



# -Rotor turbine: an experimental study

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## Why so cross?

Europe has increased the target of renewable energy contribution towards overall consumption from 27% to 32% by 2030. Offshore wind energy solutions have the potential to contribute towards this goal but are bound by their high capital and operational costs. In light of this, a novel offshore wind turbine concept known as the “X-Rotor” has been developed, which has the potential to reduce the cost of energy by 20%.

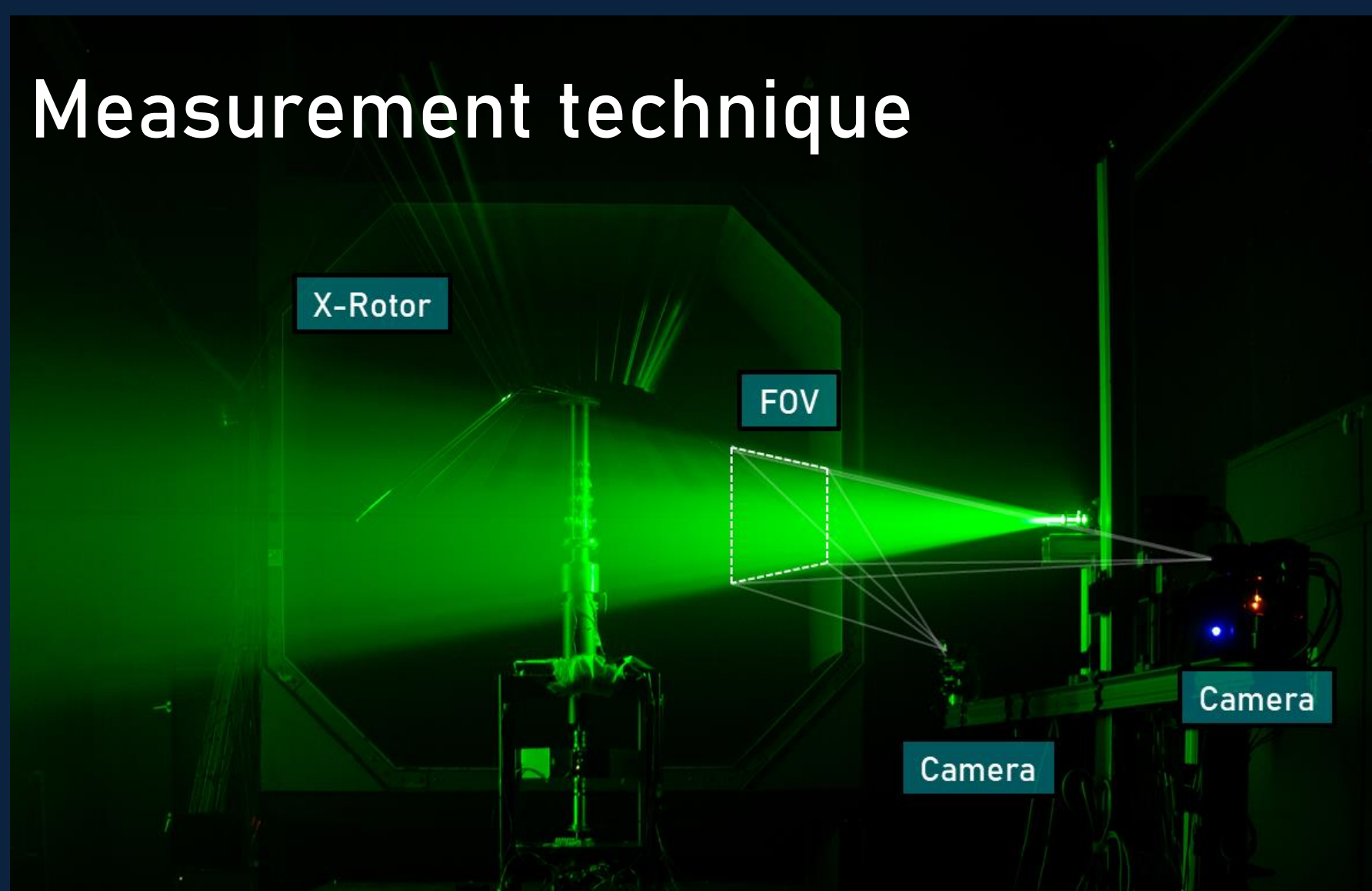
## The goal of my PhD

To experimentally perform an aerodynamic and aeroelastic characterization of a scaled X-Rotor wind turbine.



Aerodynamics Aeroelastics Rotor-rotor interaction

## Measurement technique

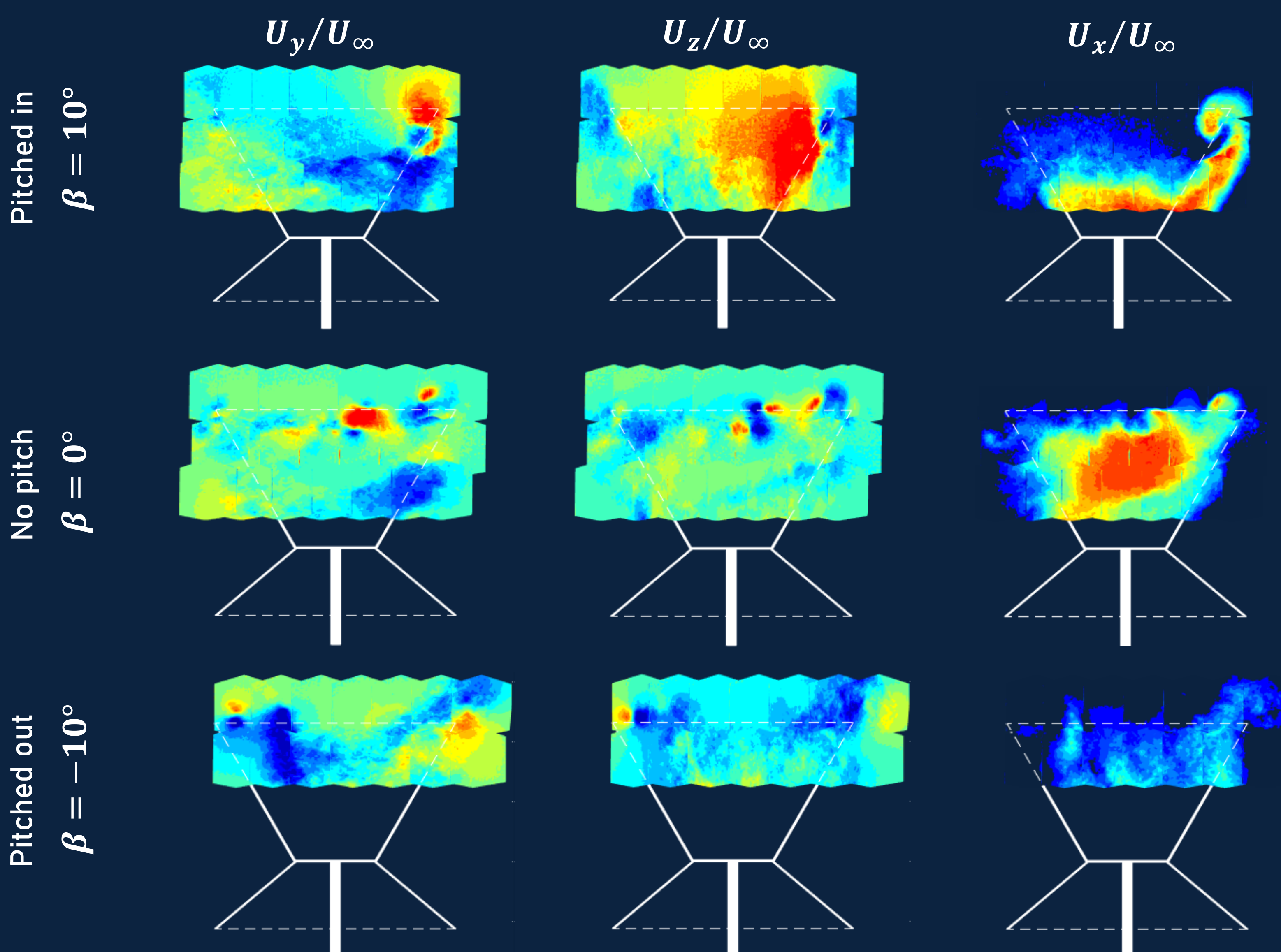
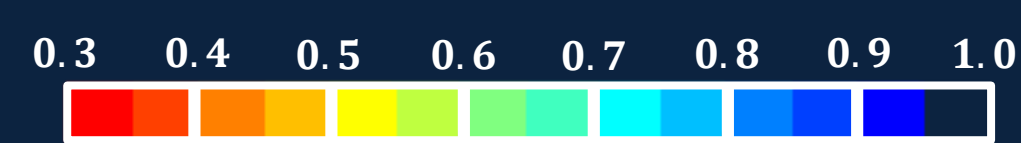
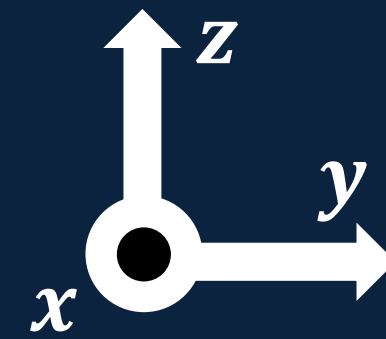


## The Concept: an aerodynamic gearbox



## What if we pitch the upper blades?

The results are  $1.8R$  downstream of the rotor, where  $R = 0.75m$



## Turbine loading

