



OPIN Workshop

Advanced Materials and Manufacturing (Composite focus)

12/11/19, Nantes



Pierre Le JOUBIUX
PLASTEOL

Repair and Maintenance

Responsable des Opérations

Plasteol, 24 Allée Loïc Caradec, 56 000 Vannes

Mob: +33 (0)6 29 11 41 66

- Who we are
- What we do
- Our development axes

History:

- 2006: Creation of PLASTINOV
- 2009: Blades production for ASTRIUM
- 2012: Creation of the subsidiary PLASTEOL of PLASTINOV dedicated to the wind turbine blades maintenance
- 2015: Acquisition of PLASTINOV by CARBOMAN group



Clients:



GROUPE CARBOMAN:

Our goal: to be a European leader manufacture of composite parts

The creation of Groupe Carboman in 2013:

Dominique Dubois and Bertrand Cardis created Groupe Carboman in 2013 by bringing together Multiplast in France and Decision SA in Switzerland, joined the following years by Plastinov, Plasteol and SMM.

The group's objective is to develop each division through organic growth, as well as acquiring new companies.

Groupe Carboman is committed to:

- Bringing an industrial solution to its customers in the field of composites,
- Ensuring its processes for quality and deadlines are at the highest level,
- Acting as a responsible citizen and company.

Groupe Carboman has:

- A 20.000 m² production area,
- 200 employees,
- € 20 million turnover.



Ours services

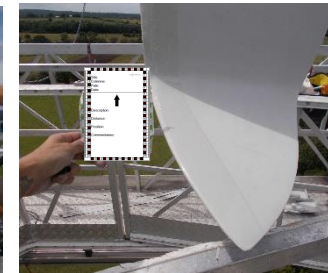
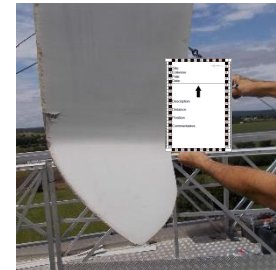
- Drone Inspection
- Blades control on the ground
- Blades control (Structure, lightning protection, evacuation drain)
- On going maintenance (Paint, leading and trailing edges repair)
- Corrective maintenance : structural repair (lighting, impact, aging)




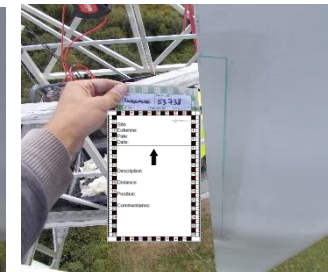
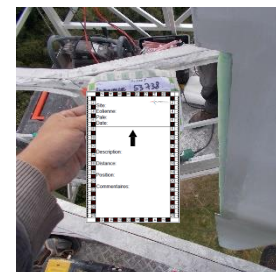
Preventive Management

-

-



- 
- The inset image shows a person's hand pointing at a checklist. The checklist is titled "Checklist" and has a column for "Yes/No" and a column for "Remarks". The checklist items are:
- 1. Is the work area clearly marked?
 - 2. Are all workers wearing PPE?
 - 3. Are all workers trained for the task?
 - 4. Are all workers aware of the hazards?
 - 5. Are all workers aware of the emergency procedures?
 - 6. Are all workers aware of the location of the first aid kit?
 - 7. Are all workers aware of the location of the fire extinguisher?
 - 8. Are all workers aware of the location of the emergency exit?
 - 9. Are all workers aware of the location of the nearest telephone?
 - 10. Are all workers aware of the location of the nearest hospital?



Maintenance

Corrective maintenance

- First skin reconstruction



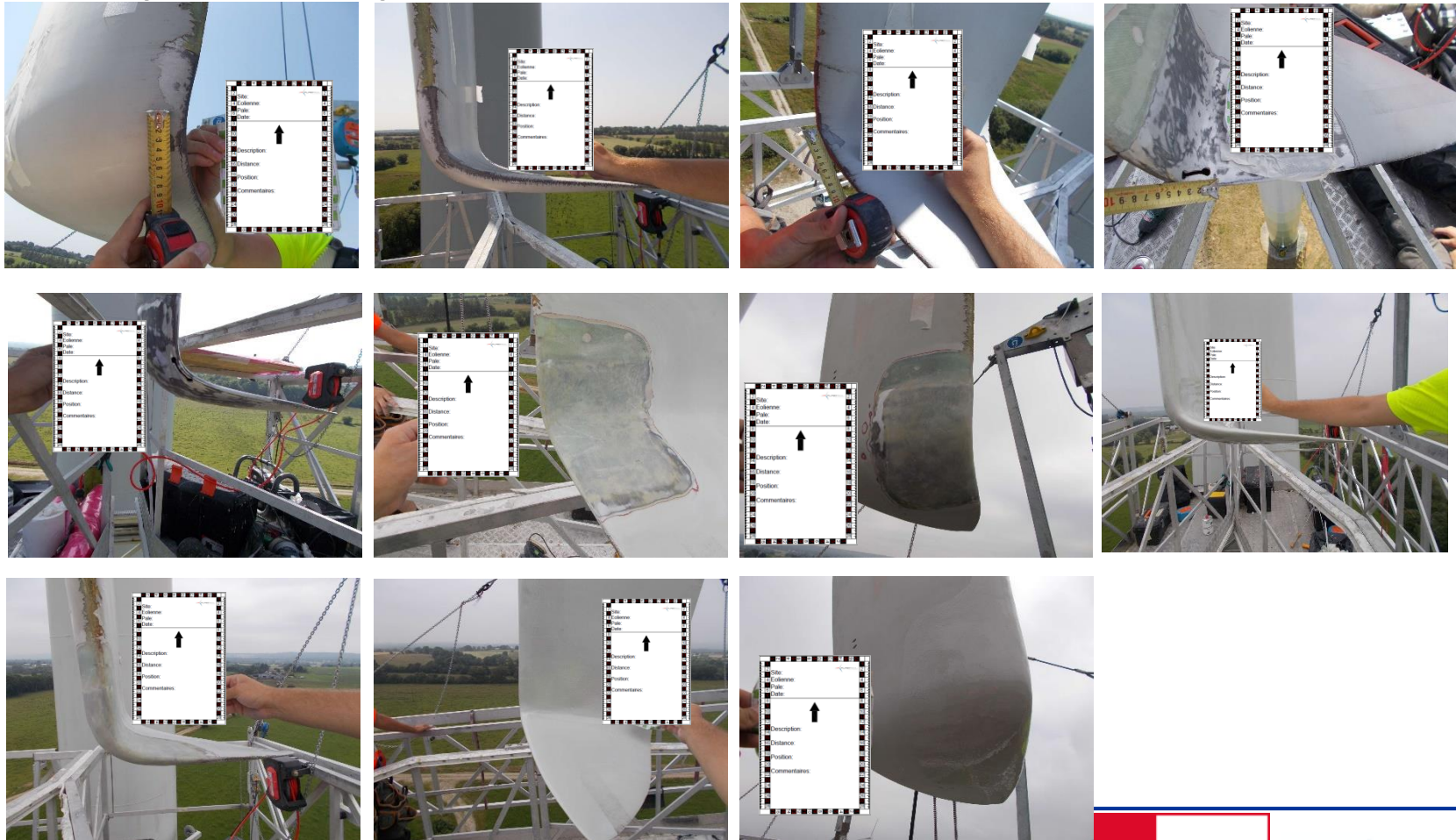
- Blade tip repair

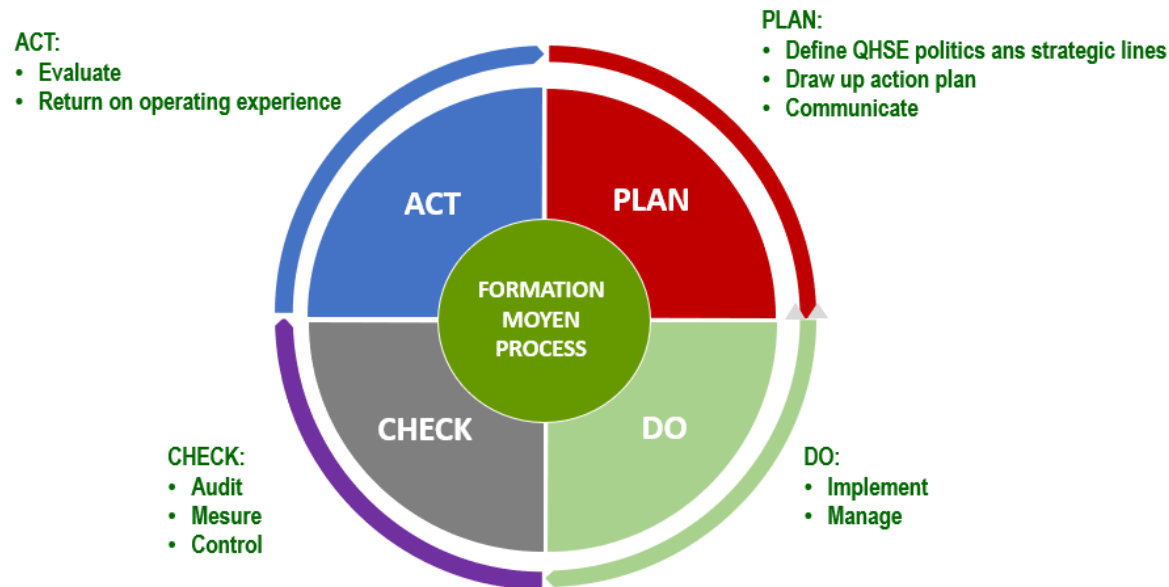


Maintenance

Corrective maintenance

- Réparation tip



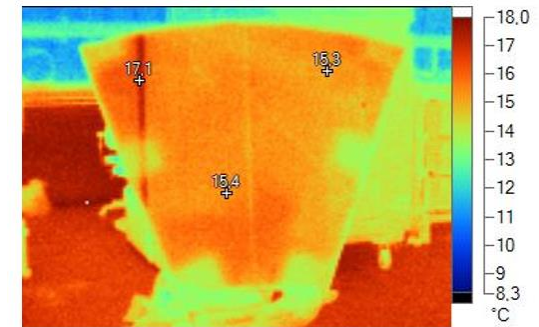
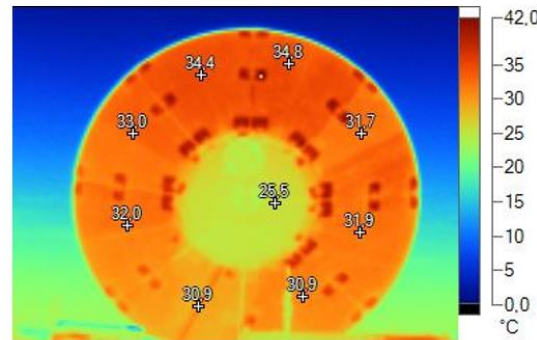


Quality & Safety & Environment

- Continuous improvement
- Monitoring and control
- Process writing
- Internal training centre

Technology

- Non destructive control tools development



- Development of process & tools to be able to accurately establish for a damage area (i.e: structure reconstruction) :
 - The type of fabric (fabric, Bi or tri axial, UD)
 - The number of ply
 - The thickness of each ply

With all these information, we can find the good lay-up and repair identically the blade to maintain the same mechanical proprieties.

Technology

- Development of process and resin & adhesive qualification in collaboration with various manufacturers (Arkema , Hunstman/Samaro , Gurit, Sicomin, ...) :
 - Our target, it is to define the complete repair process and the materials according to:
 - Impact area & surface to repair
 - Type of damage
 - Weather (humidity and temperature)

Interreg



North-West Europe

OPIN

European Regional Development Fund

Thank you!