

Hardware Requirements for MIAE Engineering Softwares

Component	Minimum Requirement	Recommended Requirement	Notes
Processor (CPU)	Intel Core i5 / AMD Ryzen 5 (4 cores)	Intel Core i7/i9 / AMD Ryzen 7/9 (6+ cores, high clock speed)	High clock speed benefits CAD/CAE software (SolidWorks, ANSYS)
RAM	8 GB	16–32 GB	ANSYS, SolidWorks, MATLAB benefit from more RAM, especially for large simulations
Graphics Card (GPU)	Integrated GPU (Intel UHD / AMD Vega)	Dedicated GPU (NVIDIA Quadro / RTX 3060 or higher, 4–8 GB VRAM)	SolidWorks & ANSYS prefer professional GPUs like NVIDIA Quadro
Storage	256 GB SSD	512 GB – 1 TB NVMe SSD	Fast storage speeds up boot time and software loading
Display	14" Full HD (1920x1080)	15.6" or larger, Full HD or 4K	Higher resolution aids in CAD modeling
Battery Life	4–6 hours	6–10 hours	For portability and extended use
Operating System	Windows 10/11 Home/Pro	Windows 11 Pro	Most engineering software is Windows-optimized
Ports	1 USB-C, 2 USB-A, HDMI, Ethernet (optional)	Thunderbolt 4, multiple USB ports, Ethernet	Useful for peripherals and project hardware

Key Software and Performance Needs

Software	CPU-Intensive	GPU-Intensive	RAM Requirement	Notes
SolidWorks	✓	✓ (for rendering)	16 GB+	Certified GPU improves stability and performance
AutoCAD	✓	⚠ (for 3D)	8–16 GB	Runs well on mid-range systems
ANSYS (FEA/CFD)	✓✓	✓	16–32 GB	CPU/RAM dependent; parallel processing helpful
MATLAB/Simulink	✓	⚠	8–16 GB	May benefit from multicore processors for simulations
Fusion 360	✓	✓	8–16 GB	Cloud-based features reduce local hardware load
CATIA / PTC Creo	✓✓	✓	16 GB+	Similar needs to SolidWorks