

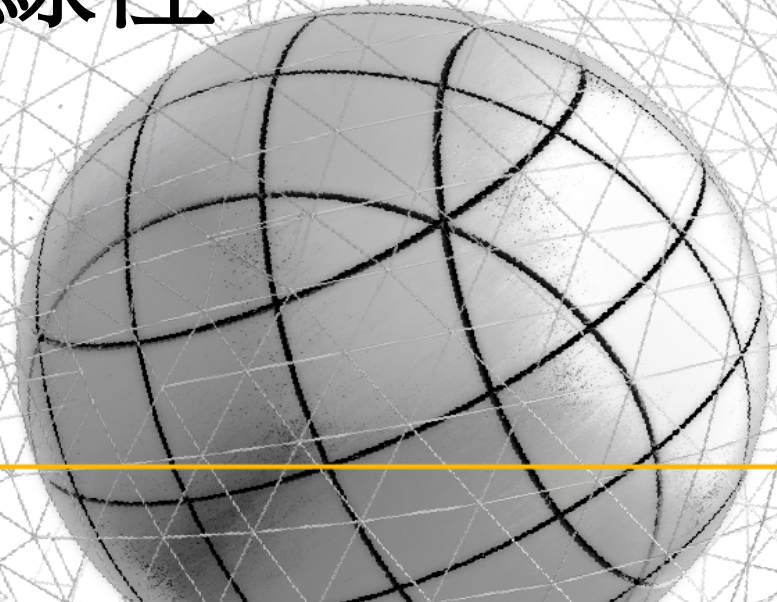


MIDAS

MESH FREE

扭力彈簧_壓板下壓
幾何&材料非線性

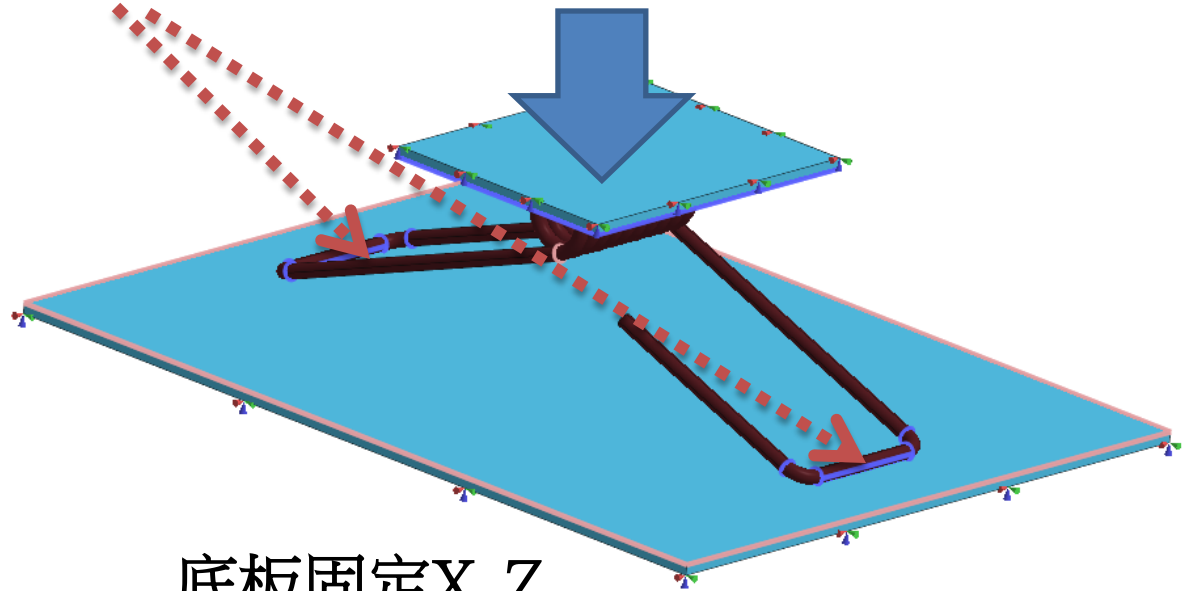
Simple, but Everything.





滑動接觸

下壓4 mm



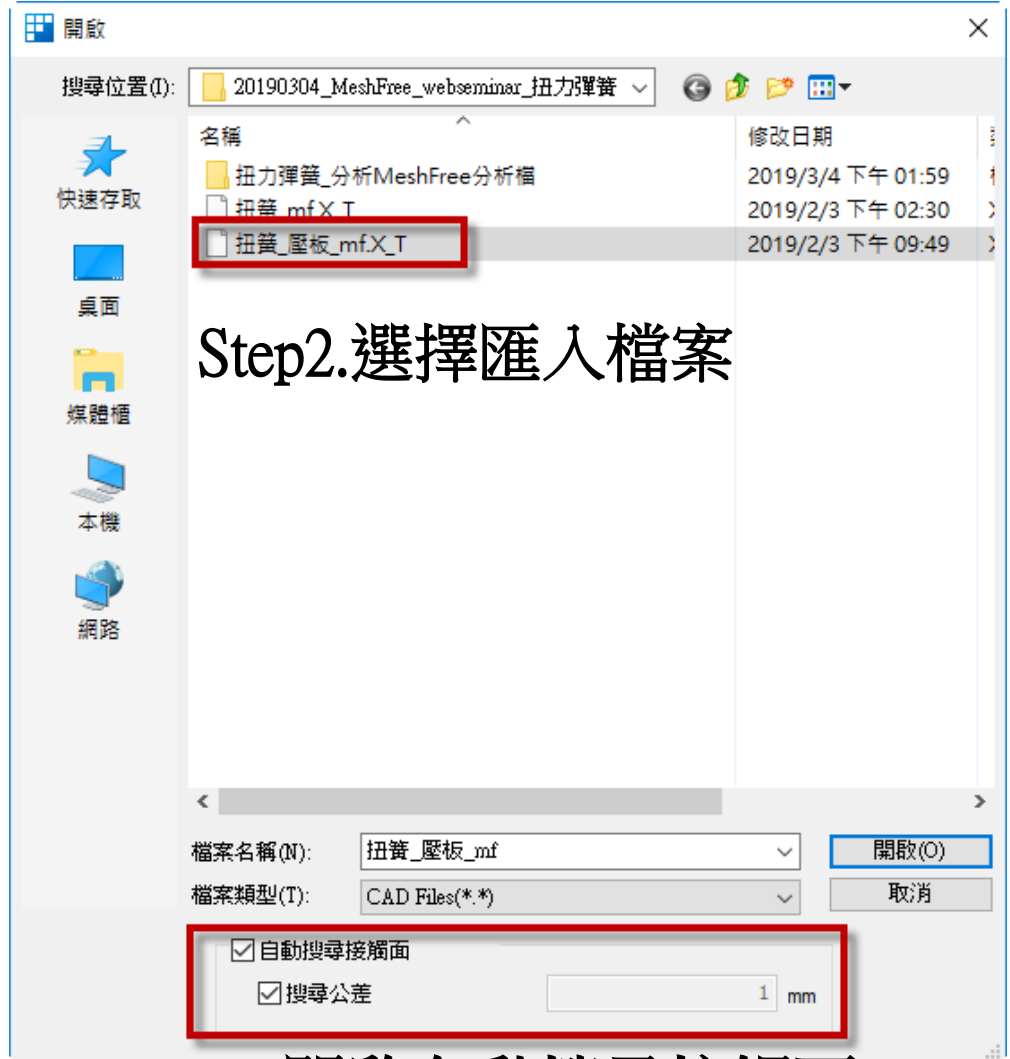
底板固定X, Z



Step1.匯入3D 模型

MeshFree支援各類CAD 格式

- Parasolid (9 - 29) Files (*.x_t;*.xmt_txt;*.x_b;*.xmt_bin)
- ACIS (R1 - 2017 1.0) Files (*.sat;*.sab;*.asat;*.asab)
- STEP (AP203, AP214, AP242) Files (*.stp;*.step)
- IGES (Up to 5.3) Files (*.igs;*.iges)
- Pro-E (16 - Creo 3.0) Files (*.prt;*.prt.*;*.asm;*.asm.*)
- CATIA V4 (CATIA 4.1.9 - 4.2.4) Files (*.model;*.exp;*.session)
- CATIA V5 (V5R8 - V5-6R2016) Files (*.CATPart;*.CATProduct)
- Solid Works (98 - 2017) Files (*.sldprt;*.sldasm)
- Unigraphics (11 - NX11) Files (*.prt)
- Inventor Part (V6 - V2017) Files (*.ipt)
- Inventor Assembly (V11 - V2017) Files (*.iam)
- Solid Edge (V18 - ST9) Files (*.par;*.asm;*.psm)



Step2.選擇匯入檔案

Step3.開啓自動搜尋接觸面

新增 Alloy Steel 彈塑性材料

材料定義
✕

Steel ▾

- 17-4PH, H1100
- AISI 1020
- AISI 1060
- AISI 304 SS Annealed
- AISI_310_SS
- AISI_410_SS
- AISI_Steel_1005
- AISI_Steel_1008-HR
- AISI 4340 Annealed
- AISI_Steel_Maraging
- Alloy Steel
- Cast Alloy Steel
- Cast Carbon Steel
- Cast Stainless Steel
- Chrome Stainless Steel
- FC250
- Galvanized Steel
- Hp-1
- Hp-4
- Inconel_718_Aged
- Plain Carbon Steel
- S/Steel_PH15-5
- SAPH-400
- SE508
- SGACC
- SGACEN
- SGARC340-E
- SGCC

名稱 Alloy Steel NL

顏色 ▾

線性 彈塑性

結構

彈性模量	<input type="text" value="210000"/> N/mm ²	熱膨脹
泊松比	<input type="text" value="0.28"/>	熱膨脹係數
質量密度	<input type="text" value="7.7e-006"/> kg/mm ³	參考溫度
		<input type="text" value="0"/> [°C]

塑性硬化曲線 無 ▾ 函數 ▾

應力-應變曲線 無 ▾ 函數 ▾

硬化法則 等向性 ▾

綜合硬化因子(0.0-1.0)

理想塑性

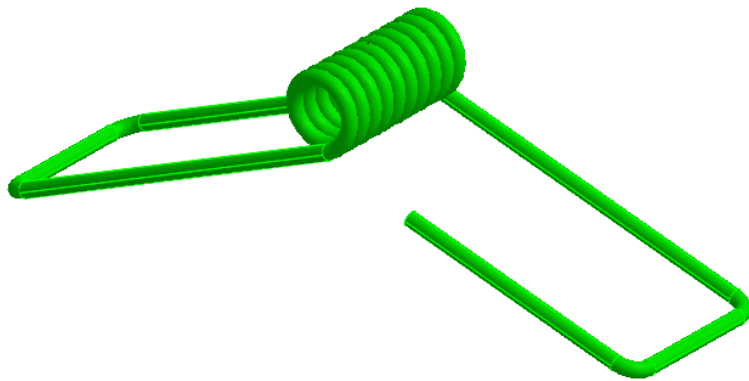
屈服應力 N/mm²

熱

熱傳導係數	<input type="text" value="0.05"/> W/(mm·[°C])
比熱	<input type="text" value="460"/> J/(kg·[°C])
發熱係數	<input type="text" value="1"/>

載入
編輯

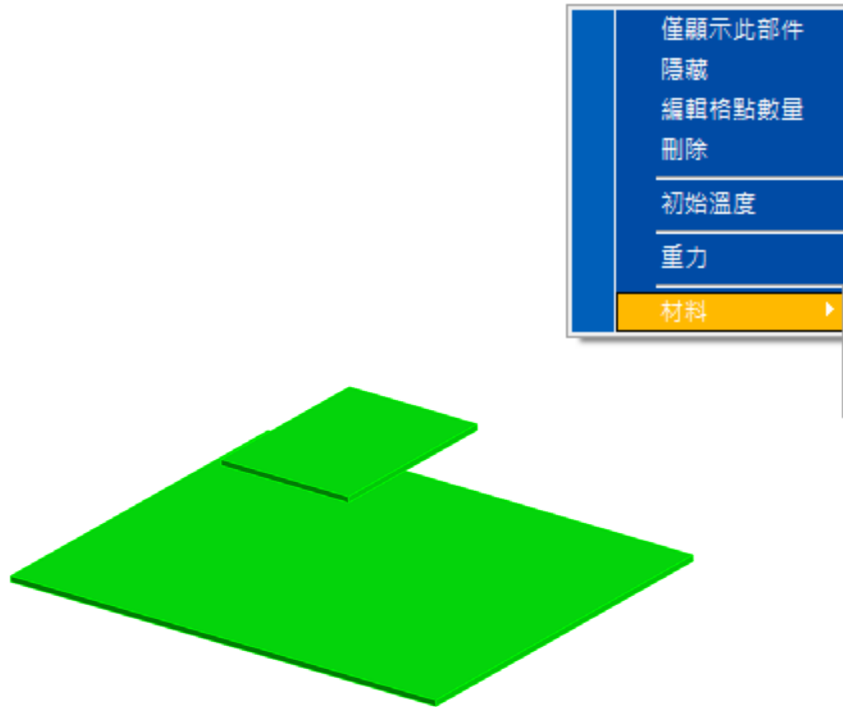
✓



滑鼠右鍵,材料定義



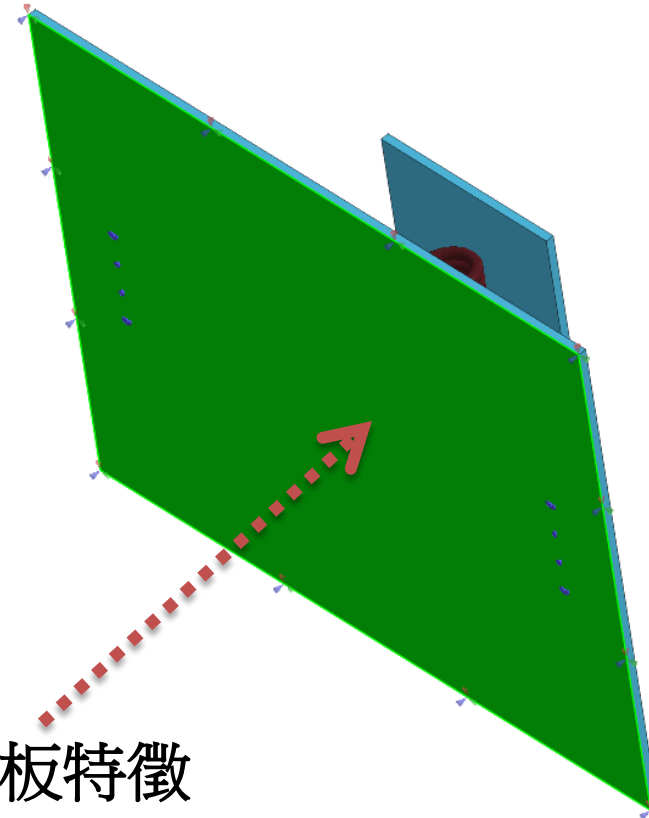
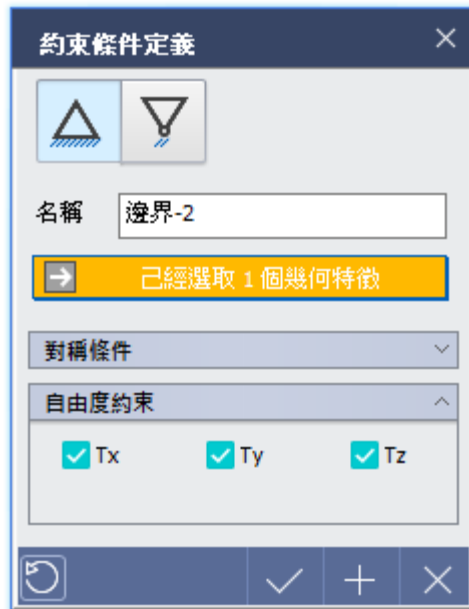
模型樹顯示指定材料



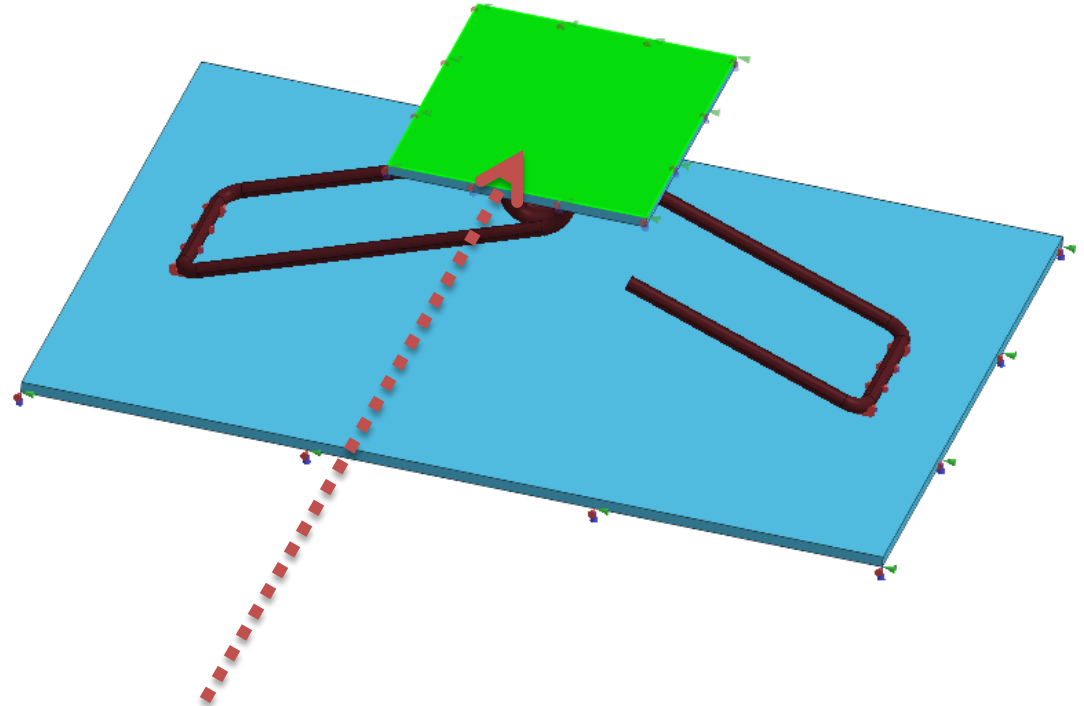
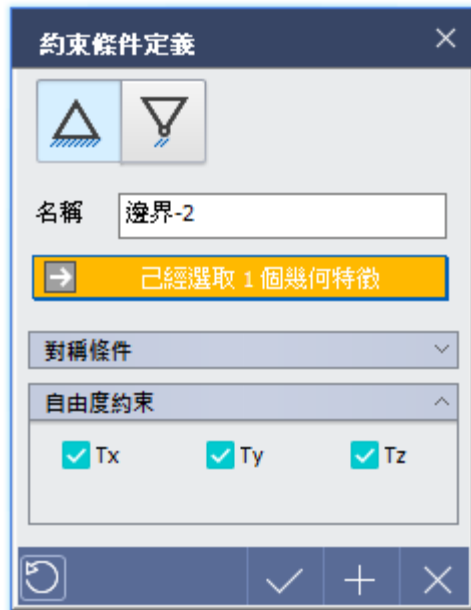
滑鼠右鍵,材料定義



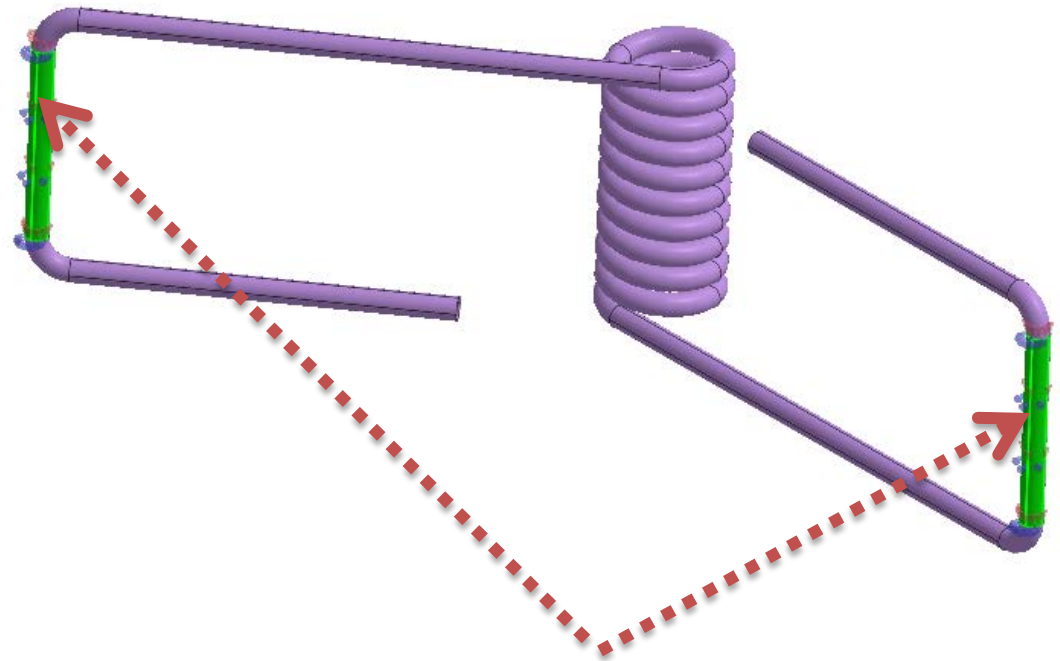
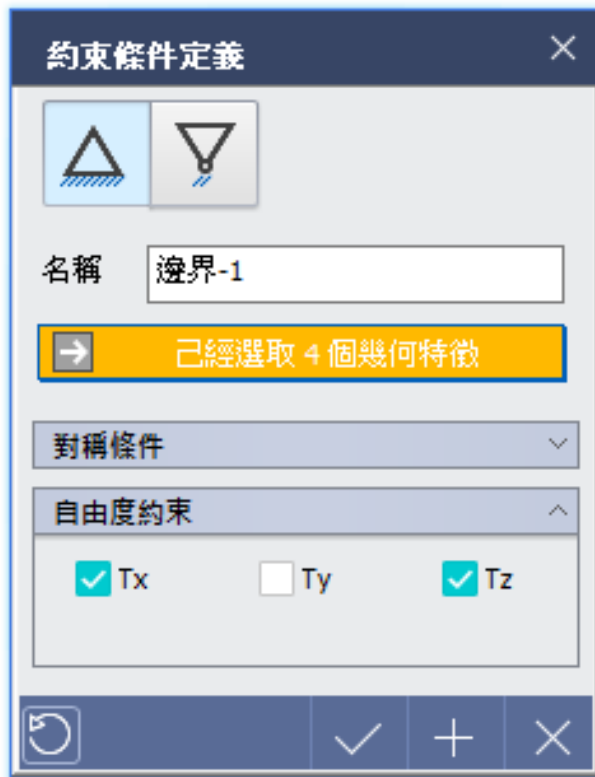
模型樹顯示指定材料



選取底板特徵
拘束(TX/TY/TZ)



選取下壓板特徵
拘束(TX/TY/TZ)

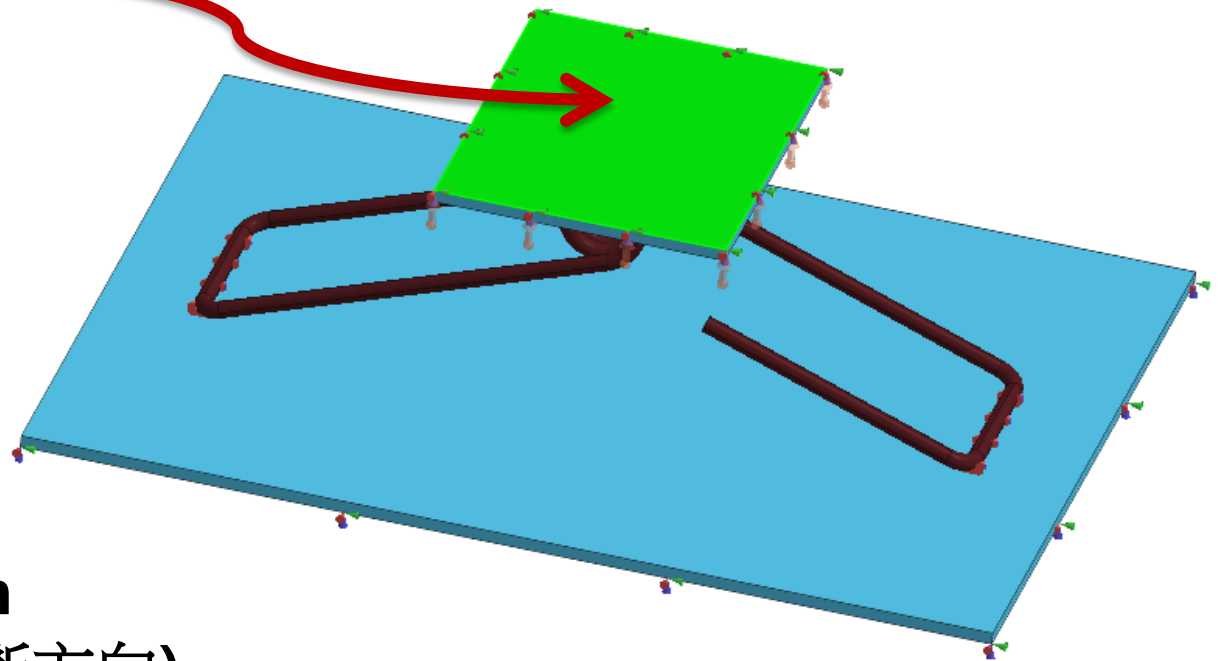
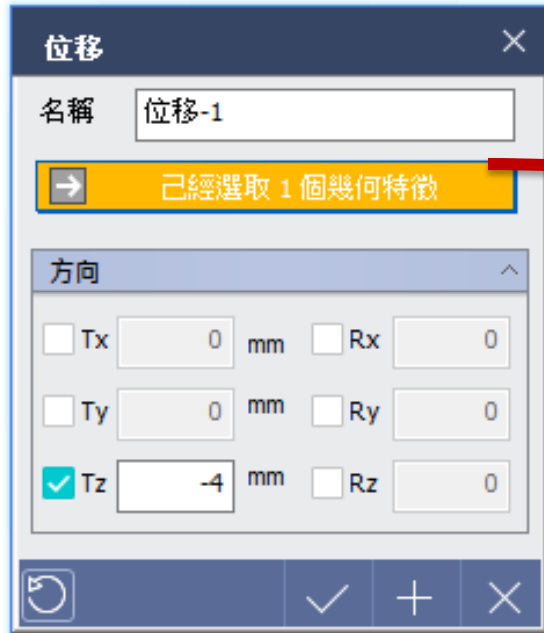


選取特徵拘束(TX/TZ)



載荷

選擇下壓板特徵



下壓4mm
(全局座標系判斷方向)

模型設置

- 幾何(3)
 - 拉伸 Alloy Steel
 - 拉伸(1) Alloy Steel
 - Body Alloy Steel NL
- 材料
 - Alloy Steel ■
 - Alloy Steel NL ■
- 接觸(2)
 - Body-拉伸 焊接
 - 拉伸-Body 焊接
- 邊界(3)
- 載荷(1)

修改
刪除

修改接觸特性
焊接 => 滑動

接觸

選取

- 已經選取 1 個幾何特徵
- 已經選取 8 個幾何特徵

類型

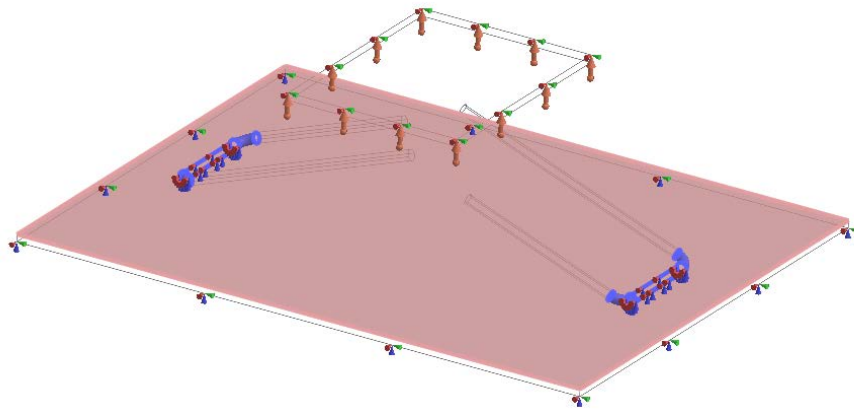
滑動接觸

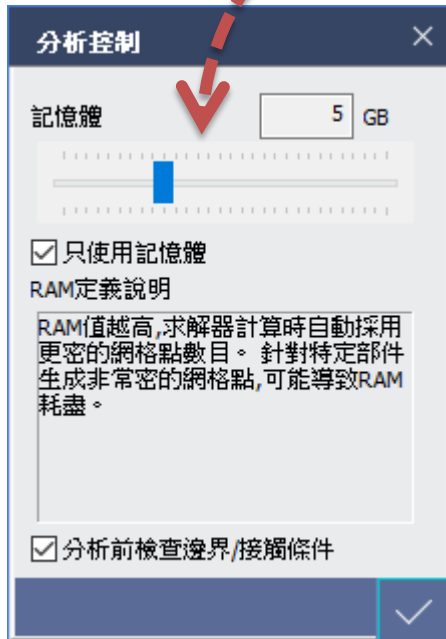
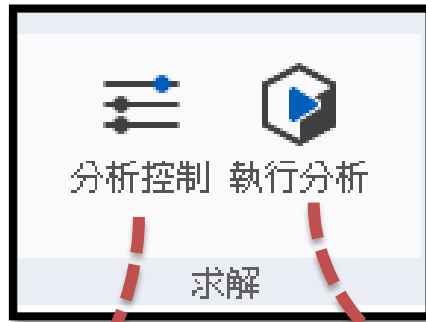
摩擦係數 0

法向剛度係數 0.1

切線剛度係數 0.01

範圍





記憶體大小

- 1.計算速度
- 2.分析準確性

The screenshot displays the MIDAS MeshFree software interface for a simulation. The main window shows a 3D model of a blue plate with a central hole, under tension. The software is running a solve program, indicated by a progress indicator showing 80% completion.

求解程序 [1/1] (Solve Program [1/1]) window options:

- 自動網點計算 (Automatic Mesh Calculation)
- 網點創建 (Mesh Creation)
- 接觸搜索 (Contact Search)
- 設置 (Settings)
- 迭代計算 (Iterative Calculation)

Maximum Displacement vs. Load Scale Factor plot:

Load Scale Factor	Maximum Displacement
0.00e+000	0.00e+000
1.00e-001	-0.50e+000
2.00e-001	-1.00e+000
3.00e-001	-1.50e+000
4.00e-001	-2.00e+000
5.00e-001	-2.50e+000
6.00e-001	-3.00e+000
7.00e-001	-3.50e+000
8.00e-001	-4.00e+000
9.00e-001	-4.50e+000
1.00e+000	-5.00e+000

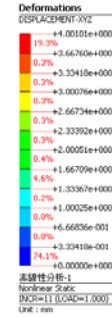
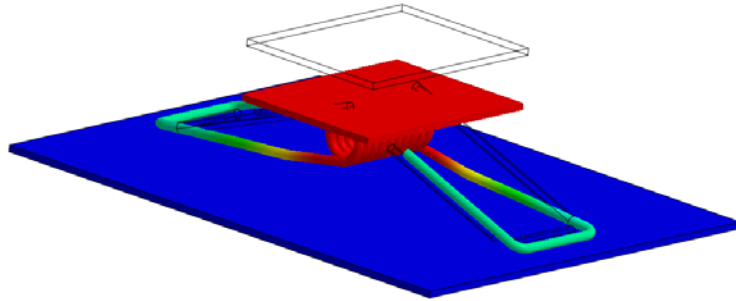
Maximum Rotation vs. Load Scale Factor plot:

Load Scale Factor	Maximum Rotation
0.00e+000	0.00e+000
1.00e-001	0.00e+000
2.00e-001	0.00e+000
3.00e-001	0.00e+000
4.00e-001	0.00e+000
5.00e-001	0.00e+000
6.00e-001	0.00e+000
7.00e-001	0.00e+000
8.00e-001	0.00e+000
9.00e-001	0.00e+000
1.00e+000	0.00e+000

Bottom status bar information:

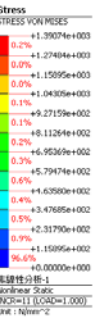
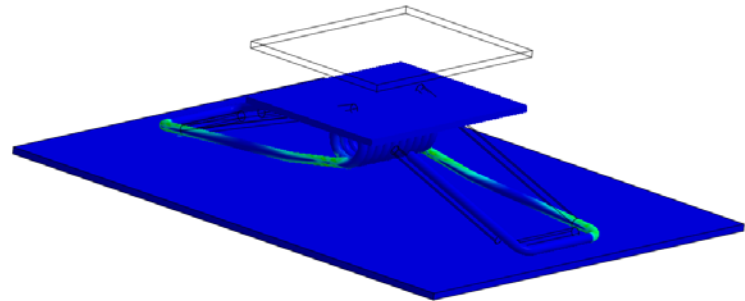
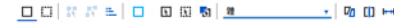
- RESULT SUMMARY
- MAXIMUM TRANSLATION: -3.6129E+000 (T3.633909), MAXIMUM ROTATION: 0.0000E+000 (R3.0)
- Coordinates: -6.7669, 26.9139, 17.4193
- Units: N, mm

分析類型 非線性分析-1
Step INCR=11 (LOAD=1.000)
結果 DISPLACEMENT-XYZ



變形量(mm)

分析類型 非線性分析-1
Step INCR=11 (LOAD=1.000)
結果 STRESS VON MISES



應力(MPa)



反力

已經選取 1 個幾何特徵

計算

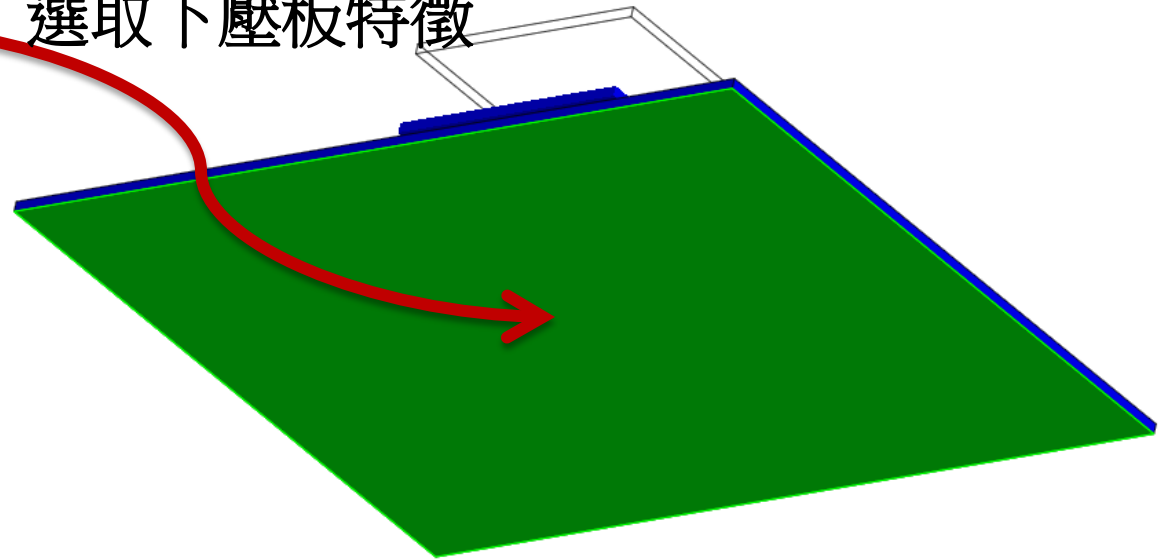
名稱	值
FX	0
FY	0
FZ	25.4

分析步

分析步：結果

- Nonlinear Static : INCR=6 (LOAD=0.500)
- Nonlinear Static : INCR=7 (LOAD=0.600)
- Nonlinear Static : INCR=8 (LOAD=0.700)
- Nonlinear Static : INCR=9 (LOAD=0.800)
- Nonlinear Static : INCR=10 (LOAD=0.900)
- Nonlinear Static : INCR=11 (LOAD=1.000)

選取下壓板特徵



選擇分析步計算反力