BASQUE PATENT TO RECYCLE 100% CARBON FIBER

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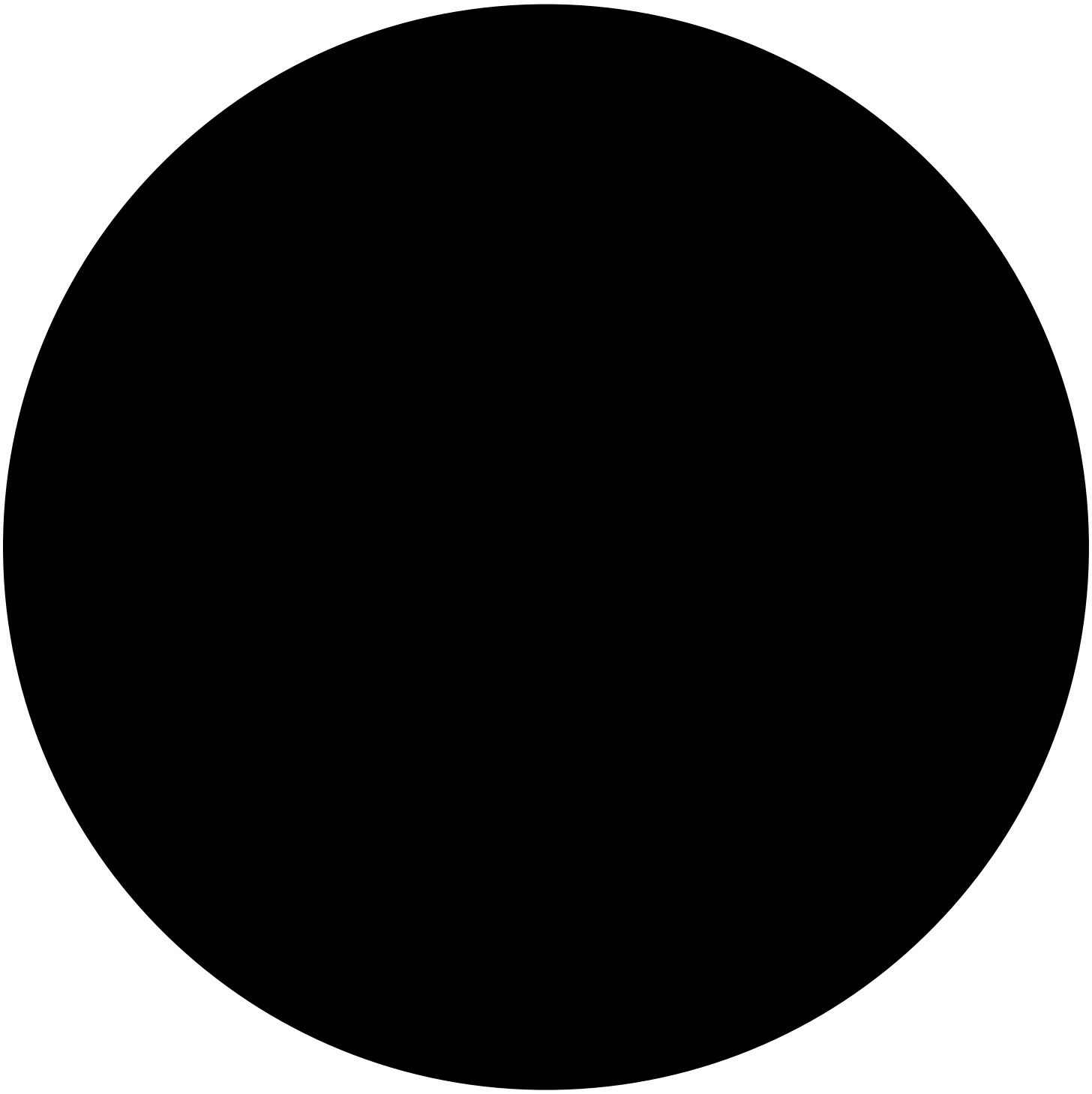

The use of carbon fiber composites has increased considerably in in recent years due to its combination of properties similar to those of many metals with greater lightness, and it is expected to continue to grow exponentially in the manufacture of high value-added products such as aircraft, wind turbine blades, or automobiles. Faced with the complex recycling of the consequent waste, derived from the component manufacturing process itself or from the end of its useful life, a group of professors and researchers from the Department

of Chemical Engineering and the Environment of the UPV/EHU has patented a system for 100% recycling of carbon fiber materials.

Carbon composites are composed of multiple ingredients – resins, fibers, fillers – of a very diverse nature, and may incorporate other materials such as metal inserts. In addition, the vast majority of composites are bonded using thermosetting resins that do not melt when heat is applied, and therefore cannot be remoulded. These are the reasons why recycling these materials is complex, as detailed by Isabel de Marco, an expert from the Consolidated Research Group Sustainable Process Engineering (SuPrEn).

Virgin carbon fiber stands out for its high market price, which is why fiber recovery plants have begun to be built, with the aim of recycling them into new composites. The work of these plants involves separating the fibers from the resins through a thermal pyrolysis process that decomposes the resin in the form of vapor and releases the fiber from the matrix so that it can be recovered. However, the value of the vapors formed is not used and polluting emissions are generated.

The patent of the UPV/EHU researchers defines a method for obtaining a valuable gas with a high proportion of hydrogen from the vapors formed and, consequently, being able to revalue the resins and not just the fibers, as described does currently. "Hydrogen is called to be the fuel of the future because it is non-polluting, since only water is produced in its combustion", according to De Marco's conclusion.

There are no comments yet.