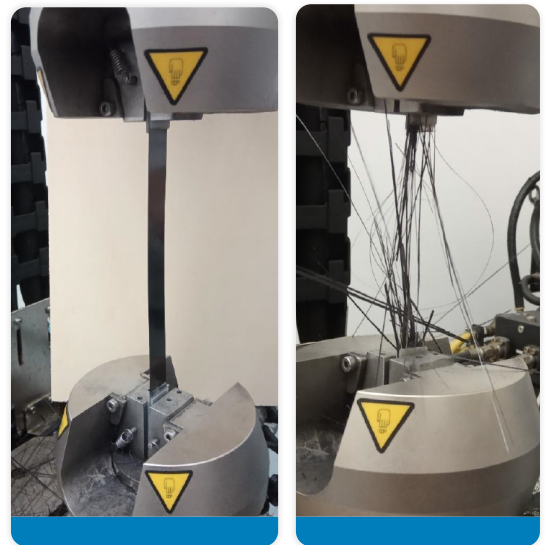


NUMERICAL TOOL FOR FATIGUE LIFE ESTIMATION OF COMPOSITES



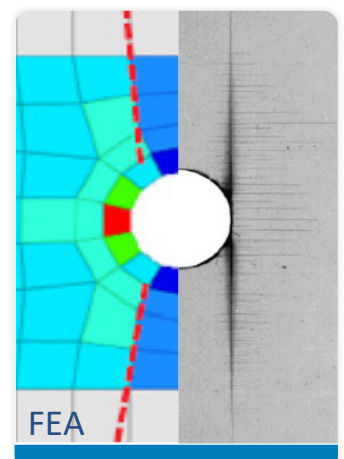
STATE-OF-THE-ART

- ▶ **Composite parts** must be **durable** for automotive energy and aerospace industries
- ▶ This means composite structures must be designed against cyclic loading
- ▶ **Fatigue of composites** is less explored area
- ▶ For brittle epoxy systems extensive literature is available
- ▶ Thermoset systems are relatively fatigue resistant, **fatigue analysis** is handled as less important
- ▶ Commercial codes have barely any composite **fatigue assessment** modules
- ▶ The thermoplastic matrix based composites of the future may be more **fatigue-sensitive** including time-dependent effects
- ▶ No bespoke **multiaxial fatigue model** is available to date



R&D ACTIVITY, INNOVATION

- ▶ Composite fatigue life evaluation method developed up to **1st ply cracking**
- ▶ Based on a combined use of **residual strength and stiffness** model
- ▶ **Degradation** models from literature
- ▶ Method supplied with asymmetric Haigh-diagram **based mean stress correction**
- ▶ **Multiaxial failure** criterion implemented
- ▶ **Fully FE-Analysis** based method
- ▶ Any components with and layup can be analyzed, in-house **validated method**



WHY IS ECON YOUR PARTNER?



CAPABILITIES AND ENABLERS FOR R&D ACTIVITIES

- ▶ **18+ years** expertise in engineering simulation & automation services
- ▶ **70+** professional engineers with up-to-date knowledge
- ▶ Numerous **international** customer and R&D projects in different industries and areas
- ▶ In-house **material testing laboratory**
- ▶ **Wide simulation portfolio** covering all important areas as:
 - ▶ Structural (finite element analysis)
 - ▶ Fluid (computational fluid dynamics analysis)
 - ▶ Electromagnetic analysis
 - ▶ Multibody simulation (MBS)
 - ▶ 1d system simulation
 - ▶ Injection moulding simulations
 - ▶ Method development
- ▶ **Industrial automation** expertise, capability of designing special testing equipment for R&D purposes



CERTIFICATES & AWARDS



SOME OF OUR REFERENCES

