MICROSENSORS IN ADHESIVE COMPOUNDS: A LONG WAY OFF?

Bonding has gradually become one of the most important joining techniques. As a result, the modern mechanics mainly plays out in a multi-material context.

We know that in order to be able to make the most of the strong properties of the different materials and components, we have to coordinate the connection techniques to be applied and must pay sufficient attention to the application. Sustainability and recyclability are central here.

An important element and challenge is monitoring and predicting the functional lifespan of a multi-material construction.
As a result of the rapid evolution towards a higher level of adhesive joints, the prediction of the functional lifespan is still based on predicative numerical models.

In the future, these models will be linked to structural monitoring. For this, microsensors are built into the adhesive joints themselves. In this way we are able to monitor the integrity of safety critical adhesive joints.
The countless measurement data can then also be compared against the previous prognosis models in order to estimate a more accurate residual life of the connections.

In this way, an important step can be taken to predict, among other things, fatigue life of complex, composite multi-material systems.

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