



# GENOA Virtual Testing Software for Durability, Reliability, Manufacturing and Life Prediction

GENOA is an integrated structural analysis/design software suite developed to cost-effectively predict strength, reliability and durability of metallic and composite structural components at the design stage with minimal experimental testing support. The software suite employs leading edge technology from the fields of composites and structural science to deliver unequaled performance and analytical capability directly into the hands of today's engineers.

GENOA is modular software utilizing both linear and non-linear technology.

### Progressive Failure Analysis (PFA)

- Static (**PFA\_STATIC**)

#### Additional PFA Options:

- Low Velocity Impact (**PFA\_LOW\_VELOCITY\_IMPACT**)
- Virtual Crack Closure Technique (**PFA\_VCCT**)
- Discrete Cohesive Zone Model (**PFA\_DCZM**)
- Honeycomb Sandwich Structure (**PFA\_HONEYCOMB**)
- Progressive Failure Dynamic Analysis (**PFA\_PFDA**)

### PFA Fatigue

- Quasi-Static Fatigue (Low Cycle) (**PFA\_FATIGUE\_QUASI**)
- Harmonic Fatigue (High Cycle) (**PFA\_FATIGUE\_HARMONIC**)
- Power Spectrum Density (**PSD**)
- Random Fatigue (Spectrum Loading) (**PFA\_FATIGUE\_RANDOM**)
- Fatigue with Fracture Mechanics (**PFA\_FATIGUE\_VCCT**)

### PFA Dynamics

- Progressive Failure Dynamic Analysis (**PFDA**)

### Materials

- Material Characterization & Qualification (**MCQ**)
- PFA Unit Cell (**PFA\_UNIT\_CELL**)
- Material Uncertainty Analysis (**MUA**)
- NANO Material Characterization Analysis (**NANO\_MCA**)
- Fracture Toughness Determination (**FTD**)
- Fatigue Crack Growth (**FCG**)
- Parametric Carpet Plots (**CARPET\_PLOTS**)
- A- & B- Basis Allowables (**AB\_ALLOWABLE**)

### Manufacturing

- Filament Winding (**FW**)

### Optimization & Reliability

- Progressive Failure Optimization (**PFO**)
- Probabilistic Analysis (**PA**)