Thermoplastic organo sheets and tapes are experiencing high market growth rates. Besides melt impregnation or film stacking, the use of solvent impregnation is a suitable technique aiming for best impregnation results. The costs for a coating plant for solvent-based thermoplastic impregnation for composite production, are approx. 30% allotted to the drying section. The main part of the variable costs of the production process is energy input and auxiliaries. The production speed of such a plant is mainly determined by the required residence time of the impregnated semi-finished product during evaporation of the solvent in the convection oven.

In the project “MicroCoat”, a novel process chain for the production of thermoplastic impregnated semi-finished products is being developed. The innovation consists of applying microwave technology to improve the distribution of matrix material in the fabric and for drying, as well as in the simultaneous application of surface pressure on the semi-finished product. This means that the semi-finished fiber composite product is simultaneously consolidated (solidified) during the drying process. This enables the production speed to be increased by 20%, with a simultaneous reduction in production costs of 10% in relation to the total product, as well as a reduction in energy...
consumption of 30% compared to machine setups relying on melt impregnation and a double belt press.

With microwave drying, the heat can be applied homogeneously, with the semi-finished product being dried from the inside. Microwave drying is equipped with a press for consolidation and also has an extraction and recycling system for the solvent that evaporates during the drying process. The implementation is to take place in the form of modular components to be developed, to also enable the retrofitting of existing production plants.

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Contact
Andreas Bündgens, andreas.buendgens@ita.rwth-aachen.de, 0241 80 23260