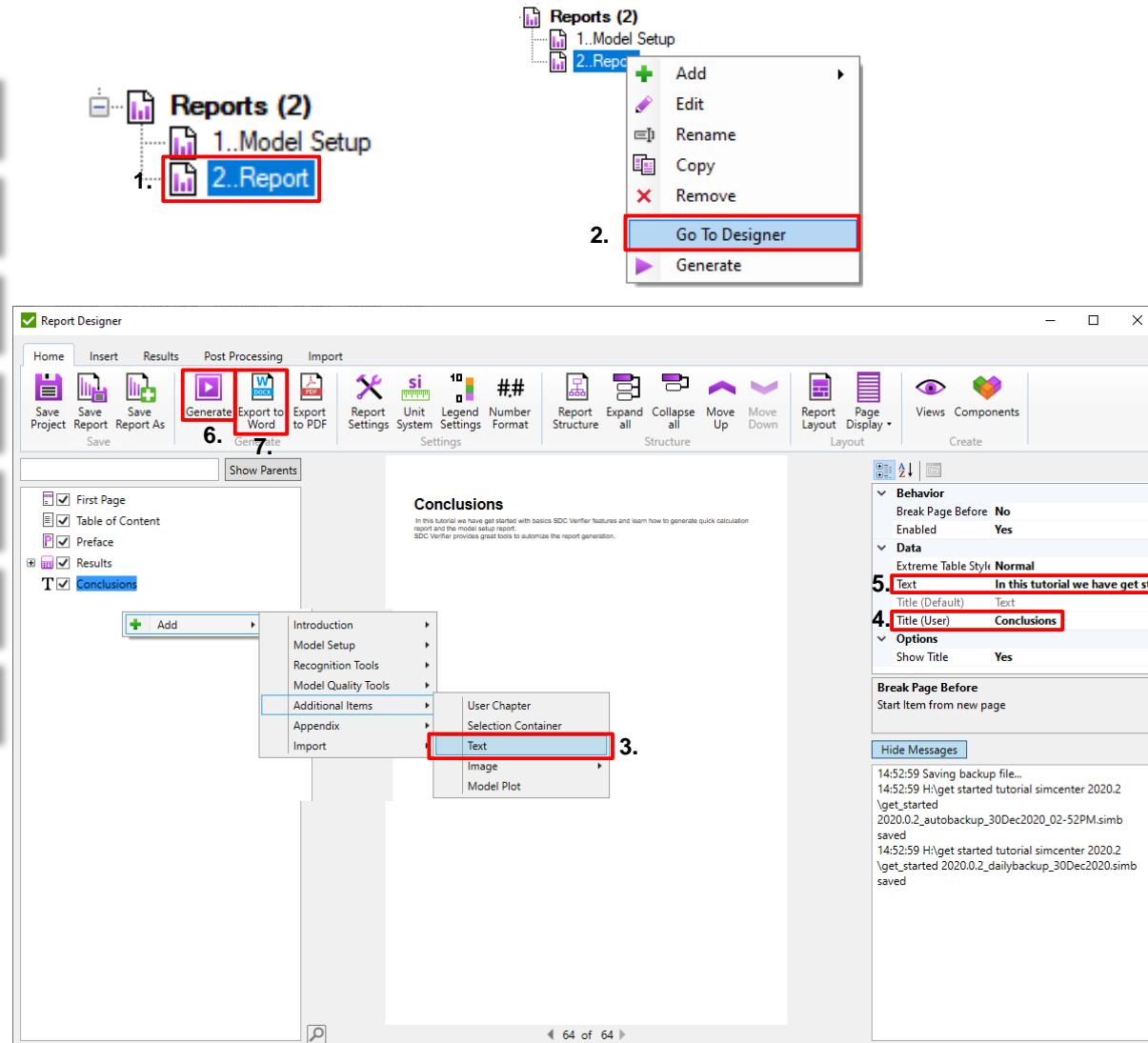
Generate report for Solid model

- 1 Select *Report* in the *Model* tree
- 2 Execute *Go To Designer* from the context menu
- 3 Add - Additional Items - Text
- 4 Title: **Conclusions**
- 5 Text:
- 6 Press  to generate report
- 7 After generation is finished press  to export generated report to Word

Note:

Report Wizard guides you through the steps of building and running the report.

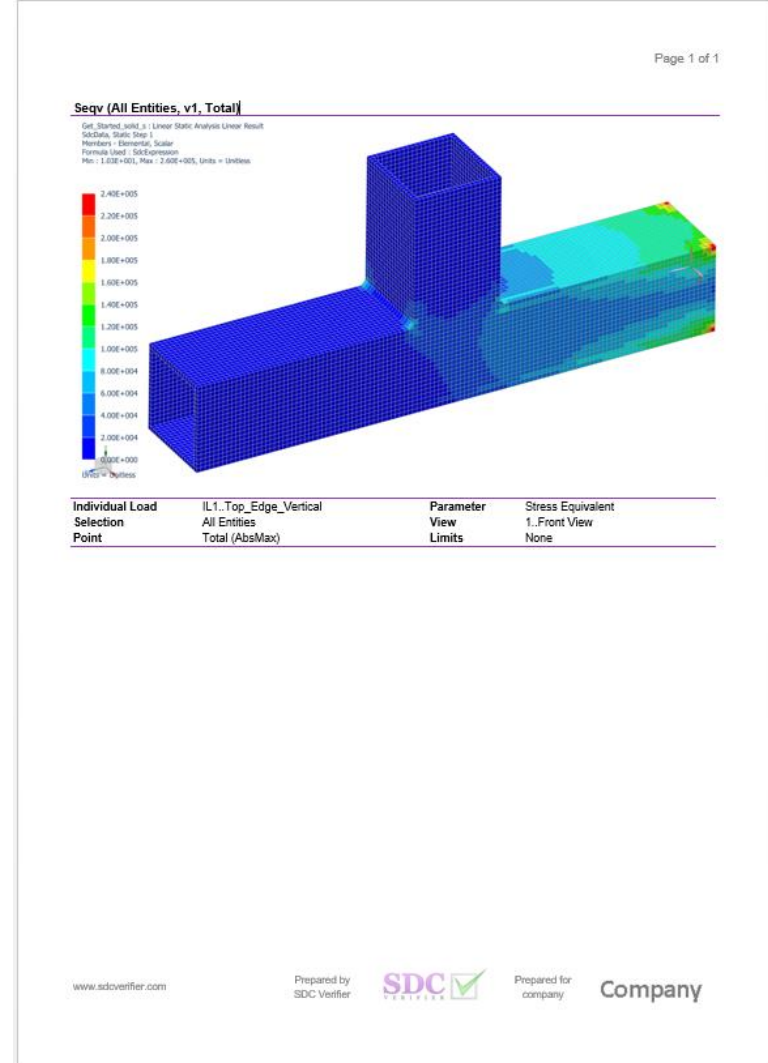
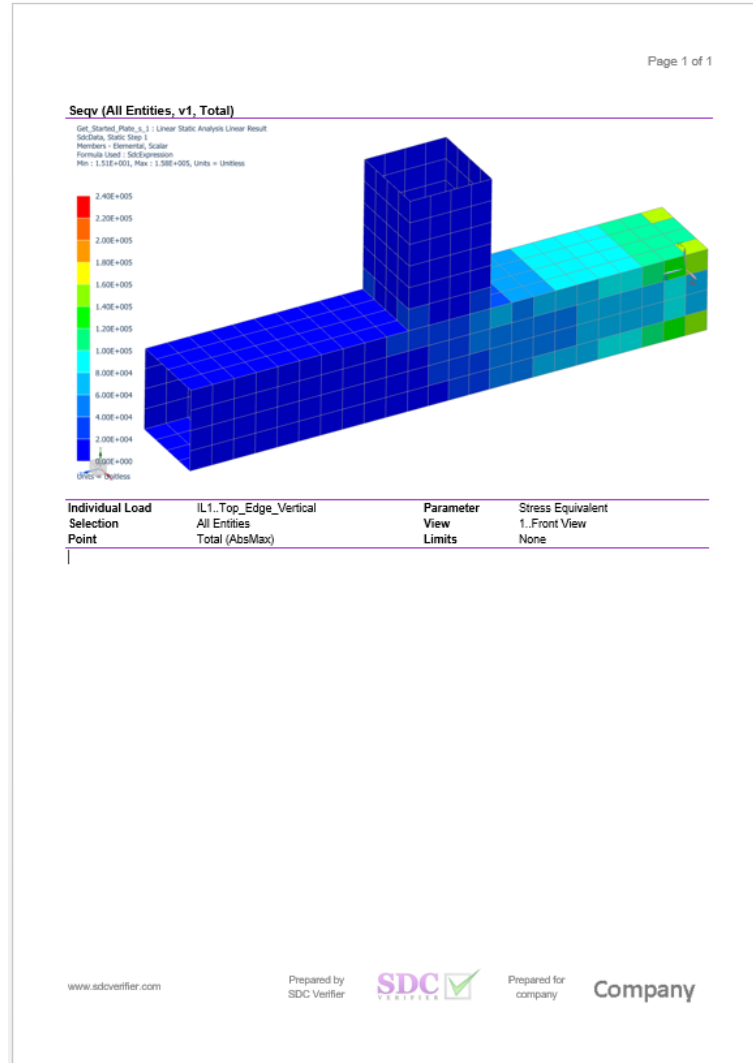
Whereas the Report Designer gives added ability to design your own reports.



Comments. Report on the volume model



Equivalent Stress plot is automatically displayed correct for plate and solid model.



Quick Support – remote access to your PC

1

Select *Help - Quick Support Tool*

2

Contact helpdesk by Team Viewer

3

Tell your ID to SDC specialist

Quick Support allows to get remote access to your PC by SDC Verifier specialist to solve your problem. All you need is to send your ID to us:
by Skype: `sdcverifier_helpdesk`;
by phone: `+31 15 30-10-310`;
by email: support@sdcverifier.com

Quick Support tool is standalone program.
Team Viewer is not required to be installed.

