

Simcenter 3D 2D網格種子層

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2D種子層網格應用

Challenge:

• 整體3D網格建立時 · 有部分局部區域 · 需要更精細的網格

Solution:

 預先將需要細化之局部實體區域,貼上一層2D網格,利用該2D網格當作3D網 格建立時的種子層







 在建立3D網格時,可以透過在前期將需要網格細化的局部區域,先利用2D網 格建立局部細化網格,當作後續3D網格的種子層。





建立2D網格

在FEM工作視窗,選擇Home tab → Mesh group → 2D mesh
 2. 在模型上選取要局部細化的位置



2D Mesh	৩ ? >
Mesh Name	
 Objects to Mesh 	
✓ Select Objects (37)	⊕ …
 Element Properties 	
Туре	CTRIA6 ▼
 Mesh Parameters 	
Meshing Method	Paver -
Automatic Element Size	
Element Size	2.84 mm 🕶 🗲
Maximum Growth Rate	1.3 🔻
Export Mesh to Solver	
 Advanced Parameters 	
Attempt Multi-Block Decompo	sition
Attempt Free Mapped Meshin	g
Curvature Based Size Variation	
	0.0000(
Curvature Threshold (Read-Only)	2.84 mm 🕞
Create Separate Meshes	Off - Single Mesh 👻
 Mesh Quality Options 	
Midnode Method	Mixed 👻
Geometry Tolerance	
Jacobian	10 -
Max Included Angle (Tria)	

建立2D網格

- 3. 設定要細化的尺寸。
- 注意·Export Mesh to Solver不要選,因為此處的2D網 格僅是為了當作3D網格之種子層,因此後續求解時,並 不參與計算。
- 5. 按下OK,完成2D種子層網格建立



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建立3D網格

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6. 在FEM工作視窗,選擇Home tab → Mesh group → 3D Tetrahedral .
 7. 選取整個模型。



3D Tetrahedral Mesh	ა? X
Mesh Name	
 Objects to Mesh 	
✓ Select Bodies (1)	¢
✓ Element Properties	
Туре	▲ CTETRA(10) ▼
 Mesh Parameters 	
Automatic Element Size	
Element Size	9 mm 🔻 🗲
Surface Maximum Growth Rate	1.3 🔻
Surface Meshing Method	Standard 💌
Mesh Quality Options	2
 Surface Mesh Settings 	
Attempt Free Mapped Meshing	
Attempt Multi-Block Cylinders	
Surface Curvature Based Size Variation	6
	60.0000
Surface Curvature Threshold (Read-Only	y) 3.654 mm 🕞
✓ Volume Mesh Settings	
Internal Mesh Gradation	1.05 💌
🗌 Target Internal Edge Length Limit	
Minimum Two Elements Through Th	ickness
Auto Fix Failed Elements	
 Model Cleanup Options 	
Small Feature Tolerance (% of Element	Size)
	0.0000(
Minimum Element Length (Read-Only	y) 0 🕞 🖉



建立3D網格

Auto Fix Failed Elements

8.

8. 設定3D網格尺寸 9. 按下OK,完成3D網格建立

3D Tetrahedral Mesh	ს ?
Mesh Name	
 Objects to Mesh 	
✓ Select Bodies (1)	¢
 Element Properties 	
Туре	♦ CTETRA(10) ▼
 Mesh Parameters 	
Automotic Element Cice	
Element Size	9 mm 🔻 🗲
Surface Maximum Growth Rate	1.3 •
Surface Meshing Method	Standard 👻
 Mesh Quality Options 	
 Surface Mesh Settings 	
🗹 Attempt Free Mapped Meshing	
Attempt Multi-Block Cylinders	
Surface Curvature Based Size Variation	
	60.0000
Surface Curvature Threshold (Read-Only)	3.654 mm 🔂
 Volume Mesh Settings 	
Internal Mesh Gradation	1.05 🔹
🗌 Target Internal Edge Length Limit	
Minimum Two Elements Through Thicl	kness

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事先局部細化區域

3D網格會以此種子 層為依據,建立3D 網格





The End





