

WTG OEM's role for foundation design optimisation

Agenda

- **Introduction**
- **Wind Turbine**
- **Integrated Load Assessment**
- **Summary**

Introduction

WTG OEM's role For Foundation Design Optimisation

- For offshore wind farm design, **support structure design is site specific**
- **Design optimisation** to achieve the most **cost effective site specific solution** is complex and time consuming
- As for any structures, design is driven by the various load contributions and, therefore, the focuses are:
 - **to reduce the loads** on support structure
 - **to realise integrated load evaluation** by utilising representative and efficient calculation method and process.

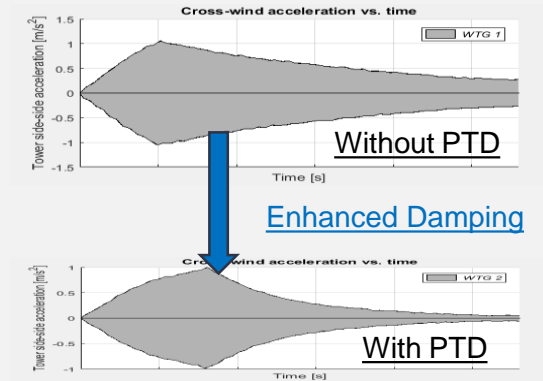


Wind Turbine

WTG OEM's role For Foundation Design Optimisation

Various foundation load reduction features are developed for design optimisation.

- Passive Tower Damper (PTD)
- Active Side-Side Tower Damper (A-SSTD)
- Active Fore-Aft Tower Damper (A-FATD)



WTG 1 : Without / WTG 2 With Damper

Excitation test (Verify damper performance)

Passive Tower Damper (PTD) Verification

Integrated Load Assessment

WTG OEM's role For Foundation Design Optimisation

Flexible interface to provide integrated optimisation opportunities for foundation design.

- Foundation Modelling
- Tower variations
- Efficient load assessment method
- Documentation package to support foundation design



Monopile (Burbo Bank Extension)



Gravity (Blyth)



Jacket (Aberdeen Bay)



Floating (Wind Float 1)

Experiences with various foundation types

Summary

WTG OEM's role For Foundation Design Optimisation



To support foundation design optimisation, MHI Vestas is committed to;

- Develop various **foundation load reduction features / damper technologies** (Passive tower damper, Active SSTD, Active FATD, etc).
- Provide **flexible interfaces in integrated load assessment** toward foundation designs.
- **Develop new technologies** to further support foundation design optimisation (e.g. SMART Foundation Loads for V164)

Let's move the horizon.