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HORIZON-CL5-2025-02-D3-06: Innovative manufacturing of wind energy technologies

- Presenters: **Eric Leduc / Pierre-Armand Thomas**
- Organization: **Cervval** (Private SME specializing in digital twin simulations)
- Country: France
- Department within the organization: Engineering
- Expertise of the department: Simulation Expertise

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The network of Horizon Europe
Cluster 5 National Contact Point.

The Need for Smarter Wind Energy

The energy transition demands clean, local, and reliable power.
However, traditional wind turbines face limitations: they are often large, noisy, inefficient in variable winds, and difficult to integrate into constrained environments like cities or complex sites.

How can we unlock wind potential everywhere, efficiently and discreetly?

The GREENET project has received funding from the EU Horizon Europe programme under Grant Agreement No 101069604

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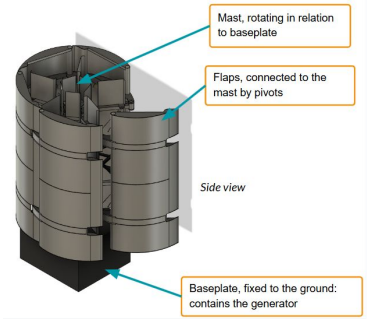
WindHouse

Introducing WindHouse: The Adaptive VAWT

Meet **WindHouse**, a Vertical-Axis Wind Turbine (VAWT)
with a game-changing innovation: **intelligent adaptive and mobile shutters**.

Think of sails constantly optimizing themselves to catch every breeze while safely managing gusts.
This dynamic adaptation is our core differentiator.



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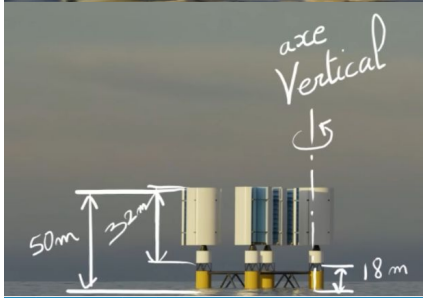
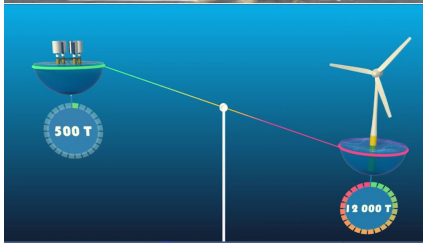
WindHouse

- Project WindHouse

  Sustainability, security, and competitive energy supply

  - **Concept:** A VAWT designed for sustainability, security, and competitive energy supply.
  - **Key Features:**
    - **Adaptive Mobile Shutters:** Operate efficiently across a wider wind speed range (capturing low winds, managing high winds).
    - **Compact & Modular Design:** Enables landscape integration (urban/peri-urban), simplifies transport & installation. Lower height, reduced visual impact.
    - **Simplified Mechanics/Electronics:** Aiming for easier maintenance and potentially lower costs.
    - **High Installation Density:** Reduced wake effect compared to HAWTs allows more turbines per area.
    - **Validated Design:** Aerodynamics and structural resistance optimized using advanced **digital twin simulations** by Cervval.





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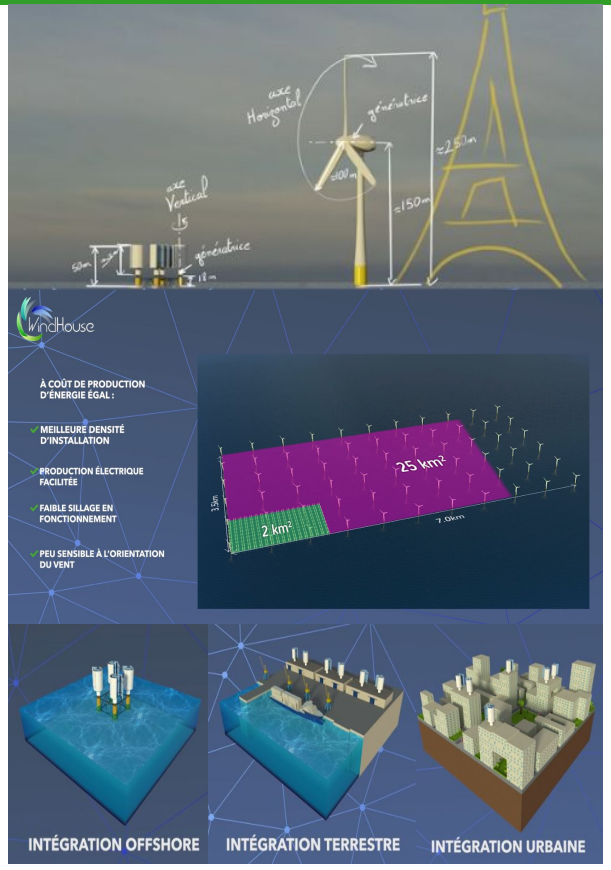
Key Benefits & Expected Impact

- **More Consistent Energy:** Reliable power generation even in fluctuating wind conditions.
- **Deploy Anywhere:** Ideal for urban, peri-urban, noise/visually sensitive sites, potentially offshore platforms (addressing niche needs).
- **Improved Economics:** Potential for better ROI through increased energy yield and reduced installation/maintenance costs. High power density.
- **Sustainability:** Contributes significantly to local green energy goals with minimal environmental footprint.



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Proven Expertise & Project Status

- **Backed by Cervval:** 20+ years of expertise in complex digital engineering and simulation (ISO 9001 certified, major clients). We leverage our DigiTwin platform.
- **Project Supporters:** Backed by Bpifrance (Inno Avenir Projets) & Région Bretagne.
- **Current Stage:** Design optimized via simulation. **Moving to full-scale prototype construction (12m height)** for real-world performance validation and digital twin calibration.

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Région BRETAGNE

bpifrance

inno Avenir Projets

cervval

Partnership Offer for Horizon Europe

WindHouse & Simulation Expertise: Your Partner for Impactful Projects

"Looking to enhance your Horizon Europe project consortium focused on **'Sustainable, secure and competitive energy supply'**? Cervval offers a unique partnership opportunity."

"What we bring to your project:"

- **The WindHouse Solution:** An innovative, adaptive VAWT solving key integration and efficiency challenges for distributed wind energy.
- **World-Class Simulation Power:** Leverage Cervval's digital twin expertise to de-risk development, optimize performance, and ensure robustness.

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Join Us to Shape the Future of Distributed Wind Energy

"*WindHouse offers an efficient, adaptable, and integration-friendly wind energy solution. Let's collaborate to make distributed wind power a widespread reality.*"

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Link to additional material : https://www.youtube.com/watch?v=4WwnwyeovBE&ab_channel=Cervval

Thank You.