

## About this organisation

### Machine translation

This organisation has been machine-translated based on data provided in German.

Fraunhofer ENAS is the expert and development partner in the field of smart systems and their integration for a wide range of applications. We offer innovative solutions and support customer projects along the entire value chain. In addition to technology development and smart sensor systems, the institute is increasingly focussing on the development of application demonstrators as part of upstream product development.

In the field of lightweight construction, Fraunhofer ENAS focuses on the integration of sensors and actuators in lightweight structures and on reliability research, whereby the development and application of coupled experimental-simulative methods for the evaluation and optimisation of materials and electronic assemblies are in the foreground. The current focus is on the evaluation and optimisation of the thermo-mechanical reliability of innovative lightweight structures. The system concept is taken into account, which includes the assembly and connection technology from the power semiconductor to the entire system, including the new cooling and housing technologies. This raises new questions of reliability assessment and prediction, which are dealt with on the basis of "physics of failure" concepts. This includes theoretical evaluation concepts and experimental investigations based on deformation measurements, material characterisation and failure analysis.

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### Organisation type

Non-university research institution

### Sectors



### Employees

50 up to 249

### Turnover

€10m - €50m

### Funding

# Fraunhofer Institute for Electronic Nano Systems ENAS

## About this organisation

**Main areas covered** Intelligent systems, Reliability research

**Infrastructure**

**Certifications** DIN EN ISO9001:2015

**Keywords**

**Memberships**

## Overview of lightweighting expertise

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**Research   Development   Manufacturing  
& Supply**

### Offer

*Products*

*Services & consulting*

## Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
<b>Field of technology</b>			
<i>Design &amp; layout</i>			
<b>Functional integration</b> Actuator technology, Sensor technology	✓	✓	
<b>Measuring and testing technology</b> Visual analysis (e.g. microscopy, metallography), System analysis, Materials analysis, Destructive analysis, Non-destructive analysis	✓	✓	✓
<b>Modelling and simulation</b> Loads & stress, Life-cycle analysis, Multiphysics simulation, Structural mechanics, Materials, Reliability validation	✓	✓	
<i>Plant construction &amp; automation</i>			
<i>Recycling technologies</i>			
<b>Manufacturing process</b>			
<i>Additive manufacturing</i>			
<i>Coating (surface engineering)</i>			
<i>Fibre composite technology</i>			
<i>Forming</i>			
<i>Joining</i>			
<i>Material property alteration</i>			
<i>Primary forming</i>			
<i>Processing and separating</i>			
<i>Textile technology</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Material			
Biogenic materials			
Cellular materials (foam materials)			
Composites			
Fibres			
Functional materials			
Metals			
Plastics			
Structural ceramics			
(Technical) textiles			

Contacts

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