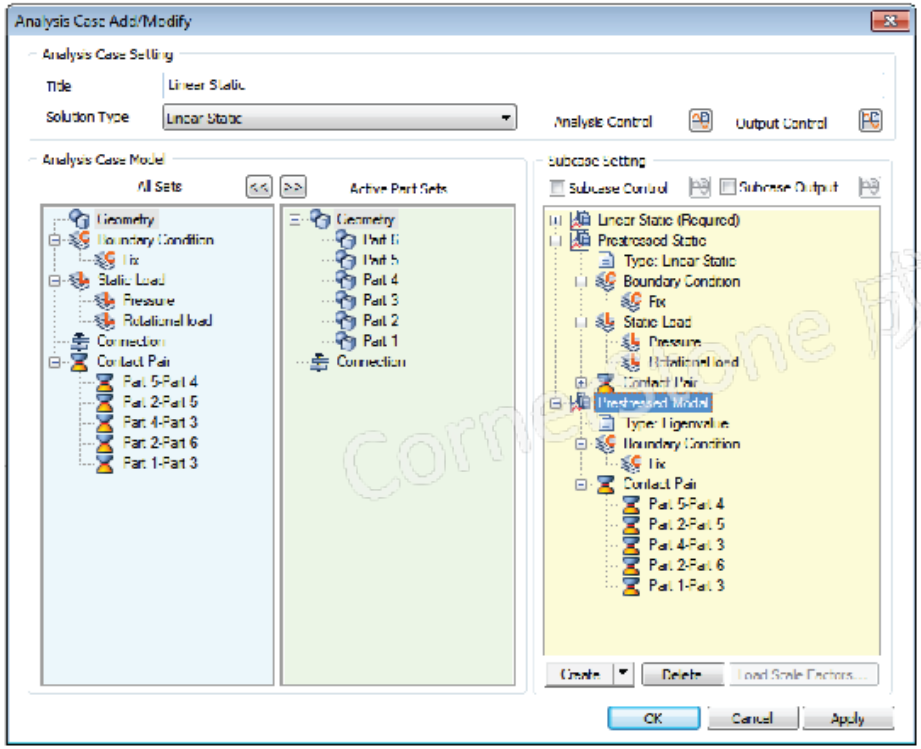
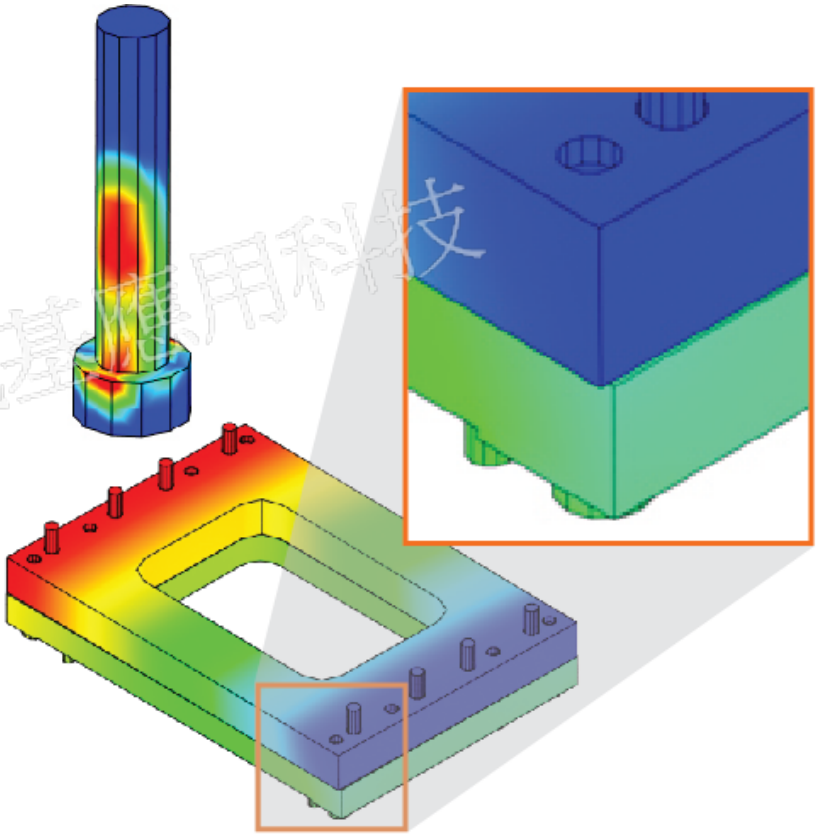
midas NFX

midas NFX 分析功能

產品設計導向分析軟體

線性結構分析(Linear Static Analysis)

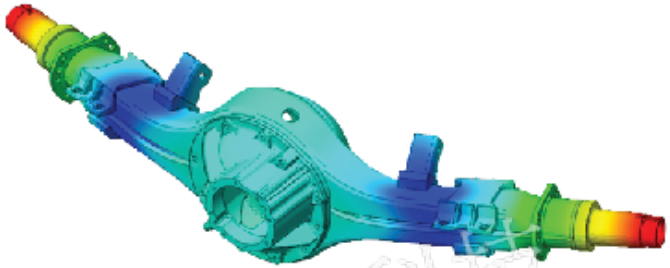




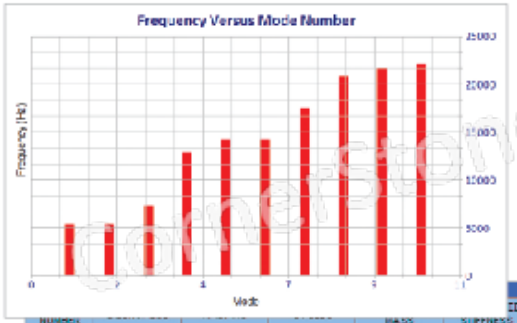
單一模型可以定義多種分析條件和類型，更能進行結果比較　採用線性滑動接觸進行螺栓相對變形及應力分析

(直觀的用戶界面 拖 & 拉 操作方式)

模態/挫曲分析(Modal/Buckling Analysis)



汽車車軸模態分析
(7th mode, Free-Free condition)

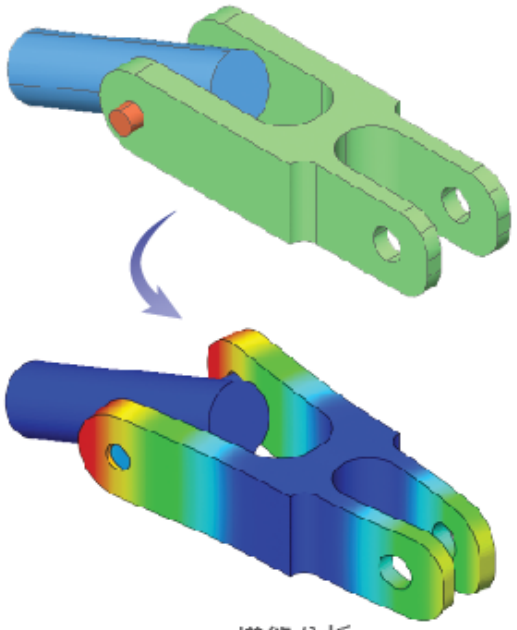


MODE NUMBER					ORTHOGONALITY LOSS	ERROR MEASURE
1	1.14e+009	3.37e+004	5.37e-003	1.00e+000	1.14e+009	0.00e+000	1.60e-009
2	1.14e+009	3.37e+004	5.37e-003	1.00e+000	1.14e+009	4.67e-010	1.34e-010
3	2.16e+009	4.59e+004	7.30e-003	1.00e+000	2.16e+009	1.58e-011	1.15e-011
4	6.49e+009	8.05e+004	1.28e-004	1.00e+000	6.49e+009	2.80e-010	8.41e-011
5	7.97e+009	8.93e+004	1.42e-004	1.00e+000	7.97e+009	2.96e-011	3.50e-011

MODE NUMBER	T1	T2	T3	R1	R2	R3
1	2.78e-006	5.15e-003	0.00e+000	3.10e-001	1.66e-002	1.23e+001
2	5.15e-003	2.70e-006	0.00e+000	1.66e-002	3.10e+001	1.35e+001
3	0.00e+000	0.00e+000	0.00e+000	7.52e-015	2.95e-015	1.95e+001
4	0.00e+000	8.38e-015	8.01e-003	1.58e+001	1.58e+001	2.77e+001
5	3.48e-005	1.40e-003	0.00e+000	1.68e-001	2.54e-003	4.93e+000
TOTAL	5.15e-003	6.83e-003	8.01e-003	4.82e+001	4.81e+001	4.12e+001
TOTAL IN MODEL	7.66e-003	7.66e-003	7.06e-003	0.00e+000	0.00e+000	0.00e+000

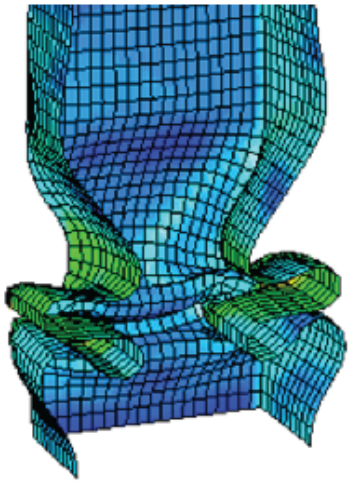
MODE NUMBER	T1	T2	T3	R1	R2	R3
1	0.04%	65.40%	0.00%	0.00%	0.00%	0.00%
2	65.40%	0.04%	0.00%	0.00%	0.00%	0.00%
3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
4	0.00%	0.00%	76.45%	0.00%	0.00%	0.00%
5	0.44%	18.00%	0.00%	0.00%	0.00%	0.00%

模態分析數值結果

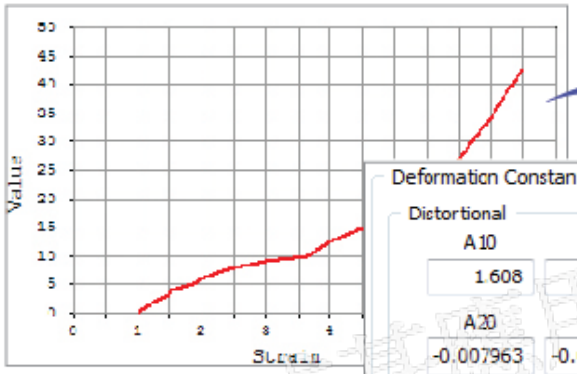


模態分析
(組裝件滑動接觸)

非線性分析(Nonlinear Analysis)



鋼框架的非線性接觸分析



直接輸入測試數據

Deformaticn Constants

Dictortional

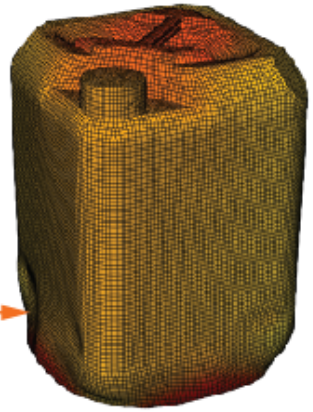
A10	A01		
1.608	0.1451		
A20	A11	A02	
-0.007963	-0.006808	0.000239	
A30	A21	A12	A03
0.000326	0.0001867	-2.206e-0(	7.579e-0.(

Volumetric

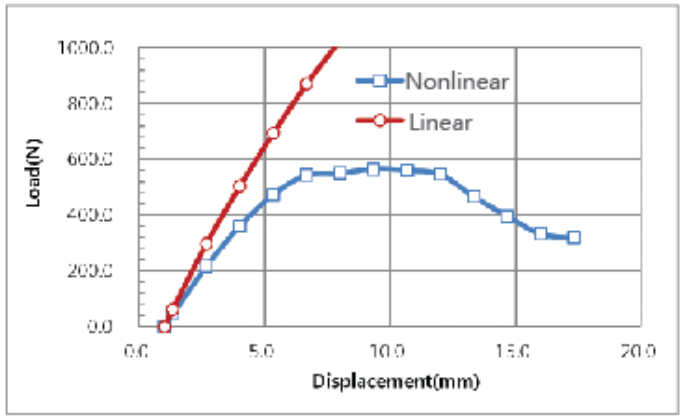
D1	D2	D3
1753	0	0

N/mm²

測試結果

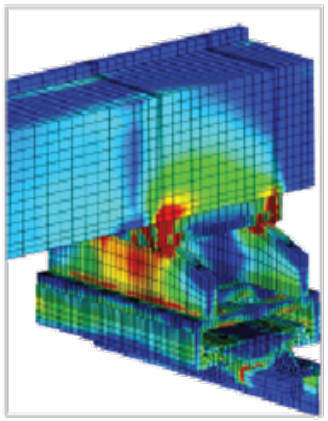


NFX 2012 分析結果

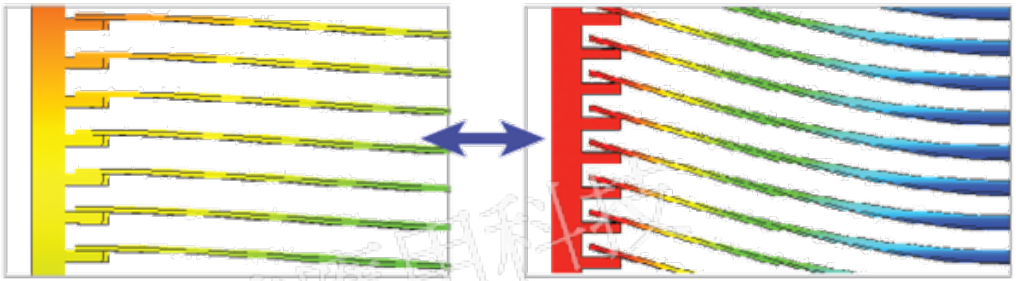


線性分析和非線性分析比較

接觸分析(Contact Analysis)

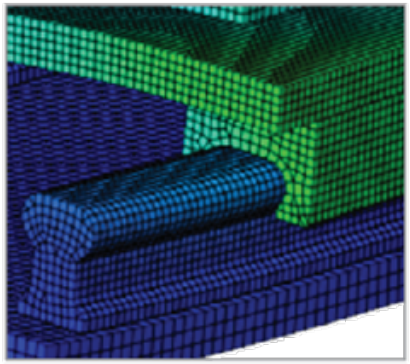


複雜的裝配模型使用自動接觸工具

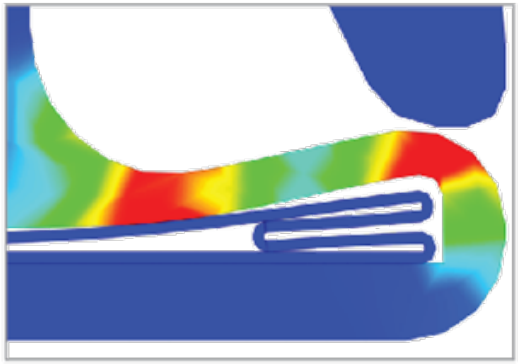


線性接觸
(單件移動)

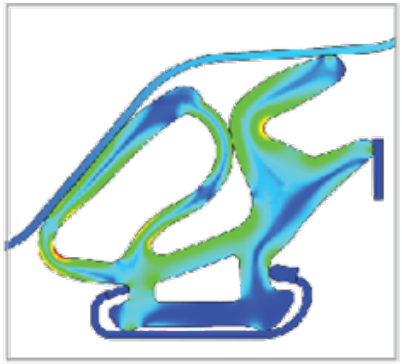
非線性接觸
(多件移動)



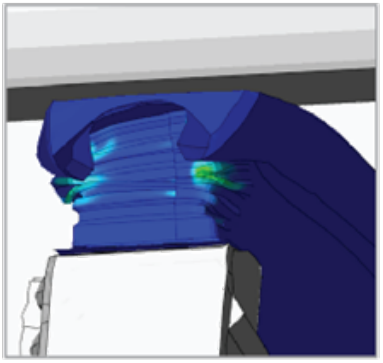
滑軌使用自動接觸



非線性接觸分析
汽車的門鎖傳感器

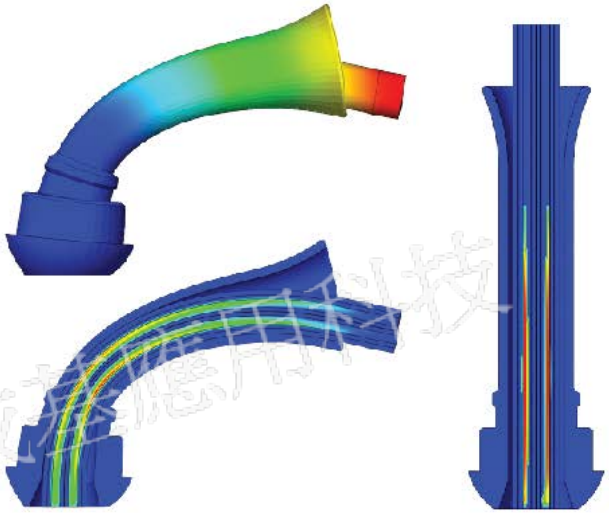


非線性接觸分析
擋風雨條

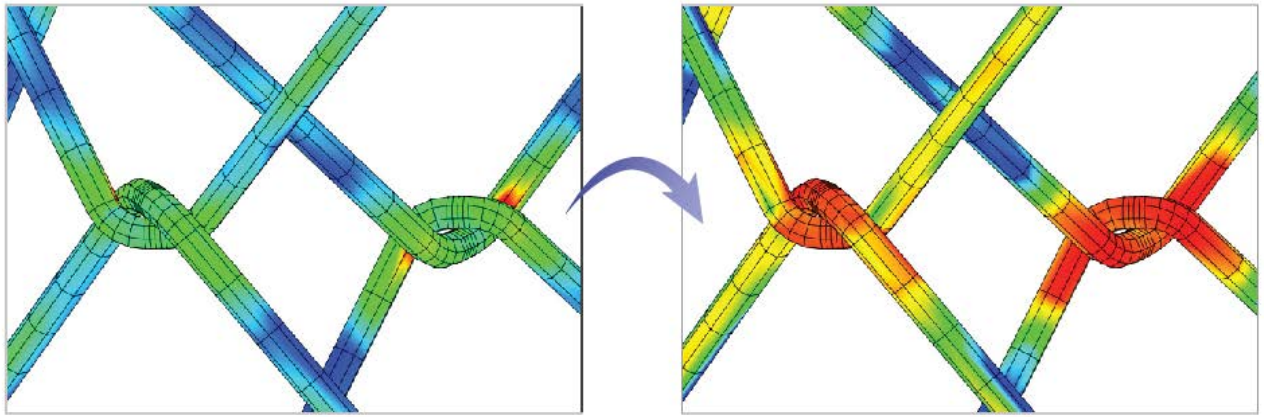


汽車的前保險槓碰撞

疲勞分析(Fatigue Analysis)

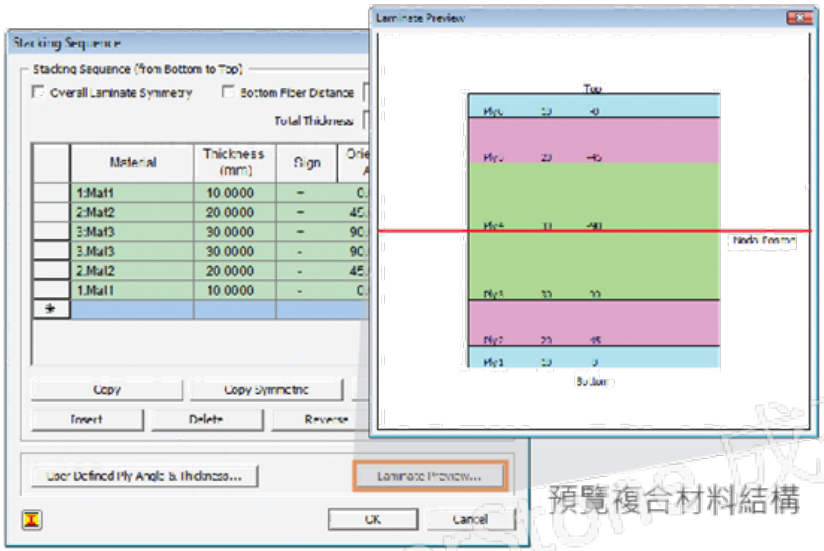


變形/強度/壽命分析



使用自動接觸功能進行靜態分析，並利用分析結果進行醫療支架疲勞壽命預測

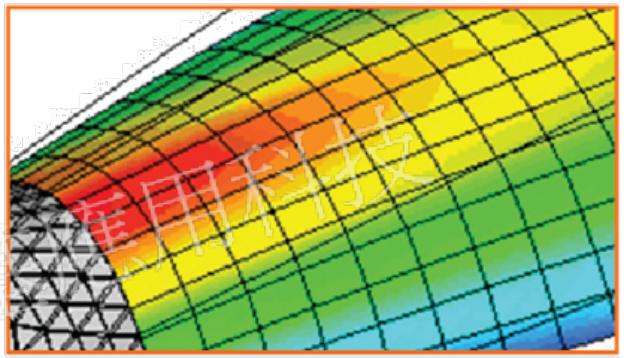
複合材料分析(Composite Material Analysis)

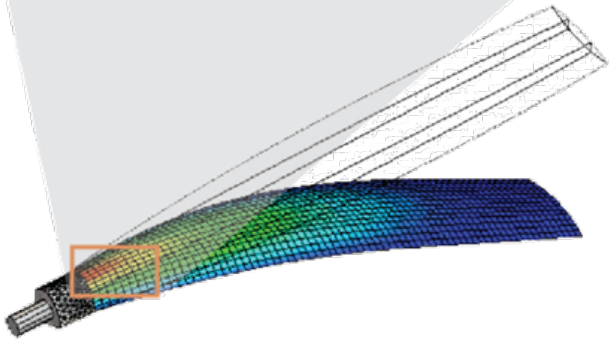


預覽複合材料結構

直觀的圖形用戶界面，用於定義每層結構
（相容MS-Excel格式）

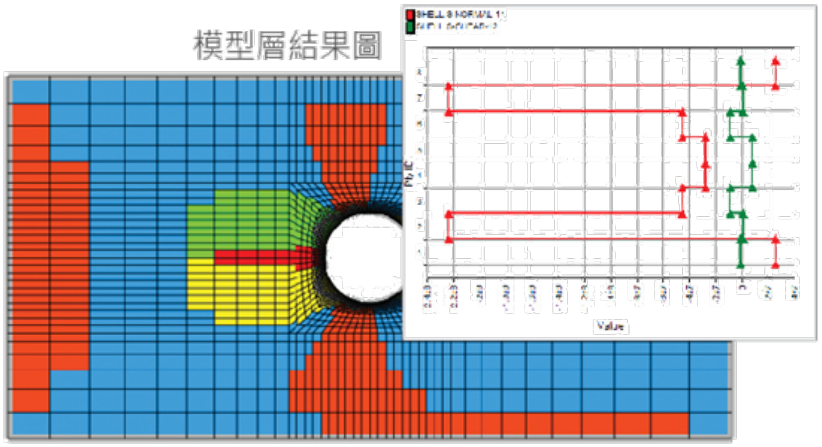
幾何非線性分析





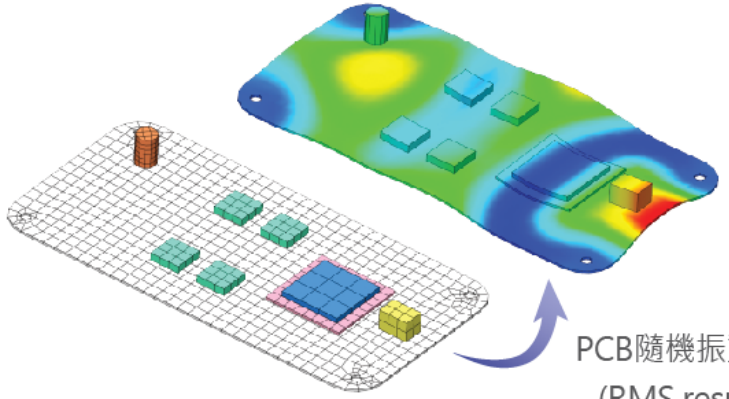
直觀的圖形用戶界面
(定義疊層材料結構)

模型層結果圖

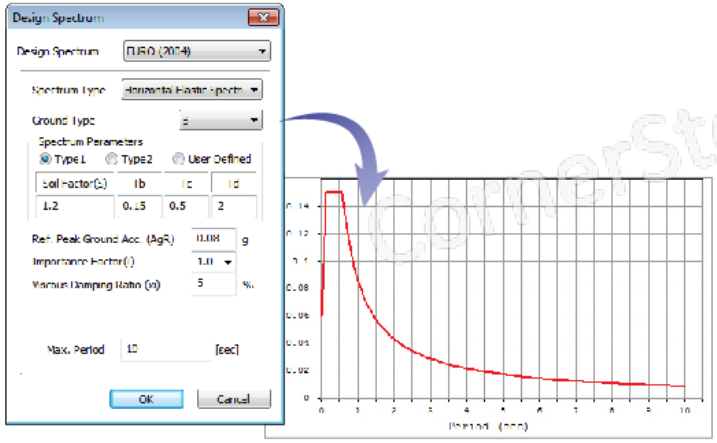


每層最大值/最小值 (Contour, Iso-line)

線性動態分析(Linear Dynamic Analysis)

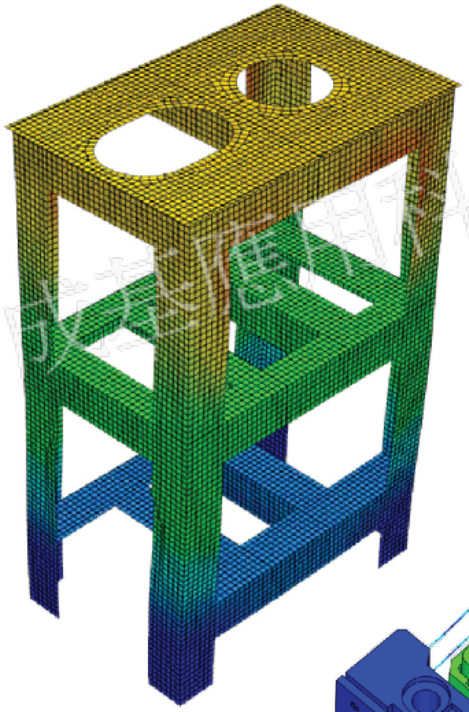


PCB隨機振動分析
(RMS results)

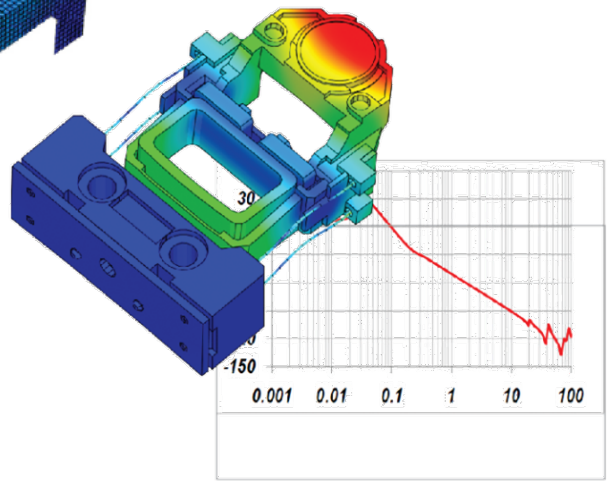


選擇/定義反應譜

自動生成反應譜



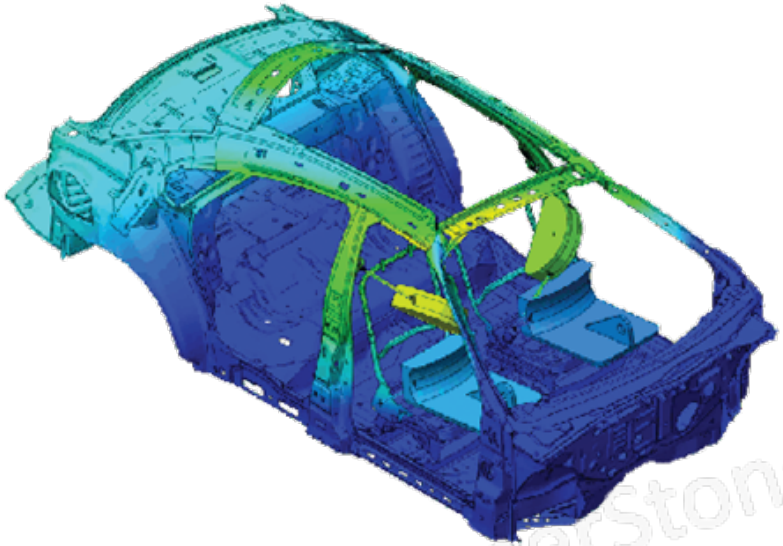
地震分析



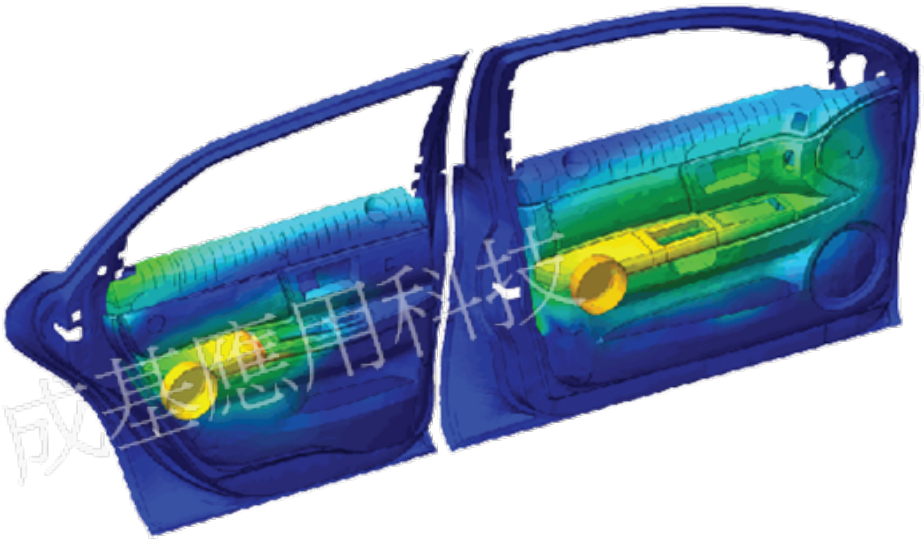
DVD-ROM受磁力作用之響應分析（頻率響應分析）

顯式動力學分析(Explicit Dynamic Analysis)

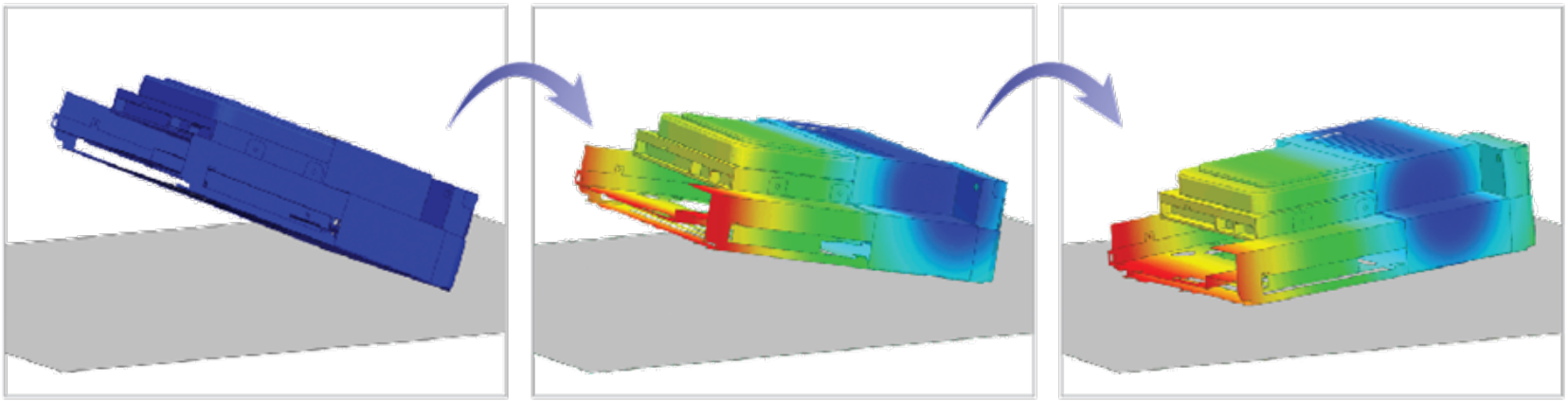
midas NFX



安全袋伸縮環分析

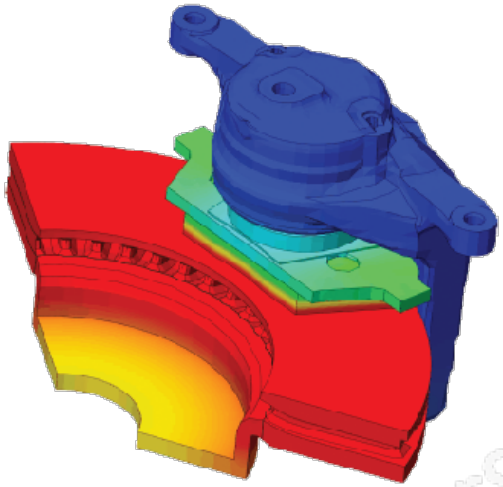


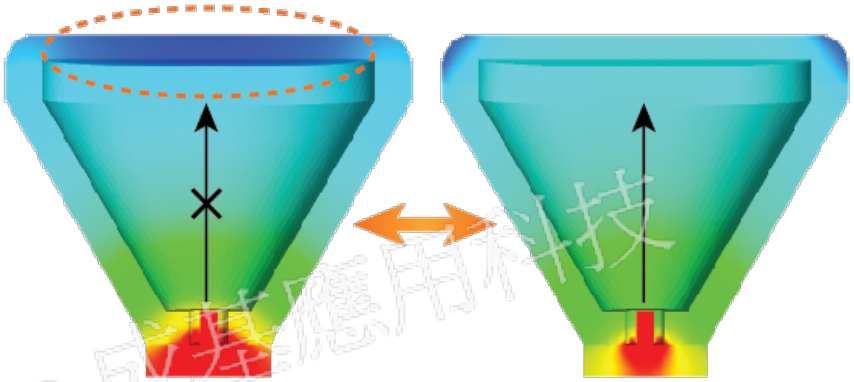
門飾板撞擊分析



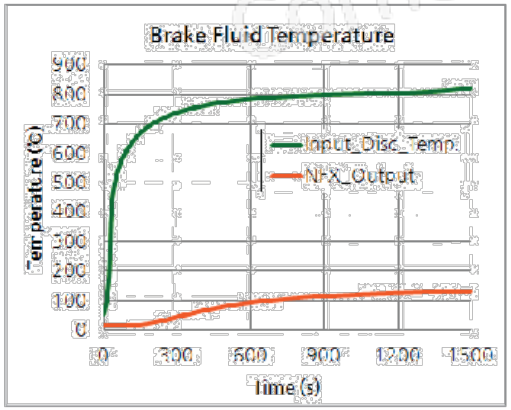
硬碟落摔測試

熱傳/熱應力分析(Heat Transfer/Heat Stress Analysis)

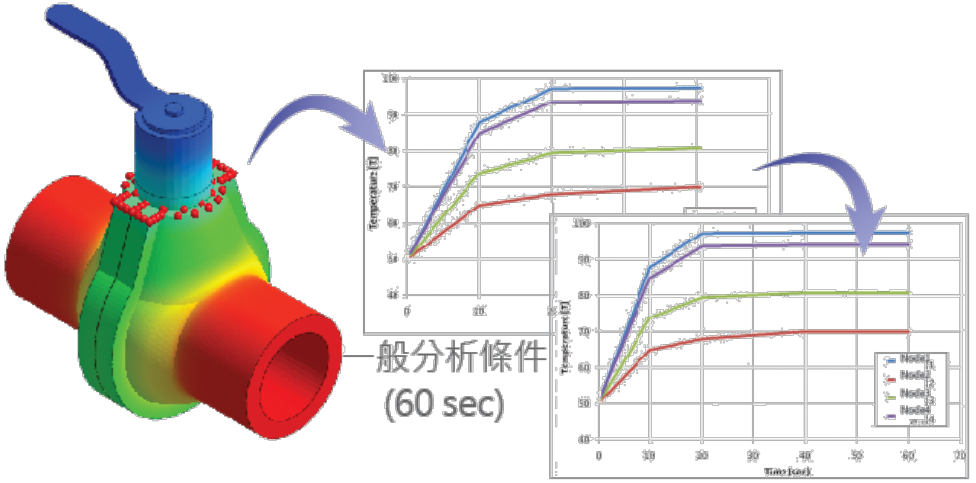




LED燈傳和輻射熱效應溫度分佈



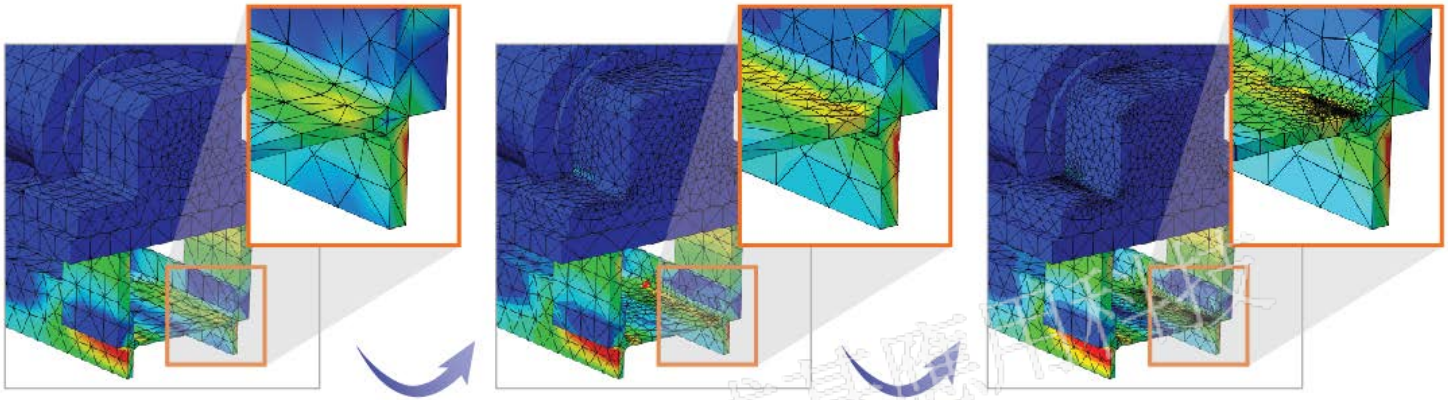
制動系統熱容分析
（瞬態熱分析，熱接觸應用）



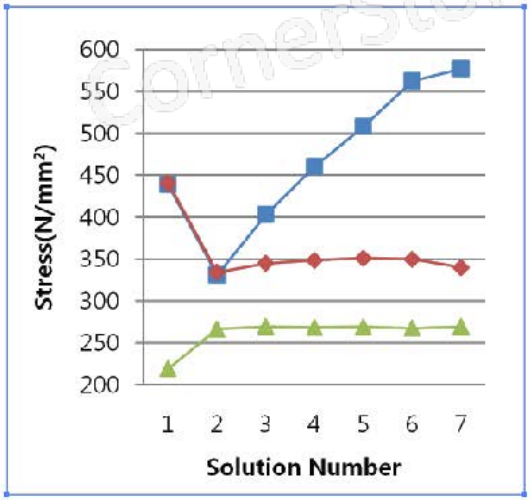
球閥瞬態熱分析
（使用傳感器）

計算完成時間在40.5 sec
（使用傳感器）

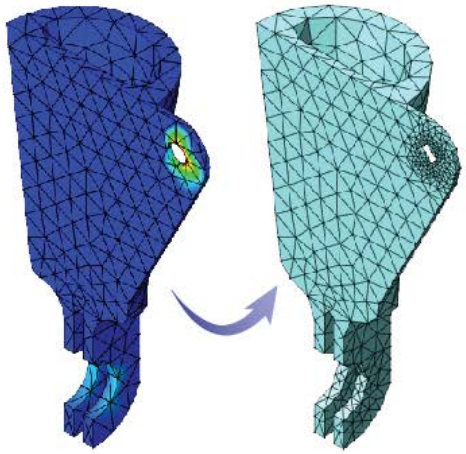
自適化網格分析(Adaptive Mesh Analysis)



初始網格模型和集力集中區域　　自適應網格分析將網格細化

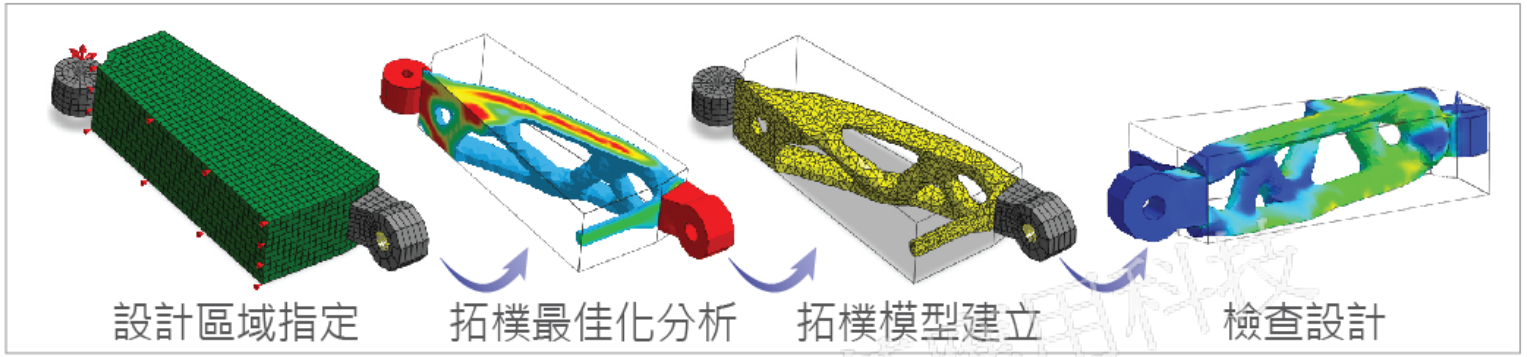


局佈區域最大應力變化

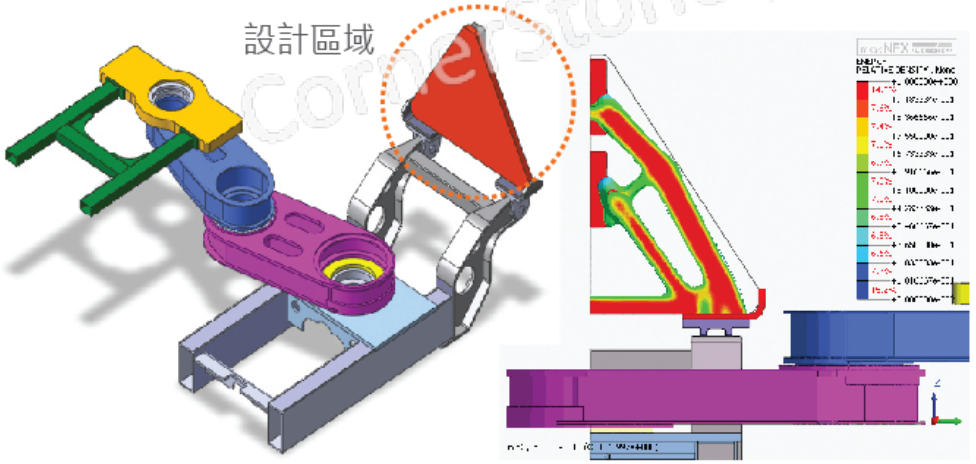


範例：粗糙網格自動加密
(錯誤目標: 小於2%)

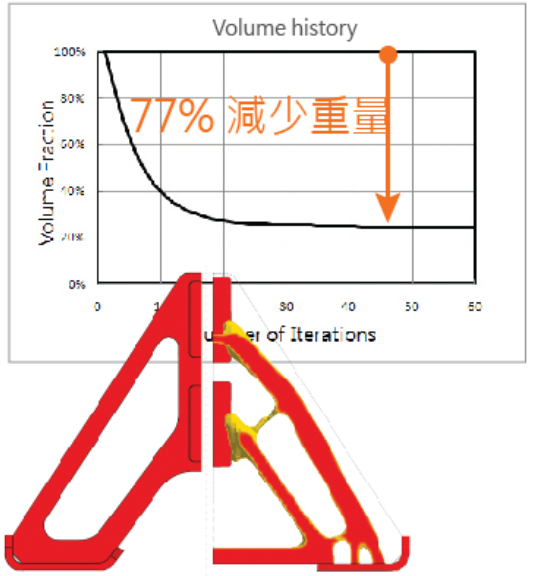
拓樸最佳化設計(Topology Optimization)



拓樸最佳化設計流程



使用拓樸工具進行概念設計
(線性結構, 設計目標:輕量化設計)



與原本設計比較