



MIDAS

MESH FREE

隨機振動  
EX2.收銀機

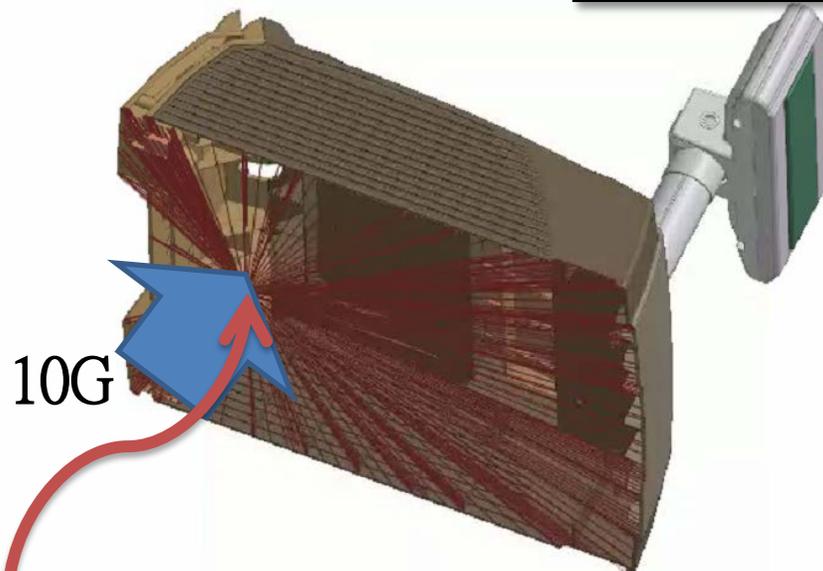
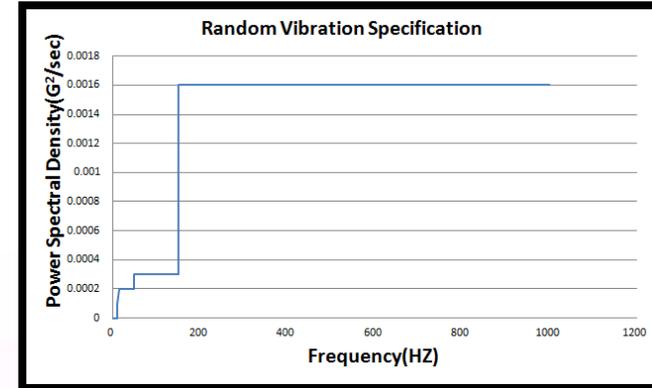
Simple, but Everything.

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計算:0~1000Hz  
10G受力之隨機振動結果



固定剛體中心點  
X,Y,Z

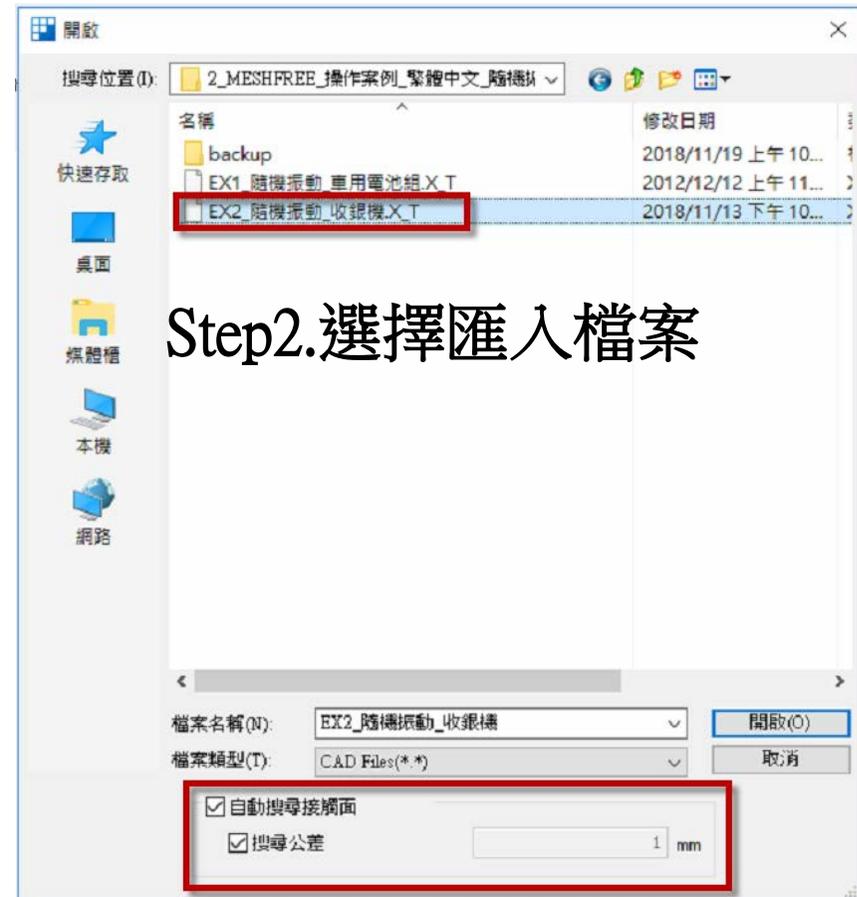
隨機響應-模態法



## Step1.匯入3D 模型

## MeshFree支援各類CAD 格式

Parasolid (9 - 29) Files (\*.x\_t;\*.xmt\_tbt;\*.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)

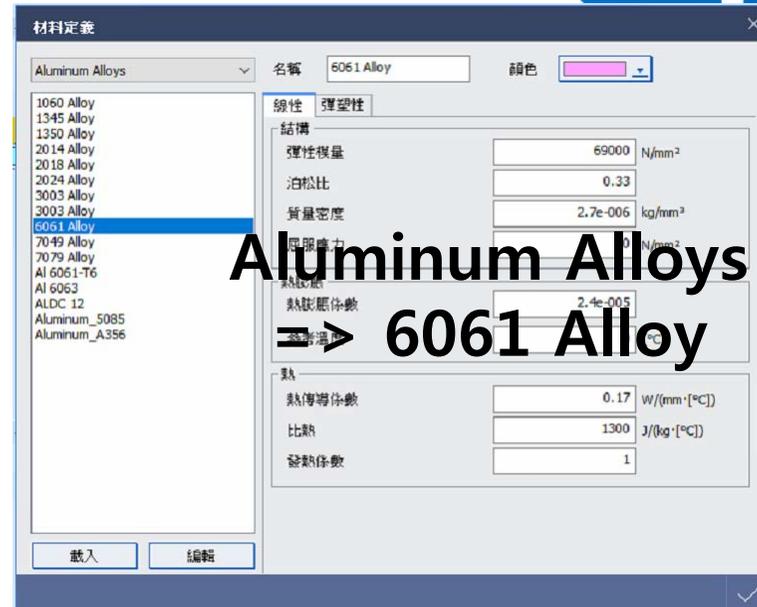


## Step2.選擇匯入檔案

## Step3.開啓自動搜尋接觸面



滑鼠右鍵,新增材料

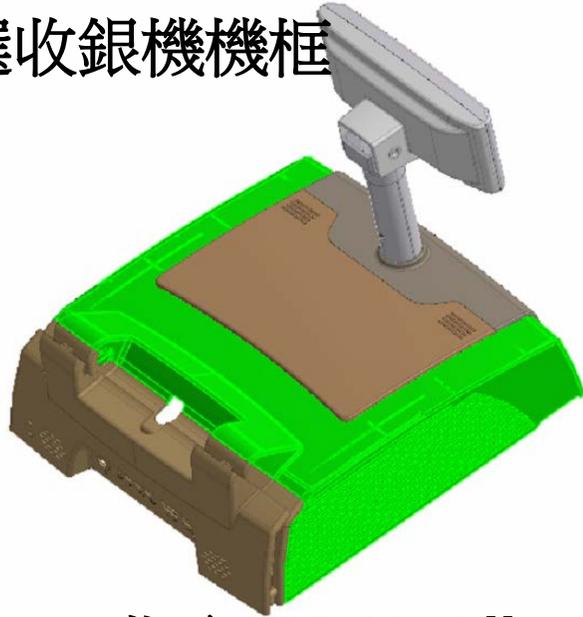


Aluminum Alloys => 6061 Alloy



Plastics => PP (Homopolymer, flame retarded V0)

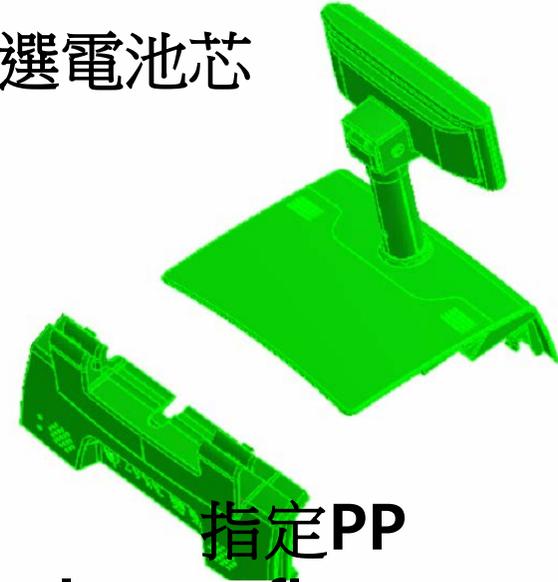
# 框選收銀機機框



指定 6061 Alloy

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>僅顯示此部件</li> <li>隱藏</li> <li>編輯拾點數量</li> <li>刪除</li> <li>初始溫度</li> <li>材料</li> </ul> | <ul style="list-style-type: none"> <li>Alloy Steel</li> <li>6061 Alloy</li> <li>PP (Homopolymer, flame retarded V0)</li> <li>添加: 材料</li> </ul> |
|--|--|

# 框選電池芯

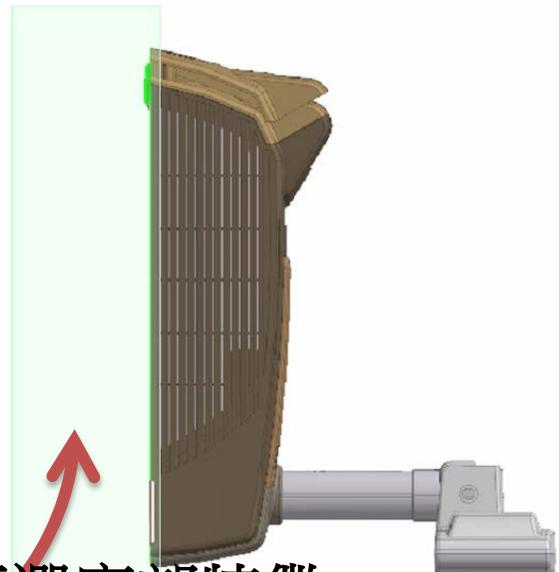


指定PP  
(Homopolymer, flame retarded V0)

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>僅顯示此部件</li> <li>隱藏</li> <li>編輯拾點數量</li> <li>刪除</li> <li>初始溫度</li> <li>材料</li> </ul> | <ul style="list-style-type: none"> <li>Alloy Steel</li> <li>6061 Alloy</li> <li>PP (Homopolymer, flame retarded V0)</li> <li>添加: 材料</li> </ul> |
|--|--|

約束條件 剛性鏈接 彈簧

邊界條件



側視圖框選底部特徵

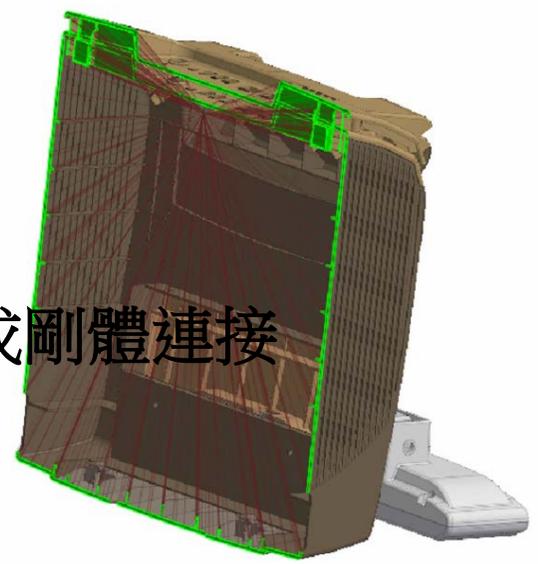
剛性鏈接定義

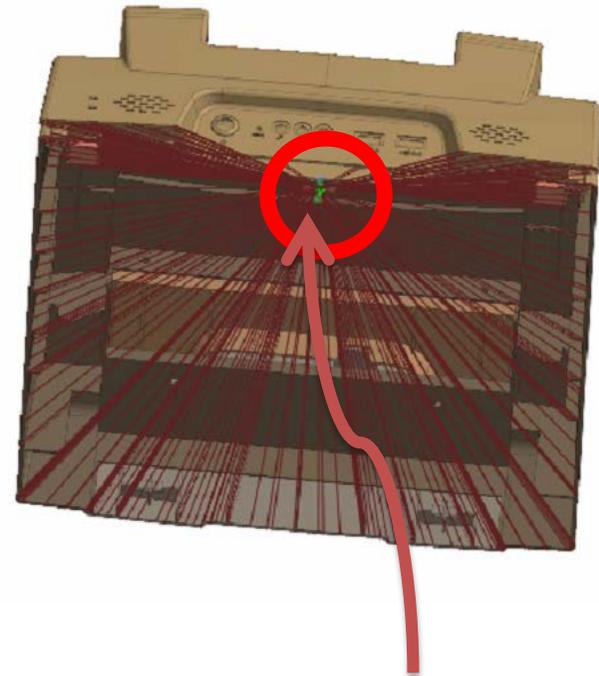
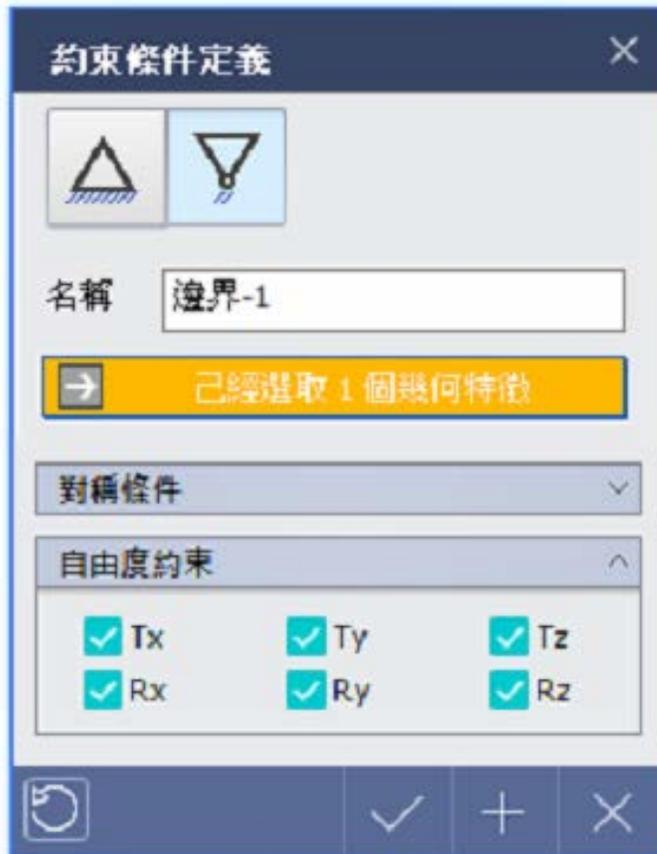
名稱 剛體連接屬性-1

連接

面 已經選取 86 個幾何特徵

自動生成剛體連接





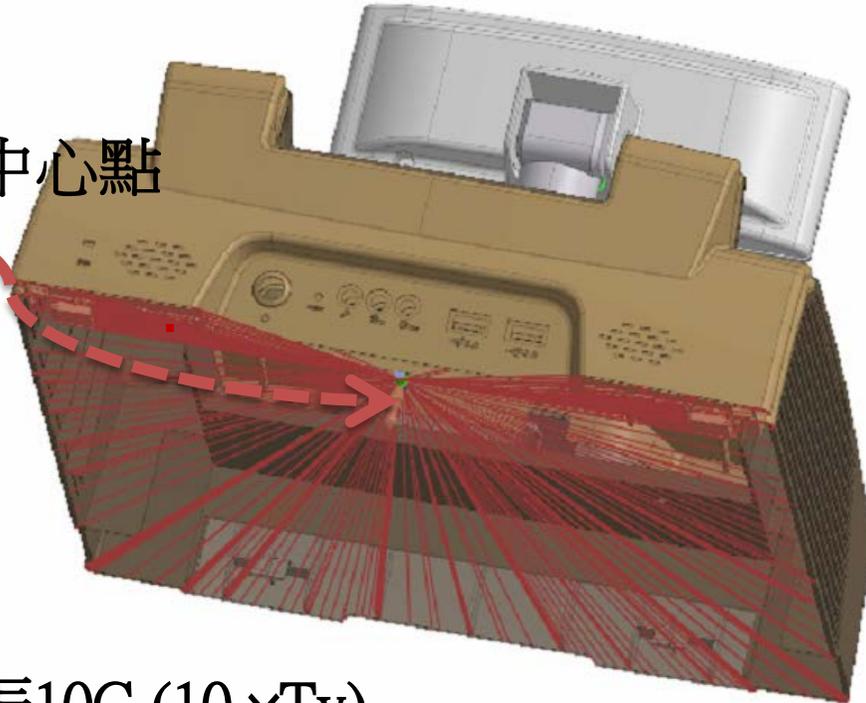
選取剛體中心點



選取剛體中心點

Ty = 1G(9810)

均勻受激振10G (10 × Ty)  
不考慮幅值/相位變化



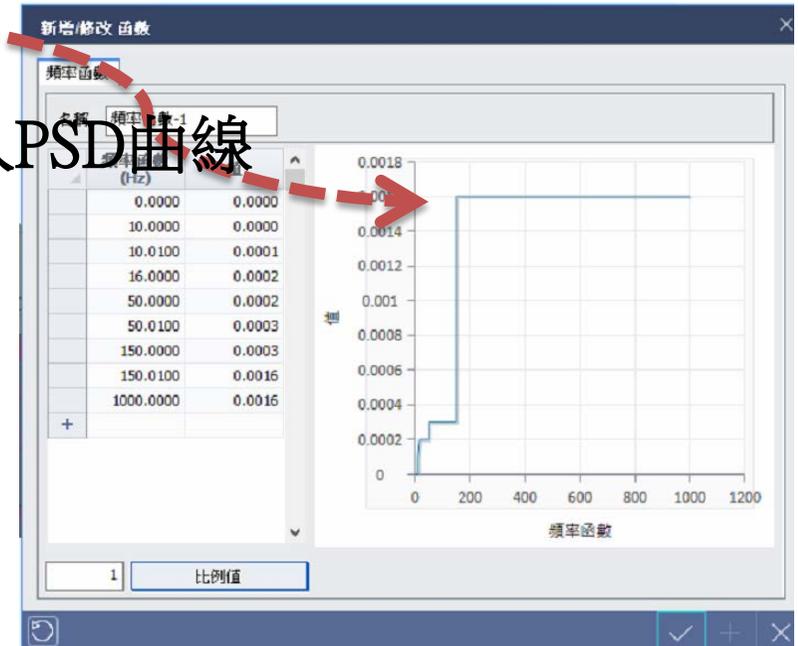


選取加速度激振設定

新增

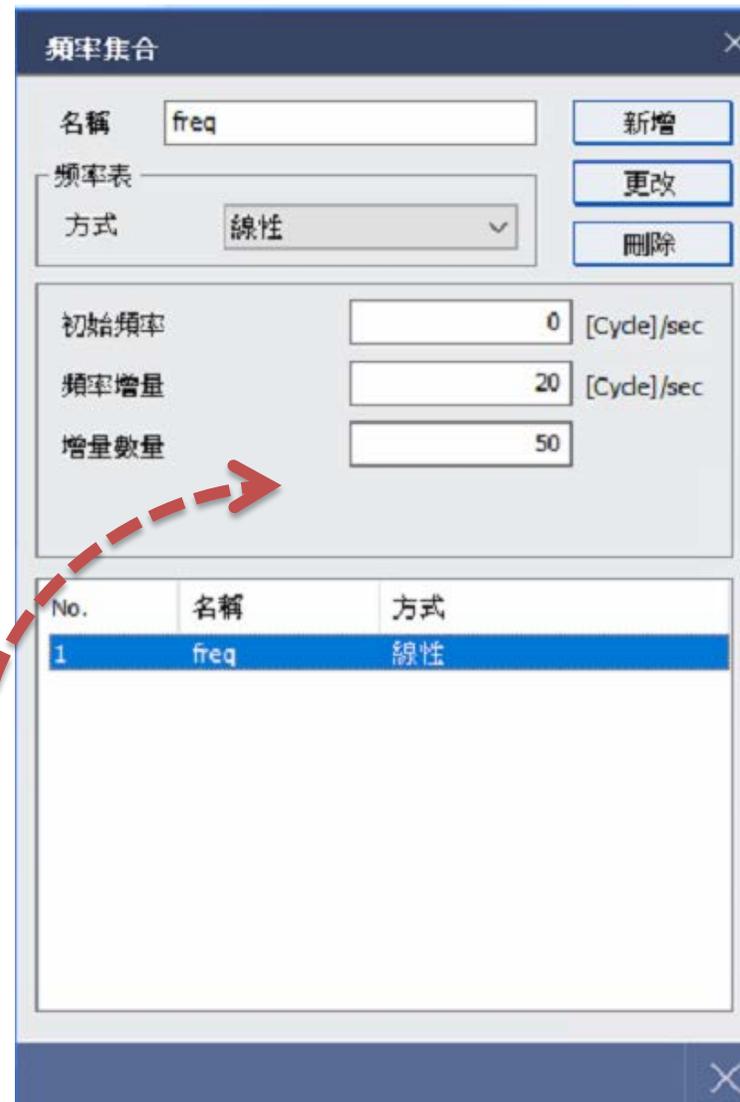
輸入PSD曲線

| Frequency(HZ) | Power Spectral Density(G2/sec) |
|---------------|--------------------------------|
| 0             | 0                              |
| 10            | 0                              |
| 10.01         | 0.0001                         |
| 16            | 0.0002                         |
| 50            | 0.0002                         |
| 50.01         | 0.0003                         |
| 150           | 0.0003                         |
| 150.01        | 0.0016                         |
| 1000          | 0.0016                         |





計算:0~1000Hz 激振  
(其中每20Hz計算一次激振值)





記憶體大小  
1.計算速度  
2.分析準確性

# 匯出計算資訊

Export Mec File

49%

匯出幾何數據...

取消

# 進行求解

求解程序 [1/1]

- 自動網點計算
- 網點剖分
- 接觸穩定
- 設定
- 剛度計算
- 質量計算
- 特徵值分析
- 分析結果

12%

取消

The screenshot displays the MIDAS MeshFree software interface. The main window shows a simulation progress window titled "求解程序 [1/1]" (Solving Program [1/1]) with a progress indicator at 37%. The progress window includes a list of tasks:

- 自動網點計算 (Automatic Node Calculation)
- 網點創建 (Node Creation)
- 接觸搜索 (Contact Search)
- 設置 (Settings)
- 剛度計算 (Stiffness Calculation)
- 質量計算 (Mass Calculation)
- 特徵值分析 (Eigenvalue Analysis)
- 分析結果 (Analysis Results)

Below the progress window, two graphs are displayed:

- Maximum Displacement vs. Frequency:** A line graph showing the relationship between maximum displacement and frequency. The y-axis is labeled "Maximum Displacement" and ranges from 0.00e+000 to 2.00e-002. The x-axis is labeled "Frequency" and ranges from 0.00e+000 to 1.00e+003. The graph shows a sharp peak at a low frequency, followed by several smaller peaks.
- Maximum Rotation vs. Frequency:** A line graph showing the relationship between maximum rotation and frequency. The y-axis is labeled "Maximum Rotation" and ranges from 0.00e+000 to 1.00e-002. The x-axis is labeled "Frequency" and ranges from 0.00e+000 to 1.00e+003. The graph shows a very low, nearly constant rotation across the entire frequency range.

The software interface also includes a toolbar with various analysis tools, a left sidebar with a tree view of the model, and a bottom status bar showing the system time as 上午 11:05 on 2018/11/19.



實際  
無網點

Sigma 3  
科學記號  
小數點位數 5

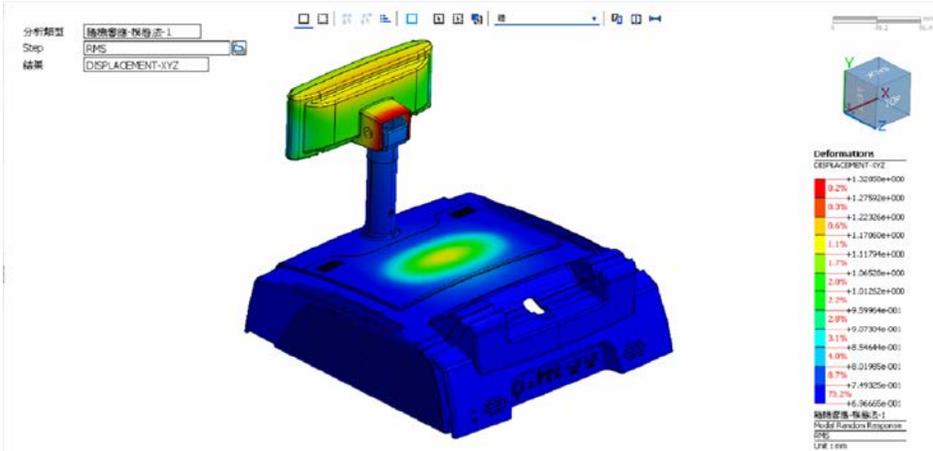
連續輪廓  
 特徵線視圖  
 刻度顯示  
 最大/最小  
 動畫

分析結果

變形

數值顯示

顯示



Sigma3-變形量(mm)

Sigma3-應力(MPa)

