Sustainable concrete with wind turbine blade waste

UNIVERSIDAD DE BURGOS
From Spain
Patents for licensing

Summary of the technology

A research group at the University of Burgos has developed a procedure for the production of concrete from wind turbine blade waste. The concrete object of the invention not only has good performance both in fresh and hardened state, but also represents a viable solution for recycling wind turbine blades, thus contributing to the circular economy and positioning itself as an alternative to traditional concrete.

Details of the Technology Offer

New and innovative aspects

In Spain, it is estimated that by 2030 around 40% of wind turbines will have to be renovated. In view of this situation, the need to seek methods for recycling them has become evident. In the literature, there are few options for the use of this residue, and the vast majority go through the separation of part of its components (glass and carbon fibres, polymeric resins, polyurethane foam, balsa wood and polyester resins) by pyrolysis, solvolysis or gasification processes. The procedure described by researchers from the University of Burgos has allowed the production of sustainable concrete using the crushed waste of wind turbine blades without having previously separated the different components, which allows saving both time and money, and in turn reducing the carbon footprint.

Main advantages of its use

- Obtain a concrete with good technical properties, showing the viability of these residues for use in structural elements.
- Reduction of costs by using raw waste (separation of its components is not necessary) reducing production times and not requiring the hiring of specialized workers.
- Dispose of the raw waste from the grinding of wind turbine blades as recycled fibre for use in concrete. Contributing to the minimization of climate change, while favouring a more circular

economy.

Specifications

- The method developed allows the use of up to 6% by volume of waste from the blades of wind turbines.
- The produced concrete retains the flexural strength of traditional concrete despite containing a lower percentage of cement by volume. Moreover, the final material has rload-bearing capacity, providing more security. Its good workability makes it a valid alternative for use in any type of structural element according to current applicable regulations.
- The optimization carried out by the researchers has allowed the creation of a procedure with low technical difficulty and low economic cost.

Applications

- Construction and civil construction companies.
- Companies related to the construction, maintenance and/or removal of wind turbines interested in recycling them.

Intellectual property status

Protected by a patent P202230623

Current development status

Research or Experimental

Desired business relationship

Trade Agreement, License Agreement, Technical cooperation: further development, Technical Cooperation: testing of new applications; Technical Cooperation: adaptation to specific needs.

Intellectual property status

- **Patent already applied for**
- Patent application number :P202230623
- Where : https://www.ubu.es/otri-transferencia/propiedad-industrial-e-intelectual/patentes-y-modelos-de-utilidad-de-la-ubu/153-p202230623-hormigon-sostenible-con-residuo-de-pala-de-aerogenerador-y-su

Attached documents

- - Foto Hormigón Sostenible NdP.PNG

Technology Owner

UNIVERSIDAD DE BURGOS
Technology Transfer Office from *Spain*

Related Keywords

Industrial manufacturing, Material and Transport Technologies, Protecting Man and Environment, Building, Energy Market, Industrial Products, circular economy, sustainable concrete, wind turbine blade waste, recycled fibers, flexural strength, load-bearing capacity

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