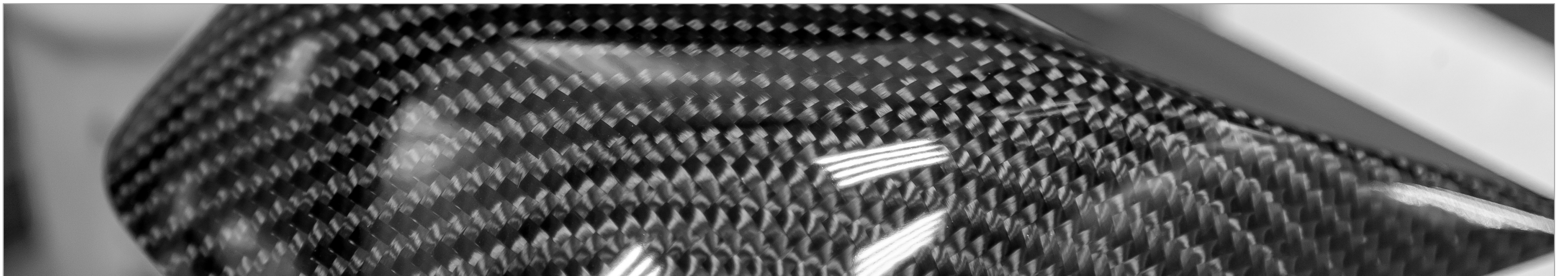


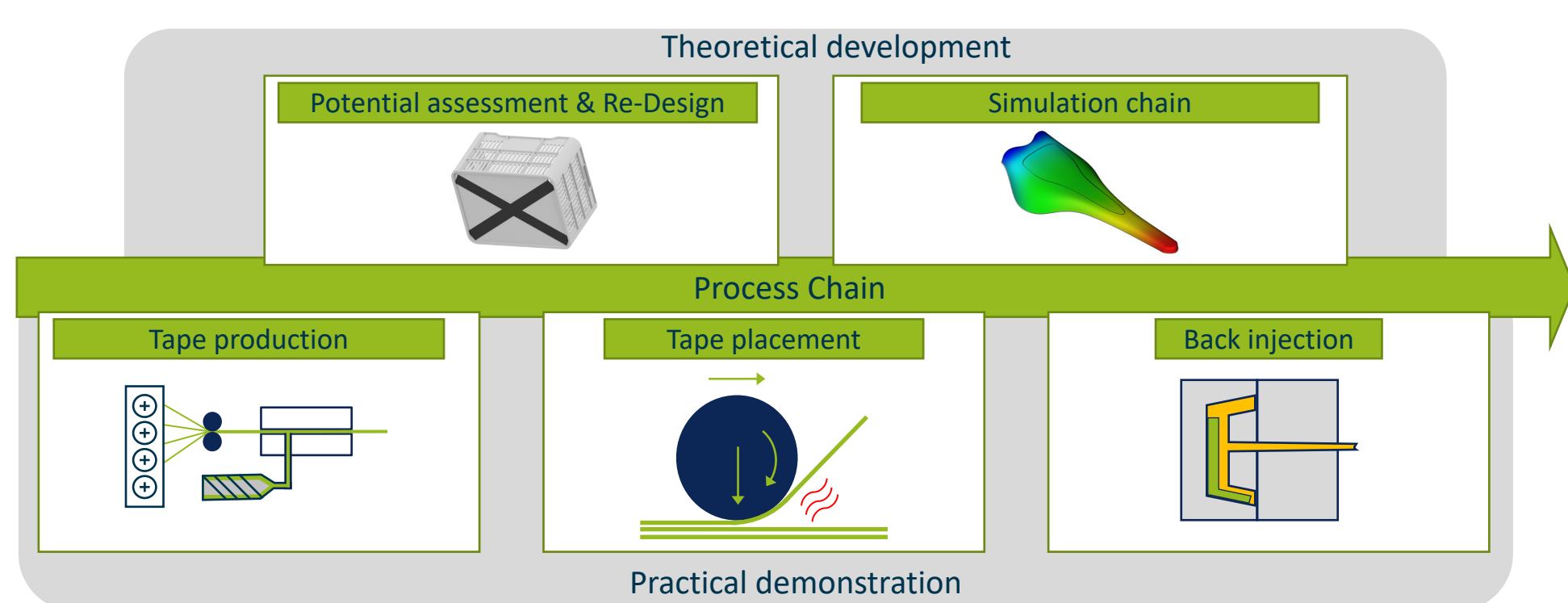
Key research area: Lightweight technologies

Research on lightweight technologies at IKV



In numerous research projects, IKV develops solutions to improve material design and increase time and cost efficiency in the production of plastic and hybrid components. In this context, it can draw on its own extensive research and combine the advantages of different materials and process technologies in a targeted manner. In this way, innovative solutions are developed time and again that significantly reduce the ecological impact of production, use and recycling at the end of the component's life of lightweight materials and that are economical at the same time. The numerous challenges of these material classes range from the selection and characterisation of materials to the design of components, precise process modelling, enabling of new materials for established manufacturing processes and material and component testing. In addition to the technical aspects, the focus of research at the IKV is always on the suitability for large-scale production and economic efficiency as well as the sustainability of the processing methods.

T³-Hub



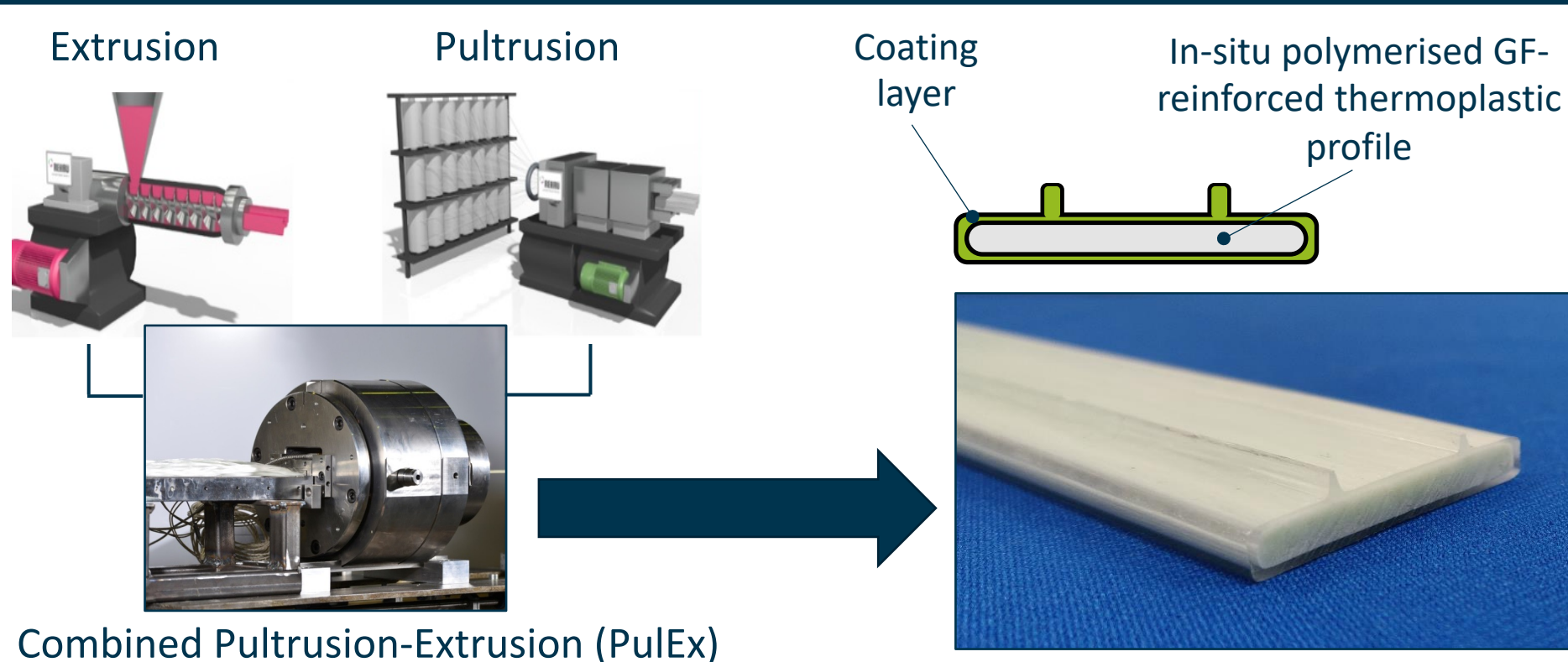
- Cost and weight optimisation potential through tape integration often for injection moulded (IM) parts not exploited.
- Provision of a calculation tool for evaluating a possible cost saving and performance increase by tape integration into IM components.
- Analysis of existing IM components from broad application areas.

HyInnoTank



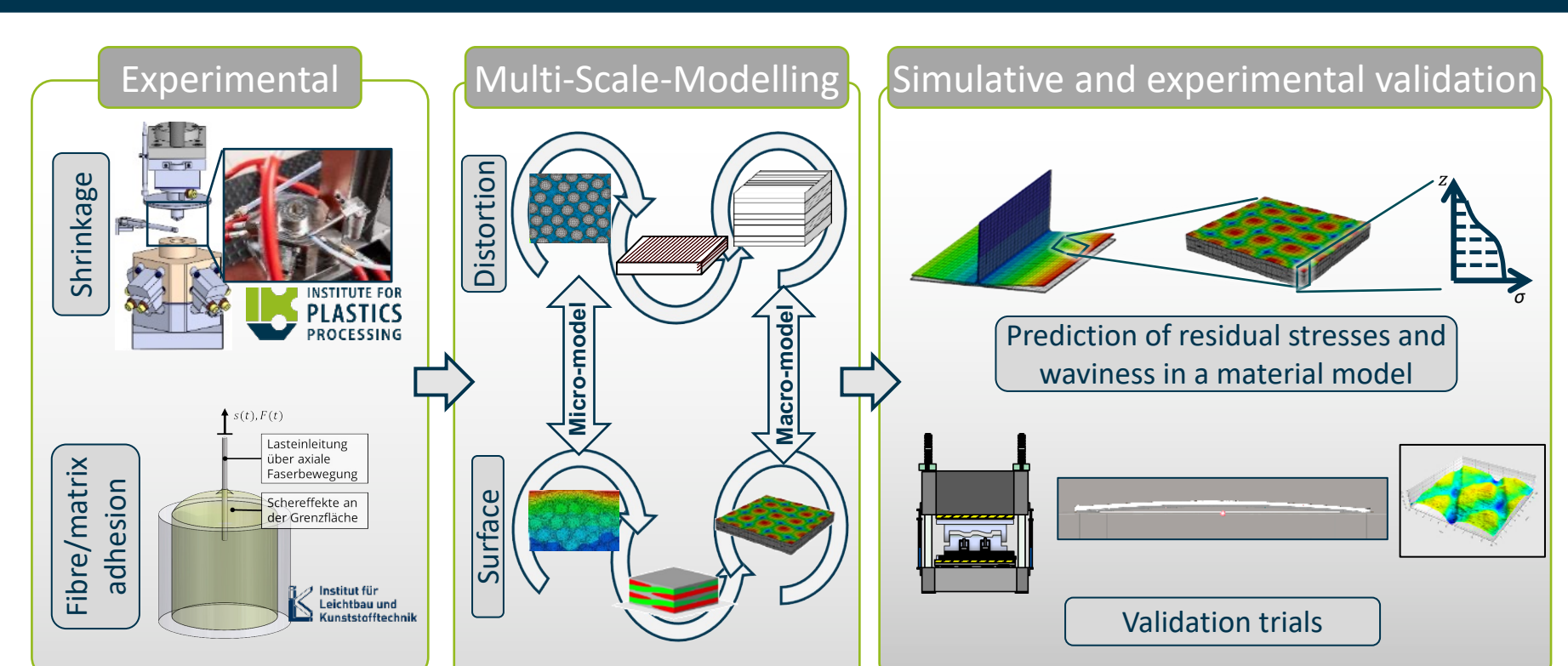
- Sensor fibres are permanently embedded in pressure vessel and allow its structural integrity to be checked in the installed condition.
- The knowledge of local strains at different positions of the pressure vessel within the laminate provides information on the material behaviour in different loading scenarios.

ReHyComPro



- Current window profiles have various issues: Heat conduction (steel inserts), Class A surface (FRP).
- Integrated production of continuous fibre-reinforced, thermoplastic window profiles with validated end-of-life concept.
- Fundamental investigations for the production of continuous fibre-reinforced hollow profiles with in-situ thermoplastics.

SWING



- Modelling of the process-dependent shrinkage behaviour for property prediction of FRP is yet not possible
- Physically based modelling of the production-dependent shrinkage of highly reactive matrix systems
- Simulation of the effect on residual stresses, warpage and surface waviness