

# Ansys Electronics Enterprise 소개



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## • Ansys Electronics Enterprise

ANSYS의 5개 Electronics 제품군들과 모든 옵션들을 모두 합쳐 놓은 Enterprise 제품

- 각각의 가격을 합산하면 7.9억원대의 가격의 기능을 2.5억원의 비용으로 구매 가능

+ Ansys HFSS : Antenna, PCB, Package, 소켓, 커넥터, EMI/EMC, 3D Components 해석

+ Ansys Siwave : PCB EM 해석 – SI, PI 분석 (IR Drop, Impedance, 공진 분석 등)

+ Ansys Q3D Extractor – PCB, 소켓, 커넥터 등의 RLC 추출

+ Ansys Maxwell – 저주파 3D EM 해석

+ Ansys Icepak – PCB/기구의 열 유동해석

+ Ansys HF/LF Circuit Simulation – IBIS 모델 등 이용 신호 파형 분석

+ ECAD(Cadence, Mentor, Zuken 등 PCB 데이터), MCAD (기구 데이터) translation

+ SpaceClaim Direct Modeler (전문 3D 모델링 툴)

+ Optimetrics, 4 HPC cores

+ 기타 Premium 옵션 기능들

|    |  |
|----|--|
| 1  | Electronics Desktop Prep/Post: UI for Circuit and 2D Solvers                         |
| 2  | Maxwell 2D (Quasistatic, Transient, PExprt, RMxpert)                                 |
| 3  | 2D Extractor (Transmission line simulations)   |
| 4  | Optimetrics, Four (4) HPC cores  |
| 5  | LF (aka Simplorer) Analog & Digital Circuit  |
| 6  | HF Circuit: Includes DC, Transient, RF Circuit, IBIS, PSPICE, Verilog-A, HSPICE      |
| 7  | EMIT   |
| 8  | Electronics Enterprise Prep/Post: UI for Slwave and 3D Solvers                       |
| 9  | ECAD & MCAD Translation  |
| 10 | Network Data Explorer  |
| 11 | HFSS (including Transient, IE, PO, and SBR+ less ADP*)                               |
| 12 | Maxwell 3D   |
| 13 | Q3D Extractor  |
| 14 | Icepak   |
| 15 | Slwave DC, Resonance, AC, PSI, CPA-FEM & Q3D, PI Advisor, TDR/SI Wizards             |
| 16 | Slwave SNA, Near/Far Field, Electromigration, HFSS Rgns, Zo, Xtalk, EMS, EMI Scanner |
| 17 | Nexxim IBIS-AMI/QE/VE  |
| 18 | Design of Experiments  |
| 19 | SpaceClaim Direct Modeler  |
| 20 | *Accelerated Doppler Processing (ADP) for SBR+                                       |

ANSYS Electronics Enterprise 기능 항목

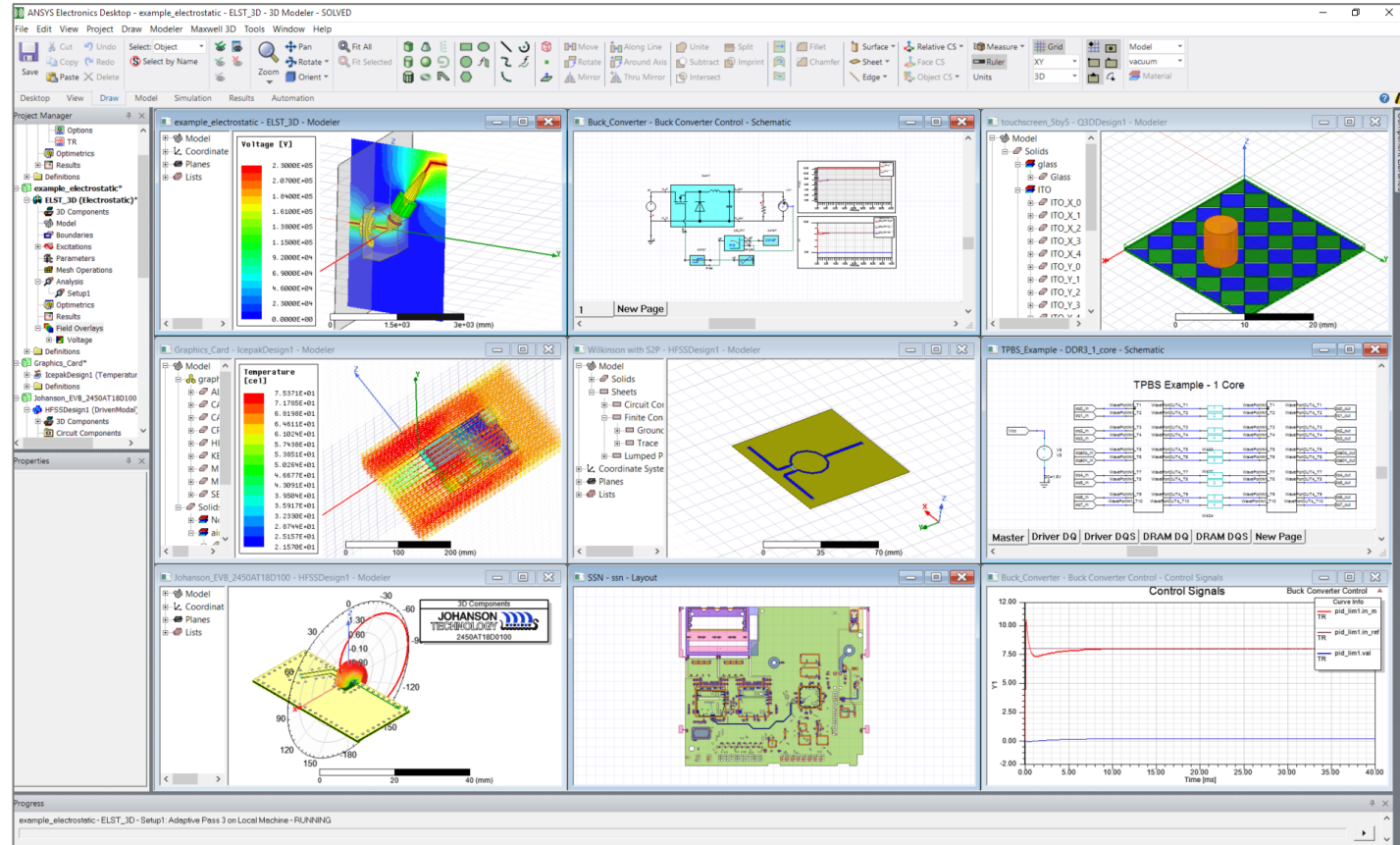


| Electronics PPE Capabilities |  | Electronics Pro 2D | Electronics Enterprise Prep/Post | Electronics Premium HFSS | Electronics Premium Maxwell | Electronics Premium Q3D | Electronics Premium Icepak | Electronics Premium Siwave | Electronics Enterprise | Electronics Enterprise Solver |
|------------------------------|--|--------------------|----------------------------------|--------------------------|-----------------------------|-------------------------|----------------------------|----------------------------|------------------------|-------------------------------|
| 1                            | Electronics Desktop Prep/Post: UI for Circuit and 2D Solvers                             | ✓                  | ✓                                | ✓                        | ✓                           | ✓                       | ✓                          | ✓                          | ✓                      |                               |
| 2                            | Maxwell 2D (Quasistatic, Transient, PExprt, RMxpvt)                                      | ✓                  | ✓                                | ✓                        | ✓                           | ✓                       | ✓                          | ✓                          | ✓                      |                               |
| 3                            | 2D Extractor (Transmission line simulations)   | ✓                  | ✓                                | ✓                        | ✓                           | ✓                       | ✓                          | ✓                          | ✓                      |                               |
| 4                            | Optimetrics, Four (4) HPC cores  | ✓                  | ✓                                | ✓                        | ✓                           | ✓                       | ✓                          | ✓                          | ✓                      |                               |
| 5                            | LF (aka Simplorer) Analog & Digital Circuit  | ✓                  | ✓                                | ✓                        | ✓                           | ✓                       | ✓                          | ✓                          | ✓                      |                               |
| 6                            | HF Circuit: Includes DC, Transient, RF Circuit, IBIS, PSPICE, Verilog-A, HSPICE          | ✓                  | ✓                                | ✓                        | ✓                           | ✓                       | ✓                          | ✓                          | ✓                      |                               |
| 7                            | EMIT   | ✓                  | ✓                                | ✓                        | ✓                           | ✓                       | ✓                          | ✓                          | ✓                      |                               |
| 8                            | Network Data Explorer  | ✓                  | ✓                                | ✓                        | ✓                           | ✓                       | ✓                          | ✓                          | ✓                      |                               |
| 9                            | Electronics Enterprise Prep/Post: UI for Siwave and 3D Solvers                           |                    | ✓                                | ✓                        | ✓                           | ✓                       | ✓                          | ✓                          | ✓                      |                               |
| 10                           | ECAD & MCAD Translation  |                    |                                  | ✓                        | ✓                           | ✓                       | ✓                          | ✓                          | ✓                      | ✓                             |
| 11                           | HFSS Solve; Including Transient, IE, PO, and SBR+ (ADP not included**)                   |                    |                                  | ✓*                       |                             |                         |                            |                            | ✓                      | ✓                             |
| 12                           | Maxwell 3D Solve   |                    |                                  |                          | ✓                           |                         |                            |                            | ✓                      | ✓                             |
| 13                           | Q3D Extractor Solve  |                    |                                  |                          |                             | ✓                       |                            |                            | ✓                      | ✓                             |
| 14                           | Icepak Solve   |                    |                                  |                          |                             |                         | ✓                          |                            | ✓                      | ✓                             |
| 15                           | Siwave DC, Resonance, AC, PSI, CPA-FEM & Q3D, PI Advisor                                 |                    |                                  |                          |                             |                         |                            | ✓*                         | ✓                      | ✓                             |
| 16                           | Siwave HFSS Regions ✓* (w Electronics Enterprise or Prem. HFSS + Prem. Siwave)           |                    |                                  |                          |                             |                         |                            |                            | ✓*                     | ✓                             |
| 17                           | Siwave SNA, Near/Far Field, Electromigration, Zo, Cross-talk, EMS, EMI Scan, TDR/SI Wiz. |                    |                                  |                          |                             |                         |                            |                            | ✓                      | ✓                             |
| 18                           | Nexxim IBIS-AMI/QE/VE  |                    |                                  |                          |                             |                         |                            |                            | ✓                      | ✓                             |
| 19                           | Design of Experiments  |                    |                                  |                          |                             |                         |                            |                            | ✓                      | ✓                             |
| 20                           | SpaceClaim Direct Modeler  |                    |                                  |                          |                             |                         |                            |                            | ✓                      | ✓                             |
| 21                           | **Accelerated Doppler Processing (ADP) for SBR+  |                    |                                  |                          |                             |                         |                            |                            | ✓**                    | ✓**                           |

- ANSYS Electronics Desktop : Enterprise 를 사용하기 위한 통합 시뮬레이션 환경

- HFSS Design Types
- Circuit Design Types
- Q3D Extractor Design Types
- ICEpak Designs
- Maxwell Design Types
- Simplorer
- SBR+

\* Slwave 는 별도 UI



# Ansyes Electronics Enterprise Solvers 소개

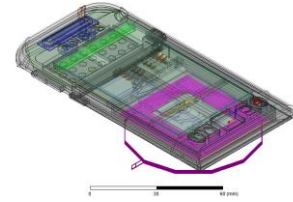
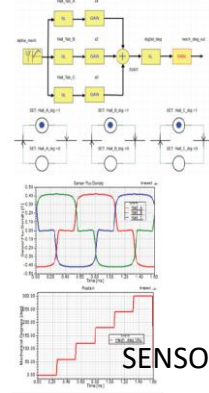
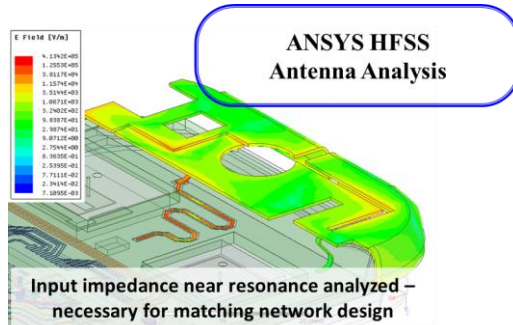
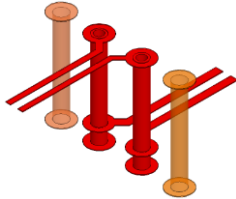
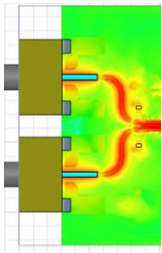


## 1. Ansys Electronics Premium HFSS Solvers :

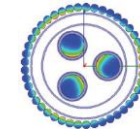
- HFSS : High Frequency Structure Simulator, 3D EM 에 업계에서 가장 많이 사용되는 Field Solver 이고, Antenna, RF 모듈, PCB, Package, 커넥터, 케이블, 3D 구조 (3D Case 등)에 사용

### Applications

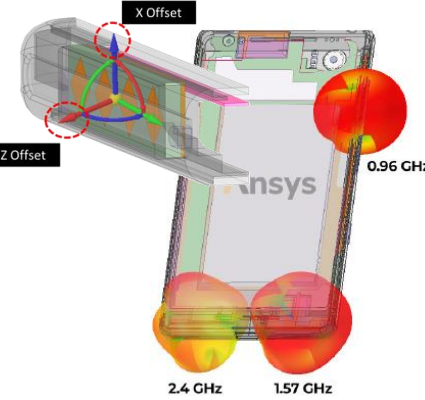
- PCB
- 패키지
- 커넥터
- 소켓
- 프로브카드
- 고속 Interconnect
- EMI/EMC
- 3D Components



무선충전기



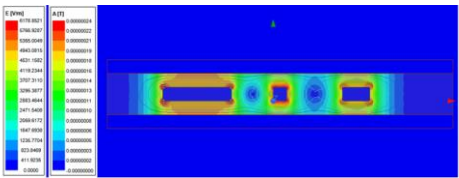
COAXIAL CABLE



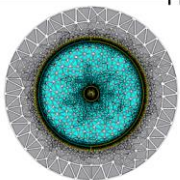
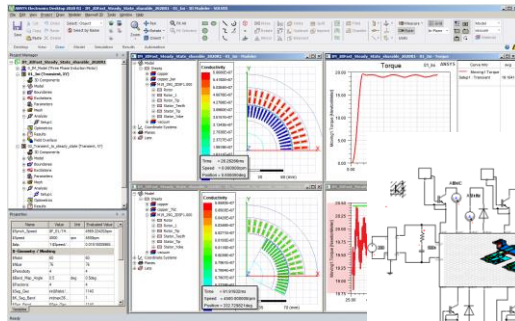
핸드폰 케이스

## 2. Ansys 2D Field Solver (SI 2D)/ Maxwell 2D/ Low Frequency/ High Frequency Circuit

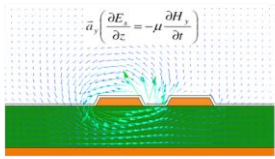
- 전송 선로 구조의 2D Field 해석 : FFC, FPC 또는 PCB 의 선로에 대한 Impedance 계산을 매우 빠르게 할 수 있고, Parametric 해석을 통해 원하는 Impedance 를 최적화



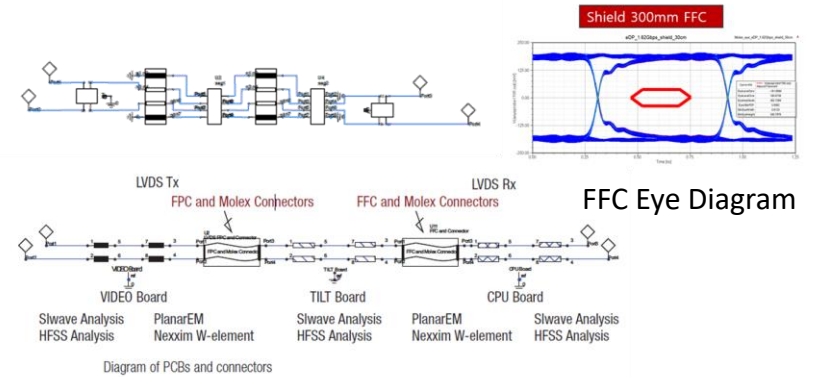
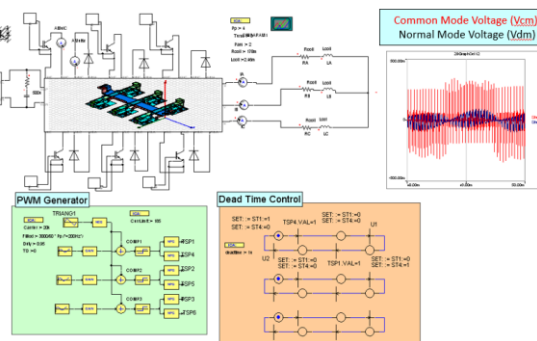
FFC 구조의 2D Field 해석



Coaxial Cable 2D Field 해석



PCB 전송 선로 구조의 2D Field 해석

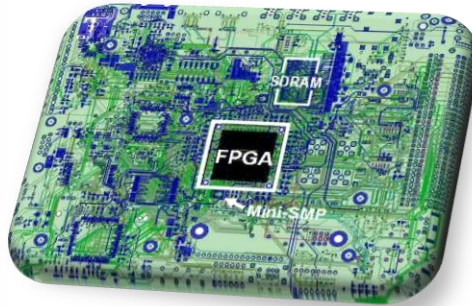
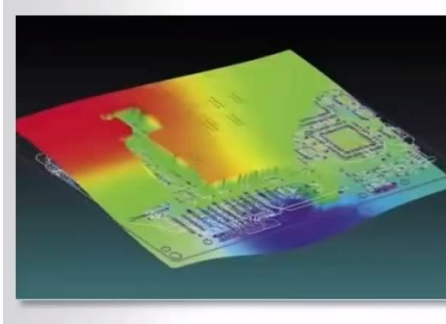


# ANSYS Electronics Enterprise Solvers 소개

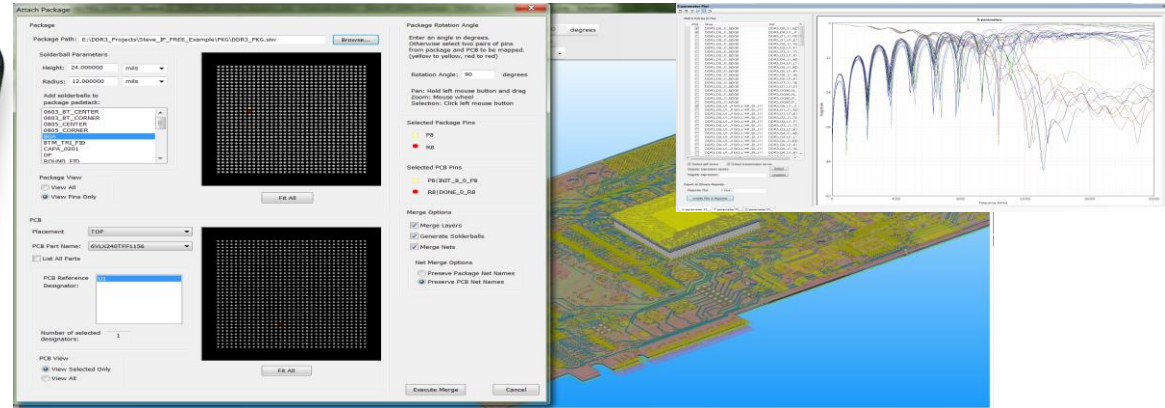


## 3. Ansys SIwave :

- SIwave : PCB EM 해석 툴, Signal Integrity, Power Integrity, EMI/EMC 분석 및 모델링

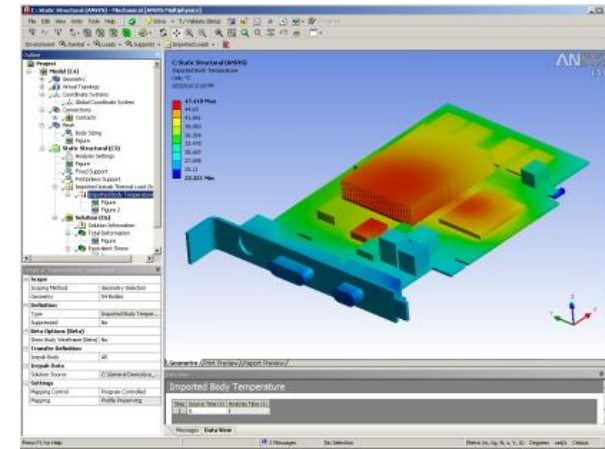
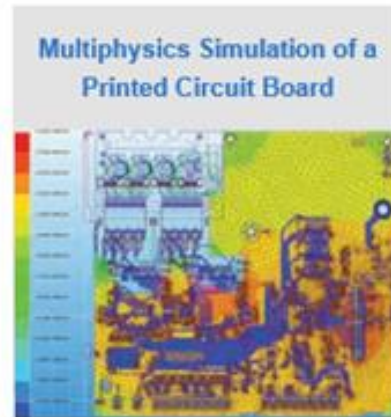
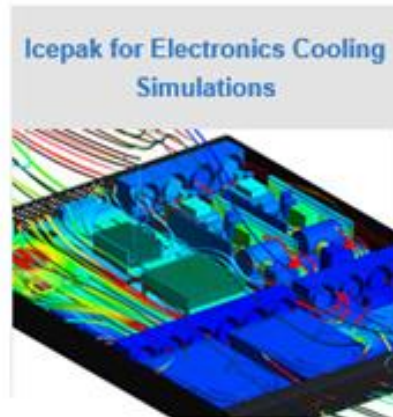
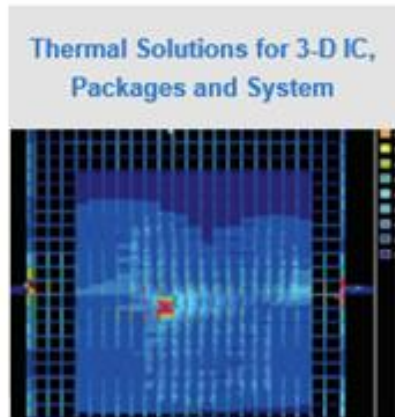


Complete BRD & PKG Analysis



## 4. Ansys Icepak :

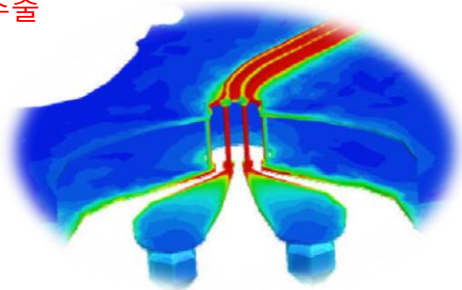
- Icepak : PCB 및 기구에 대해 열 전도 및 유동 해석



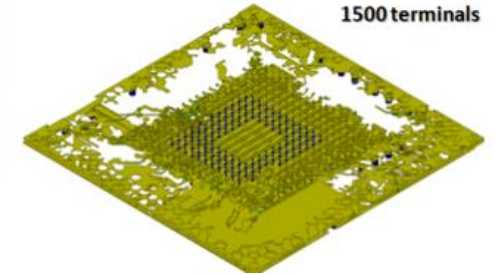
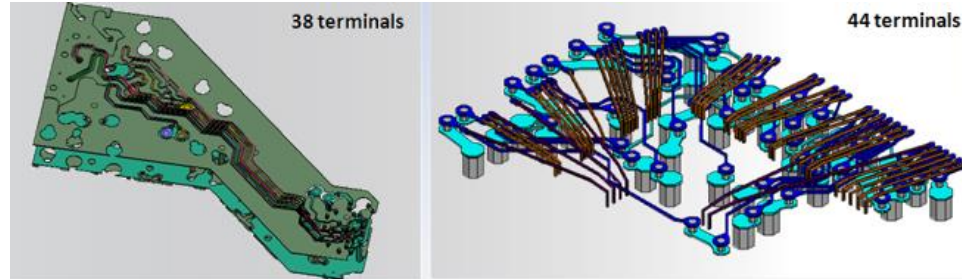
# ANSYS Electronics Enterprise Solvers 소개

## 5. Ansys Q3D Extractor :

- Q3D Extractor : PCB/Package 및 Interconnection 구조의 RLC 추출
- CG, DC RL, AC RL 추출
- 등가회로 추출



3D Quasi-Static Field Solutions



## 6. Ansys Maxwell :

- Maxwell : 저주파 모터, 액추에이터, 센서 등 해석

Initial Design Magnetic / Thermal      Geometry Input, Adv. Material Properties, EM Validation

3D Geometry and templates      High Performance Computing      Optimization and ROMs

### Electromagnetic Design & Optimization

# ANSYS Electronics Enterprise upgrade 필요성



## Simulation 필요성 :

기술 경쟁이 심화됨에 따라 반도체 측정 장비 업체와 반도체 공급 업체와의 기술적인 협업이 중요하며, 고속 측정 장비의 SI, PI 뿐 아니라 시스템 적인 열해석까지도 필요하게 됨. 향후 신제품 개발 등에 경쟁력을 확보하게 됨

## 기술 Support 및 교육 :

Electronics Enterprise 시뮬레이션 환경을 도입함으로써 시뮬레이션 공급업체(Ansys-Huwin)와의 기술 교류 및 어플리케이션 분석에 대한 기술을 확보할 수 있음.

Huwin : 국내 유일한 EM 시뮬레이션 기반 컨설팅 업체로 20여년의 국내외 업계의 경험을 보유하고 있음.  
실무 업체에 특화된 실무 교육 및 어플리케이션 지원을 받을 수 있음.



*Huwin Simulation Training*

**ANSYS enables customers to predict with confidence that their products will thrive in the real world.**

