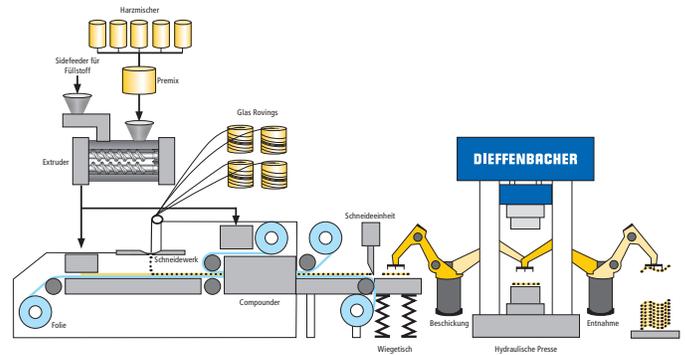


Fraunhofer Project Centre @ Western

Thermoset Sheet Moulding Compound (SMC)



What is Thermoset Sheet Moulding Compound?

The thermosetting fibre reinforced composites based on Sheet Moulding Compounds (SMC) enable lightweight solutions for applications where high mechanical, chemical and thermal stability is required. SMC components are becoming increasingly established in automobiles and utility vehicle applications. This is due to the fact they are associated with various advantages such as low density, high thermal and chemical stability, dimensional stability and the Class-A quality surface appearance.

Research activities at the Fraunhofer Project Centre @ Western are targeted towards the development of SMC semi-finished products, processing technology and materials development. Goals include achieving Class-A surface appearance, lightweight SMC, tailored SMC, the use of reinforcing carbon fibres and incorporation of nanoparticles during processing. The newly developed materials and components can be evaluated by using available testing and characterisation technologies at the Fraunhofer Project Centre @ Western.

Direct process for SMC

The direct process for SMC (D-SMC) enables continuous production of SMC-compounds. This innovative D-SMC one-step process eliminates the need of a several day maturation period necessary in conventional SMC process, and reduces the processing time from the raw material to the finished product, to a matter of just a few minutes.

As a consequence of the elimination of the intermediate step compared to conventional SMC, in D-SMC, each material formulation, including the fillers and reinforcing fibres, can be varied for the individual components during the ongoing process. Beside the reduction in the cycle times and costs, this also leads to a high degree of flexibility during component manufacturing.

in cooperation with



Equipment and Facilities

- Laboratory units for development of SMC formulations
- Direct Sheet Mould Compound (D-SMC) line with a maximum sheet width of 800 mm and a maximum throughput of 500 kg/h
- D-SMC line is capable of manufacturing of conventional SMC
- Carbon fibre reinforcements for SMC materials
- Low density fillers
- Alternative resin systems
- Hydraulic high-speed press with a maximum press force of 25,000 kN and parallelism control
- Vacuum assisted compression moulding

Fraunhofer Project Centre @ Western

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