鉴衡认证
CHINA GENERAL CERTIFICATION

Solutions after Rotor Blades Service Expiry

China General Certification Center

2020/11

Catalogue

Current Situation and Background

New capacity grown rapidly

The installed wind power capacity reached 210GW until 2019.More than 50GW is expected to be installed in 2020.

Huge number of recycled blades

Since 2016, the blades gradually entered the decommissioning stage. 59,000 tons of blades will be expected to be decommissioned until 2020.

Green recycling is hard

The blade is made of thermosetting materials which are difficult to recycle green.

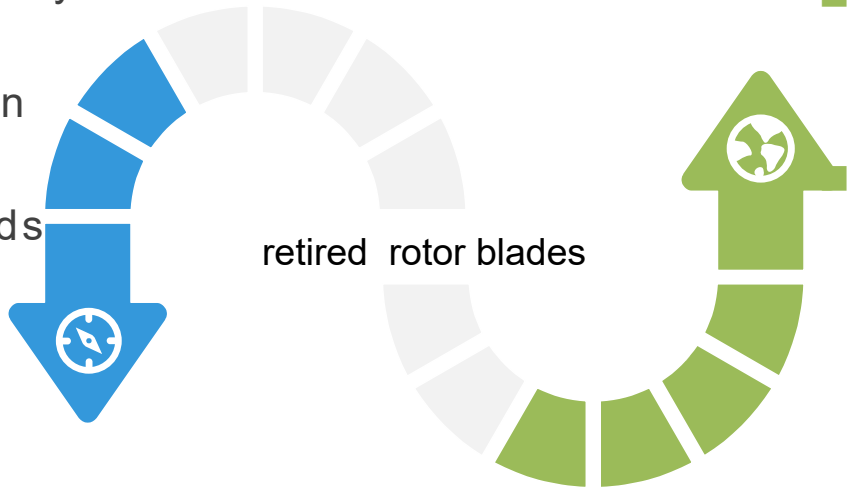
Complexity limits the Lifetime extention

Complex operating conditions and different quality levels limit the lifetime extention application.

Technical Solutions for retired blades

Scrap recycling

- The physical recovery
- Heat decomposition
- Chemolysis mehtods



Lifetime extension

- Assess the remaining usable life
- The blade inspection

Technical Solutions for retired blades

Physical Recycling

- The blades are cut into different size part. The root and middle area of blade are used as part of building, and the other parts are powderred to collect the material which are reused, such as the filler of the concrete.
- The method is simple, and it is a common method.

Heat Decomposition

- Heat decomposition includes pyrolysis, fluidized bed and microwave pyrolysis.
- Pyrolysis method can get the clean fibre by using heating inert gas to demostrate resin.
- Fluidized bed can recycle the fiber not the continuous fiber.
- Microwave pyrolysis is used to demostrate the resin.

Technical Solutions for retired blades

Chemolysis mehtods

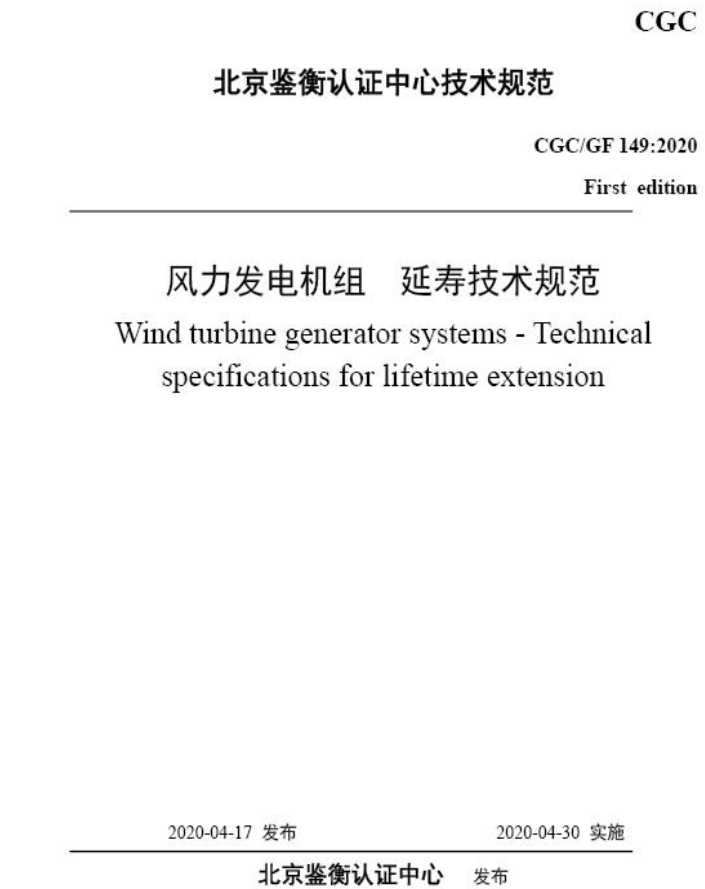
- Supercritical fluid or specific solvent are used to decompose or degrade the polymer.
- The methods require the high energy and the new solvent which means high cost.

Physical recycling is considered as a more economical solution in China.

Results of Blade recycling in China

Lifetime extention

- CGC has released the technical specification for lifetime extention of WTGS which define the scope and technical requirement.
  - Detail investigation include inspection of the damage and defect,evaluation of maintenance.
  - Analysis the structure safety using operational data.
  - Natural frequency testing and anlysis



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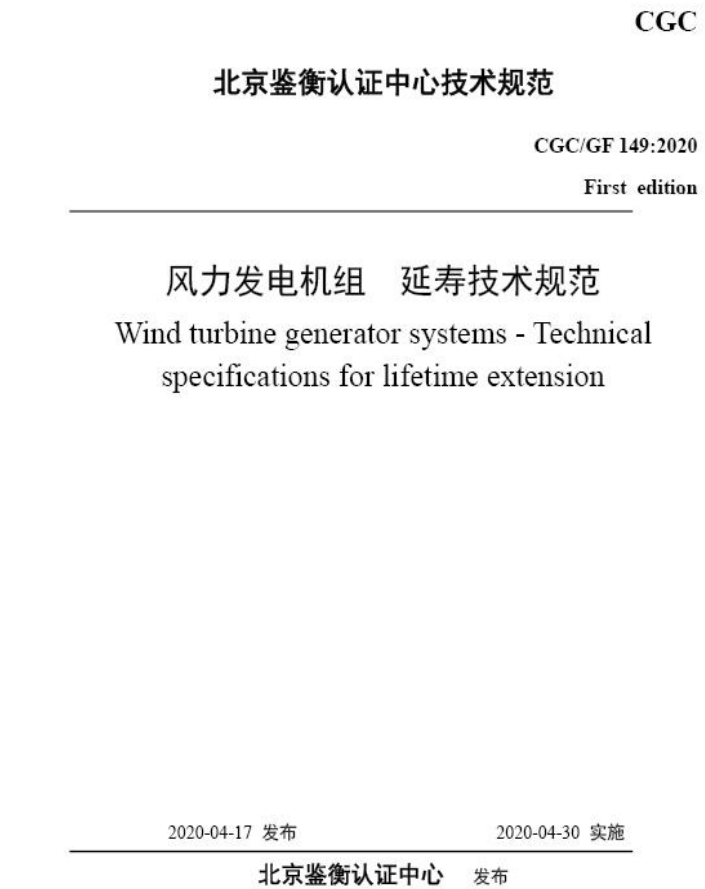

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Results of Blade recycling in China

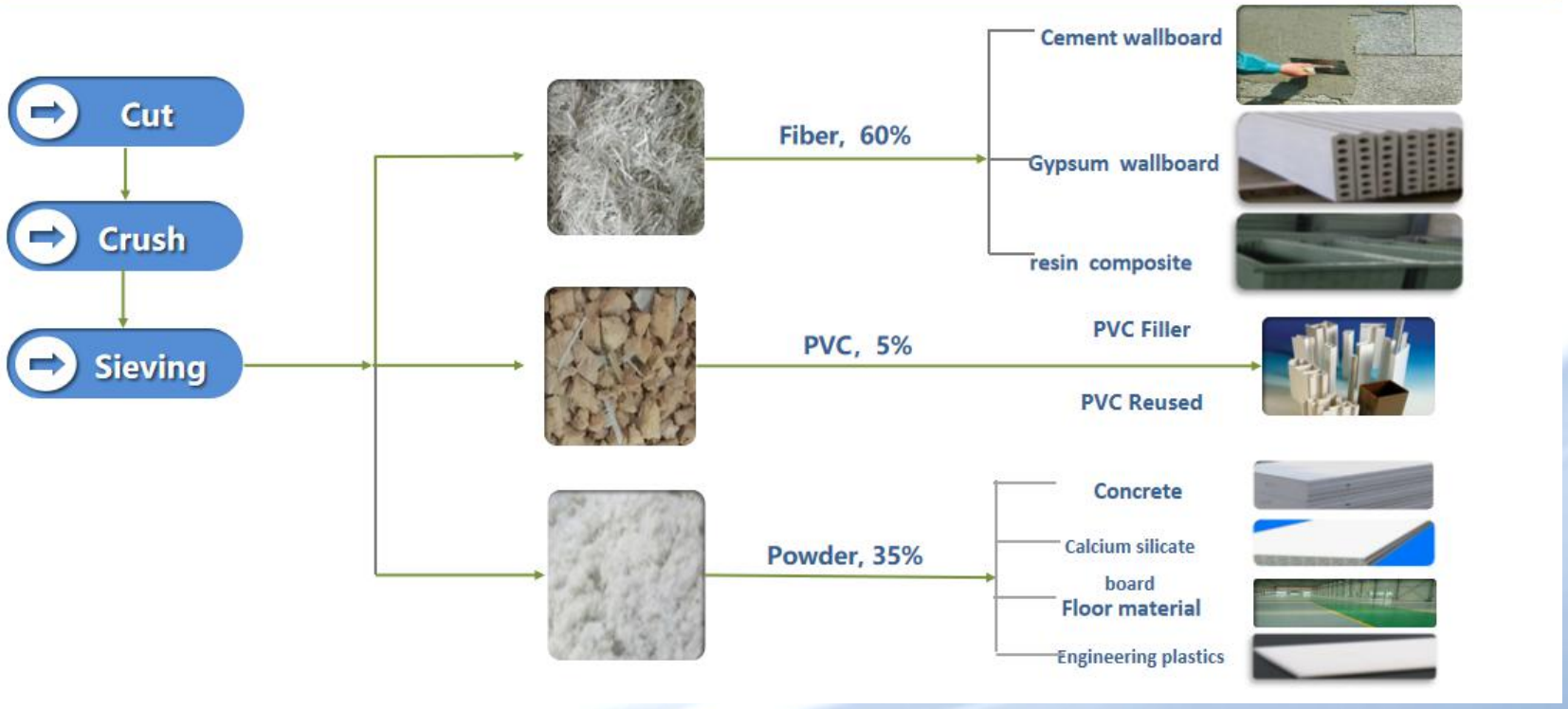
Automatic Blade Cutting Equipment

- The equipment does not need the help of lifting equipment, reduce dust, and improve cutting efficiency .
  - A 50m long blade is cut into different size parts within 8 hours.
  - The equipment reduces the cost of on-site segmentation, environmental hazards and transportion.

Results of Blade recycling in China

Physical Recycling 1

- The materials such as fiber, PVC are obtained using cutting, crushing and screening technology and so on. The solution is applied by CCNM.



Results of Blade recycling in China

Physical Recycling 2

- The parts which are cutted from blade are reused by simple handling and packaging.

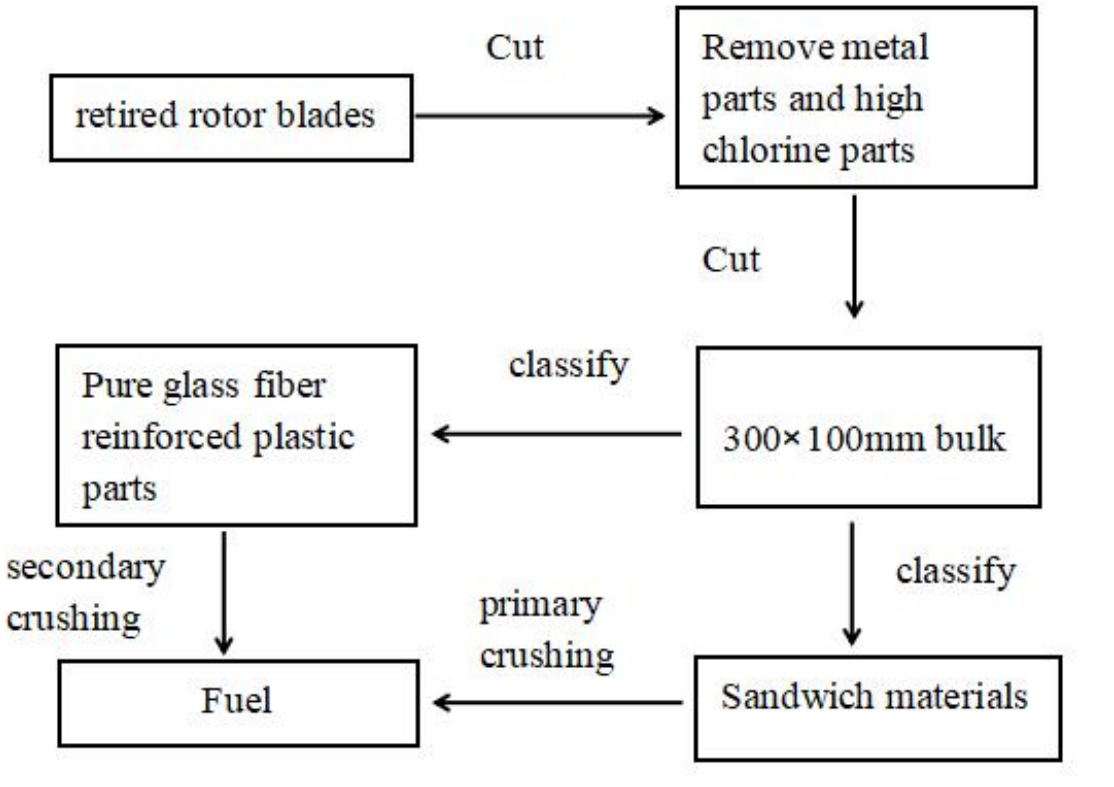





Results of Blade recycling in China

Physical Recycling 3

- The retired blades are cutted and crushed. And the materials are used as fuel for cement plant or thermal power plant. The solution is used by Sinoma.



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