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Flotherm XT 2210功能介紹

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Outline

- EDA Bridge
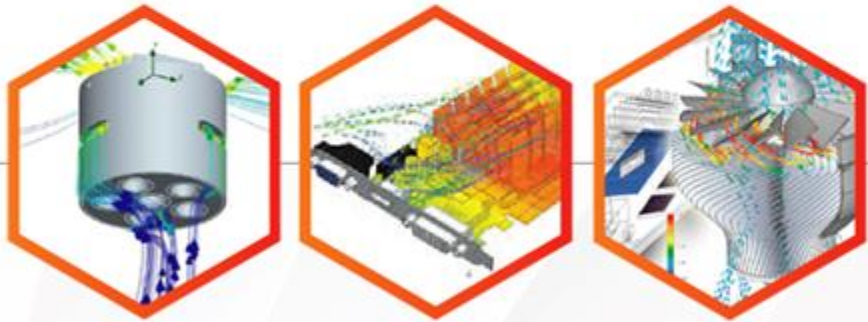
- HyperLynx PI Co-Simulation

- Parametric study

EDA Bridge

Solder Mask Import

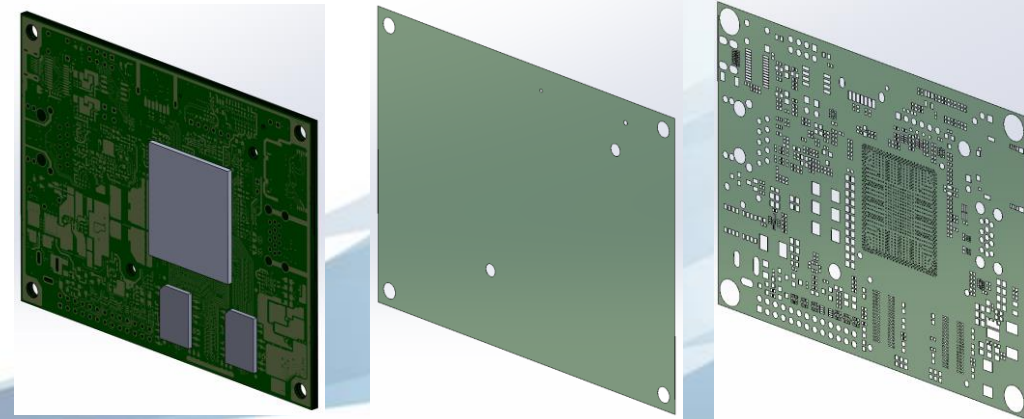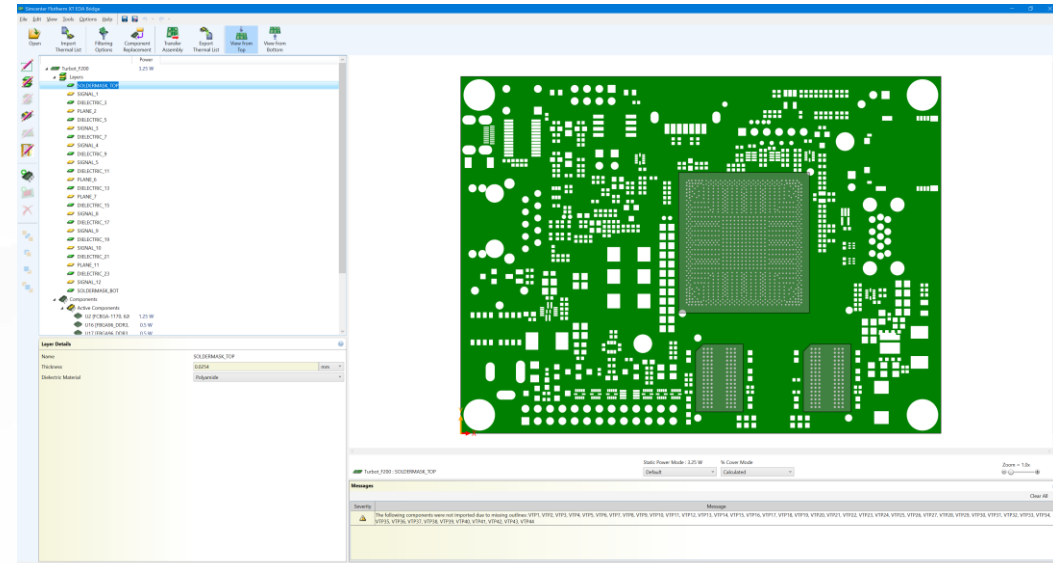能得到PCB更高的精確度

Challenge:

PCB的solder mask層在熱分析中經常被忽略，為確保在PCB在3D模型端的總高且PCB內各層能平滑的過渡，將solder mask層詳細模型納入模擬是必要的

Solution:

可以選擇匯入或建立solder mask，並匯入Flotherm XT中

- 有兩種模型可以編輯Solder Mask
  - Simple –只有板上的孔
 - Explicit –包含pin的孔
- Thermal Territories須獨立設定

Solder Mask匯入流程的優化

Process to include solder mask.

Version 2021.2	Version 2210
Import & transfer EDA File using EDA Bridge (no solder mask)	Import & transfer EDA File using EDA Bridge (solder mask is included)
Create a new part (top solder mask)	
Sketch outline of board including holes (use board as reference)	
Extrude to appropriate thickness	
Repeat for bottom solder mask	
Run simulation	Run simulation

Manual steps avoided

舊版本(V2021.2)要建立 Solder Mask層需在3D端建立草繪再長料產生模型

新版本(V2210)可直接匯入包含Solder Mask資訊的檔案，可直接匯入到Flotherm XT介面進行模擬
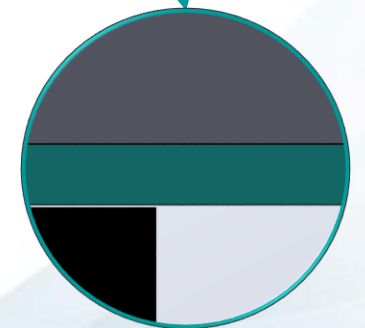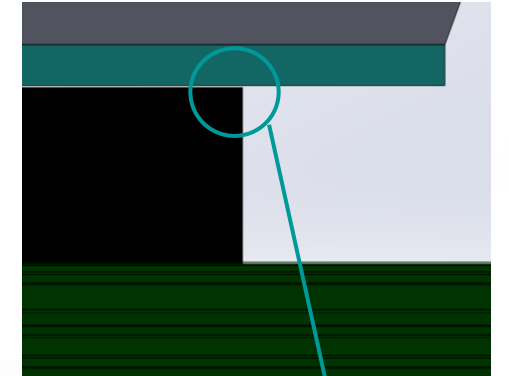
未設定Solder Mask可能導致在模型產生極小的間隙
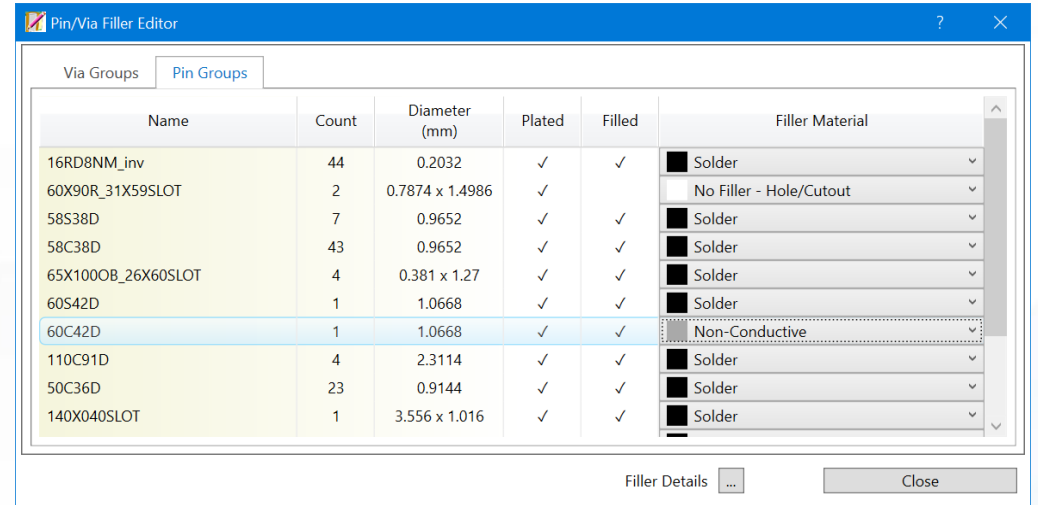
Pin and Via groups

讓編輯PCB資訊更快速且更容易
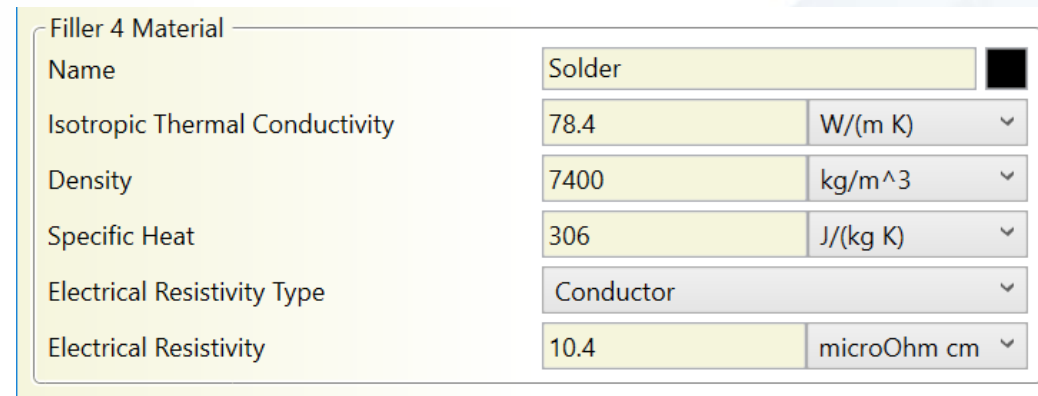
Challenge:
如要編輯數十到數百的pins跟vias，在選擇過程非常耗費時間且很容易發生失誤

Solution:
新增Pin/Via Editor 來群組式管理及定義材料參數，功能如下：

- Pin/Via群組資訊的顯示
- 使用者可定義Pin/Via群組的材料參數
- 可轉換成以下兩種模式
  - Explicit Nets or Thermal Territories

Pin/Via Filler Editor

Via Groups | Pin Groups

Name	Count	Diameter (mm)	Plated	Filled	Filler Material
16RD8NM_inv	44	0.2032	✓	✓	Solder
60X90R_31X59SLOT	2	0.7874 x 1.4986	✓		No Filler - Hole/Cutout
58S38D	7	0.9652	✓	✓	Solder
58C38D	43	0.9652	✓	✓	Solder
65X100OB_26X60SLOT	4	0.381 x 1.27	✓	✓	Solder
60S42D	1	1.0668	✓	✓	Solder
60C42D	1	1.0668	✓	✓	Non-Conductive
110C91D	4	2.3114	✓	✓	Solder
50C36D	23	0.9144	✓	✓	Solder
140X040SLOT	1	3.556 x 1.016	✓	✓	Solder

Filler Details ... Close

Filler 4 Material

Name	Solder	
Isotropic Thermal Conductivity	78.4	W/(m K)
Density	7400	kg/m^3
Specific Heat	306	J/(kg K)
Electrical Resistivity Type	Conductor	
Electrical Resistivity	10.4	microOhm cm

Pin and Via groups

Process to change Pin/Via filler

| Version 2021.2	Version 2210
Import EDA File using EDA Bridge	Import an EDA File using EDA Bridge
Export areas of the board that have pins and vias using explicit modeling	Edit the materials in the Pin and via Filler editor
Individually select the (100s-1000s) pins and vias to apply materials	
Run simulation	Run simulation

舊版本(V2021.2)在選擇 Pins/Vias時會花費較多的時間

新版本(V2210)可以在Pin/Via Editor設定材料參數
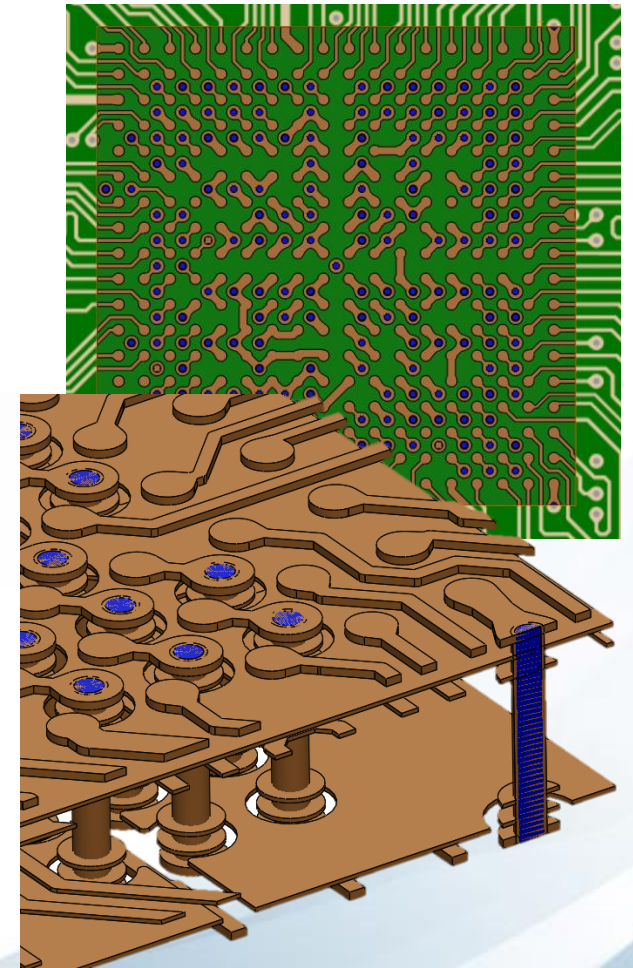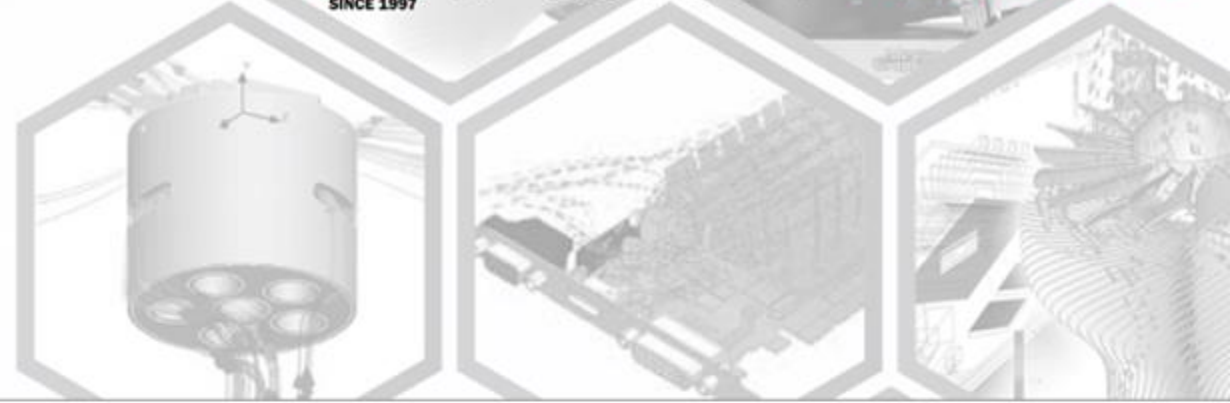
HyperLynx PI Co-Simulation
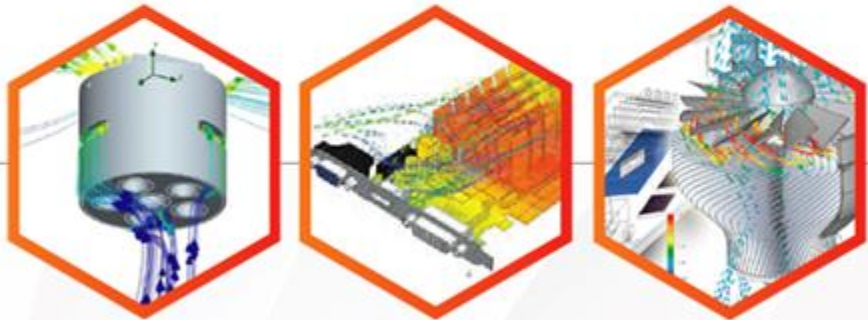
Thermal Co-Simulation

能更快的得到模擬結果
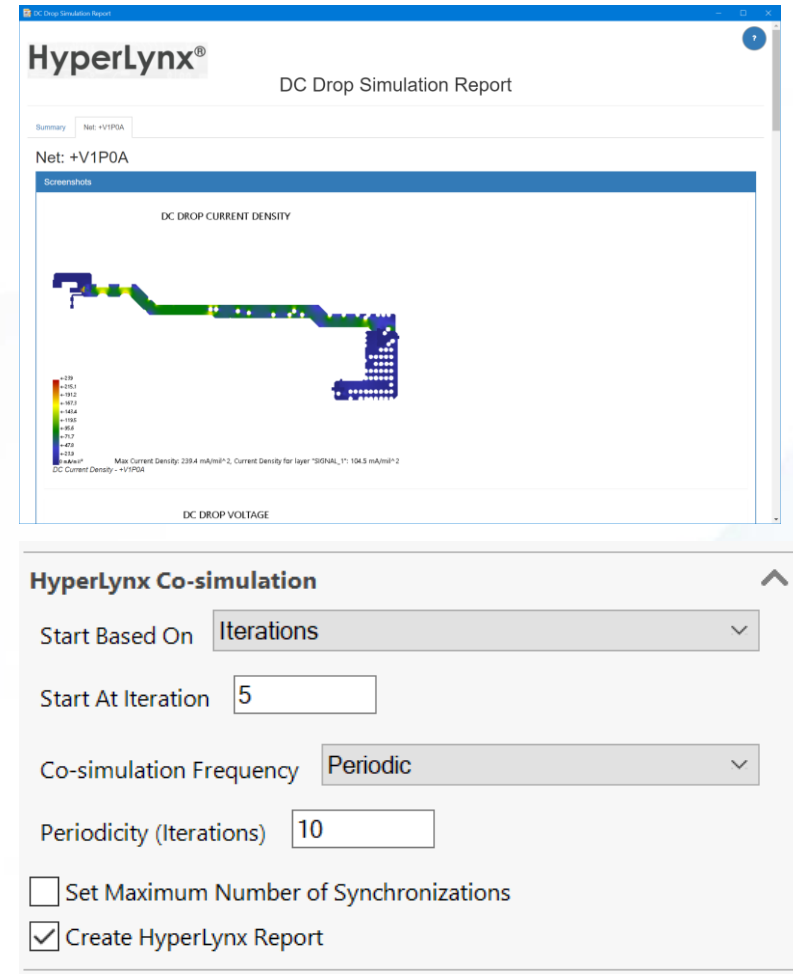
Challenge:

在HyperLynx DC Drop 的模擬中，結果無法可視化

Solution:

能產生DC Drop結果報告

Challenge:

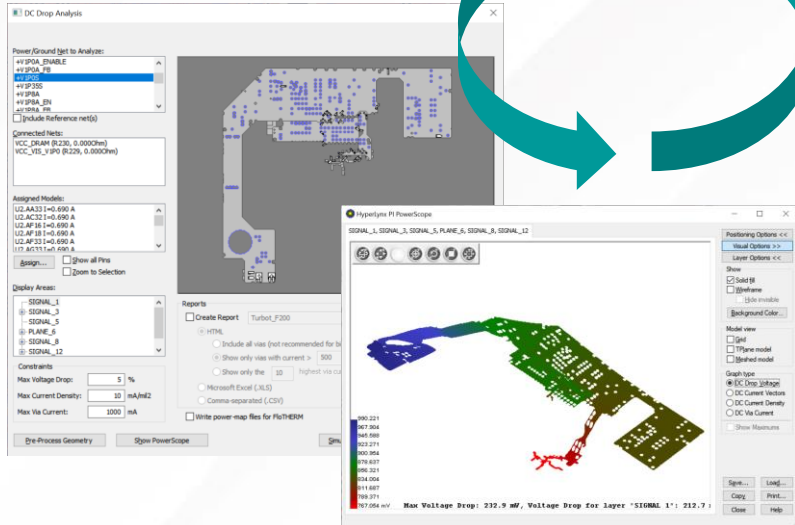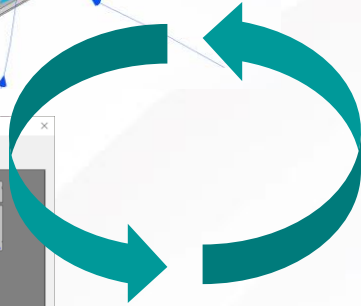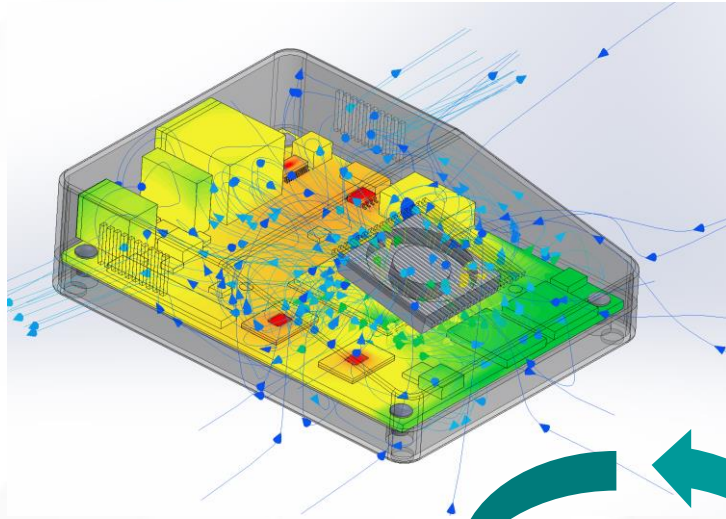在先前的Co-simulation，為了精準度，每次迭代計算後HyperLynx的功率與Flotherm XT的溫度不會同步，但增加了計算時間

Solution:

新增Co-simulatio的設定選項，可以設定HyperLynx的功率與Flotherm XT的溫度模擬的同步頻率
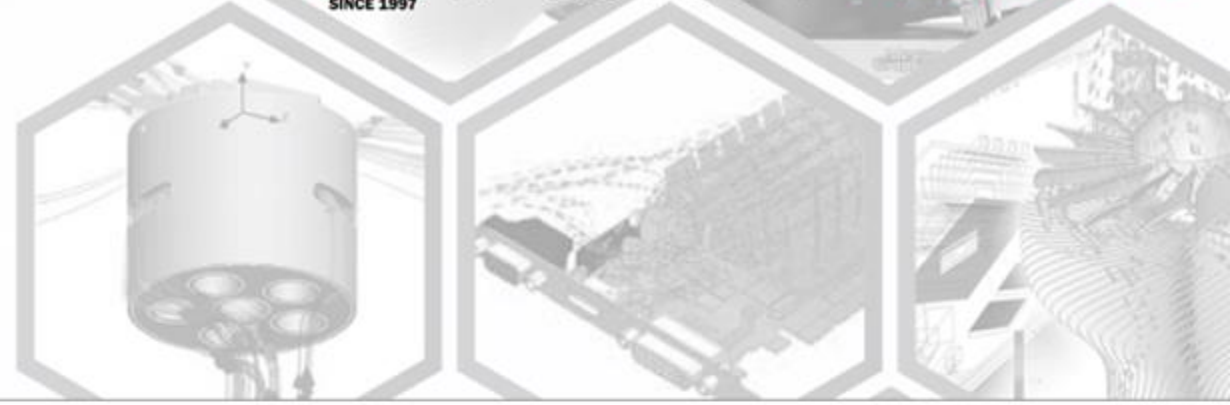
Thermal Co-Simulation

設定Co-simulation同步頻率，可降低20%的計算時間

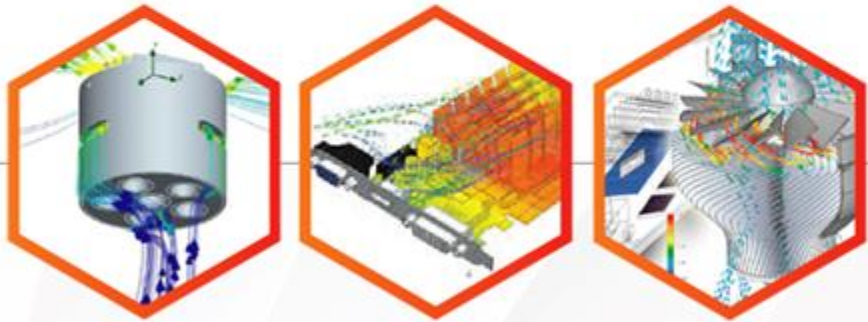|	Run A	Run B
CPU time (s)	10116	7996 ▼20%
U16 Die Temperature (°C)	73.57	73.56
U17 Die Temperature (°C)	72.19	72.18
U18 Die Temperature (°C)	74.77	74.76
U19 Die Temperature (°C)	73.92	73.92
U20 Die Temperature (°C)	76.80	76.79

Parametric study

Parametric study

- 新增匯出專案功能(包含parametric study設定)，可選擇包含結果或不包含結果，位置於Project Tools下(Fig. A)
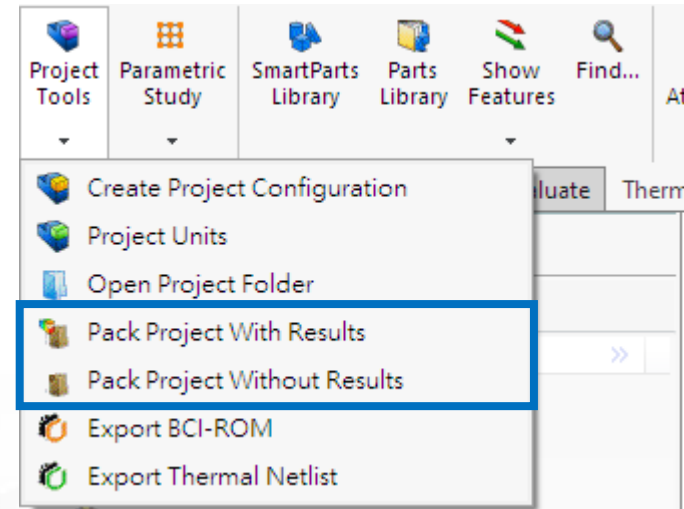
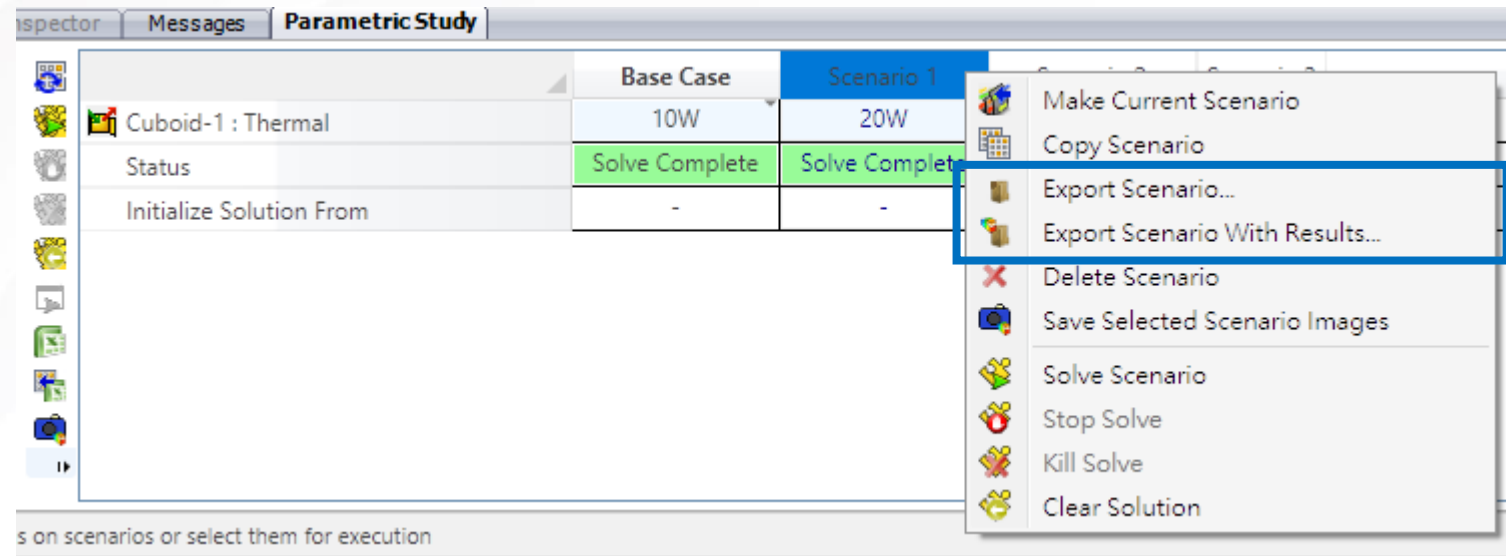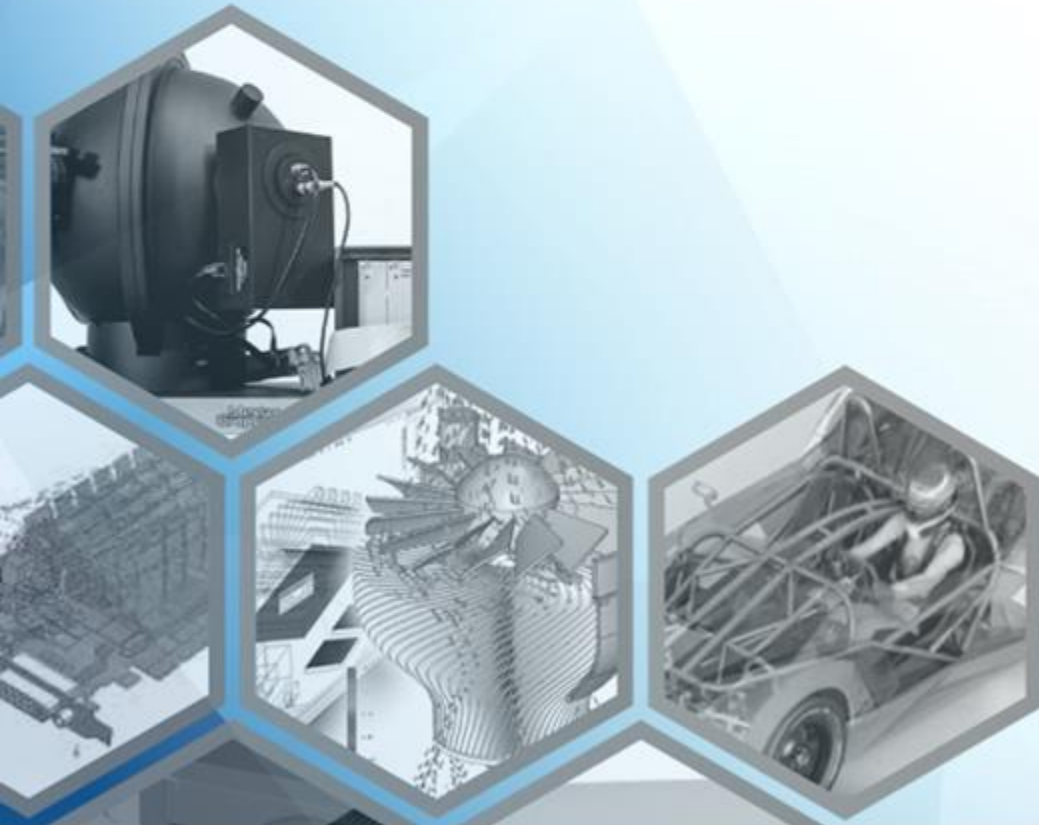- 新增能對單一scenario匯出功能，可選擇包含結果或不包含結果(Fig. B)

Fig. A

Fig. B

Thank you for your attention.

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