

# RECYCLING OF WIND TURBINE BLADES

**Contact project:**  
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## DESCRIPTION

Wind turbine blades, countertops, furniture: the application areas of thermoset composite are numerous. No sustainable solutions were possible for recycling these applications until recently. This poses a major problem in the Netherlands, but also globally. Waste used to be incinerated, which is not a sustainable or circular solution. Applications of recycled materials did not yet exist.

Circular Recycling Company (CRC) is working on a supply-chain with regional chain partners with the aim of having end-of-life products made of fibre-reinforced thermoset composite serve as raw material for new products. Currently, the recyclate is already being used in construction and infrastructure technology. A test is also being conducted in which the composition of the product will be mixed with thermoplastics to make it suitable for the automotive industry.

## WHY

Europe is banning the landfill option and incineration has a very high tax. Volumes from wind turbine blades rise annually from 400,000 tonnes in 2030 and double that amount by 2050.

## (EXPECTED) RESULTS

This chain approach contributes to a sustainable solution at a lower purchase price than charged by regular waste management companies. The system developed to collect, sort, and mechanically and chemically process these materials, creates various recycling streams. CRC reduces this material to different compositions. In addition, the reuse of the recycled composites in new products results in CO<sub>2</sub> savings.

## LESSONS LEARNED

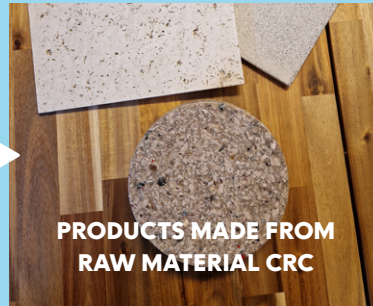
Collaboration with various parties, both nationally and internationally, is crucial for CRC's success and for shared growth and ambition. Besides technology and collaboration in the chain, quality personnel are essential. Keeping the momentum from the period when CRC was a start-up is very important besides giving space to employees for creative thinking in the innovation process.



START OF RECYCLING UNPROCESSED COMPOSITE



NEW RAW MATERIAL CRC



PRODUCTS MADE FROM RAW MATERIAL CRC

## INPUT

Thermoset composite



## OUTPUT

70% = coarse and fine recyclate of glass and carbon fibre  
30% = residue for pyro-oil production (feedstock for new plastics)



## TECHNOLOGY READINESS LEVEL



1	2	3	4	5	6	7	8	9
Basic principles observed	Technology concept formulated	Experimental proof of concept	Technology validated in lab	Technology validated in relevant environment	Technology demonstrated in relevant environment	System prototype demonstration in operational environment	System complete and qualified	Actual system proven in operational environment
DISCOVERY			DEVELOPMENT			DEMONSTRATION		

## CIRCULAR INDICATORS (REDUCTION OF)



CO<sub>2</sub>



Energy



Costs



Raw materials



Water

## COMPANY

