This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement no. 101096858.

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SMART BLADE CUTTING

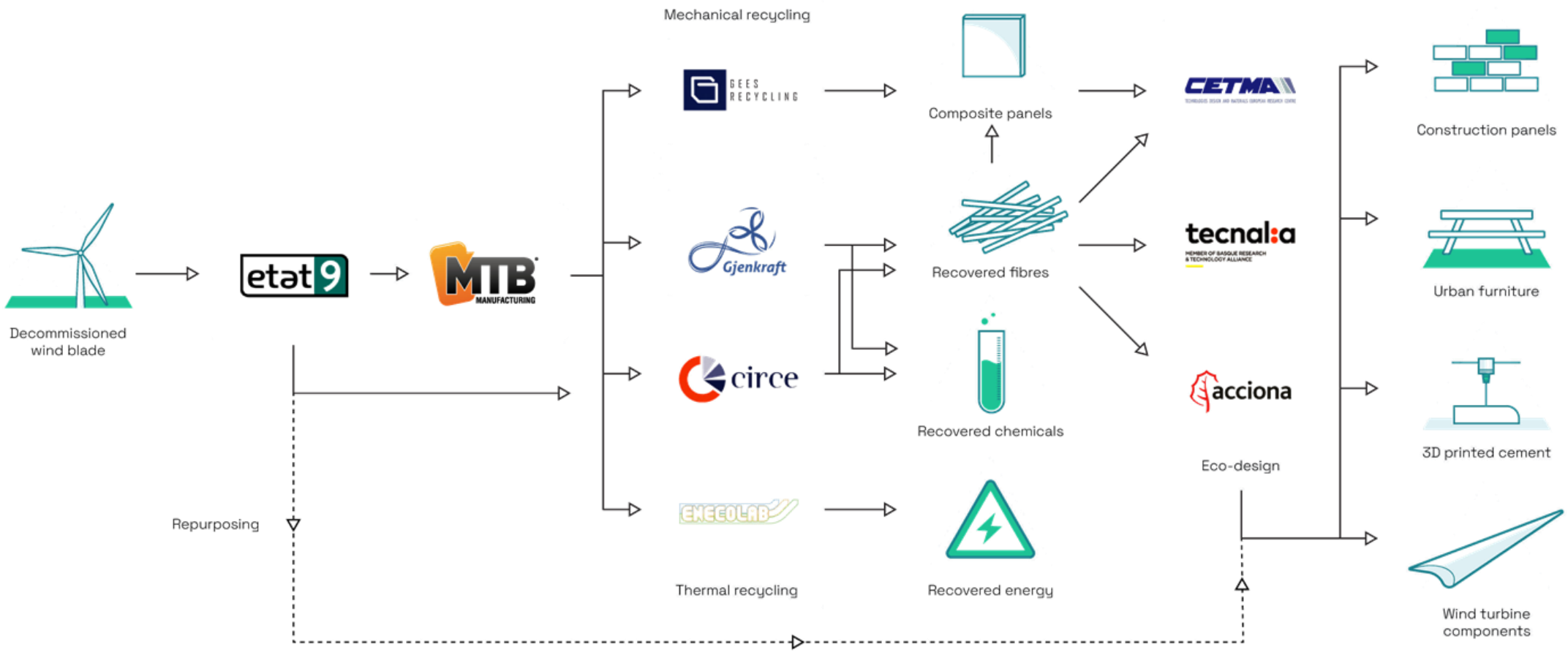
Jean-Baptiste STREHAIANO, ETAT9

First stakeholder workshop

17 November, 2025, Online

Photo by Nicholas Doherty on Unsplash

Description of technology



Some constraints of technologies choice

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Respect for operators and environment

Some constraints of technologies choice

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Can cut at height, precisely and large dimensions

Description of technology

Circular saw missions :

- Fast cutting !
- Pieces in planks/board long : 5m max
- Width direction : until saw capacity thick < 0,7m
- Materials sorting (carbon, fiberglass+resin, fiberglass+resin+balsa/foam)

Wire saw missions :

- Cutting roots and huge sections > 3m
- Materials sorting

TRL7 reached

Blade materials characterisation: to complete “DecomBlades” material passport
Linking with other European projects

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Blade Material Passport

Wind Turbine Blade Model: B45
Manufacturer: Siemens Gamesa Renewable Energy

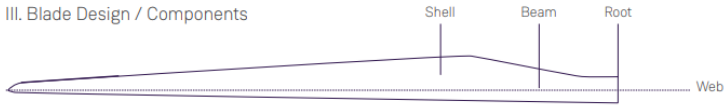
I. Introduction (Purpose / Scope)

This Blade Material Passport (BMP) document provides information to support end-of-life treatment of wind turbine blades. The BMP document is intended for use by those who are active in disposal of end-of-life blades. In addition to the information given in this BMP, please note that the blades contain detailed confidential information that is sensitive to the manufactur-er and which you will get insight into in connection with the decommission-ing of the blades. We kindly request you not to disclose any information not already stated in this BMP to any third part unless such third part has a need to know the information in connection the decommissioning of the blades.

II. Blade Dimensions (General Data)

Blade Mass	8900 kg
Blade Length	45000 mm
Root Diameter	1950 mm
Max Chord	3350 mm
Max Thickness	< 100 mm (root section)

III. Blade Design / Components



IV. Blade Materials

Material (example categories below)	**Blade part** (refer to diagram)	**Mass** (%)
Glass fiber	Blade shells, webs, root section	55
Epoxy resin	Blade shells, webs, root section	35
PUR foam	Blade shell	1
Balsa wood	Blade shells	3
Plywood	Web	2
Aluminum	Lightning conductors	1
Steel	Root end – inserts	2
Coating (Epoxy and PU)	Outer surface	1

SIEMENS Gamesa RENEWABLE ENERGY

4 samples on 2 different types of blade:
- RGF + wood blade: 1 on root, 1 on shell
- RCF + foam blade: 1 on root, 1 on shell

- Density analysis,
- Moisture rate,
- Ash,
- Volatil matter,
- Fixed carbon,
- Organic matter,
- Intern calorific power,
- Analysis (CHONS) and halogens (CL, Br, I, F),
- Inorganics analysis.

Knowledge of blades compositions and characteristics

Smart cutting more efficient for on-site sorting

Optimize valorisation channels

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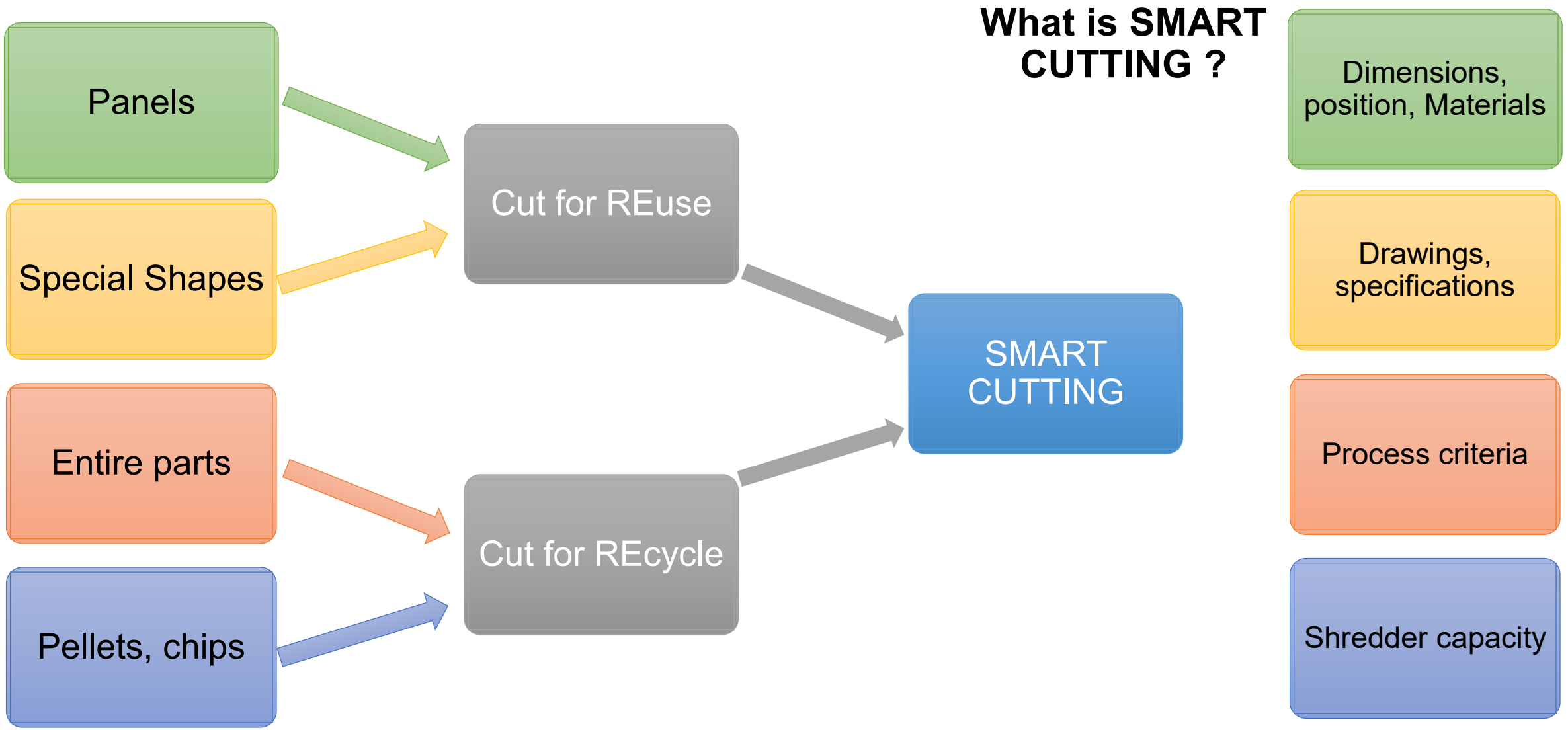
Green treatment requires Smart Cutting



PICNIC table for JEC World Event with CETMA, EuCIA and GEES

- **One of collaboration with other partners one ideal way**

Panels selected on the blade and pre-cutted on cutting worksite by SMART cutting → Panels sent to waterjet cutter → Deliver machined parts to CETMA AND ETAT9

1 piece for JEC World Event March ‘25

1 piece for CETMA research center

Assembling by CETMA AND ETAT9

Visual created by EuCIA

Top panel provided by GEES for CETMA’s model

Reproduction from J. Joustra et al. 2021 (Delft University of Technology).

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Sorting materials onsite

Preservation of workers health and safety

Water process filtration and recirculation

Preservation of environment

Management of dust

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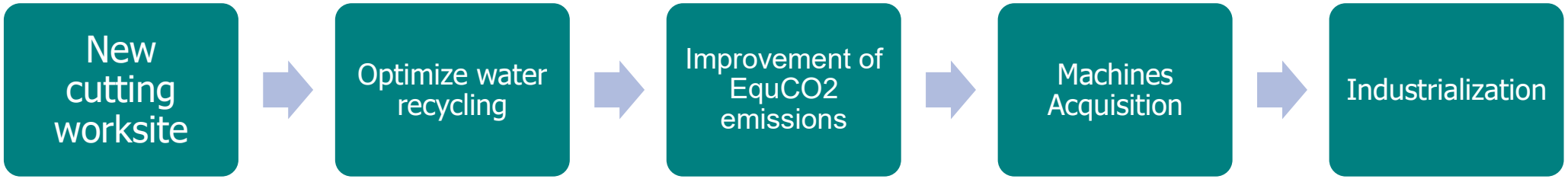
Next step

At each stage of the process, a strategic GO/NO-GO will be necessary.



FAQ

How can optimizing the cutting protect workers and environment on the field as well as make possible the recycling ?

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Health and safety of the teams, as well as environmental protection, are key considerations in the development of blade-cutting methods.

Each recovery stream requires a defined quality standard for incoming materials to ensure an efficient process. Therefore, source separation of materials is essential to supply revalorization channels.

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Thank you for your attention!

Jean-Baptiste STREHAIANO, ETAT9

jstrehaiano@etat9.com