



SMART MATERIALS

Smart materials respond to environmental conditions, thereby allowing systems to be monitored and optimised efficiently. LCM supports its customers in designing and integrating structures with smart materials, such as piezoelectric ceramics, fibres and films, by offering complete solutions – from material selection, through simulation, to prototype construction.

YOUR BENEFITS:

Successfully integrated smart materials make systems far more productive by enabling them to react to specific, clearly defined situations on their own. Intelligent structures adapt to their environment, thereby optimising their performance in terms of energy efficiency or mechanical loads. In collaboration with LCM, you can benefit from the expertise of a leading research company in this specific field. We analyse existing systems and advise you on selecting and integrating the right materials. In parallel to this, we guarantee the success of your smart materials project with coupled simulations, prototype construction and comprehensive tests.

The applications of smart materials range from vibration and noise reduction, through structure monitoring, to fine positioning. Piezoelectric ceramics play a crucial role here, converting deformation into electrical signals and vice versa. They are suitable for mass production and satisfy the demands of modern systems in terms of performance and speed.





OUR EXPERTISE INCLUDES:

- Comprehensive knowledge in the integration of smart materials into mechatronic systems
- System analysis, selection of appropriate smart materials, coupled simulation, controller and electronics design, prototype construction and testing
- Combination of current fundamental research and high application orientation from a single source
- Years of experience in utilising smart materials for a variety of applications in different sectors

CURRENT REFERENCES:

Our knowledge and expertise in smart materials can be demonstrated by the numerous projects that we have undertaken for customers in a wide variety of sectors. This is just a small selection of our references:

- Tactile feedback via touch modules: Modern touch modules only seldom contain tactile (palpable) feedback. However, tactile feedback is vitally important for people. The use of piezoelectric materials makes human-machine interaction a tangible experience.
- Vibration and noise reduction: Thanks to their sensor and actuator properties, smart materials are excellently suited to use in vibration and noise reduction. Applications range from machine and system construction, through robotics and medical, automotive, ventilation and air conditioning technology, to home electrical appliances.