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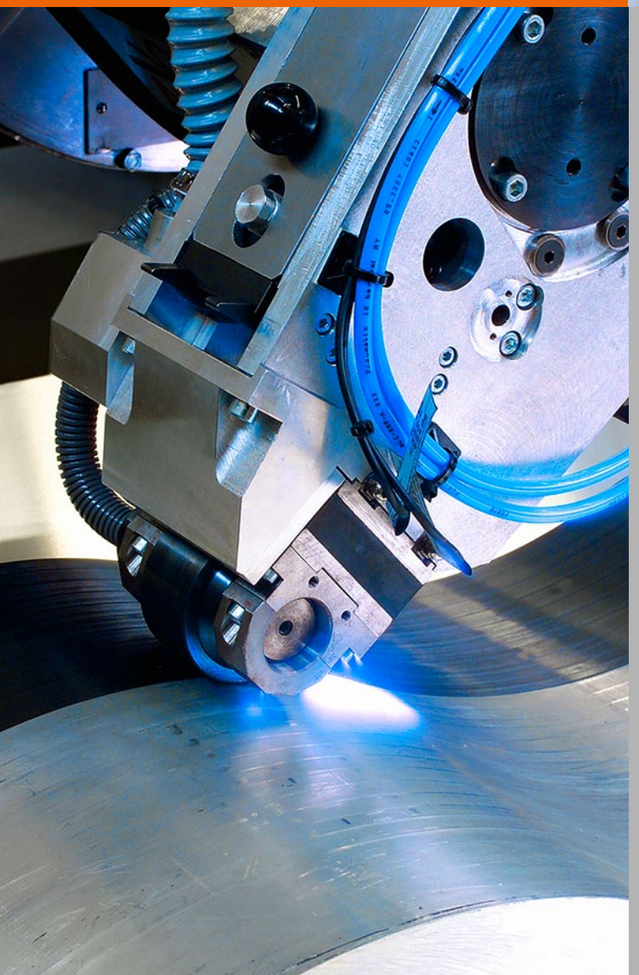
FRAUNHOFER LIGHTWEIGHT DESIGN ALLIANCE



DATES AND REGISTRATION

For current information, please check our website:
www.composite-engineer.de

CONTACT

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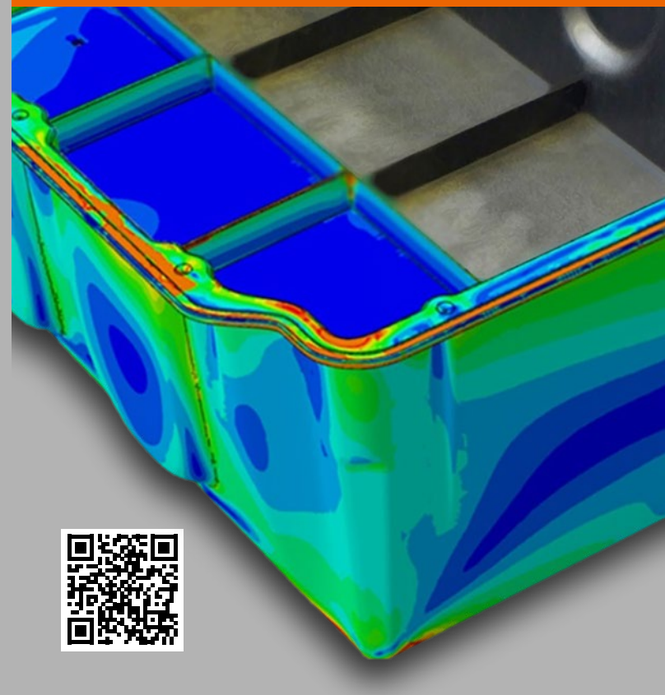
Cover picture: Box made of Long-Fiber-reinforced Thermoplast (LFT) © Fraunhofer IWM, outside left: Laser supported Automated Tape Laying (ATP) © Fraunhofer IPT, outside center: panel painting © Fraunhofer IFAM, inside center: LFT © Fraunhofer LBF

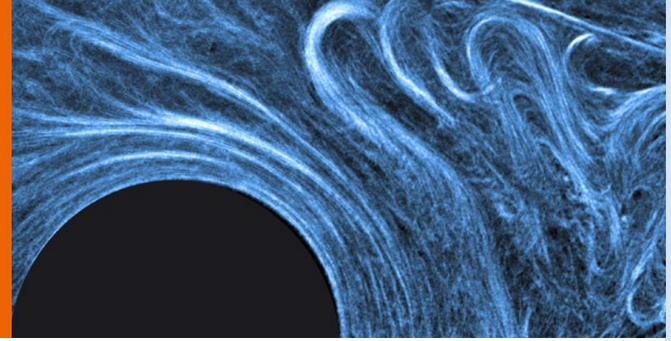
COMPOSITE ENGINEER

Modular professional training



COMPOSITE ENGINEER

Modular professional training



Background

Since 2016 the Fraunhofer Lightweight Design Alliance offers the professional training course “Composite Engineer” in cooperation with the Fraunhofer IFAM. The course participants are trained on particular topics by scientists and engineers who are engaged in current, cutting-edge R&D work in the field of composite materials. This guarantees direct transfer of key knowledge and technology to the industry. Due to a growing international demand, this course will be available in English from spring 2020.

Required knowledge for participation and objectives of the training course

Target groups are engineers, scientists and also qualified technical employees in all disciplines and sectors of industry, who either currently work with composites or wish to do so in the future. Participants for the “Composite Engineer” course must have either:

- successfully completed a professional qualification and have at least five years technical work experience
- successfully completed an engineering or science course (Bachelor degree or higher) at a university or technical college.

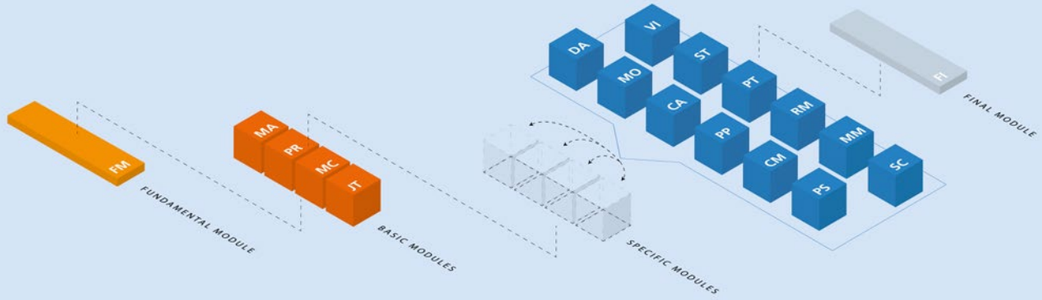
The Composite Engineer training course qualifies people to supervise the whole life cycle of a composite product. This covers product development, manufacture, and repair and involves interdisciplinary thinking, evaluation, decision-making, and actions relating to effective usage of composite technology.

Course content, duration and examinations

The Composite Engineer course is modular. Each module lasts three days. The Fundamental Module and the four Basic Modules are compulsory. The participants take four Specific Modules of their own choice. Each of the Specific Modules ends with a written examination. A certificate of attendance from the Fundamental and Basic Modules and successfully passed examinations for the Specific Modules are prerequisites for taking the final oral examination. Passing the final oral examination results in the award of a certificate as “Composite Engineer”. The final oral examination is preceded by a two-day revision session, the so-called Final Module. The training course thus extends over a total of 30 days (6 weeks / 240 hours).

All the modules can also be booked individually by people not intending to take the full Composite Engineer training course.

For detailed information about the different modules, please check our website: **www.composite-engineer.de**



Location

Fundamental Module (compulsory)

FM **Fundamental Module** — Bremen
Overview of the whole life cycle of a composite component

Basic Modules (compulsory)

MA **Materials** — Bremen
Fibers – thermoset and thermoplastic matrix systems – textile semi-finished products – prepregs

PR **Processing Technologies** — Bremen
Processing technologies for thermoset and thermoplastic FRP-components

MC **Machining** — Bremen
Machining with geometrically defined and undefined cutting edge – laser cutting – waterjet cutting

JT **Joining Technologies** — Bremen
Adhesive bonding – mechanical joining – thermal methods – laser welding – hybrid joining

Specific Modules (compulsory elective)

DA **Design and Architecture** — Darmstadt
Lightweight design principles – methods and guidelines

VI **Vibration Reduction and Functional Integration** — Darmstadt
Vibration measurement – measures for vibration reduction – vibration simulation – structural monitoring

MO **Modeling and Simulation** — Darmstadt
Design philosophies – structural design – numerical simulation – FEA – failure mechanisms and criteria

Location

ST **Surface Treatment and Analysis** — Darmstadt
Surfaces and their properties – adhesive and cohesive forces – methods for surface characterization – FRP relevant surface preparation

CA **Characterization and Assessment** — Darmstadt
Component requirements and classification – damage and failure mechanisms – nondestructive testing and failure analysis – destructive testing for the determination of mechanical properties

PT **Manufacturing and Production Technologies** — Darmstadt
Manufacturing methods and process chains in FRP component manufacture – selection of suitable process routes depending on material, manufacturing method, design, product requirements, cost efficiency and quantity

PP **Proof Testing and Test Philosophies** — Darmstadt
Determination properties and failure loads – experimental proof of function and safety – typical defects and inspection tasks of nondestructive testing

RM **Recycling and Maintenance** — Darmstadt
Repair methods – nondestructive test methods – recycling concepts for FRP’s – Reuse of recycled carbon fibers

More specific modules are currently in development covering the fields of multi-material-design, ceramic based composite materials, short-fiber composites and production system design and evaluation methods.

Final Module

FI **Repetition and Examination** — Bremen
Repetition and summary of the Fundamental and Basic Modules – examination by certification body