Report Wizard

01.14.2020
version 5.3

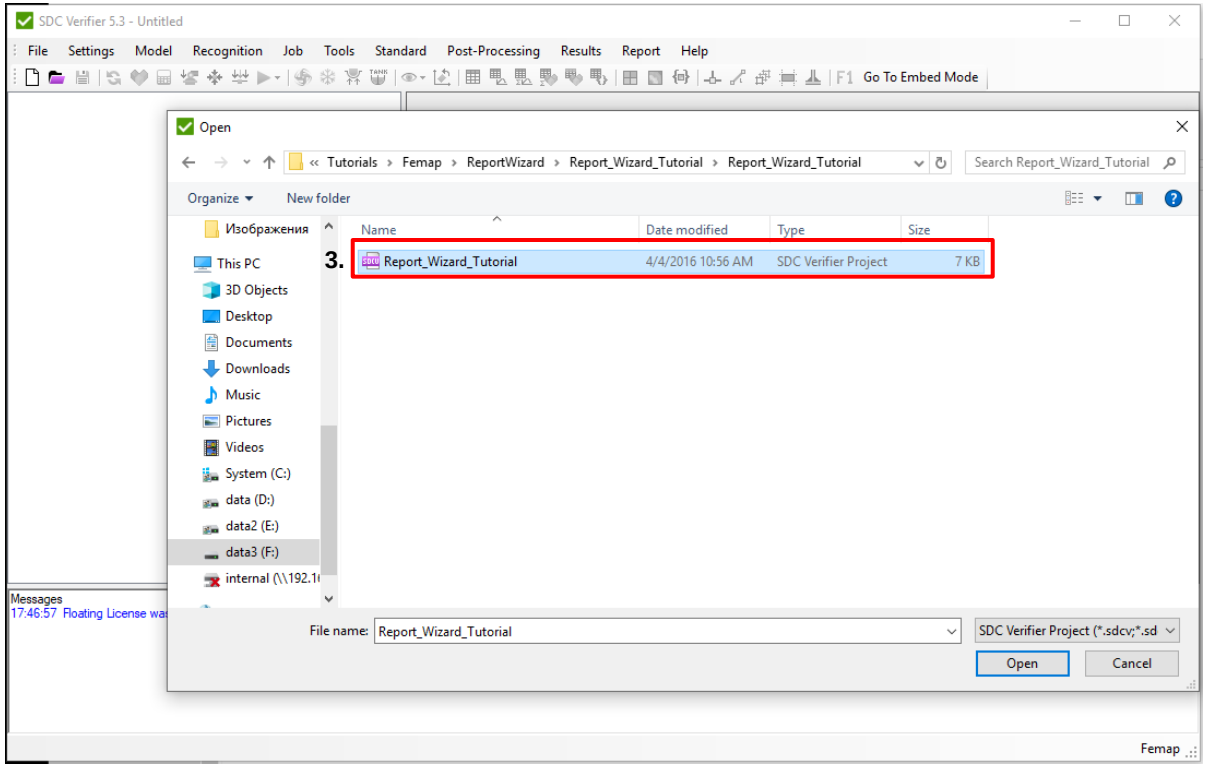
Content

This step-by-step tutorial is designed to cover SDC Verifier topics, namely :

- Add new report;
- First page settings;
- Model entities in report;
- Operations with tables and plots;
- Include results of the standards;
- Report generation.

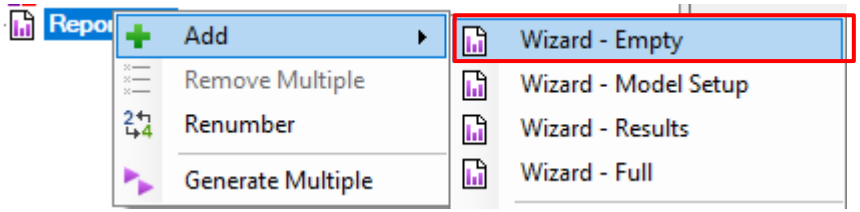
Open Project

1. Launch **SDC Verifier** ✅
2. Execute *File - Open Project.*
3. Project: **Report_Wizard_Tutorial .sdcv**



Add New Report

1 Execute **Reports** – ***Add*** – ***Empty*** from report context menu



1.

There are 4 templates of reports:

Empty – only first page and preface items are included;

Model Setup – description of model data (materials, properties, components, boundary conditions) is included;

Results – for each load extreme displacement tables, stress and displacement plots are included. Predefined tables: sum of reaction forces, stresses/displacements summary tables;

Full – Model Setup + Results + all tables created in Job.

Report Wizard Window

1. Save changes to current report. If report is not saved – new report will be added

2. Add new report to the project

3. Open report settings

4. Open unit system

5. Open legend settings

6. Open number format settings

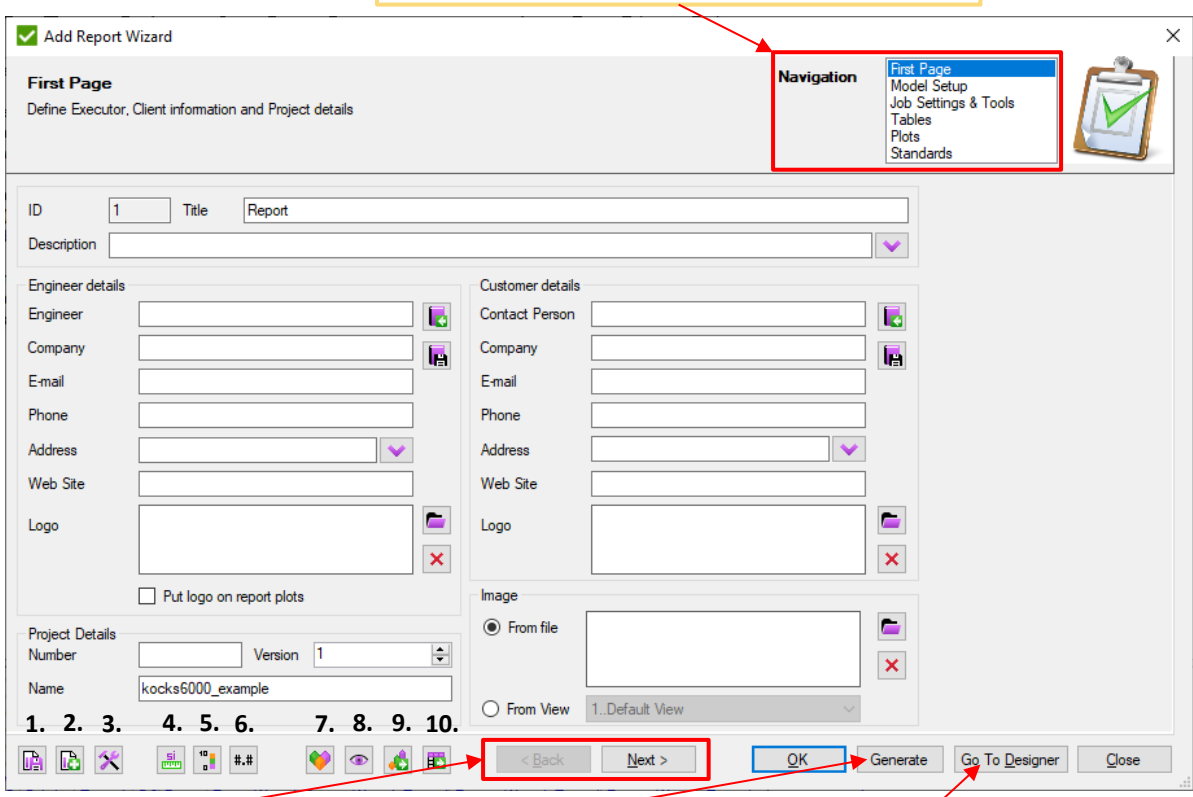
7. Modify components of the project

8. Modify views of the project

9. Export all Plots created in report to the project

10. Export all Tables created in report to the project

Navigation between report wizard sections



Step to next / previous section of report wizard

Generate the report and export to MS Word

Close current report and open Report Designer window to customize the report structure

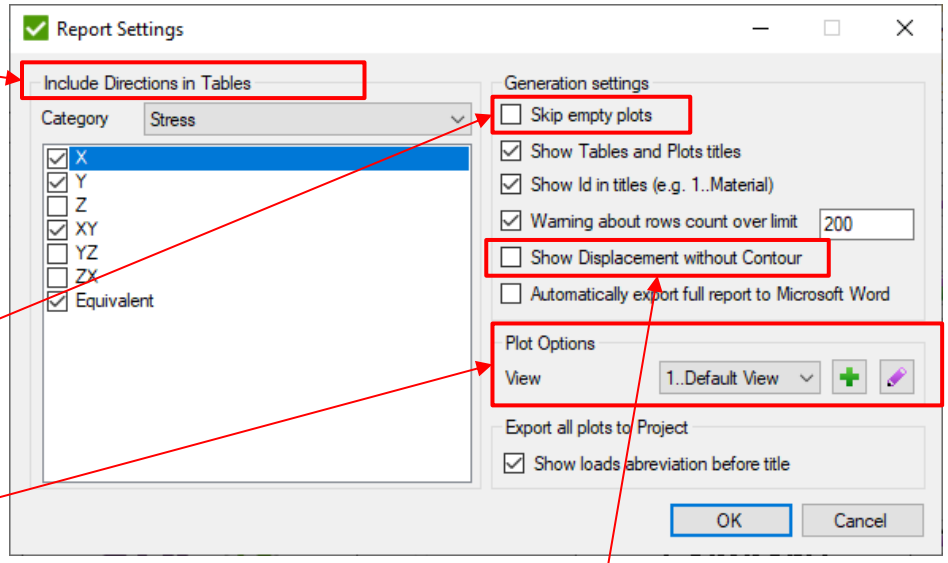
Report Settings

Include directions in Tables enables to change visibility of directions in tables by categories:

Stress Extreme (All Entities)

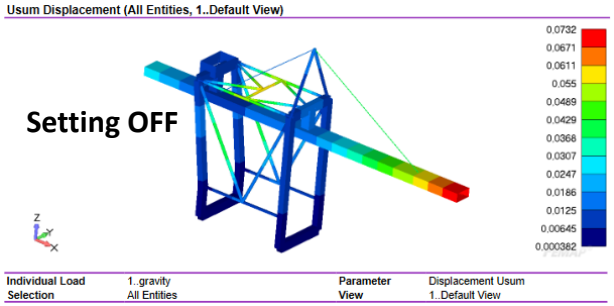
Individual Load	1..gravity	Selection	All Entities
Type	Extreme	Parameter	Stress

Extreme	X	Y	XY	Equivalent
Minimum	-83.29e+6		0.00e+6	0.00e+6
Maximum	68.53e+6		0.00e+6	83.29e+6
Absolute	-83.29e+6		0.00e+6	83.29e+6

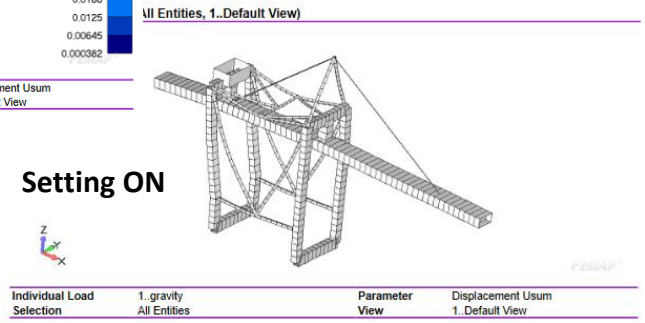


Skip empty plots: if a plot does not contain values that pass the limit, it will not be generated and warning message will be displayed

View is applied to plots of the model entities (Materials, Properties etc.)



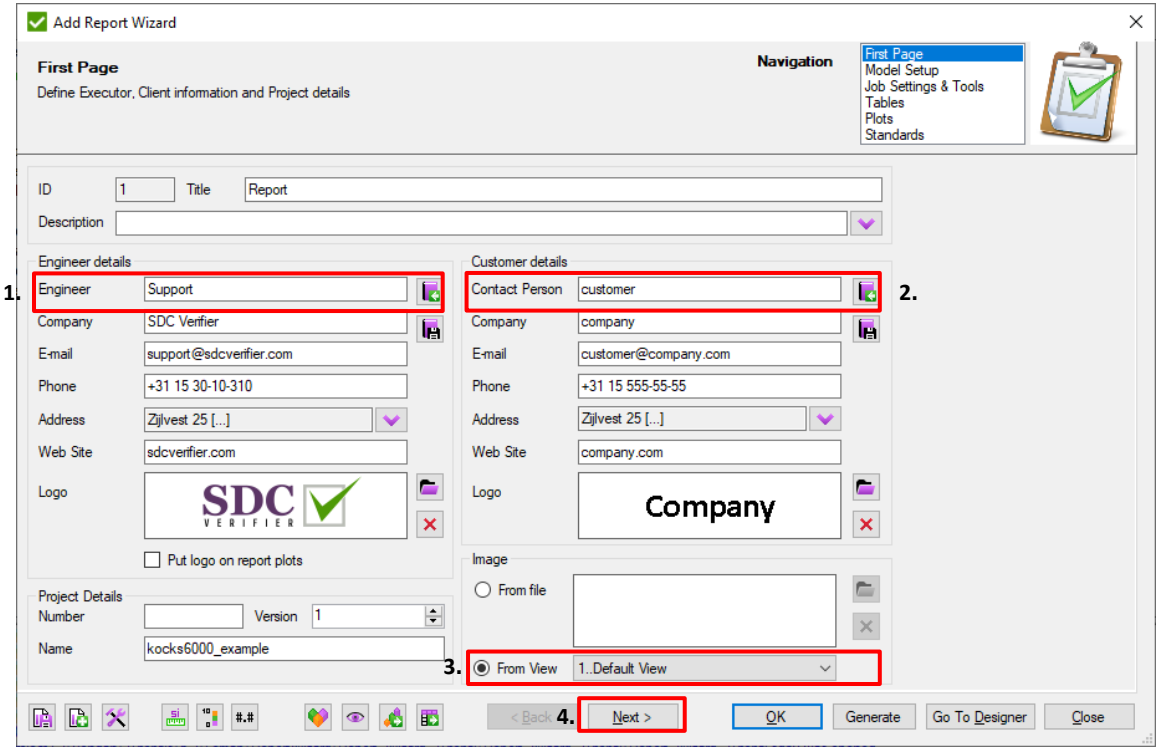
Show displacement without Contour: no legend and only deformation will be displayed on the plot



First Page Settings

1. Press and select Support Engineer from the library
2. Press and select Customer from the library
3. Image – **From View**: **1..Default View**
4. Press *Next.*

Use *Navigation* alternatively



Note: The default data from library is used for Engineer and Customer. It is possible to fill in your data and store it to the library to reuse it in the future projects.

Generated First Page

Project name

Image from view or custom image

SDC and FEMAP versions, model and project paths

Engineer details

Project details

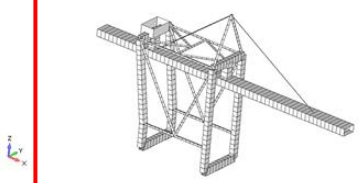
Customer details

Companies logos and names

SDC VERIFIER

Report

kocks6000_example



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Engineer:	Support
Customer:	customer
Project Number:	
Version:	1
Date:	14-01-2020

Preface

This document is generated with SDC Verifier 5.3 and calculated with Femap v2019.1
Model File: G:\Tutorials\5.3\Femap\Report_Wizard_Tutorial\Crane_Model.modfem
Project File: G:\Tutorials\5.3\Femap\\Report_Wizard_Tutorial\Report_Wizard_Tutorial.sdcv
Report Profile: 1..Report
Generation on: 14-Jan-20 05:18:26 PM

Unit System
Current Unit System = MKS (Meter/Kg/Second). It is used in calculations for the following standards: API RP 2A, ISO 19902, Norsok N004, DIN 15018, FEM 1.001 and Eurocode3.

Dimensions	Value
Length	Meter
Mass	Kilogram
Time	Second
Force	Newton
Stress	Pa

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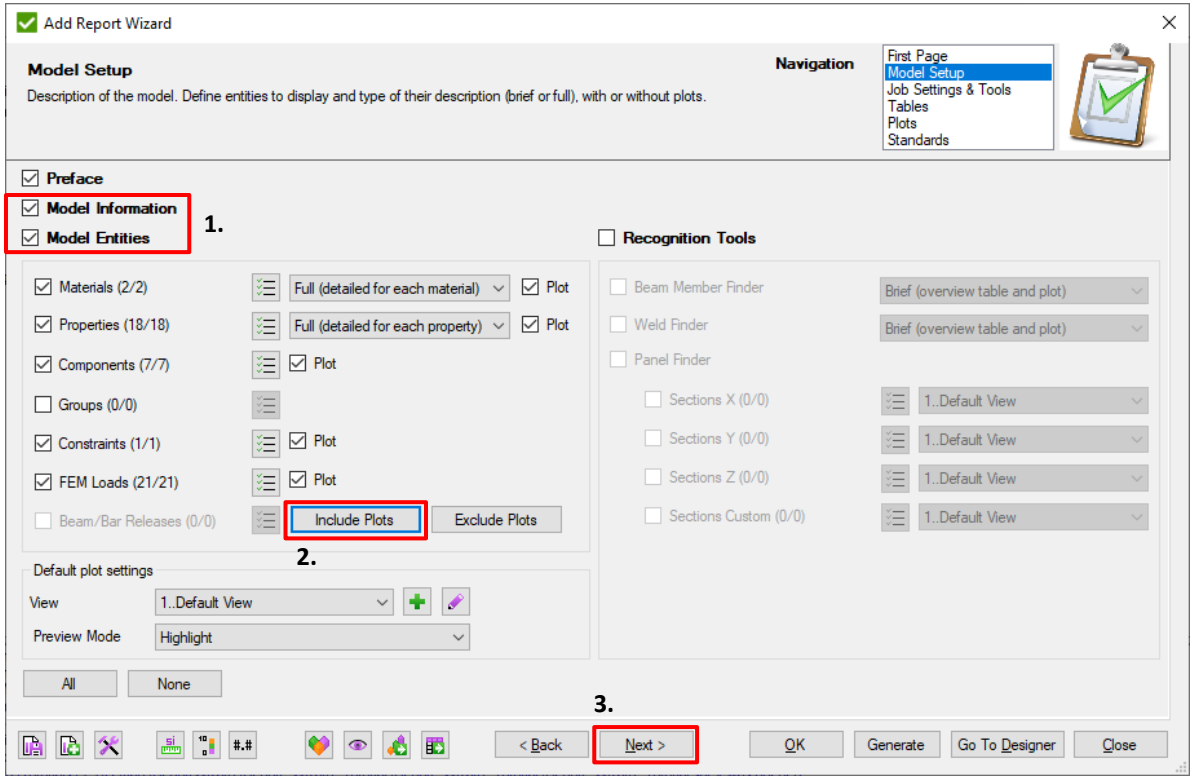
Model Setup Section

1. *Model Information* and *Model Entities:* **ON**
2. Press *Include Plots*
3. Press *Next* to navigate to Job Settings & Tools section

Use *Navigation* alternatively



Materials and properties information type will be changed from Brief to Full. Plots will be selected automatically for all enabled items.

All / None buttons – select/deselect all model entities (Materials, properties etc.)

Model Setup Section

Model Information

Model Summary

Entity	Count
Mass [kg]	2017142.7
Gravity Center [m]	[-14.70; 0.00; 35.00]
X [Min;Max] [m]	[-60.48; 60.00]
Y [Min;Max] [m]	[-9.25; 9.25]
Z [Min;Max] [m]	[6.00; 70.00]

Properties Brief information

Properties

This paragraph contains properties information.

Properties Summary

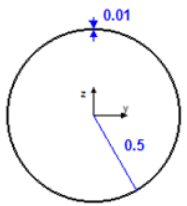
Title	Elements	Material	Mass [kg]	Gravity Center [m]
1..portside legs	44	1..steel	112491.4	[-32.42; 0.00; 28.04]
2..sea side legs	44	1..steel	111564.2	[0.00; 0.00; 28.00]
3..stiffening beam	32	1..steel	24644.6	[-15.24; 0.00; 16.00]
4..cross members	78	1..steel	1183705.7	[-16.76; 0.00; 33.00]
5..chassis beam	22	1..steel	57799.6	[-15.24; 0.00; 6.00]
6..gauntry members PS	10	1..steel	28899.8	[-35.48; 0.00; 50.00]
7..gauntry members SS	10	1..steel	17357.3	[0.00; 0.00; 50.00]
8..top part	22	1..steel	13449.9	[0.00; 0.00; 60.00]
9..main beam	13	1..steel	58678.8	[-47.98; 0.00; 42.00]
10..between legs	18	1..steel	83276.9	[-17.74; 0.00; 42.00]
11..sea side	31	1..steel	140829.0	[30.00; 0.00; 42.00]
12..forestay	1	1..steel	21426.6	[22.50; 0.00; 56.00]
13..backstay	1	1..steel	18272.3	[-17.74; 0.00; 56.00]
14..Top stiffness member portal	36	1..steel	19249.8	[-17.74; 0.00; 50.00]
15..Top diagonal members	50	1..steel	19244.2	[-17.74; 0.00; 50.00]
16..Bridge_support_SS	4	1..steel	13126.5	[0.00; 0.00; 46.00]
17..Bridge support beam PS	4	1..steel	13126.5	[-35.48; 0.00; 46.00]
18..machine_house	1	2..Machine_house	79999.9	[-35.48; 0.00; 52.00]
Overall	421		2017142.7	[-14.70; 0.00; 35.00]

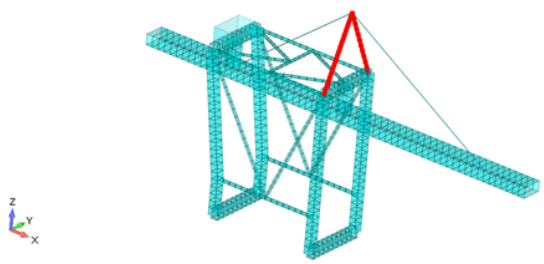
Properties Full information includes Brief and detailed information of each property

8..top part

Property	Value
Type / Elements	Beam / 22
Material	1..steel
Mass [kg]	13449.9
Gravity Center [m]	[0.00; 0.00; 60.00]
Area, [m^2]	0.03
I1, [m^4]	3.811e-03
I2, [m^4]	3.811e-03
I12, [m^4]	0
Torsion Constant, [m^4]	0.01
Y Shear Area, [m^2]	0.02
Z Shear Area, [m^2]	0.02
Nonstructural Mass, [kg]	0
Perimeter, [m]	3.14
Warping Constant, [m^6]	0
Y Neutral Axis Offset A, [m]	0
Z Neutral Axis Offset A, [m]	0
r [m]	0.500
t [m]	0.010

Property Shape





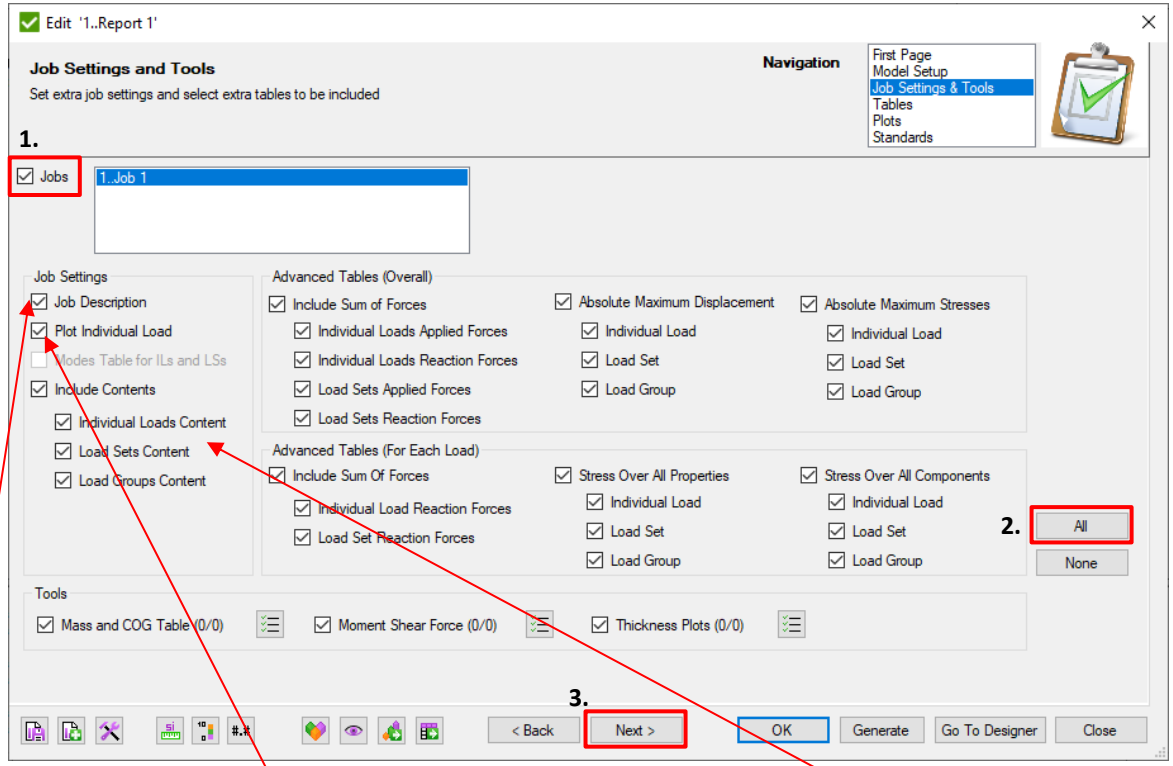
Job Settings & Tools Section

1. *Jobs:* **ON**
2. Press *All* to include all settings of the section

Settings will be included only for selected job. Other jobs have their own settings.

3. Press *Next* to navigate to the Tables section

Use *Navigation* alternatively



Job Description includes information about the selected job (selection, requested results etc.) and list of used in Individual Loads FEM Loads and Constraints

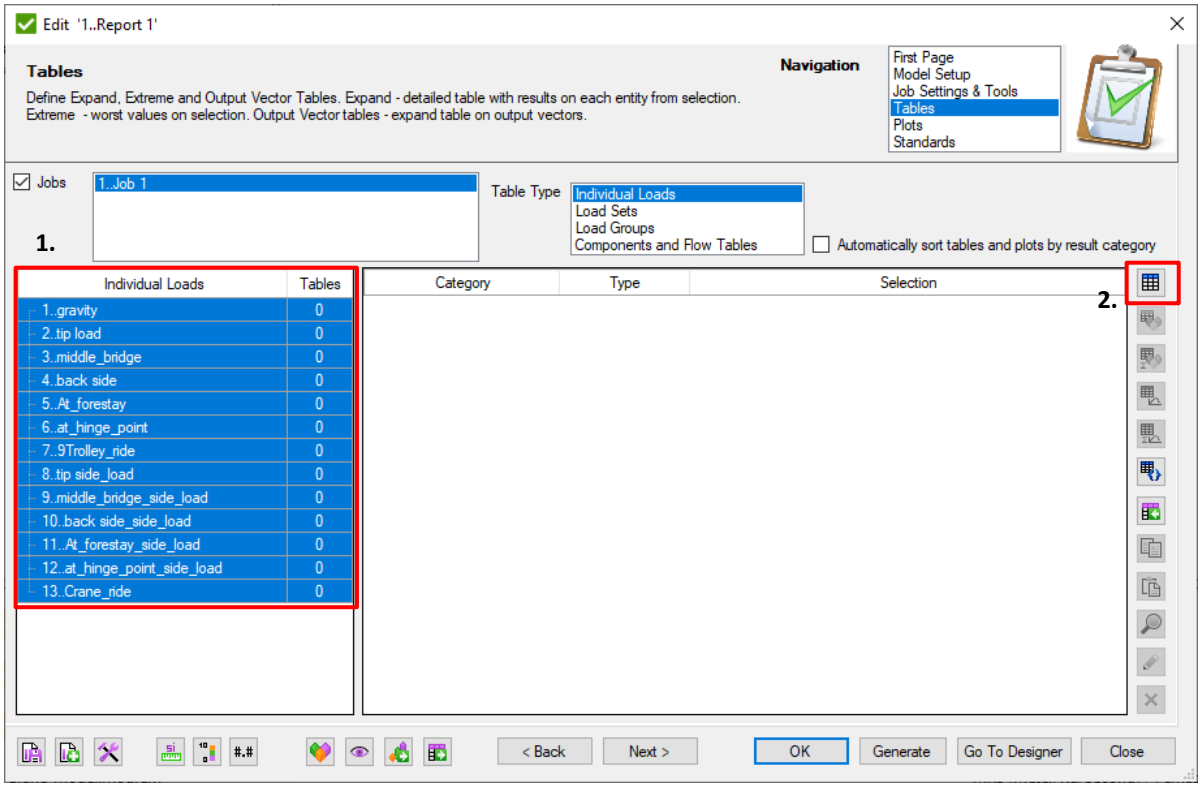
Plot Individual Load – Each Individual load additionally will generate plot of related FEM Load and Constraint. Default View will be used for the plot

Include Contents – FEM Loads and Constraints for individual loads; Individual loads with factors for load sets; Loads with safety factors for load groups;

Tables Section

1. Select all Individual loads from the list
2. Press to add table

Add simple expand or extreme table by result categories



Add Extreme Table

1. Select *Displacement* and *Stress* categories
2. Add all materials to selection list
3. Press *OK*

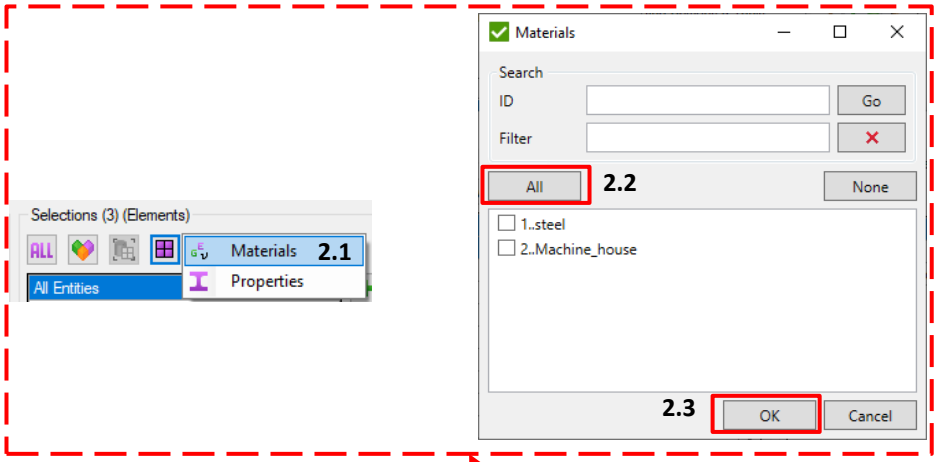
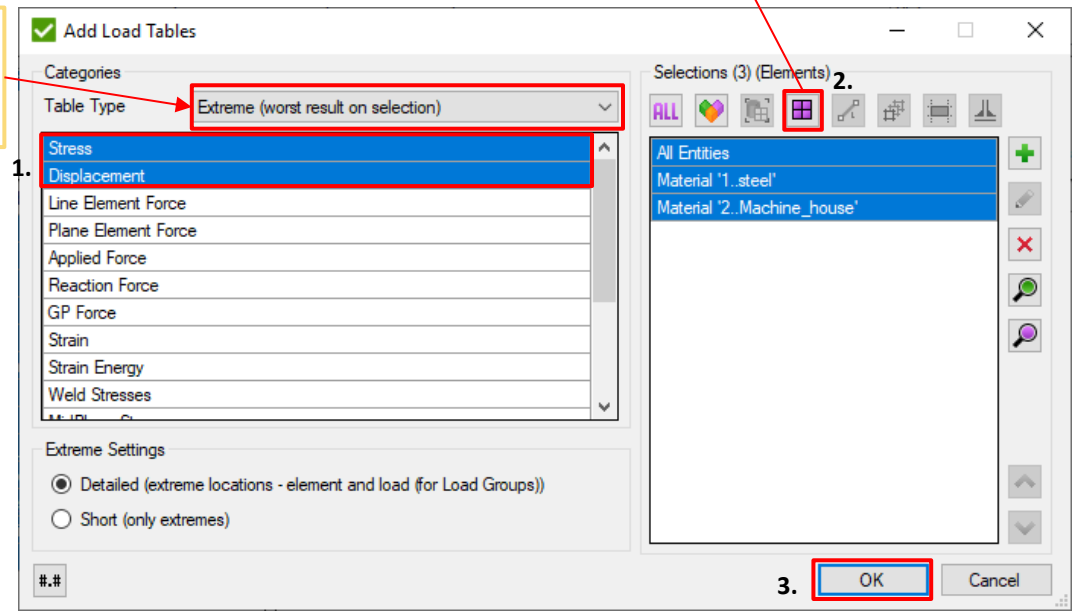
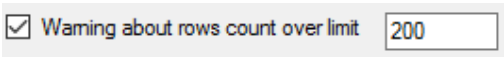


Table Types:
Expand – display result for each element/node;
Extreme – worst values on selection;



To include tables that contain more than 200 rows – change maximum rows count in report settings or turn off warning setting.



Edit Tables Settings

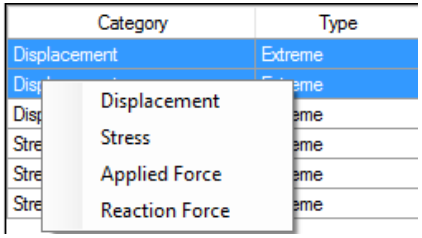
Amount of created tables is a combination of categories, selections and types

Tables are created for all selected loads and common tables are displayed in the list

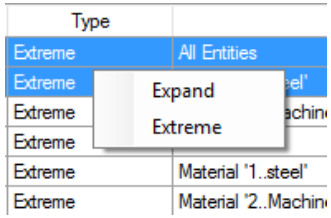
Individual Loads	Tables
1..gravity	6
2..tip load	6
3..middle_bridge	6
4..back side	6
5..At_forestay	6
6..at_hinge_point	6
7..9Trolley_ride	6
8..tip side_load	6
9..middle_bridge_side_load	6
10..back side_side_load	6
11..At_forestay_side_load	6
12..at_hinge_point_side_load	6
13..Crane_ride	6

Category	Type	Selection
Stress	Extreme	All Entities
Stress	Extreme	Material '1..steel'
Stress	Extreme	Material '2..Machine_house'
Displacement	Extreme	All Entities
Displacement	Extreme	Material '1..steel'
Displacement	Extreme	Material '2..Machine_house'

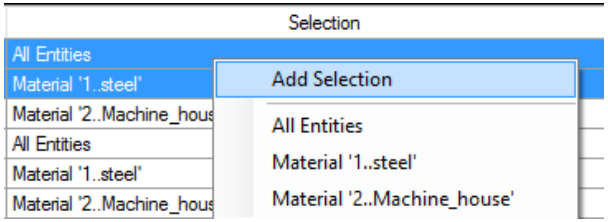
Change category



Change Type



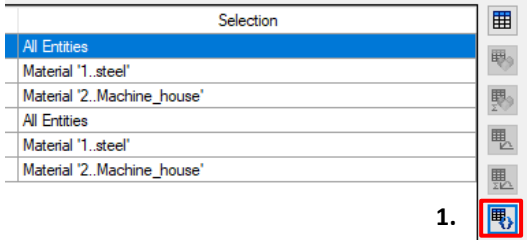
Change Selection

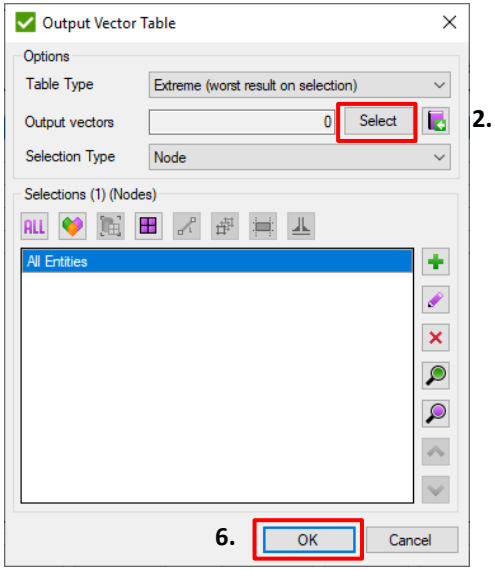


Changes will be applied to all selected tables

Add Output Vector Table

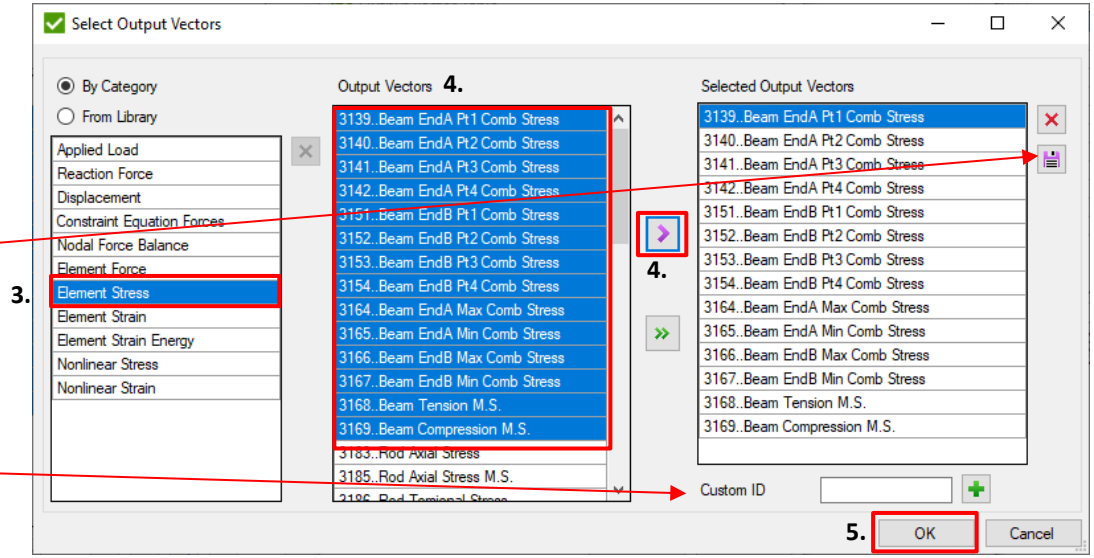
1. Press to add output vector table(expand/extreme)
2. Press *Select* to add output vectors
3. Select **Element Stress**
4. Select **Beam stress vectors** and press
5. Press *OK.*
6. Press *OK*





Press to store predefined set of output vectors to the library.

Fill Custom ID and press to add already known vector

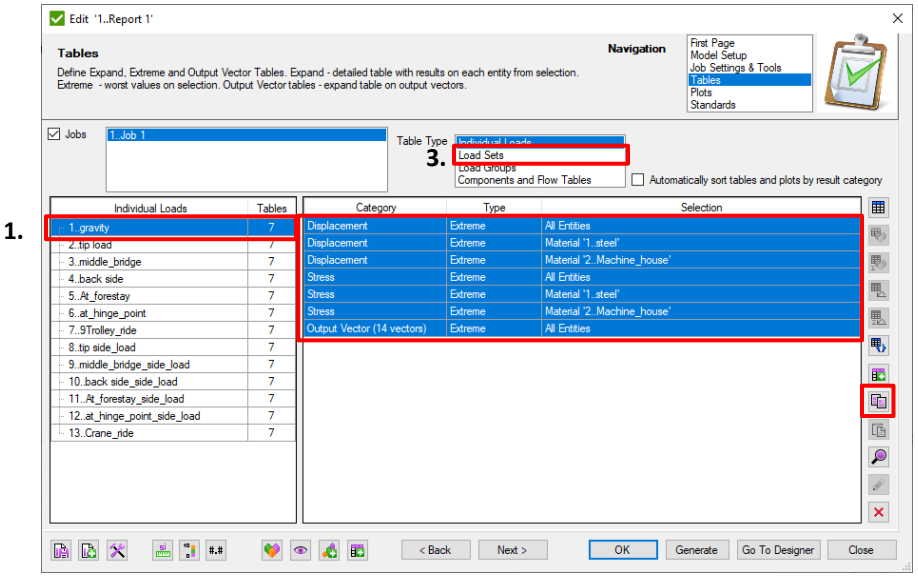


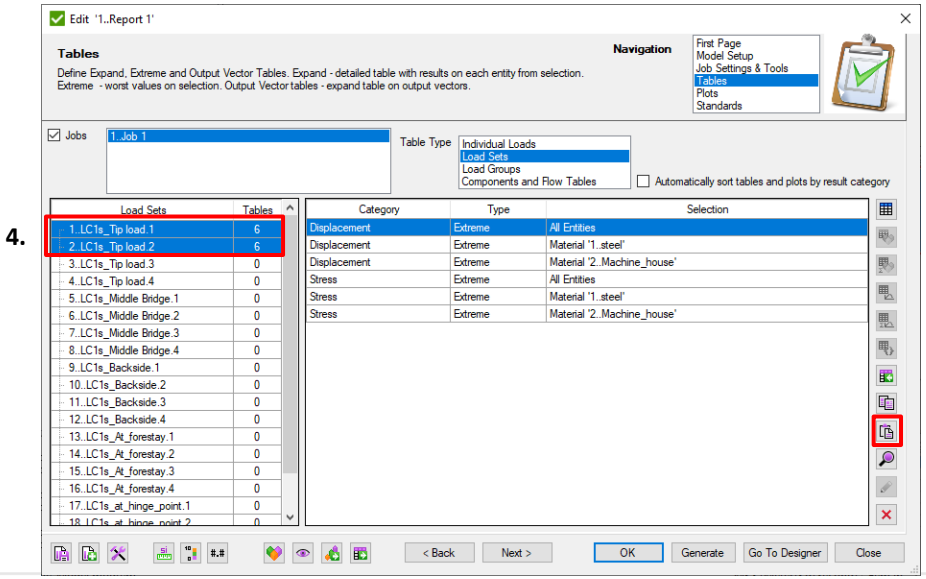
Copy Tables

1. Select first individual load and select all tables from the list
2. Press
3. Select *Table Type*: Load Sets
4. Select two first Load Sets in the list
5. Press

Tables order will be kept

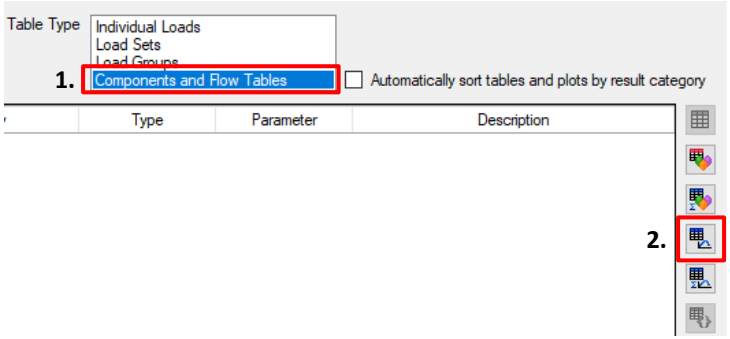
Output vector tables are available only for Individual Loads. For other types they will be skipped on copy.

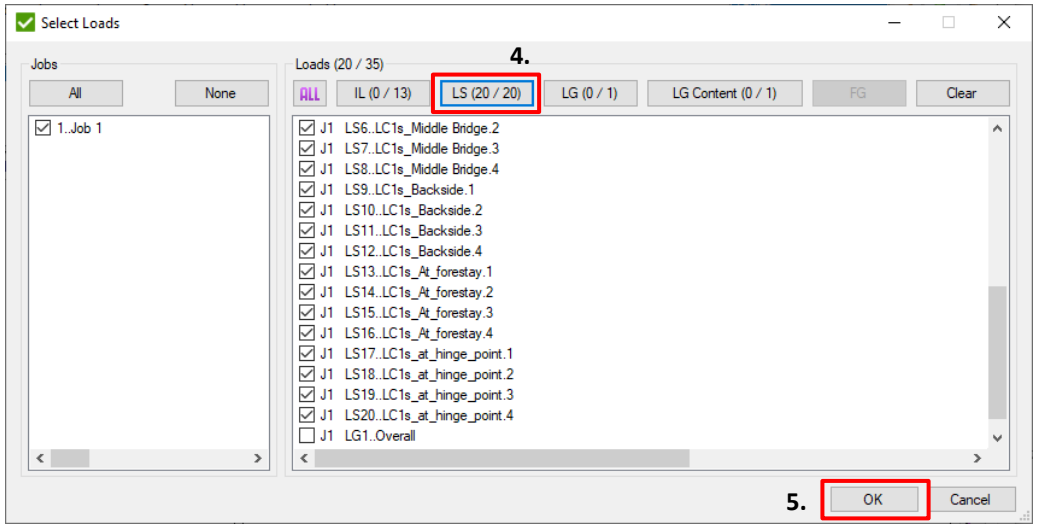




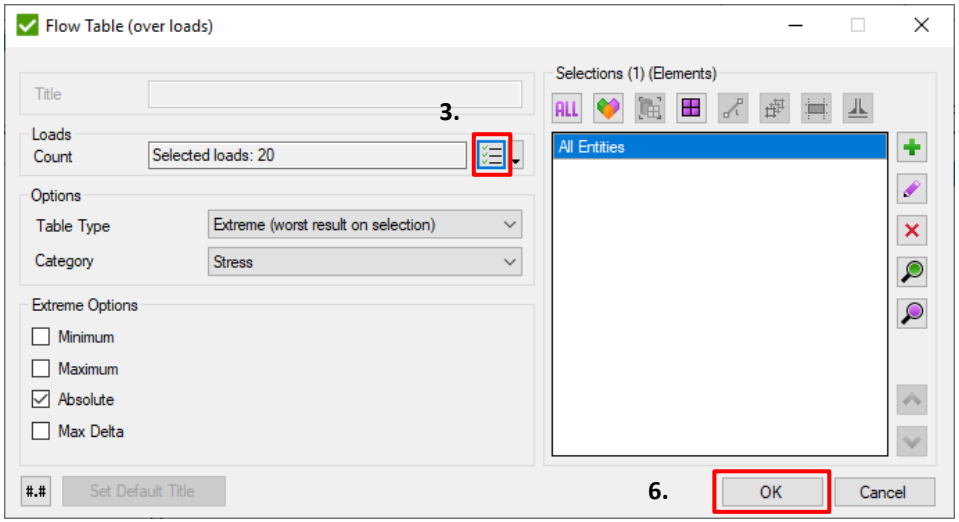
Add Flow Table

1. Select *Table Type*: Components and Flow Tables
2. Press to add flow table



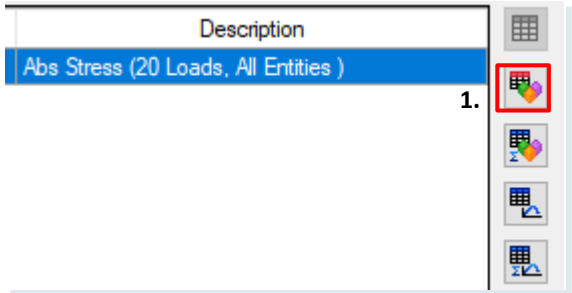


3. Press
4. Press *LS* to add all Load Sets
5. Press *OK*
6. Press OK



Add Components Table

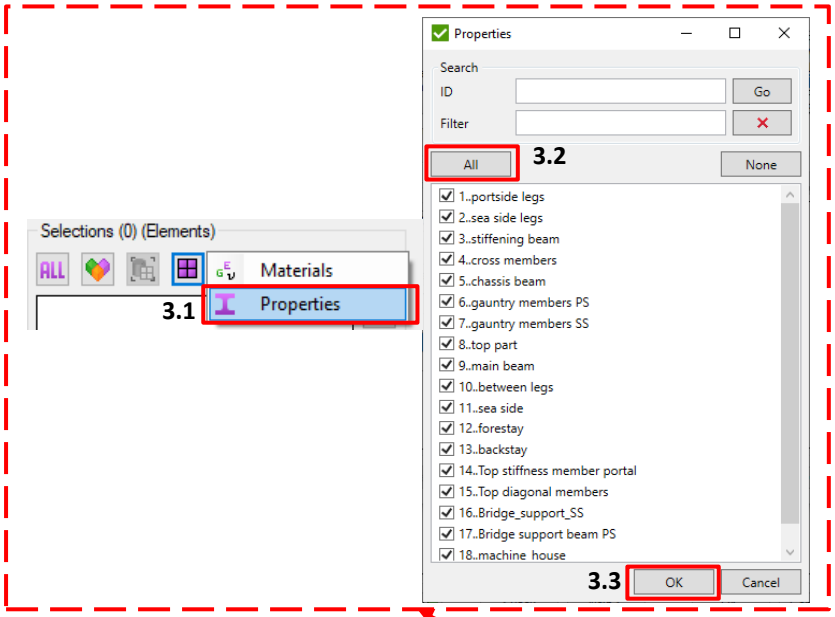
1. Press Components *Table*

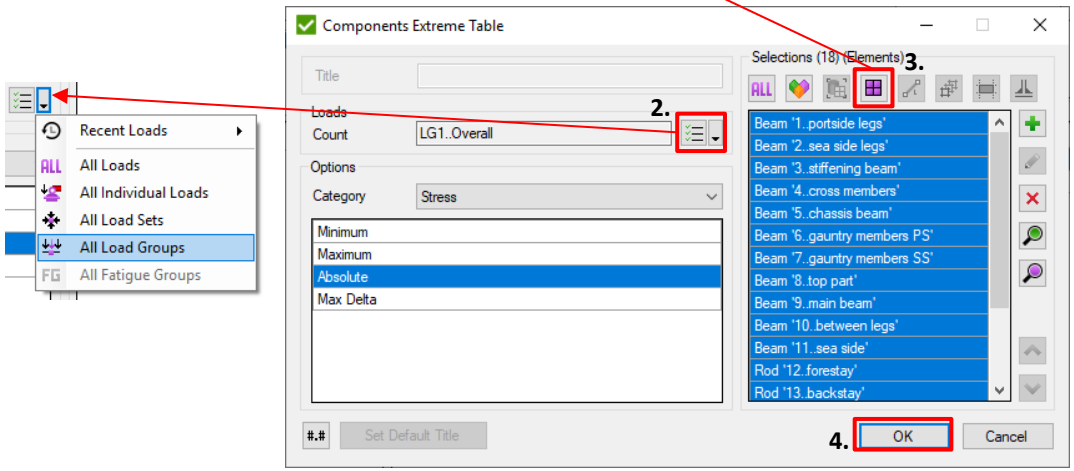


2. Press ▾ and select **All Load Groups**

3. Add all properties to the selection list

4. Press *OK*

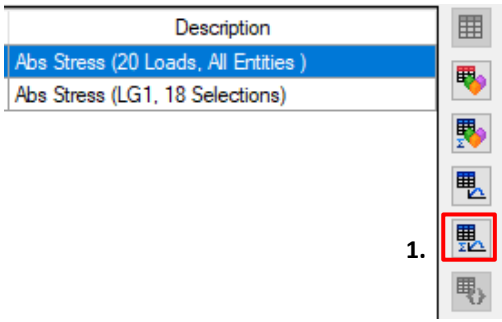


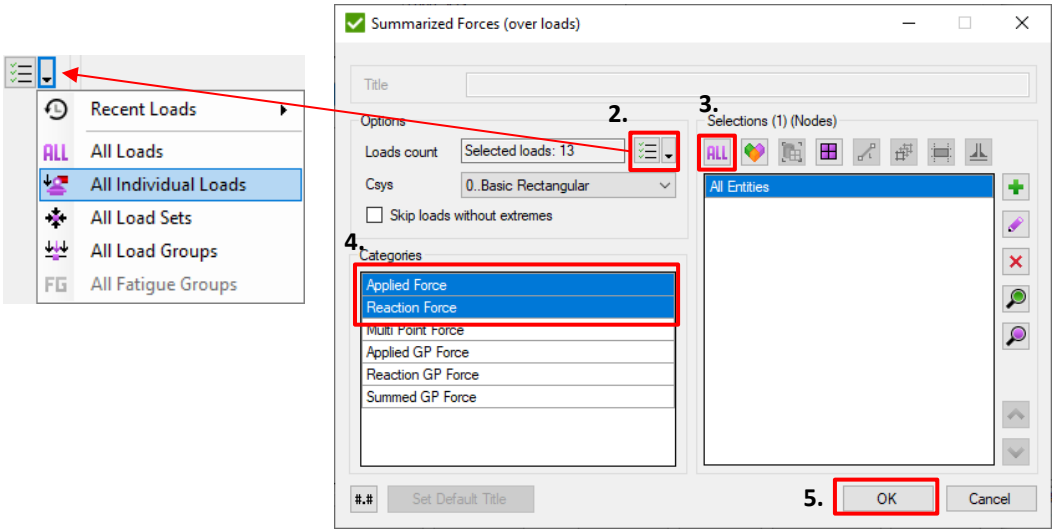


Add Force Summation Table

1. Press Force Summation Table over Loads
2. Press ▾ and select **All Individual Loads**
3. Press **All** to add the full model selection
4. Select categories: **Applied and Reaction forces**
5. Press *OK*

Current table is similar to the flow table, but instead of showing the worst (or detailed) results, forces are summarized on the full selection





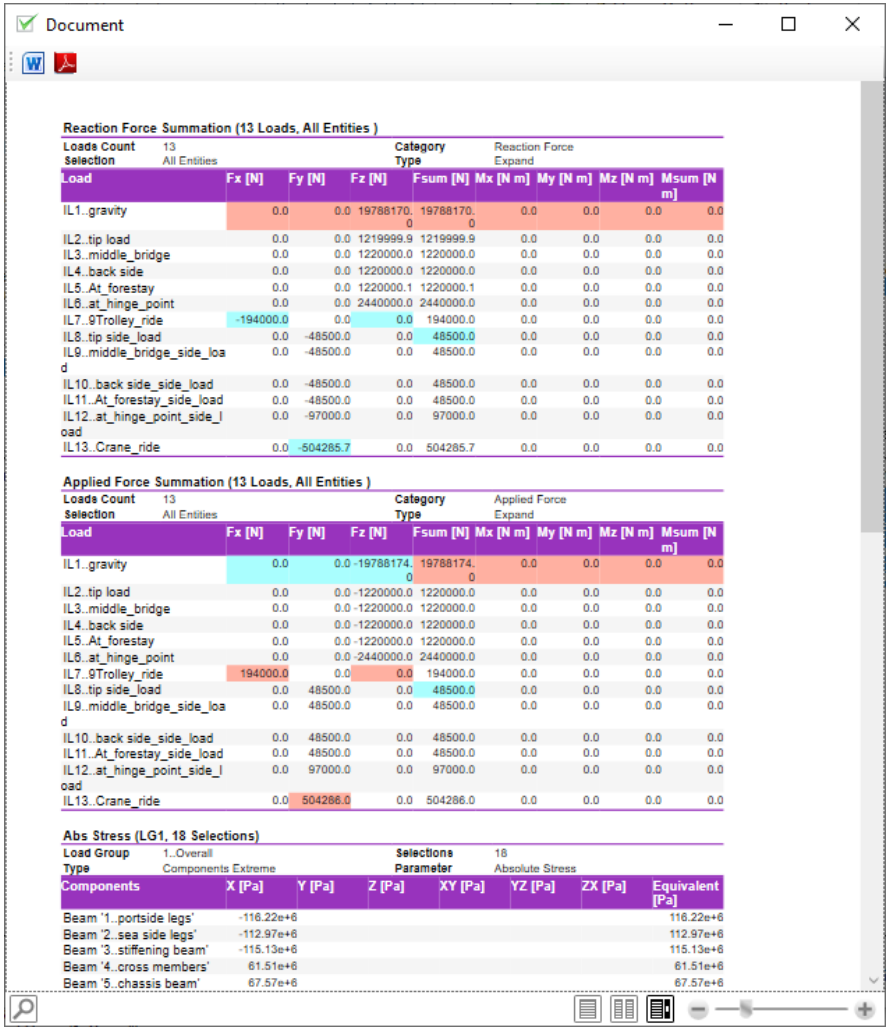
Preview Tables

1. Select all tables in the list
2. Press to preview tables

1.

Category	Type	Parameter	Description
Stress	Extreme Flow Ta...	Abs	Abs Stress (20 Loads, All Entities)
Stress	Component Extre...	Absolute	Abs Stress (LG1, 18 Selections)
Applied Force	Summarized forc...		Applied Force Summation (13 Loads, All Entiti...
Reaction Force	Summarized forc...		Reaction Force Summation (13 Loads, All Enti...

2.



Document

Reaction Force Summation (13 Loads, All Entities)

Loads Count 13 — Category Reaction Force
Selection All Entities — Type Expand

Load	Fx [N]	Fy [N]	Fz [N]	Fsum [N]	Mx [N m]	My [N m]	Mz [N m]	Msum [N m]
IL1..gravity	0.0	0.0	19788170.0	19788170.0	0.0	0.0	0.0	0.0
IL2..tip load	0.0	0.0	1219999.9	1219999.9	0.0	0.0	0.0	0.0
IL3..middle_bridge	0.0	0.0	1220000.0	1220000.0	0.0	0.0	0.0	0.0
IL4..back side	0.0	0.0	1220000.0	1220000.0	0.0	0.0	0.0	0.0
IL5..At_forestay	0.0	0.0	1220000.1	1220000.1	0.0	0.0	0.0	0.0
IL6..at_hinge_point	0.0	0.0	2440000.0	2440000.0	0.0	0.0	0.0	0.0
IL7..9Trolley_ride	-194000.0	0.0	0.0	194000.0	0.0	0.0	0.0	0.0
IL8..tip side_load	0.0	-48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL9..middle_bridge_side_load	0.0	-48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL10..back side_side_load	0.0	-48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL11..At_forestay_side_load	0.0	-48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL12..at_hinge_point_side_load	0.0	-97000.0	0.0	97000.0	0.0	0.0	0.0	0.0
IL13..Crane_ride	0.0	-504285.7	0.0	504285.7	0.0	0.0	0.0	0.0

Applied Force Summation (13 Loads, All Entities)

Loads Count 13 — Category Applied Force
Selection All Entities — Type Expand

Load	Fx [N]	Fy [N]	Fz [N]	Fsum [N]	Mx [N m]	My [N m]	Mz [N m]	Msum [N m]
IL1..gravity	0.0	0.0	-19788174.0	19788174.0	0.0	0.0	0.0	0.0
IL2..tip load	0.0	0.0	-1220000.0	1220000.0	0.0	0.0	0.0	0.0
IL3..middle_bridge	0.0	0.0	-1220000.0	1220000.0	0.0	0.0	0.0	0.0
IL4..back side	0.0	0.0	-1220000.0	1220000.0	0.0	0.0	0.0	0.0
IL5..At_forestay	0.0	0.0	-1220000.0	1220000.0	0.0	0.0	0.0	0.0
IL6..at_hinge_point	0.0	0.0	-2440000.0	2440000.0	0.0	0.0	0.0	0.0
IL7..9Trolley_ride	194000.0	0.0	0.0	194000.0	0.0	0.0	0.0	0.0
IL8..tip side_load	0.0	48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL9..middle_bridge_side_load	0.0	48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL10..back side_side_load	0.0	48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL11..At_forestay_side_load	0.0	48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL12..at_hinge_point_side_load	0.0	97000.0	0.0	97000.0	0.0	0.0	0.0	0.0
IL13..Crane_ride	0.0	504286.0	0.0	504286.0	0.0	0.0	0.0	0.0

Abs Stress (LG1, 18 Selections)

Load Group 1..Overall — Selections 18
Type Components Extreme — Parameter Absolute Stress

Components	X [Pa]	Y [Pa]	Z [Pa]	XY [Pa]	YZ [Pa]	ZX [Pa]	Equivalent [Pa]
Beam '1..portside legs'	-116.22e+6						116.22e+6
Beam '2..sea side legs'	-112.97e+6						112.97e+6
Beam '3..stiffening beam'	-115.13e+6						115.13e+6
Beam '4..cross members'	61.51e+6						61.51e+6
Beam '5..chassis beam'	67.57e+6						67.57e+6

It is possible to export tables to Word or PDF without generating full report

Generated Tables

Advanced Tables are predefined tables that can be defined for all types of loads at once (Advanced Tables Overall) or each load separately (Advanced Tables For Each Load)

Absolute stress over all load sets

Abs Stress (20 Loads, All Entities)

Loads Count	20	Category	Stress
Selection	All Entities	Type	Extreme
Parameter	Abs		

Load	X [Pa]	Y [Pa]	XY [Pa]	Equivalent [Pa]
LS1..LC1s_Tip load.1	-176.40e+6		-0.02e+6	176.40e+6
LS2..LC1s_Tip load.2	-176.40e+6		0.02e+6	176.40e+6
LS3..LC1s_Tip load.3	-172.95e+6		-0.02e+6	172.95e+6
LS4..LC1s_Tip load.4	-172.95e+6		0.02e+6	172.95e+6
LS5..LC1s_Middle Bridge.1	-113.16e+6		0.00e+6	113.16e+6
LS6..LC1s_Middle Bridge.2	-113.16e+6		0.00e+6	113.16e+6
LS7..LC1s_Middle Bridge.3	-115.13e+6		0.00e+6	115.13e+6
LS8..LC1s_Middle Bridge.4	-115.13e+6		0.00e+6	115.13e+6
LS9..LC1s_Backside.1	139.42e+6		0.00e+6	139.42e+6
LS10..LC1s_Backside.2	139.42e+6		0.00e+6	139.42e+6
LS11..LC1s_Backside.3	142.59e+6		0.00e+6	142.59e+6
LS12..LC1s_Backside.4	142.59e+6		0.00e+6	142.59e+6
LS13..LC1s_At_forestay.1	-148.02e+6		-0.01e+6	148.02e+6
LS14..LC1s_At_forestay.2	-148.02e+6		0.01e+6	148.02e+6
LS15..LC1s_At_forestay.3	-144.57e+6		-0.01e+6	144.57e+6
LS16..LC1s_At_forestay.4	-144.57e+6		0.01e+6	144.57e+6
LS17..LC1s_at_hinge_point.1	148.51e+6		-0.01e+6	148.51e+6
LS18..LC1s_at_hinge_point.2	148.39e+6		0.01e+6	148.39e+6
LS19..LC1s_at_hinge_point.3	145.20e+6		-0.01e+6	145.20e+6
LS20..LC1s_at_hinge_point.4	145.09e+6		0.01e+6	145.09e+6

Absolute stress over properties for one load

Abs Stress (LG1, 18 Selections)

Load Group	1..Overall	Selections	18
Type	Components Extreme	Parameter	Absolute Stress

Components	X [Pa]	Y [Pa]	XY [Pa]	Equivalent [Pa]
Beam '1..portside legs'	-116.22e+6			116.22e+6
Beam '2..sea side legs'	-112.97e+6			112.97e+6
Beam '3..stiffening beam'	-115.13e+6			115.13e+6
Beam '4..cross members'	61.51e+6			61.51e+6
Beam '5..chassis beam'	67.57e+6			67.57e+6
Beam '6..gauntry members PS'	142.59e+6			142.59e+6
Beam '7..gauntry members SS'	148.51e+6			148.51e+6
Beam '8..top part'	-176.40e+6			176.40e+6
Beam '9..main beam'	-130.16e+6			130.16e+6
Beam '10..between legs'	-86.05e+6			86.05e+6
Beam '11..sea side'	-113.09e+6			113.09e+6
Rod '12..forestay'	137.87e+6		0.02e+6	137.87e+6
Rod '13..backstay'	148.06e+6		-0.01e+6	148.06e+6
Beam '14..Top stiffness member portal'	-102.12e+6			102.12e+6
Beam '15..Top diagonal members'	-84.51e+6			84.51e+6
Beam '16..Bridge_support_SS'	61.10e+6			61.10e+6
Beam '17..Bridge support beam PS'	97.41e+6			97.41e+6
Beam '18..machine_house'	-0.01e+6			0.01e+6

Sum of applied forces over all individual loads

Applied Force Summation (13 Loads, All Entities)

Loads Count	13	Category	Applied Force
Selection	All Entities	Type	Expand

Load	Fx [N]	Fy [N]	Fz [N]	Fsum [N]	Mx [N m]	My [N m]	Mz [N m]	Msum [N m]
IL1..gravity	0.0	0.0	-19788174.0	19788174.0	0.0	0.0	0.0	0.0
IL2..tip load	0.0	0.0	-1220000.0	1220000.0	0.0	0.0	0.0	0.0
IL3..middle_bridge	0.0	0.0	-1220000.0	1220000.0	0.0	0.0	0.0	0.0
IL4..back side	0.0	0.0	-1220000.0	1220000.0	0.0	0.0	0.0	0.0
IL5..At_forestay	0.0	0.0	-1220000.0	1220000.0	0.0	0.0	0.0	0.0
IL6..at_hinge_point	0.0	0.0	-2440000.0	2440000.0	0.0	0.0	0.0	0.0
IL7..9Trolley_ride	194000.0	0.0	0.0	194000.0	0.0	0.0	0.0	0.0
IL8..tip side_load	0.0	48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL9..middle_bridge_side_load	0.0	48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL10..back side_side_load	0.0	48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL11..At_forestay_side_load	0.0	48500.0	0.0	48500.0	0.0	0.0	0.0	0.0
IL12..at_hinge_point_side_load	0.0	97000.0	0.0	97000.0	0.0	0.0	0.0	0.0
IL13..Crane_ride	0.0	504286.0	0.0	504286.0	0.0	0.0	0.0	0.0

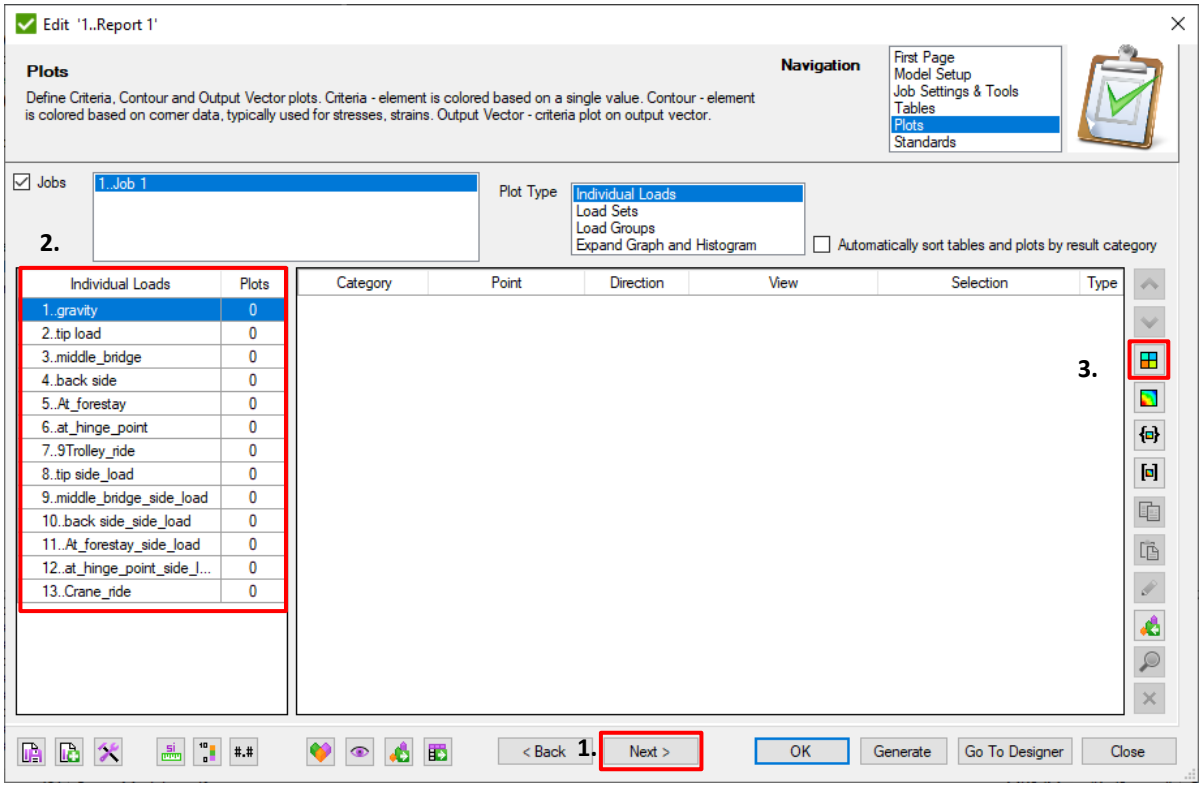
Plots Section

1. Press *Next* to navigate to the Plots section

Use *Navigation* alternatively

2. Select all Individual loads from the list

3. Press to add Criteria Plot



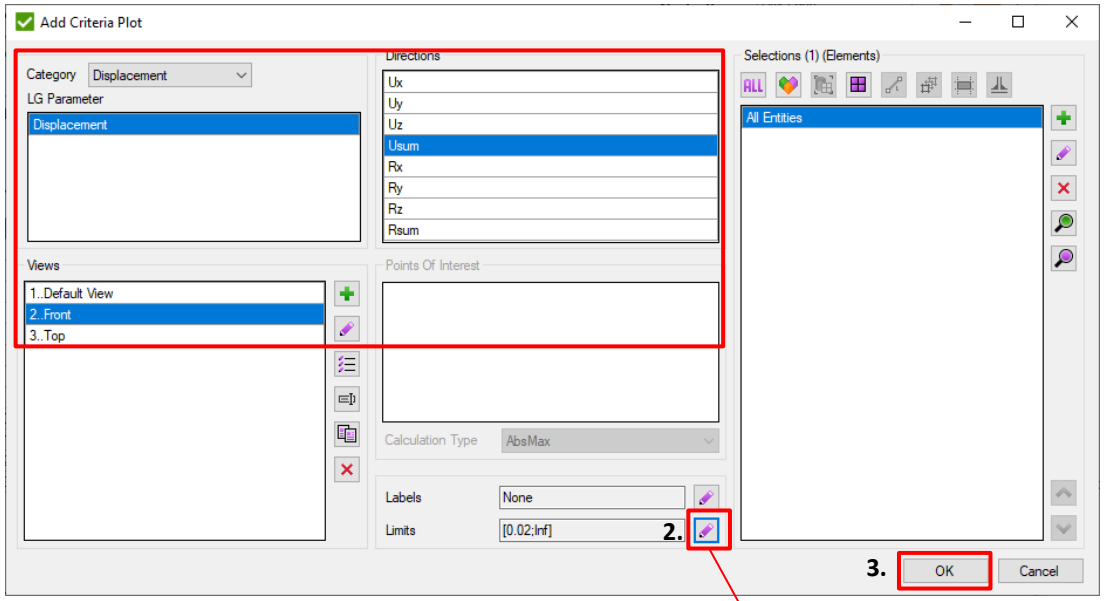
Plots can be copied, edited in the same way as described in the tables section

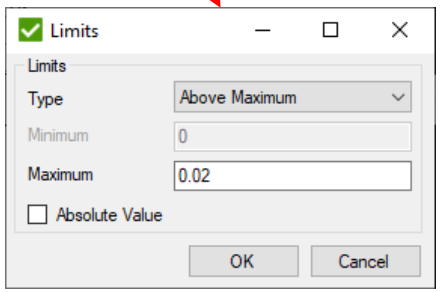
Add Criteria Plot

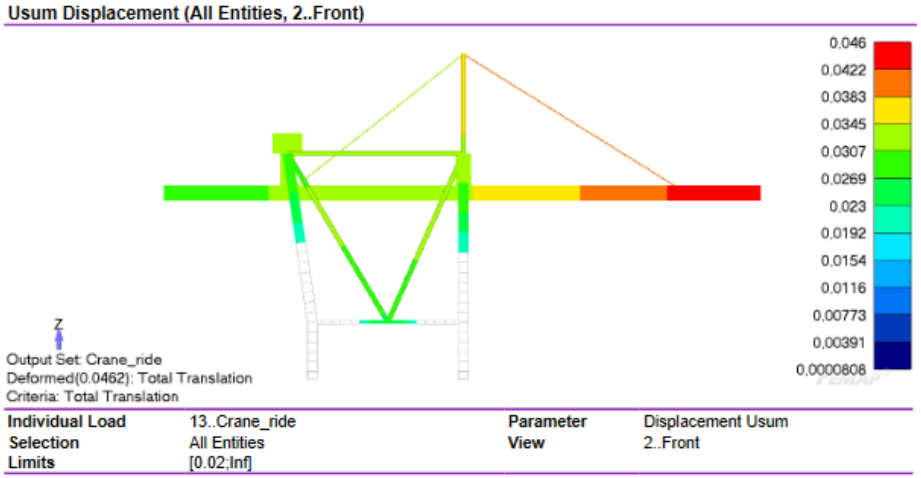
1. Select following parameters:
   Category: **Displacement**
   Direction: **Usum**
   View: **2..Front**

2. Press to set the following limits:
   Limits Type: **Above Maximum**
   Maximum: **0.02**

3. Press *OK*







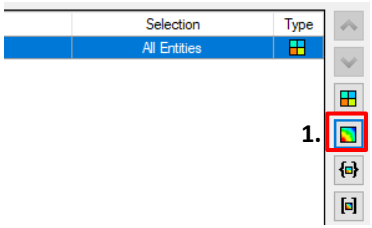
Values less than 0.02 are displayed in element colors

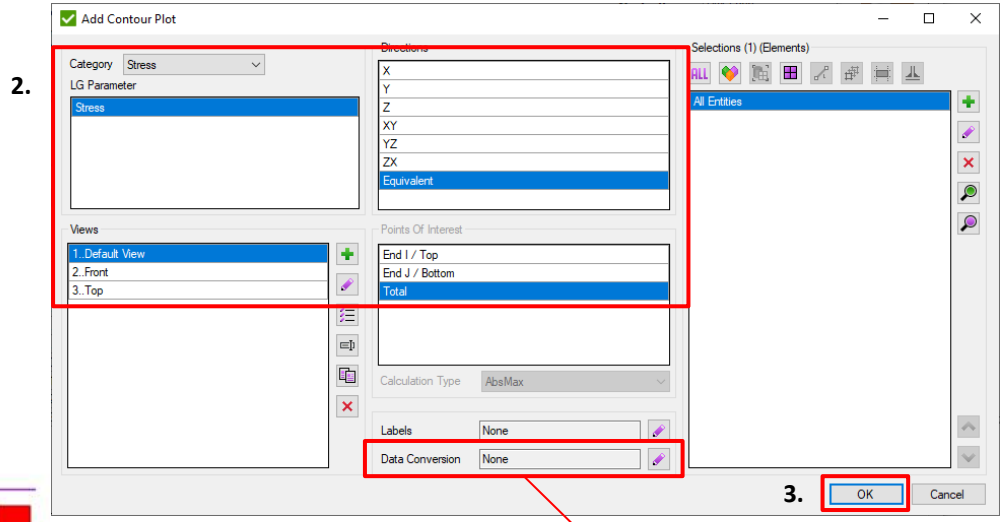
Add Contour Plot

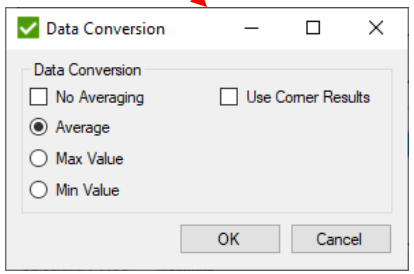
1. Press to add Contour Plot

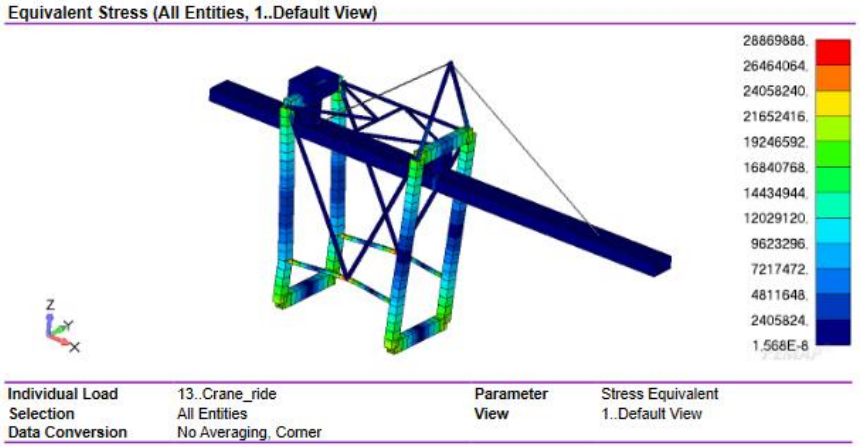
2. Select following parameters:
   Category: **Stress**
   Direction: **Equivalent**
   Point: **Total**
   View: **1..Default View**

3. Press *OK*









Data Conversion is applied to plates and solids only

Standards

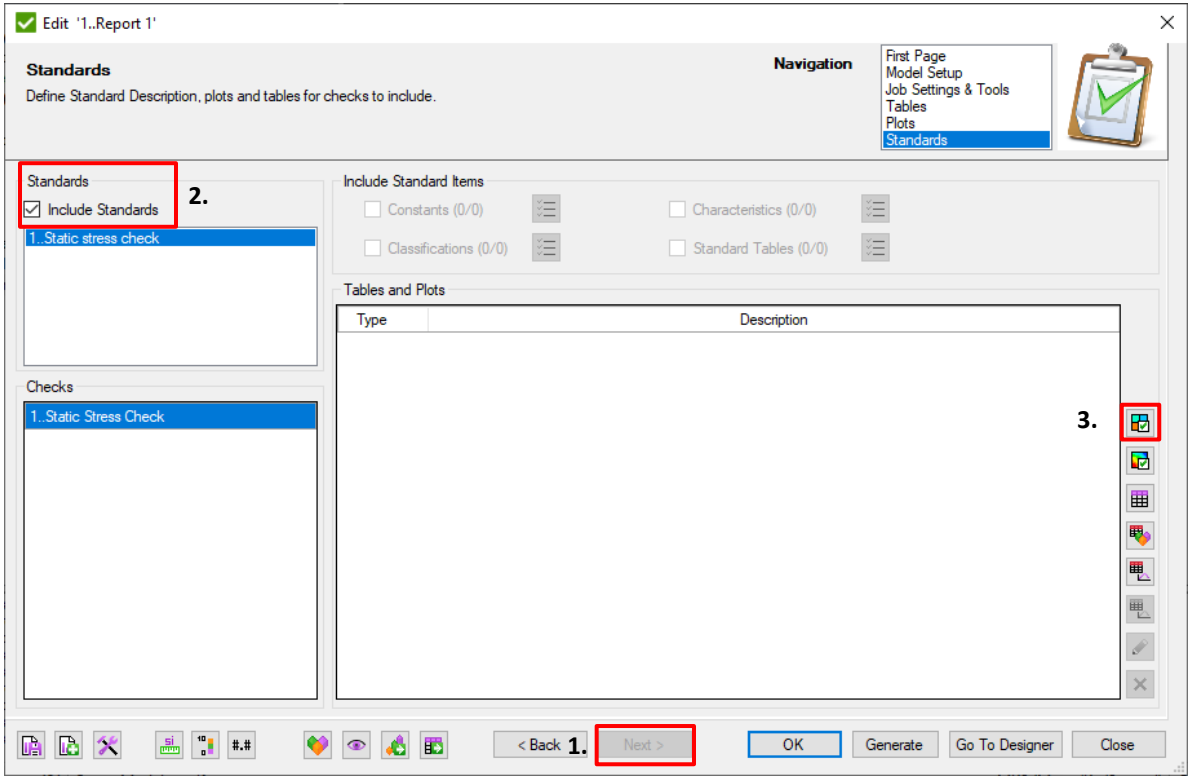
1. Press *Next* to navigate to the Standards section

Use *Navigation* alternatively

2. *Include Standards:* **ON**

3. Press to add Criteria Check Plot

Constants, characteristics, classifications or standard tables are disabled if no items exist of respective type

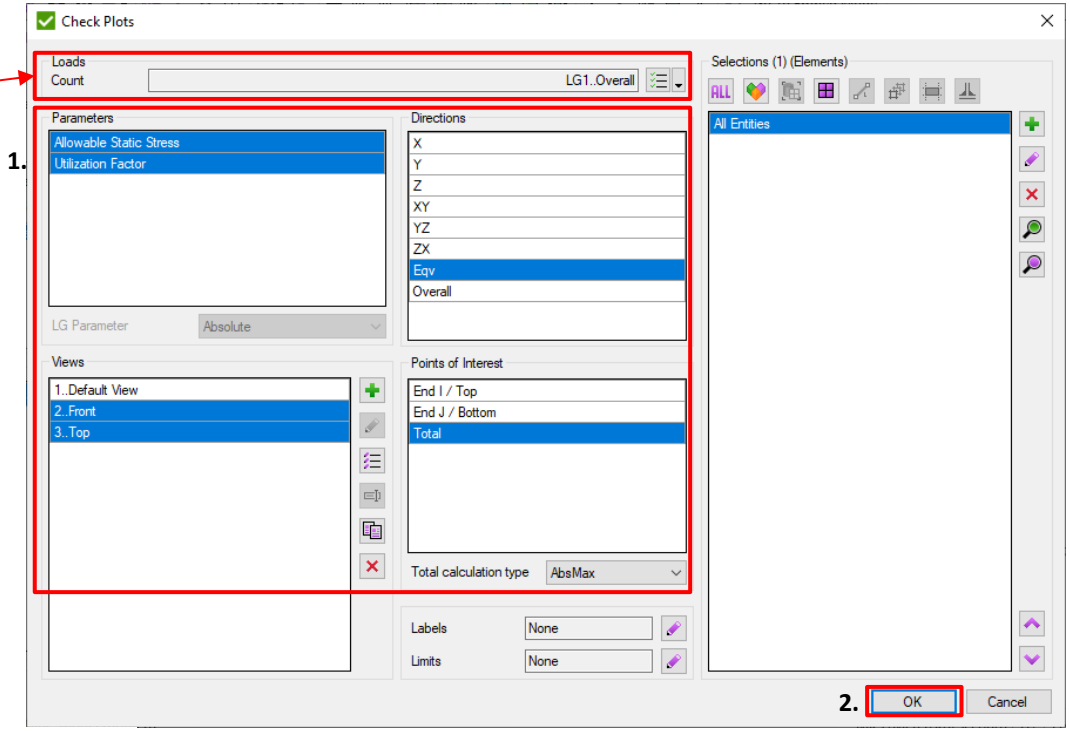


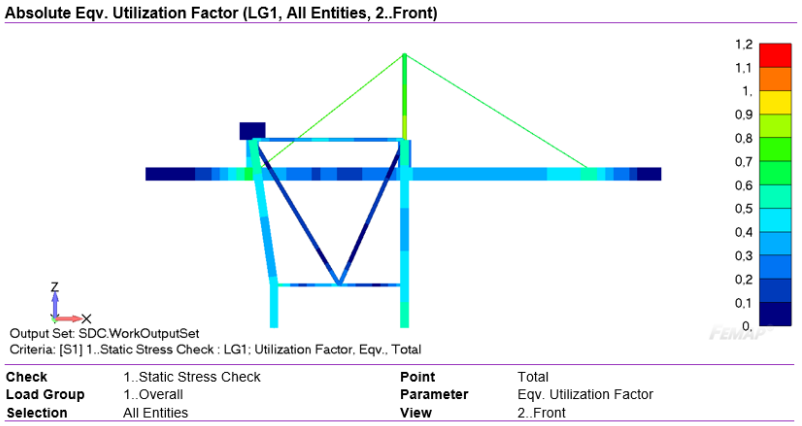
Add Criteria Check Plot

Static Stress Check can be calculated over load groups only. Load Group is automatically selected as it is the only one in the project

1. Set the following settings:
   Parameters: **All**
   Direction: **Eqv.**
   Point of Interest: **Total**
   Views: **2..Front, 3..Top**

2. Press *OK*

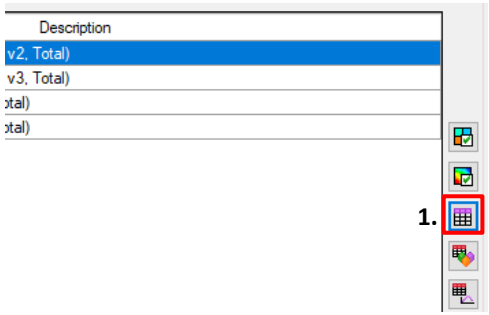




Absolute equivalent utilization factor for front view is displayed

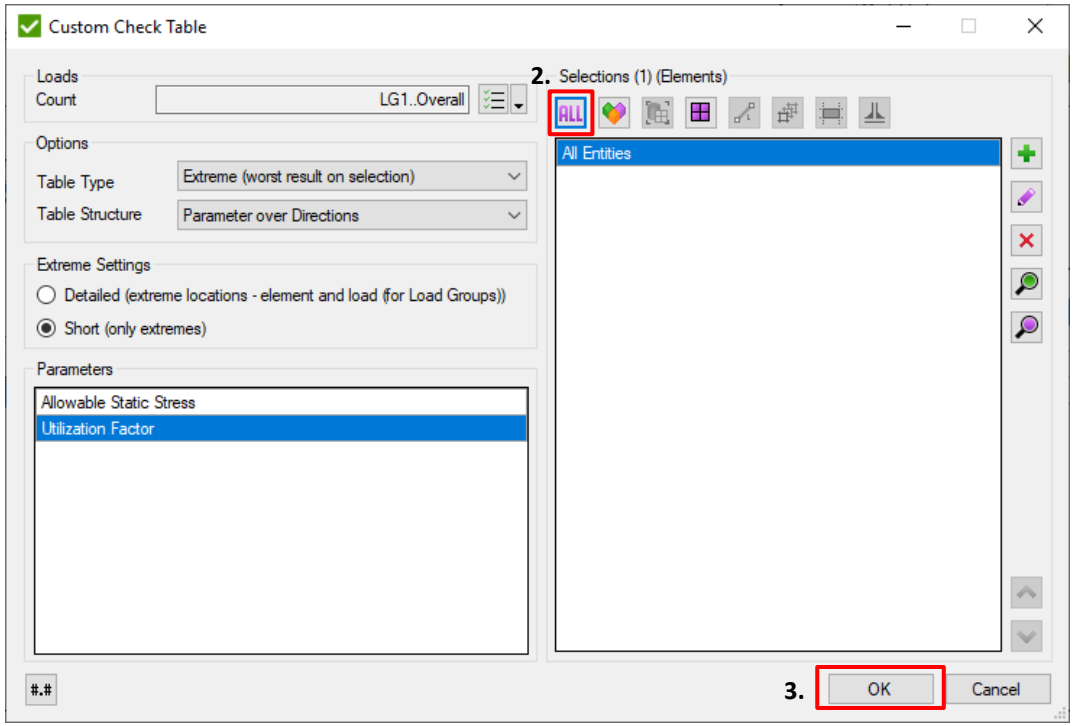
Add Check Extreme Table

1 Press to add Custom Check Table



2 Press ALL to add selection "All Entities"

3 Press *OK*



Utilization Factor (LG1, All Entities)

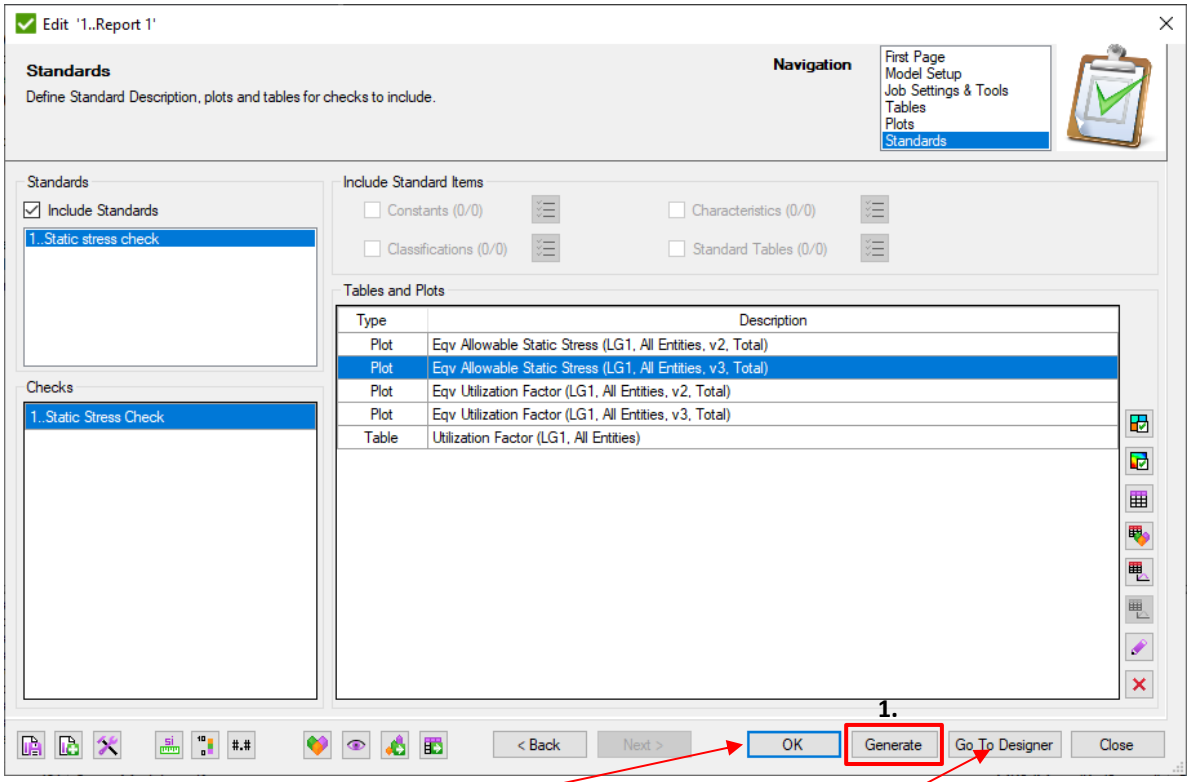
Standard	1..Static stress check	**Check**	1..Static Stress Check
Load Group	1..Overall	**Parameter**	Utilization Factor
Selection	All Entities		

Extreme	X	Y	Z	XY	YZ	ZX	Eqv.	Overall
Minimum								
Value	0.00			0.00			0.00	0.00
Element ID	284			520			284	284
Maximum								
Value	0.85			0.00			0.85	0.85
Element ID	131			521			131	131
Absolute								
Value	0.85			0.00			0.85	0.85
Element ID	131			521			131	131

Min/Max/Abs utilization factor is shown in the table together with the element Id where peak is located

Generate Report

1 Press ***Generate*** to generate and open report in Microsoft Word



Add new or edit existing Report

Preview report structure and customize if necessary