電池模組設計
Standard Battery Pack Design

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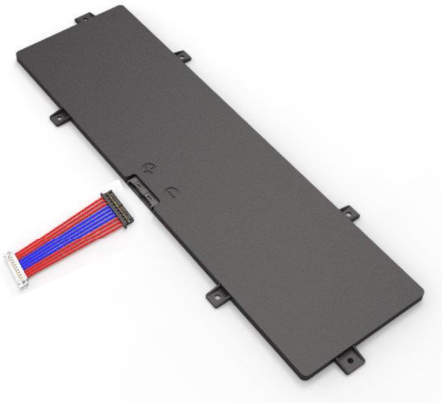
電池模組連接主系統(單向接頭)
Battery Pack System: One Way Connector
vs.
電池模組連接主系統(雙向接頭)
Battery Pack System: Two Way Connector

Battery Pack ⟶ **Mother Board**

Battery Pack ⟷ **Mother Board**



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雙向接頭設計優勢
Advantages of Two Way Connector

標準化 Standardization for Battery Pack

縮短設計時程 Shorten Design Period

線材佈線 Simplification for Cable Design

自動化生產 Automation in Production

自動化檢測 Automation in Safety Test

減少安規費用 Lower Cost for Safety Related Certification

提前市場行銷 Shorten Time to Market Schedule

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標準化
Standardization

增加共用 Increase share use for different product models

低庫存風險 Lower risk for storage parts

減少模具開發 Decrease quantity for new mold development

成本控制 Cost control

延長售後服務 Extend after sales service

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縮短設計時程
Shorten Design Schedule

標準電池模組

Standard Battery Case – Only a few standard cases needed to be used in all product model

電池機構位置

Battery Placement – Allows more flexibility in designing where the battery pack is located in the laptop

電池容量確認

Cell Capacity – Standardization of battery pack allows one cell size to be used in multiple models

減少設計時間

Overall simplifies the design process for each product model

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線材佈線
Cable Design and Wiring

線彎折材較不受限制，可繞性佳。
More freedom in cable design between battery and motherboard

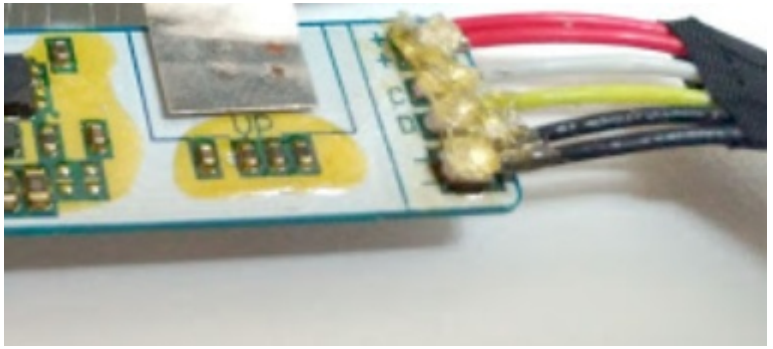
系統亦不受限插座位置。
System design is not limited by location of connectors between battery and motherboard

不因調整線材長短而開新電池。
Eliminate the need to design a new battery pack due to modifications to the cable

自動化生產
Automation in Production

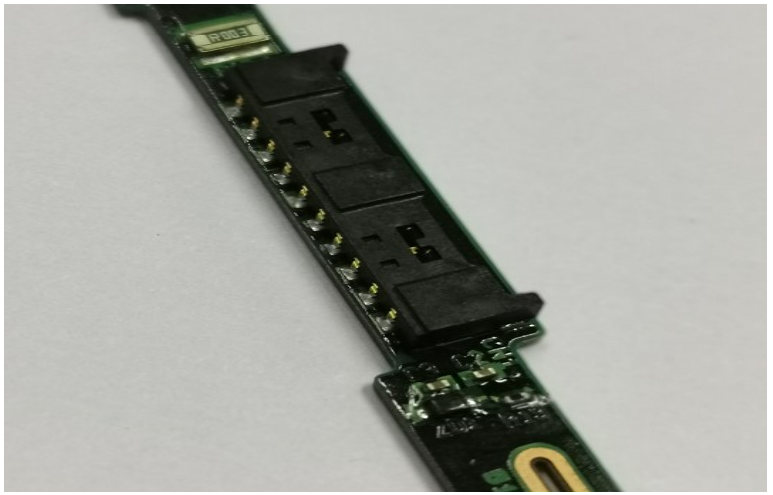
熱壓 Hot Bar

將”線束”放好於PAD位置，進行熱壓，
此工站會利用到人工且速度亦較慢。
The process of hot bar requires manual labor which increases assembly time.



表面黏著 SMT

置件機上件”連接器”過迴流焊製程，
此工站可減少製程時間與人員。
Automation in assembly is possible with SMT process instead of hot bar as stated above.



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自動化檢測
Automation in Safety Test

測試端治具設計固定配插或設計頂針試端子測試。

Test station designs tooling for automatic testing as connector location is fixed on the battery.

須人員作業將線端配插測試治具

Test station requires manual labor to connect the wire connector for test.

安規費用
Safety Certification Cost

每個專案設計新的電池需要安規認證,電池設計如果標準化就可以在新的專案中延用已認證的電池設計, 這樣可以減少每年專案中所需要花費的總安規費用.

Safety certifications are required for each new battery pack design. With standardization there will be less battery pack models for each year thus leading to lower total certification cost per year.

Safety item	UL/CB	UL62368	CTIA	BIS 2015	SIRM	KC	TUV
Price (USD)	10000	8200	7400	7000	3000	3000	2300
Safety item	**MIC**	**BSMI**	**GOSTR**	**PSE**	**GB31241**	**CE**	
Price (USD)	2200	2000	2100	2000	1000	1000	

*Price for reference only

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提前市場行銷
Time to Market

因為安規已準備好所以可以省去SR跟ER的樣品時間

Time to market shorten for 70 days when eliminating safety certification time.

試產階段 Trial Run	時間 Time	開始 Start	結束 End
EVT	20 day	July 1st	July 28th
DVT	20 day	July 29th	August 25th
PVT	20 day	August 26th	September 22nd
Safety (UL/CB)	25 day	August 26th	September 25th
Safety (KC/BIS/BSMI)	45 day	August 26th	October 23rd

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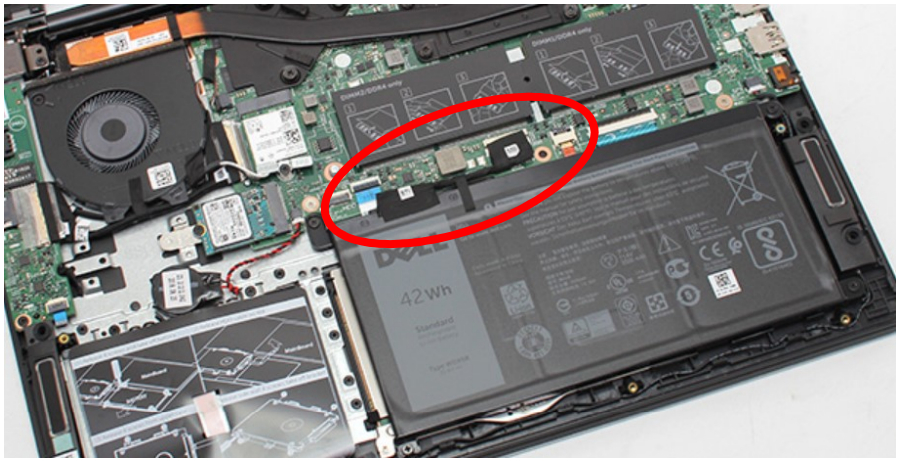
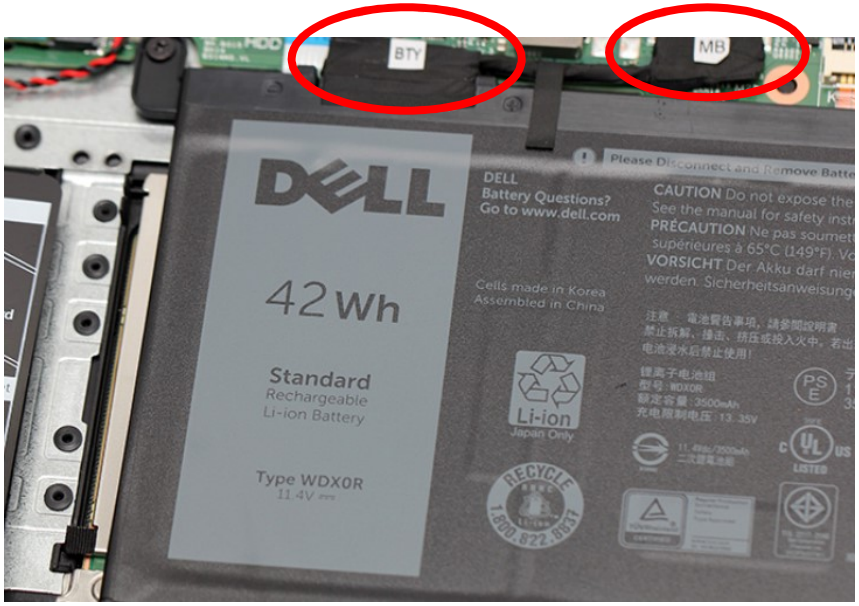
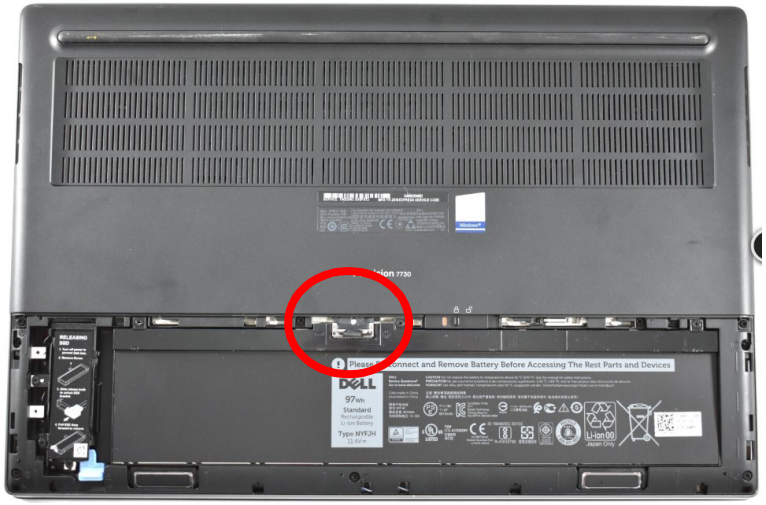
案例說明 1
Case Exhibit 1

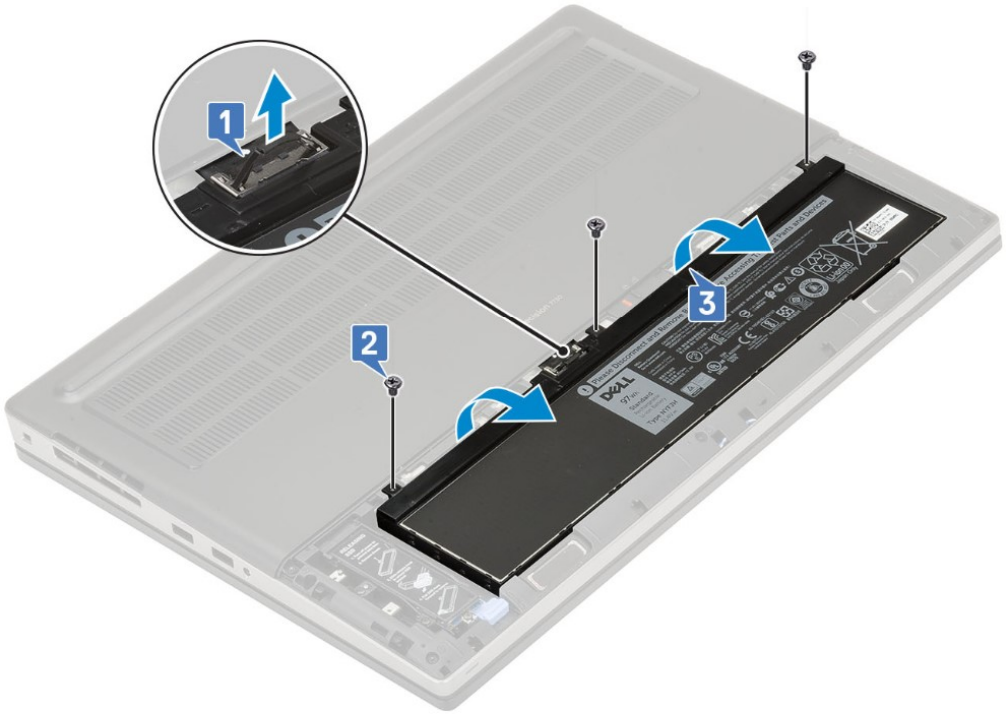
案例說明 2
Case Exhibit 2





案例說明 3
Case Exhibit 3





Thank You