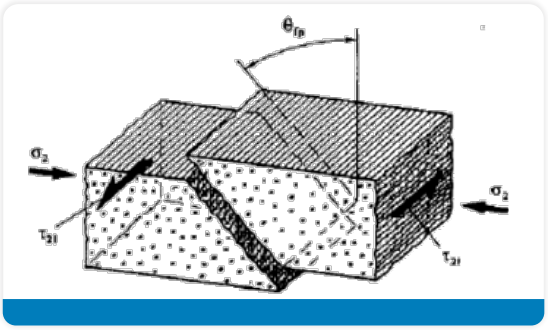
PROBABILISTIC EVALUATION METHOD OF COMPOSITE FAILURE MODELS

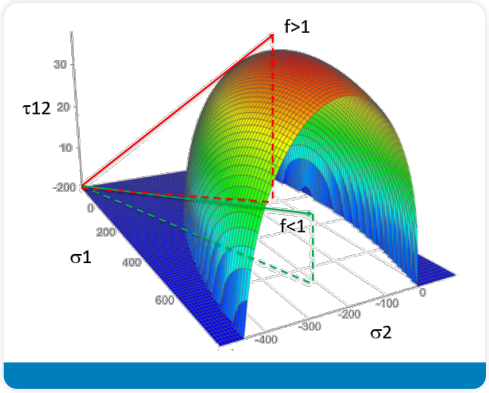
STATE-OF-THE-ART

- **Continuous fibre reinforced composites** are the best candidates for future materials
- FE method is the only reliable tool to assess these structures from strength POV
- Distinction upon stress compliance is based on **1st-ply-failure models**
- These models are available in commercial FE tools with user input parameters
- Getting the **failure model** parameters right is prime to get reliable results
- **Identifying strength** / failure parameters is hard:
  - Multiple strength components affect failure
  - Multiaxial stress state occurs
  - High scatter in experimental data is possible
  - Strength components require proper uncertainty quantification
  - Complex limit stress state equations are necessary



R&D ACTIVITY, INNOVATION

- **High-fidelity** material parameter fitting processes with UQ and probabilistic methods
- Method for direct evaluation of **stiffness** constants and their **variation**
- Method for direct evaluation of **failure model parameters** and the variation of them (Tsai-Wu, Puck, Hashin etc.)
- Possibility to derive **FE material input** corresponding to predefined **probability of survival**
- Opportunity to compute **cost of safety**



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

Information Security Management System ISO 27001 Certified

CERTIFIED ISO 9001:2015 COMPANY

JEC WORLD INNOVATION AWARDS WINNER 2019

TISAX® RESULT AVAILABLE

SOME OF OUR REFERENCES

BYD, YUTONG, HARMAN A SAMSUNG COMPANY, GE, BMW, thyssenkrupp, SUMITOMO ELECTRIC, BOSCH, Continental, HILITE INTERNATIONAL, ACPS AUTOMOTIVE, KNORR-BREMSE, CLAAS, SIEMENS, HYUNDAI HEAVY INDUSTRIES CO., LTD., BorgWarner