Model Setup

Eurocode 3. Bolt check

Prepared by:

Prepared for:

Engineer:

Customer:

Project Number:

Version: 1

Date: 29-05-2019

Content

Preface

This document is generated with SDC Verifier 5.2 and calculated with Femap v12.0.0
Model File: D:\Other\Standards\Eurocode 3. Design of steel structures - Part 1-8. Design of joints\Eurocode 3. Bolt check.modfem
Project File: D:\Other\Standards\Eurocode 3. Design of steel structures - Part 1-8. Design of joints\Eurocode 3. Bolt check.sdcv
Report Profile: 2..Model Setup
Generation on: 29-May-19 3:27:33 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 Information

Model Summary

Entity	Count
Mass [kg]	14.16
Gravity Center [m]	[0.10; 0.00; -0.10]
X [Min;Max] [m]	[-0.02; 0.30]
Y [Min;Max] [m]	[-0.07; 0.07]
Z [Min;Max] [m]	[-0.39; 0.14]

FEM Model Description

This paragraph shows detailed or brief model overview.

Materials

This paragraph contains materials information.

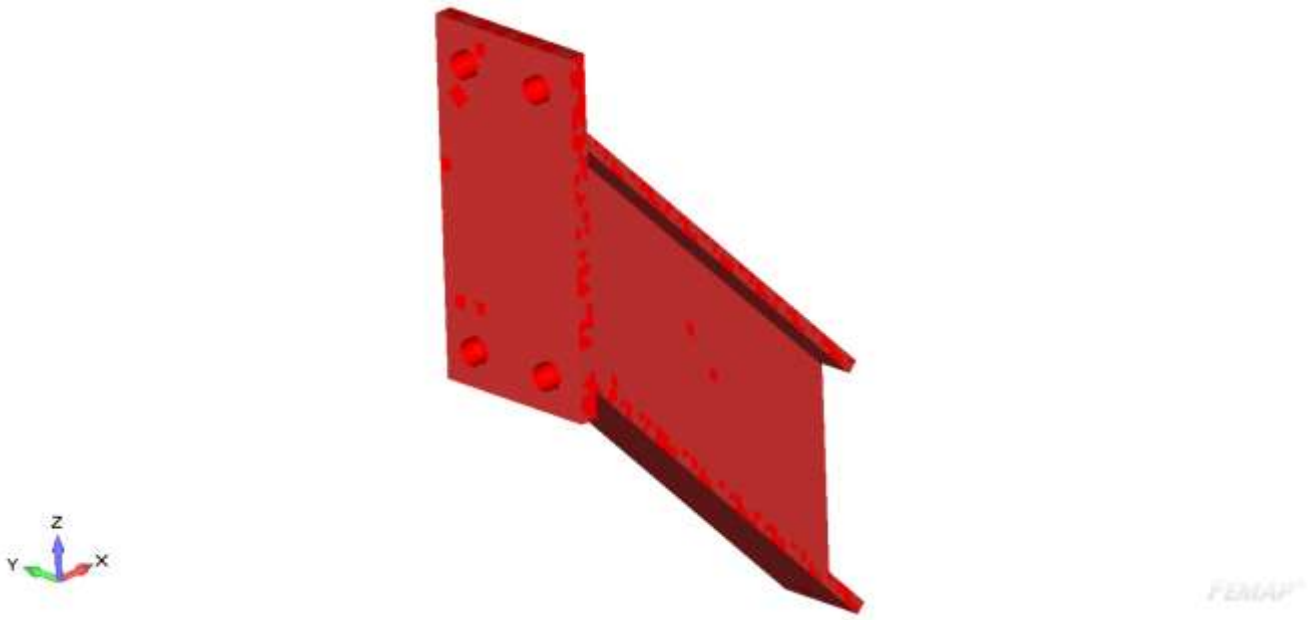
Materials Summary(All Entities)

Title	Elements	Mass [kg]	Gravity Center [m]
1..Steel Fe510	1808	13.29	[0.10; 0.00; -0.10]
2..Spiders	32	0.87	[0.00; 0.00; 0.00]
Overall	1840	14.16	[0.10; 0.00; -0.10]

Material Label Plot (All Entities, v1)

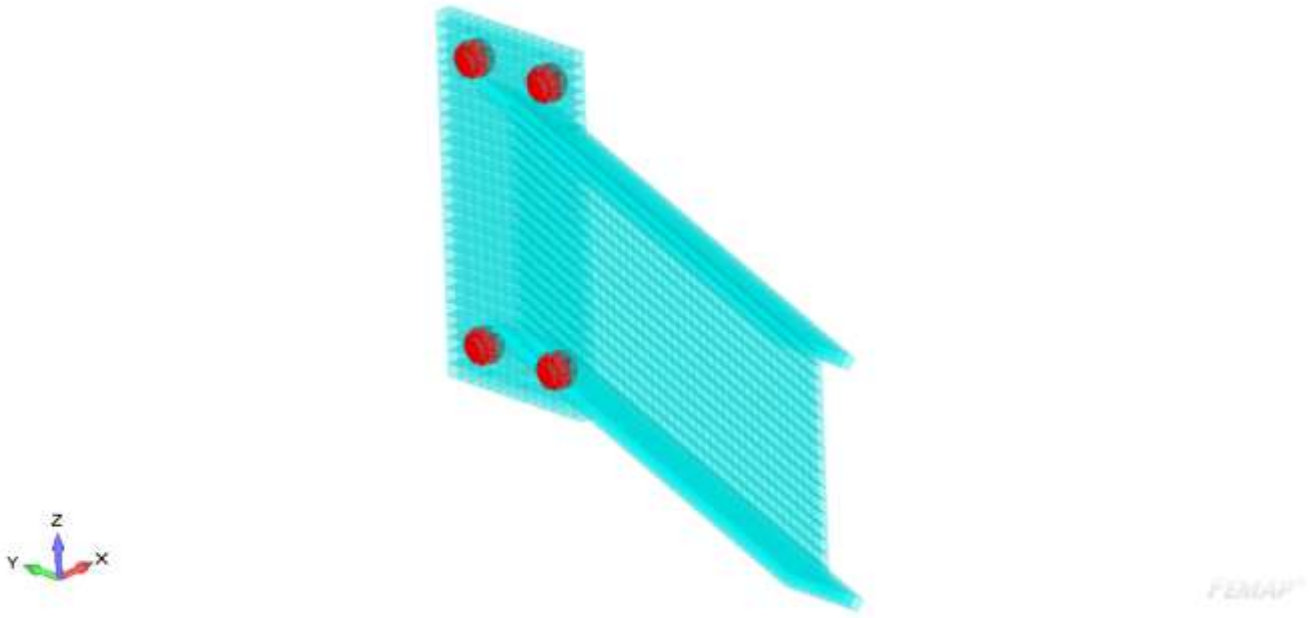
1..Steel Fe510

Property	Value
Elements	1808
Mass [kg]	13.29
Gravity Center [m]	[0.10; 0.00; -0.10]
Young Modulus [Pa]	210000000000.00
Shear Modulus [Pa]	0
Poisson Ratio	0.30000
Shear [Pa]	0
Mass Density [kg/m^3]	7850.00000
Tensile Strength [Pa]	510000000.00
Yield Stress [Pa]	355000000.00



2..Spiders

Property	Value
Elements	32
Mass [kg]	0.87
Gravity Center [m]	[0.00; 0.00; 0.00]
Young Modulus [Pa]	21000000000000.00
Shear Modulus [Pa]	0
Poisson Ratio	0.30000
Shear [Pa]	0
Mass Density [kg/m^3]	7850.00000
Tensile Strength [Pa]	510000000.00
Yield Stress [Pa]	355000000.00



Properties

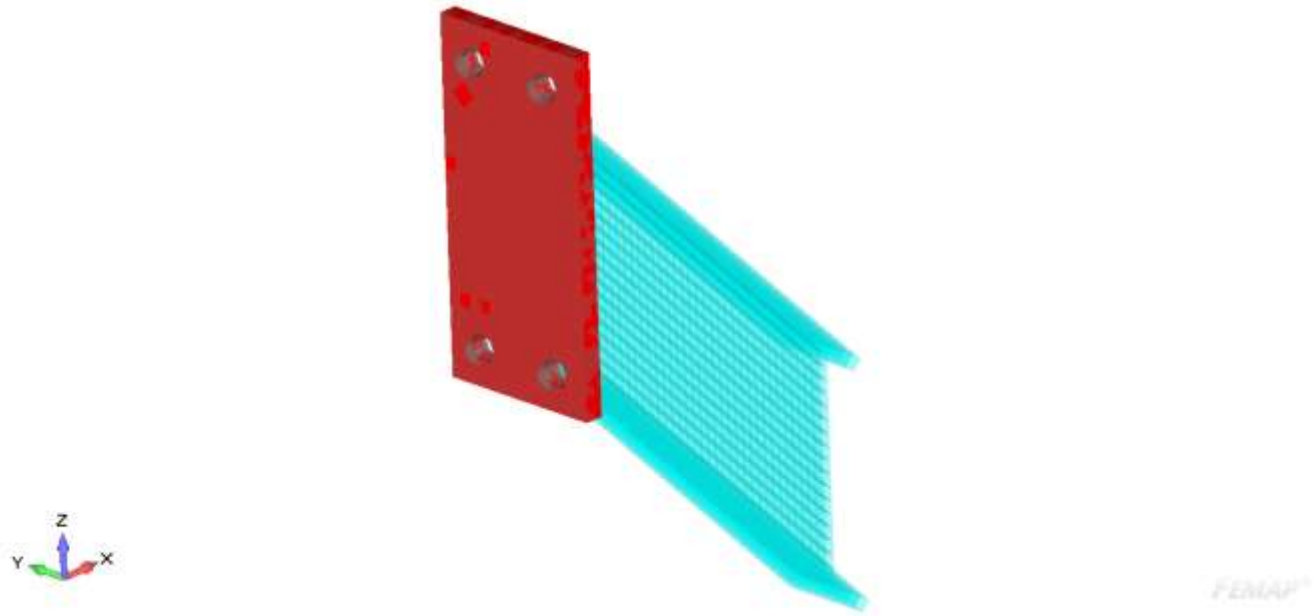
This paragraph contains properties information.

Properties Summary

Title	Elements	Material	Mass [kg]	Gravity Center [m]
1..Plate t=15mm	376	1..Steel Fe510	4.12	[0.00; 0.00; 0.00]
2..Plate t=10mm	1428	1..Steel Fe510	9.02	[0.15; 0.00; -0.15]
3..Bolt M20. Class 8.8	4	1..Steel Fe510	0.15	[-0.01; 0.00; 0.00]
4..Spiders	32	2..Spiders	0.87	[0.00; 0.00; 0.00]
5..Fundation	0	1..Steel Fe510	0.00	[0.00; 0.00; 0.00]
Overall	1840		14.16	[0.10; 0.00; -0.10]

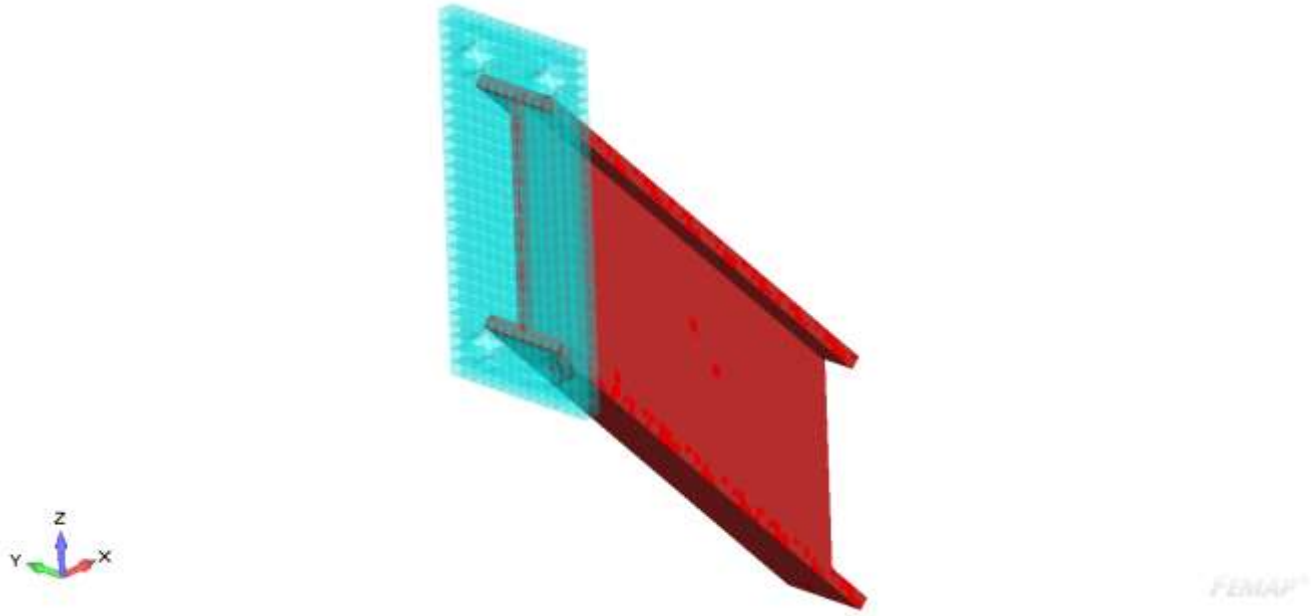
1..Plate t=15mm

Property	Value
Elements	376
Type	Plate
Material	1..Steel Fe510
Mass [kg]	4.12
Gravity Center [m]	[0.00; 0.00; 0.00]
Thicknesses 1 [m]	0.02
Thicknesses 2 [m]	0
Thicknesses 3 [m]	0
Thicknesses 4 [m]	0
Nonstructural Mass/Area [kg/m^2]	0
Top Fiber [m]	0
Bottom Fiber [m]	0
Bend Stiffness [m^3]	0
TShear/Mem Thickness	0



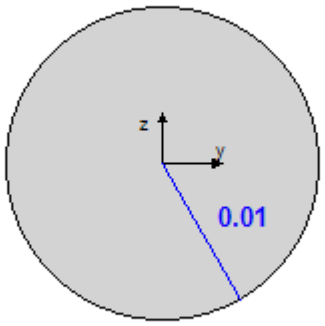
2..Plate t=10mm

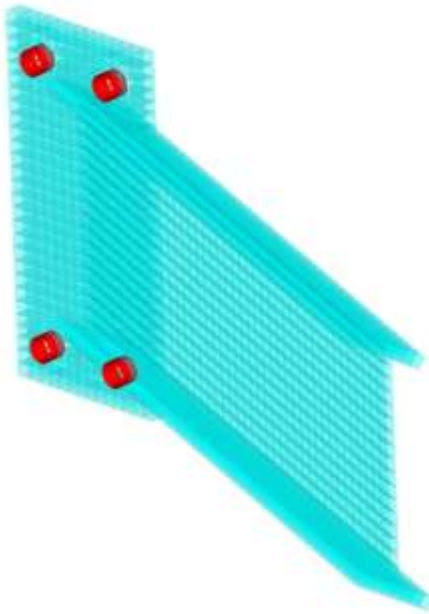
Property	Value
Elements	1428
Type	Plate
Material	1..Steel Fe510
Mass [kg]	9.02
Gravity Center [m]	[0.15; 0.00; -0.15]
Thicknesses 1 [m]	0.01
Thicknesses 2 [m]	0
Thicknesses 3 [m]	0
Thicknesses 4 [m]	0
Nonstructural Mass/Area [kg/m^2]	0
Top Fiber [m]	0
Bottom Fiber [m]	0
Bend Stiffness [m^3]	0
TShear/Mem Thickness	0

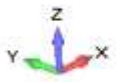


3..Bolt M20. Class 8.8

Property	Value	Property Shape
Type / Elements	Beam / 4	
Material	1..Steel Fe510	
Mass [kg]	0.15	
Gravity Center [m]	[-0.01; 0.00; 0.00]	
Area, [m^2]	3.142e-04	
I1, [m^4]	7.854e-09	
I2, [m^4]	7.854e-09	
I12, [m^4]	0	
Torsion Constant, [m^4]	1.569e-08	
Y Shear Area, [m^2]	2.784e-04	
Z Shear Area, [m^2]	2.784e-04	
Nonstructural Mass, [kg]	0	
Perimeter, [m]	0.06	
Warping Constant, [m^6]	0	
Y Neutral Axis Offset A, [m]	0	
Z Neutral Axis Offset A, [m]	0	
r [m]	0.01	

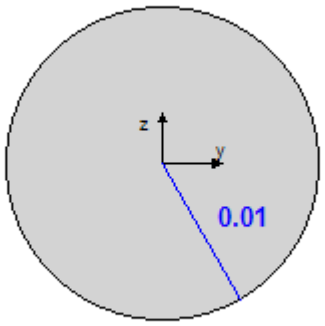


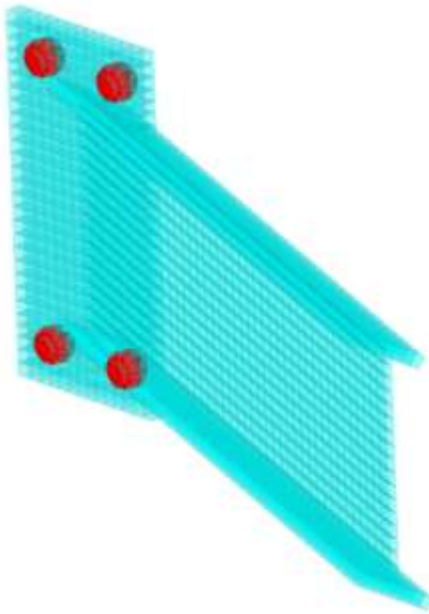


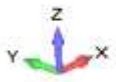


4..Spiders

Property	Value	Property Shape
Type / Elements	Beam / 32	
Material	2..Spiders	
Mass [kg]	0.87	
Gravity Center [m]	[0.00; 0.00; 0.00]	
Area, [m^2]	3.142e-04	
I1, [m^4]	7.854e-09	
I2, [m^4]	7.854e-09	
I12, [m^4]	0	
Torsion Constant, [m^4]	1.569e-08	
Y Shear Area, [m^2]	2.784e-04	
Z Shear Area, [m^2]	2.784e-04	
Nonstructural Mass, [kg]	0	
Perimeter, [m]	0.06	
Warping Constant, [m^6]	0	
Y Neutral Axis Offset A, [m]	0	
Z Neutral Axis Offset A, [m]	0	
r [m]	0.01	





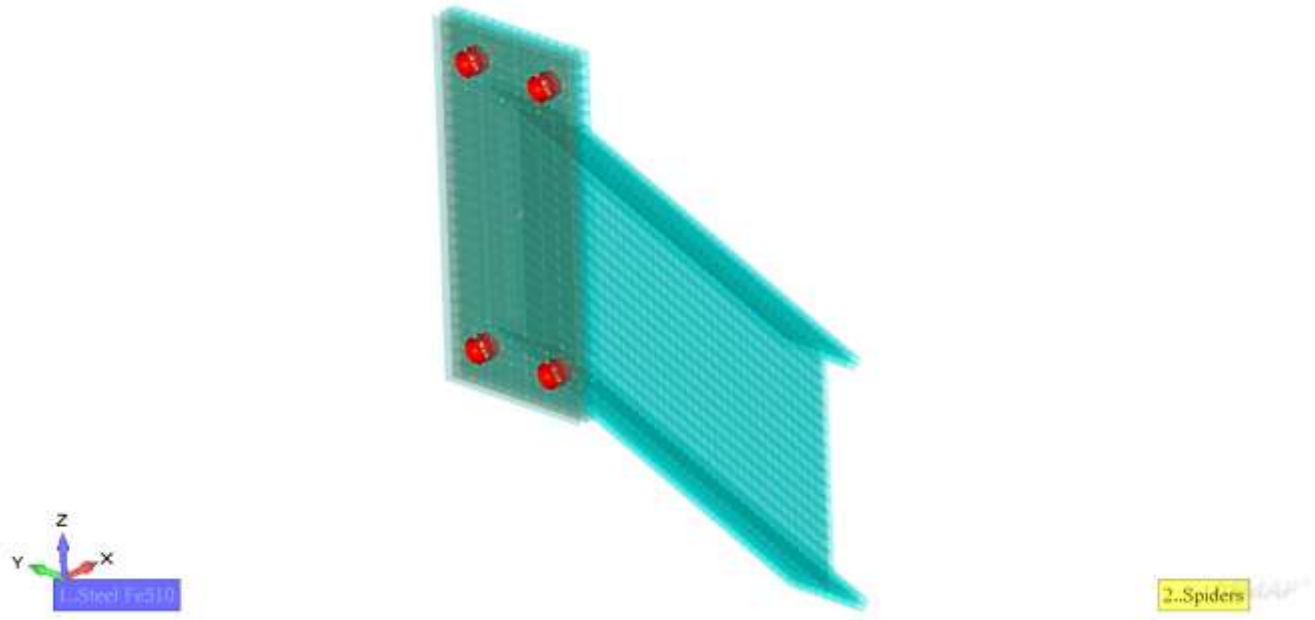


Components

This paragraph contains information about components. Component is a selection of nodes or elements based on rules.

1..Bolts

Property	Value
Count	4
Mass [kg]	0.15
Gravity Center [m]	[-0.01; 0.00; 0.00]
X [Min;Max] [m]	[-0.02; 0.00]
Y [Min;Max] [m]	[-0.04; 0.04]
Z [Min;Max] [m]	[-0.11; 0.11]



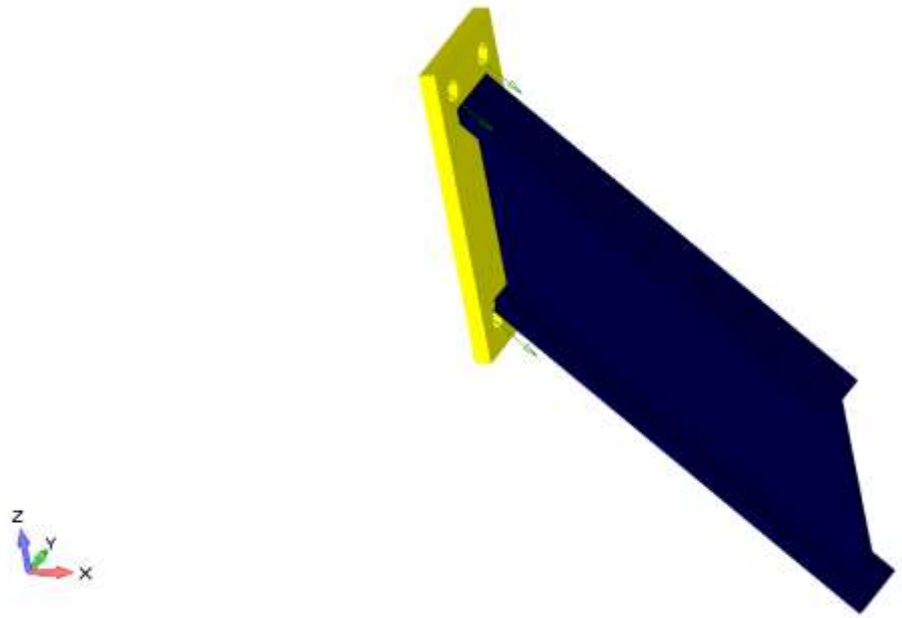
FEM Loads

This paragraph contains information about applied loads to model.

1..S_sd

Definition	Load Type	Applied On	Values
Force on Node	Force	Nodes: 407, 482, 1962, 1963	(75000; 0; -75000)

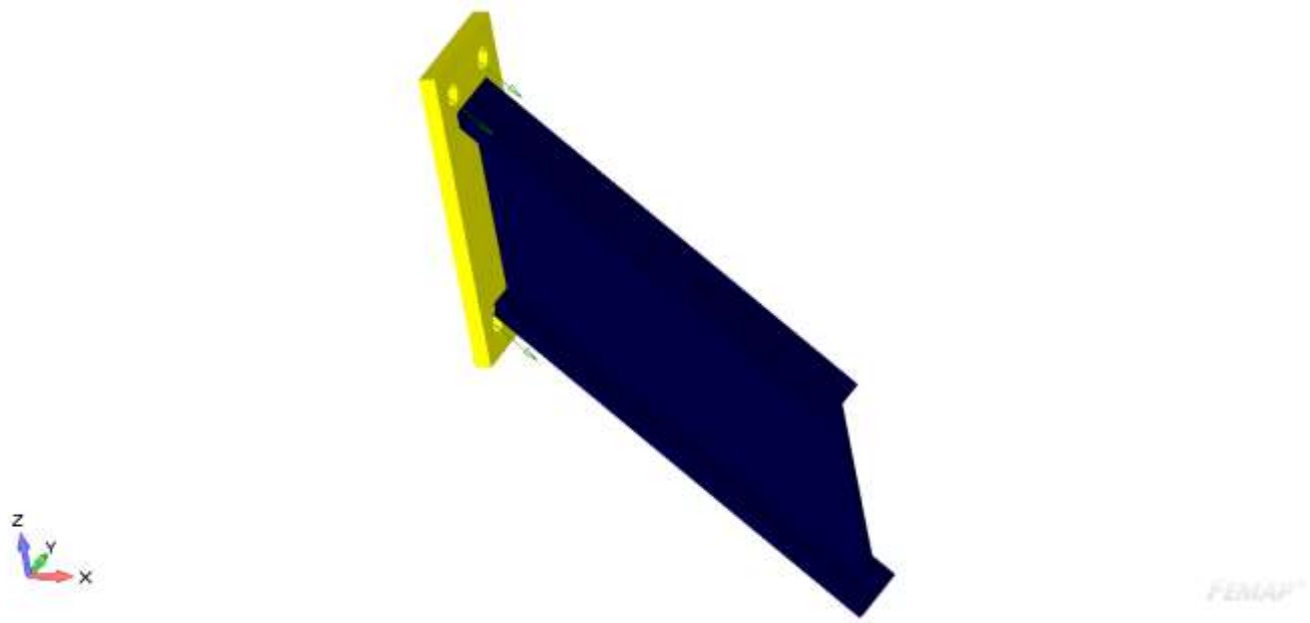
Sum around [0, 0, 0]	X	Y	Z
Sum Of Forces [N]	300.0e+3	0.0e+3	-300.0e+3
Sum Of Moments [N m]	0.0e+3	0.0e+3	0.0e+3



2..Unit force

Definition	Load Type	Applied On	Values
Force on Node	Force	Nodes: 407, 482, 1962, 1963	(0.708; 0; -0.708)

Sum around [0, 0, 0]	X	Y	Z
Sum Of Forces [N]	0.0e+3	0.0e+3	0.0e+3
Sum Of Moments [N m]	0.0e+3	0.0e+3	0.0e+3



Constraints

This paragraph contains information about constrained parts of the model.

1..Fixed

Definition	Count	DOF
Constraint on Node	Nodes: 1865, 1866, 1867, 1868	Tx Ty Tz Rx Ry Rz