

OVERVIEW OF THE COMPOSITES INDUSTRY FOCUSING ON MATERIALS, PROCESSES AND TRENDS

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ABSTRACT

The use of composites is steadily increasing since the 60's, finding their way into a variety of sectors, and being nowadays the material of choice in wind energy, marine and electrical & electronics. They have continuously evolved, from mere substitutes to indispensable, and, indeed, some newer applications are only possible due to their remarkable characteristics. This lecture will start with an overview of the current composites market, including major sectors, market value and share by region/country, and post-pandemic situation, based on JEC reports. The major fibre types, thermoplastics and thermosets polymer matrices, and manufacturing processes will then be presented. This will be followed by some recent work of the composites and nanocomposites group at UFRGS, including composites for Oil&Gas and energy sectors, and the development of a web-based composite mechanics software (Mech-Gcomp, www.ufrgs.br/mechg). The final remarks will summarize the addressed aspects and present some innovations, including in Building and Civil Engineering, and general trends in composite materials.

KEYWORDS

Polymer composites; market; applications; fibers and matrices; innovation, software.