Technische Hochschule Wildau
Technical University of Applied Sciences

» Forschung in Wildau – innovativ und praxisnah «

UV-LED Curable Thermosets and Composites

Applications from Micrometer to Meter Scale

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ADVANCED UV FOR LIFE

Introduction to UV-LED Technology

Within the last years, UV-LEDs gained more and more attention for various industrial applications. Main reasons are the availability of these relatively new UV-sources at steadily lower prices, by simultaneous increase of their efficiency making high intensities, competitive with established Hg-vapor-bulbs, possible. Furthermore, almost the whole wavelength region from approx. 300 – 420 nm, which is of importance for UV-curing, can be covered now by UV-LED-systems with high light-intensities.

Project UV-Co-Light

UV-Co-light is focused on glass-fiber reinforced thermosetting polymers: Materials and processes for UV-LED curing of glass-fiber reinforced laminates with an area of up to 3.30 m x 33 m are developed (Figure 1 a) as well as materials and a hybrid process using thermal and radiation curing for the fast and energy efficient pultrusion of glass-fiber reinforced profiles (Figure 1b).

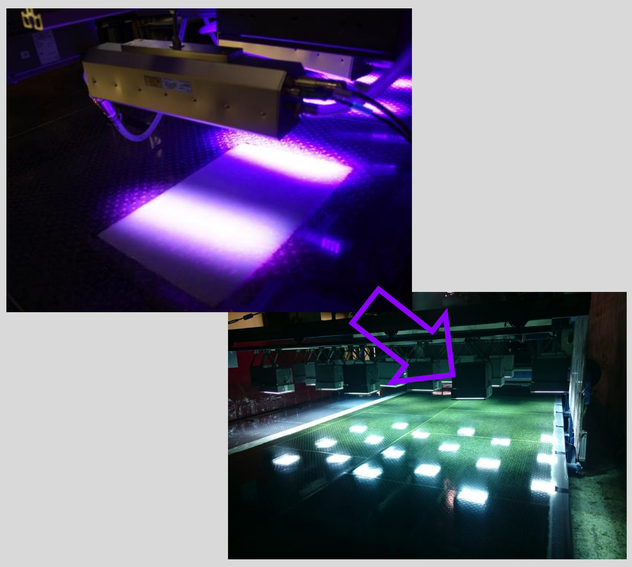

Figure 1a: UV-LED curing of glass fiber-reinforced laminates.

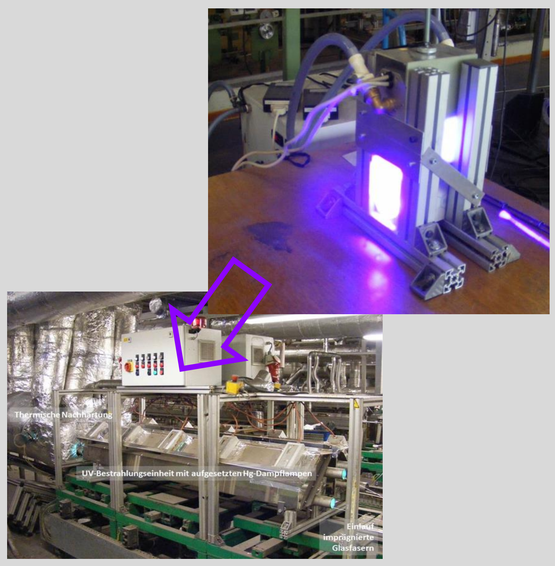

Figure 1b: Hybrid curing of Pultrusion profiles.

Project Inno-UV-Faser

Subject is the development of UV-LED-curable high-performance coatings for optical glass-fibers used in laser material-processing and medical surgery.

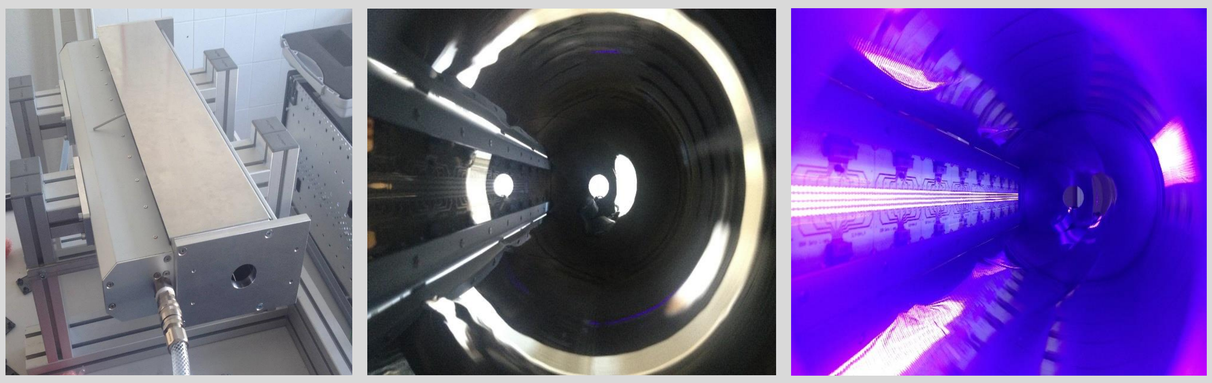

Figure 2: UV-LED-Module for glass-fiber drawing Tower (left), Reflector (middle), Reflector with active UV-LED-Modul (right)

Advanced UV for Life - AUVL

The consortium Advanced UV for Life – AUVL, funded by the German Government, Ministry for Education and Research, covers the complete value-chain from the crystal growth of the LED-substrates, the LEDs themselves, the light-sources thereof and their use for different fields of application, like medicine, disinfection, environment & life sciences and production. In the following an overview is given about a number of projects running since 2012 in the Application Area Production of the AUVL-consortium.

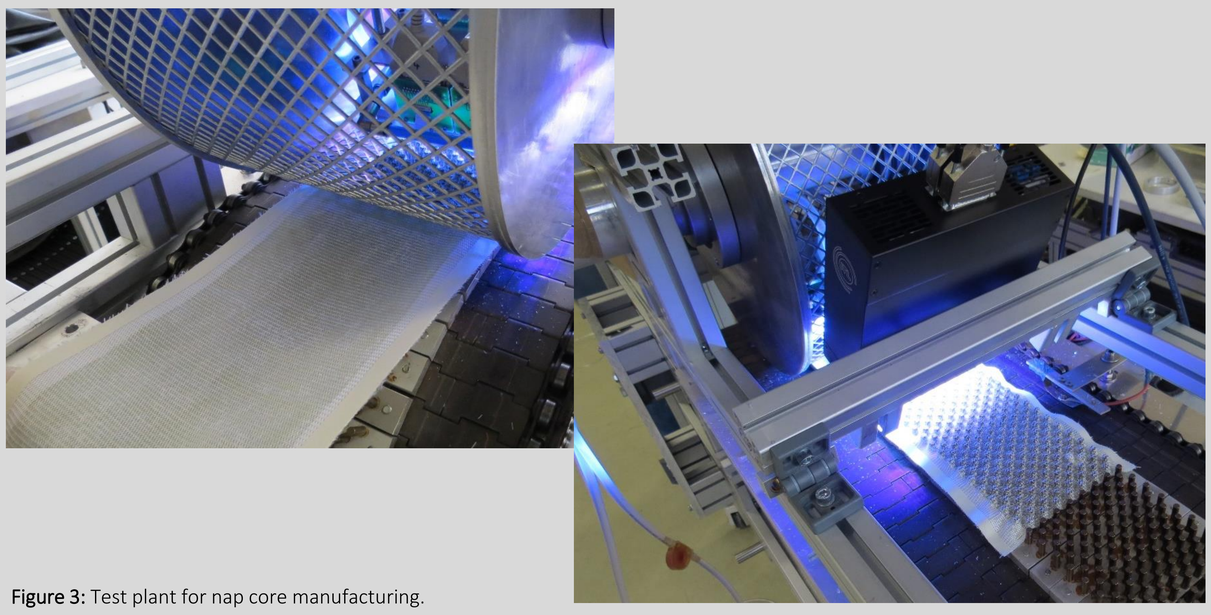

Figure 3: Test plant for nap core manufacturing.

Project UV-Endlos

This Project is dedicated to roll-to-roll processes. The rapid curing of antiadhesive UV-coatings with a thickness of a few micrometers for release-papers is one goal of this project, while the development of a fast UV-curing process of alternative core-materials, so called nap-cores, for sandwich-panels in light-weight construction is the second subject (Figure 3).

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