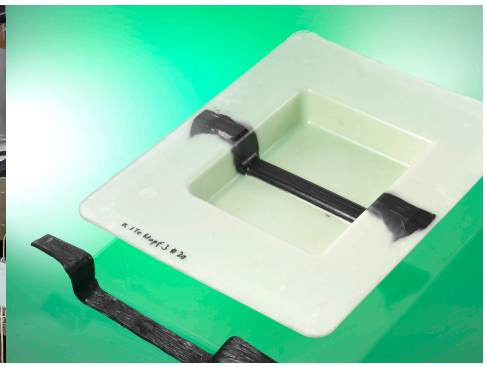
Fraunhofer Project Centre @ Western

Long-Fibre Reinforced Thermoplastics (LFT)





What is Long-Fibre Reinforced Thermoplastics?

Long-Fibre Reinforced Thermoplastics (LFT) is an established technology in the automobile industry using lightweight materials for semi-structural applications, having advantages such as: innovative materials, novel joining technologies, and attractive functional integration possibilities, as well as low density compared to metals. Further improvements in materials and production costs, will enable a continuation of the significant growth of LFT materials shown in the past few years.

For the past 10 years, the Fraunhofer ICT has carried out remarkable research and development work in the field of long- fibre reinforced thermoplastics such as local continuous fibre reinforcement. A strong focus has also been on the formulation and process development for direct LFT processing technologies, including in-line compounding (LFT-D-ILC). This accumulated experience and know-how are available at the Fraunhofer Project Centre @ Western through its joint venture partnership with Fraunhofer ICT.

Key Research Topics in the Field of LFT-D-ILC Technology

- Formulation and process development for the processing of engineering thermoplastics such as polyamides, PET etc.
- Formulation and process development for the processing of carbon fibres
- Incorporation of local continuous fibre reinforcement
- Incorporation of local metal reinforcement
- Benchmarking of glass-fibre rovings and matrix polymers
- Evaluation of new generations of additives, modifiers and master batches
- Processing of bio-materials such as thermoplastics obtained from natural resources and natural fibres
- Adaptation of processing technology for special fibre-matrix combinations
- Prototyping of demonstration components

Western UNIVERSITY · CANADA

in cooperation with

Fraunhofer

Equipment and Facilities

- Compounding twin screw extruder (60 mm diameter, l/d = 28)
- Mixing twin screw extruder (75mm diameter, l/d of 17)
- Hydraulic high-speed press with a maximum press force of 25,000 kN and parallelism control
- Foaming of polymers
- Hot air oven for pre-heating of local reinforcements
- Moulds for manufacturing two and three dimensional demonstrator components

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Western University and the Fraunhofer Institute of Chemical Technology ICT have partnered to provide joint expertise for industry needs.

Together, Western and Fraunhofer will develop lightweight composites for the transportation and building materials sectors, focusing on applied research in the fields of methods, materials and manufacturing technologies for composite materials.

Collaborations

With Industry

- Develop industrial processes
- Apply developed innovative processes
- Optimize existing processes and materials

With Fraunhofer

- Process and material development
- Scientific research at intermediate level
- Transfer from basic research to industrial scale

With Universities

- Basic research on fibre matrix phenomena
- Simulation and design
- Investigation of fundamental interests

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