Pro-Drone a WavEC Spin-off

Blade Inspections 2.0

By André Moura – WavEC Seminar, 16th November 2015
WavEC: a Hub for Innovation

- 7 years at WavEC Offshore Renewables
- Constant opportunities to grow
- Amazing GLOBAL network
- Freedom to explore prospects
Pro-Drone a WavEC Spin-off

- How it all started
- Product Development — KIC Innoenergy
- Entrepreneurship courses
- Validation
- Execution
The Problem

Blade inspections

- Up to 30% of wind turbine efficiency
- Preventative Maintenance > Corrective Maintenance
- Focus on O&M Cost reductions
- Huge costs and logistics in Offshore Wind
- Aging infrastructure
Current Solutions

- **Rope**
  - Cost: +/- 1500 €
  - Downtime: 4 - 6 hours
  - Efficacy / Robustness: ✔
  - Safety: ❌

- **UAV**
  - Cost: 300 - 600 €
  - Downtime: 1 - 2 hours
  - Efficacy / Robustness: ✔
  - Safety: ✗

- **Ground Camera**
  - Cost: 300 - 600 €
  - Downtime: 2 - 4 hours
  - Efficacy / Robustness: ✗
  - Safety: ✔
Current UAV Limitations

- Manual Piloting
- GPS
  - Accuracy 3-4m
  - Loss of coverage 50%
  - Signal Refraction
- Monitoring Discontinuities

NOT THE ROBUST SOLUTION
THE INDUSTRY IS DEMANDING

AUTOMATION
Solution

Post Processing

• Image Enhancement

• Automatic fault finding

• Cloud based platform for data visualization

• Integration with EPR, CMMS, SCADA

Safe, robust, repeatable inspections
High quality results and damage analysis
Opportunity

Large Market – 280k+ turbines

Growing Market

• 15% Onshore

• 30% Offshore

• 6bn USD market in next 9 years

‘Expected to become the norm in 3-5 years’ Eduardo Garcia Perez, Head of Central Maintenance EDP Renewables

Easilly transferable technology
Achievements

• IP

• Freedom to Operate

• Patent Pending

• First successful service in August 2014
Achievements

• IP

  • Freedom to Operate

  • Patent Pending

• First successful service in August 2015

• Working Autonomous Prototype

• MOU with Market Leader

• LOI from 4 major players
Team

André Moura
Founder and CEO

Tiago Ferreira
Head of Engineering

Illia Sheremet
Control Engineer

George Mitrensis
Post Processing

Renato Braz
KIC Officer

Pedro Leão
Mentor

Bruno Guerreiro
Scientific Advisor - IST

Pedro Pires
WavEC

Miguel Lopes
WavEC

António Pinho
Inspection specialist
Roadmap

2015
- Proof of concept

2016
- Spring
- Autonomous Pilot Inspections
- Summer
- Tests Offshore

2017
- Full Operational Ready to Licence

2018
- Fully Autonomous Blade Inspection

Funding
Thank You

The sky is not the limit, it’s our office.