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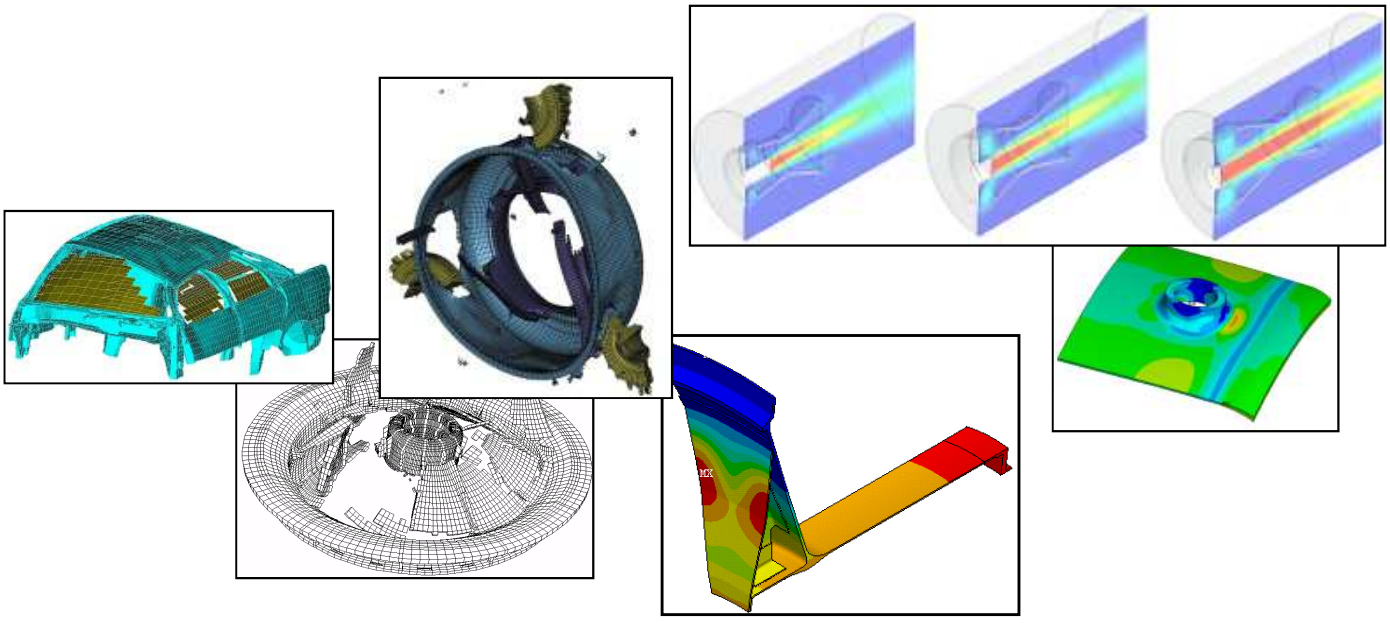
嵐昊科技 *FEA-Opt Technology*

SmartDO+™

Smart Computing. Smart Design Optimization



Design Optimization/ System Integration/ Process Automation/Smart Computing

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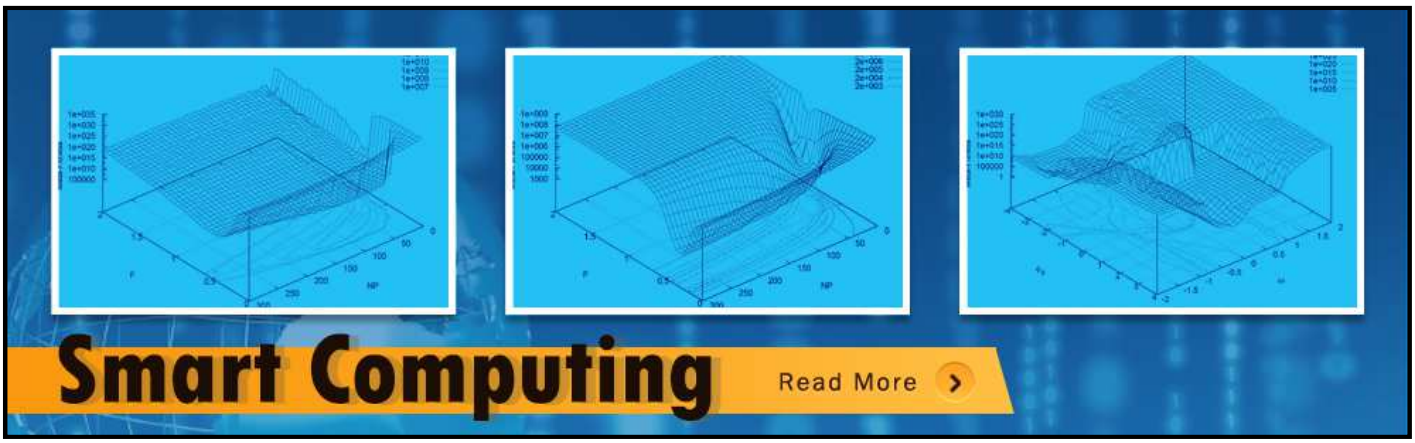
Smart Computing. Smart Design Optimization

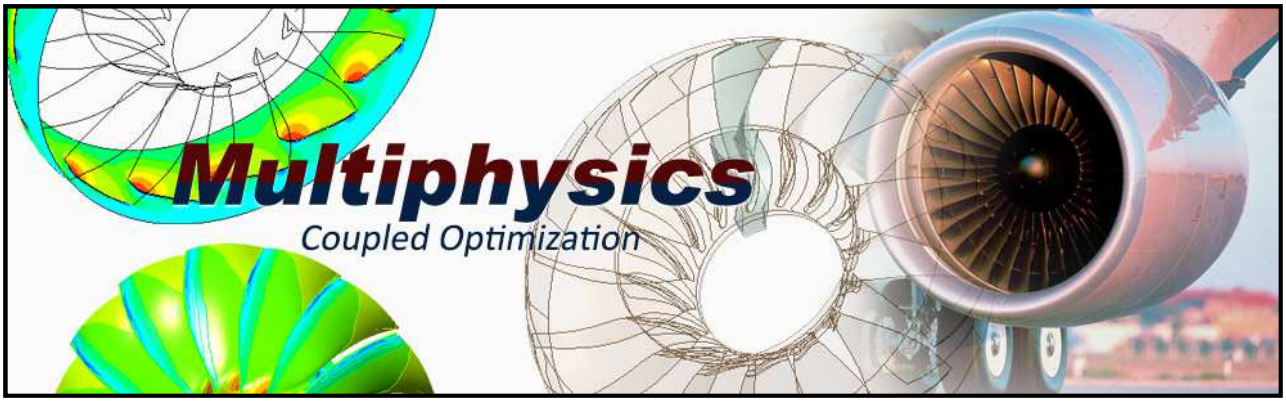
智慧型設計最佳化系統與智慧運算平台

SmartDO特色與優勢

- 一頁式設定界面(One-Page Setup GUI)。
- "單鍵設計"最佳化(Fire-And-Forget Optimizer Technology)。
- 超過100個成功案例
- Tcl/tk可程式環境。革命性的SmartPET及PET工具允許用戶以前處理方式，在一般的文字輸入檔置入Tcl/tk的功能(即使第三方程式無任何可程式功能)。



- 尖端且具智慧之數學模式，適用於不同領域及行業。
- 長期應用於CAE及工業實務。提供國際級顧問及客制化服務，讓現有CAE軟體投資產生實質可量化效應。
- 數位產線整合與自動化平台(Platform for Digital Production Line Integration & Automation)



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智慧型設計最佳化系統與智慧運算平台

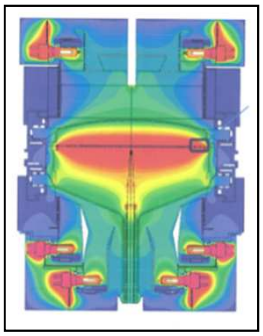
最佳化求解器 Optimizer

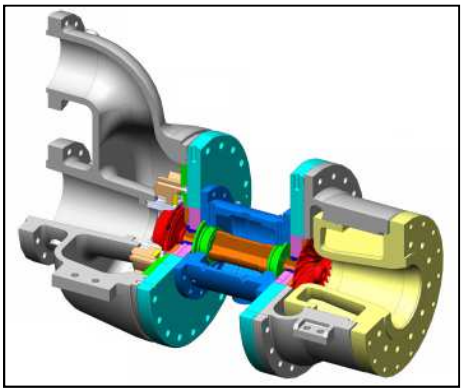
- 所有最佳化求解器具備總域直接搜尋功能(**Direct Global Search**)。具強制收斂特色 **(Absolute Descent)**。
- 微分梯度法 **(Gradient-Based Direct Global Optimization)**
  - Tunneling and Hill Climbing
  - Local Optimizer with DV Normalized [1]
  - Recursive Conjugate Feasible Direction Method (RCFDM)[1]
  - Smart Dynamic Search(SMDS)[1]
  - Applicable for differentiable problem. For both smooth problems or with noise [1,2]
- 強力基因演算法 **(The Robust Genetic Algorithms, RGA)**
  - Adaptive Penalty Function[1], Automatic Schema Representation[1], Absolute Descent[1]
  - Automatic Population and Generation Number Calculation[1]
  - Adaptive and Automatic Cross-Over Probability Calculation)[1]
  - Concurrent Sizing, Shaping and Topology Optimization
  - Applicable for Binary(0/1) and Combinatory Optimization, for both differentiable and non-differentiable problems
- 設計變數**(Design Variables)**及束制條件**(Constraints)**沒有數量限制
- 可使用不合理設計**(Infeasible Design)**為初始設計，**SmartDO**會自動找到合理設計 **(feasible design)**。

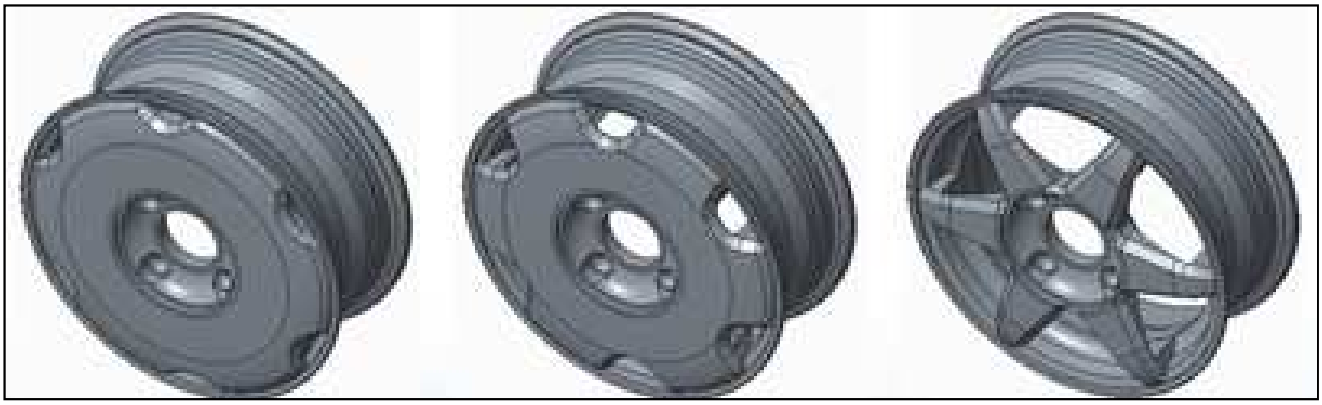
NOTE：1. Proprietary algorithms. 2. Dealing with functions with local and minor to medium noise.

優化應用領域 Application

半導體封裝，材料擬合與優化 : Semi Conductor : packaging, material fitting/optimization
連接器機械與電磁特性 : Connector, mechanical and EMI
系統整合與自動化 : System Integration & Automation
噴嘴，流道與噴射器 : Nozzles & Ejectors
葉片與渦輪 : Fan and turbine blades
複合材料 : Laminate Composite
汽車輪圈 : Car Wheel Rim
拓樸 : Topology
鋼結構 : Steel Construction
結構輕量化 : Light Weight Structure
加熱與散熱 : Heating & Cooling
工具機 : Machine Tools
馬達 : Motor







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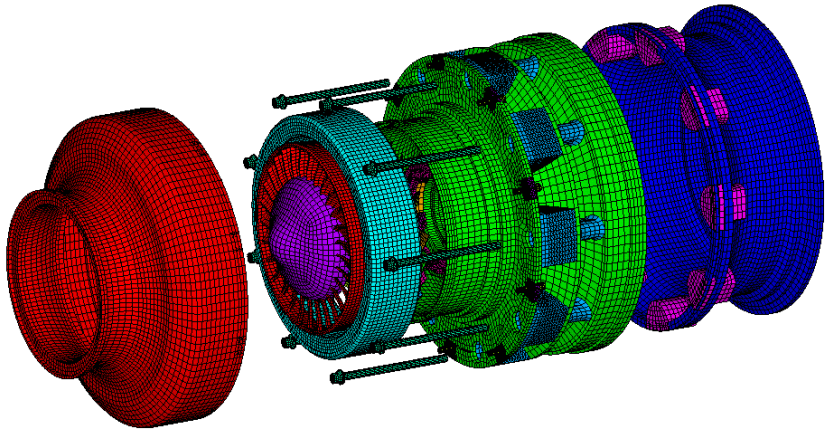

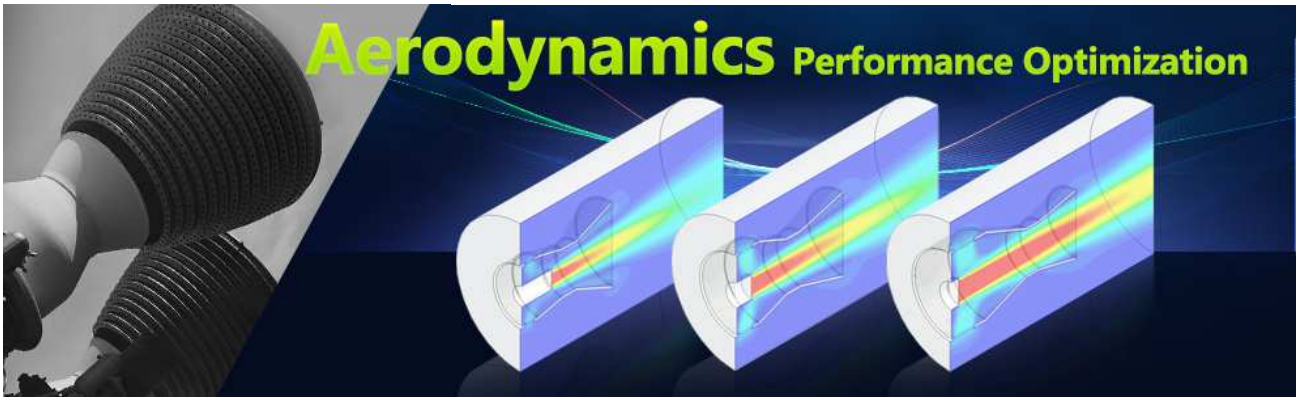

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