



# Optimising and closing the design loop of offshore wind farm and assets useful life using measured (monitoring) data

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## Introduction

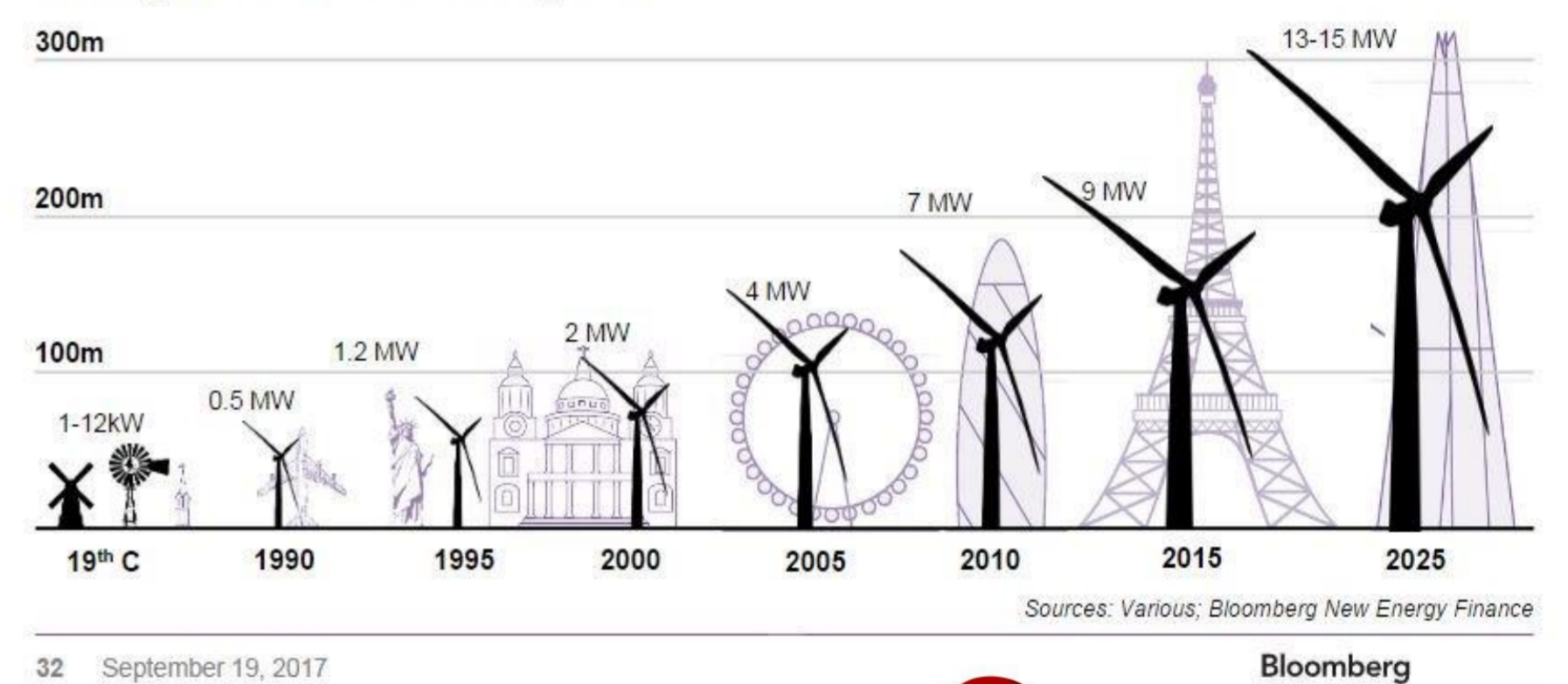
Considering the vast amount of offshore wind turbines currently in operation and the projected increase in assets over the decade or two, it is crucial to understand and quantify the current gaps in knowledge and understanding of salient structural components, members, and system. This work aims to understand, refine, and improve current design method through identification and assessments of uncertainties and challenges in the design of offshore wind turbine and development of framework for evaluation of in-service assets using measured monitoring data.



## Aims and objectives

- Evolution and improvements of design
- Identify current design challenges and design gaps
- Governing design criteria
- Identify and quantify uncertainties in design data and data interpretation
- Optimise current offshore wind turbine structure design
- Assessment of in-service assets using optimised design methodology.
- Recommendations for improvements on current design methodology
- Recommendations on refined and optimised assessment and evaluation of in-service assets

## Evolution of wind turbine heights and output



## Identify and quantify uncertainties in design data and data interpretation



## Optimise and improve on current offshore wind turbine structure design.



## Results and discussion:

- Data collation and literature review.
- Response and utilisation of primary components for typical offshore wind turbine structure
- Evaluation of existing offshore wind turbine utilisation and remaining life using measured monitoring data and improved design methodology
- Define improved design methodology for new offshore wind turbine and assessment of in-service assets

## Conclusions and Future work