

TURBO - Towards turbine blade production with zero waste



TURBO is a Horizon Europe project funded by the EU to improve sustainability in the manufacture of wind turbine blades.

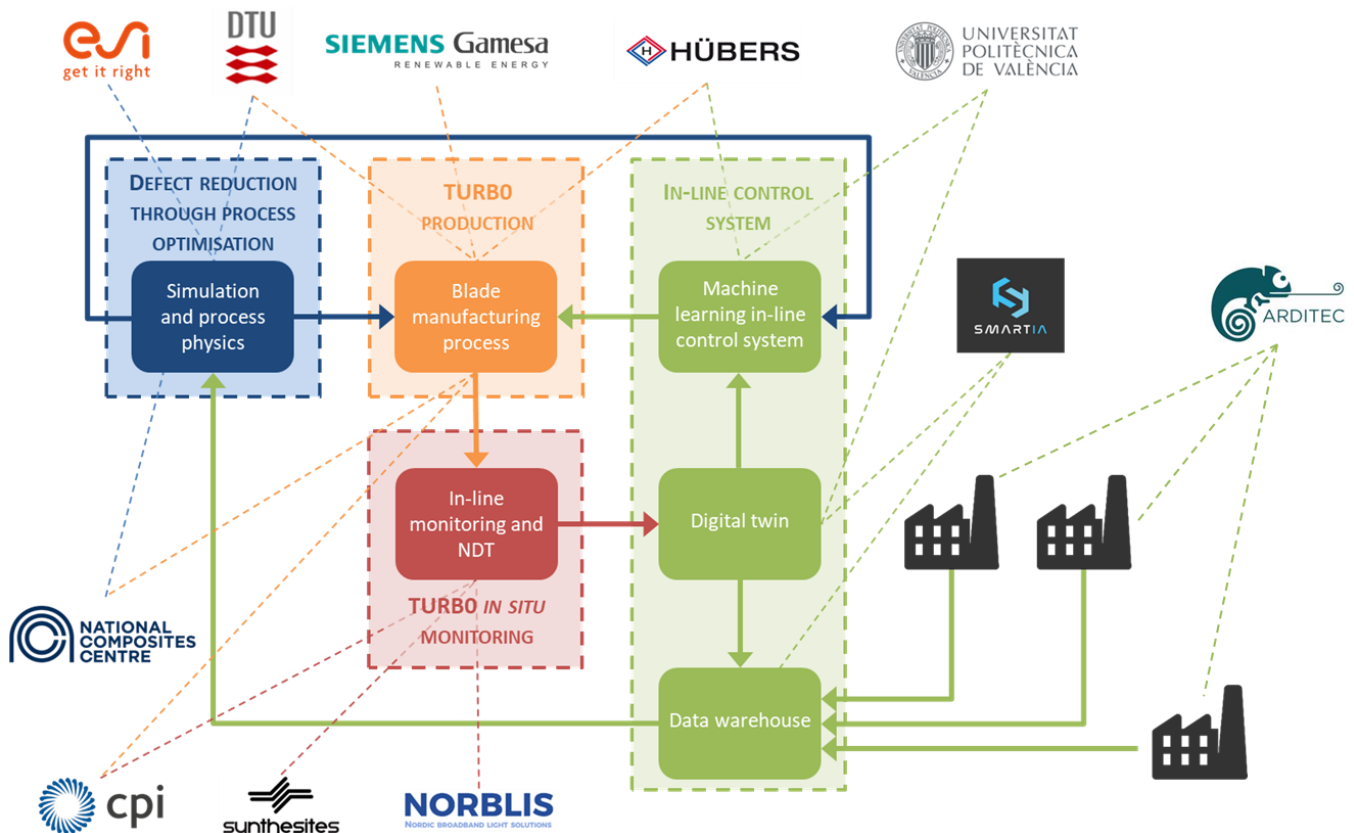


Funded by the European Union



Wind turbines are already part of everyday European life and are an essential element of the strategy to meet the Green Deal targets. Blade size is steadily increasing, with the largest new offshore blades >100 m in length. Composite blades are manufactured using resin infusion and coating processes. Even using modern manufacturing methods, these are subject to defects which result in re-work, scrap and repair.

TURBO will reduce defect formation through better process simulation, monitoring and control, improve defect identification with new methods of non-destructive testing (NDT) and introduce novel repair strategies in composites and coatings.

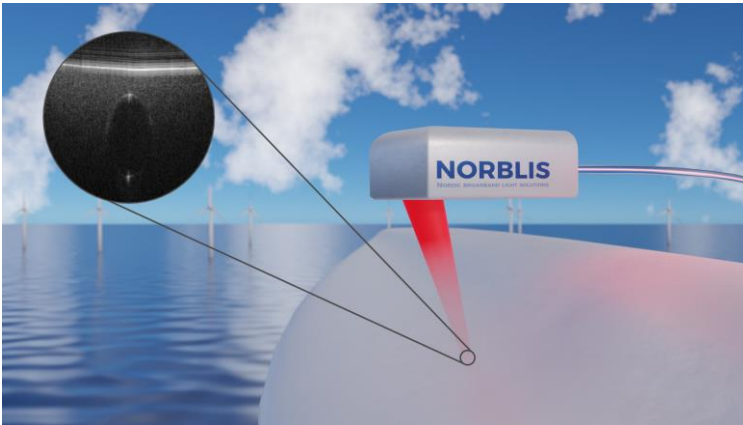
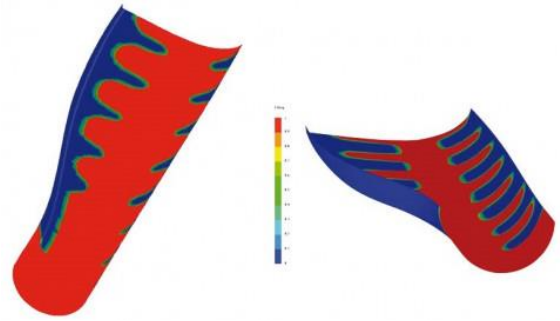


<https://turboproject.eu>



<https://www.linkedin.com/groups/12777432>

Simulation The project will develop simulations of the production process to minimise defect formation by combining the latest multi-physics process modelling with reduced order models to improve understanding of the composite manufacturing process.



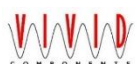
NDT TURBO will investigate both in-line NDT to monitor WTB composite infusion and post-manufacture sub-surface WTB coating inspection, combining ultrasound and mid-infrared optical coherence tomography.

Process control The production equipment, monitoring sensor and in-line NDT data will be combined to establish a digital twin for real-time analysis and production control including the application of machine learning.



Demo The project will demonstrate its results in the fabrication of full size blade sections at the Siemens Gamesa Renewable Energy factory in Aalborg, Denmark. The workplan also includes full lifecycle analysis, environmental assessments and production efficiency analysis to quantify the project benefits.

Consortium



Coordinator Admin

Ole Bang
Bruce Napier

Danish Technical University
Vivid Components Germany

oban@fotonik.dtu.dk
bruce@vividcomponents.co.uk

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101058054 (TURBO). This includes funds from UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding guarantee [grant numbers 10037822, 10042318 and 10044756] as part of the topic ID HORIZON-CL4-2021-TWIN-TRANSITION-01-02.

Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or UKRI. The European Union or UKRI cannot be held responsible for them.

