D-STANDART:
Upgrading Materials Characterization for Composite Structures

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Abstract

Horizon Europe's D-STANDART project is helping to evolve better composite structure fatigue life estimation by contributing new and updated engineering models for resin-based, fibre-reinforced composite materials. These models account for material and layup variations as well as voids, wrinkles, and delamination features inadvertently yet commonly introduced during composites manufacturing. The models are based on first principles and used to run thousands of highly customized FEM simulations, which in turn are used to train surrogate AI models that can predict similar outcomes in just a fraction of the time. Finally, the AI models are used to help more accurately estimate the fatigue life of composite structures. Such models promise to aid future applications, such as the use of test results for materials characteristics exploration, using artificial intelligence to find material compositions optimally suited for specific design applications. And as the D-STANDART approach relies on combining experimental results and numerical models in a chain of methods, the CHADA documentation standard plays an important role in maintaining traceability of the data leading to the final material fatigue predictions.

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References

[1] d-standart.eu