3D FEM model (SCD method)

- Cyclic laboratory tests
- Soil stiffness
- Cyclic contour diagram
- Storm event

Uncertainty quantification from available data

Stochastic input variables $X$

- Response surface
- Limit State Equation
- Monte Carlo simulation & Probability of failure (PoF)

Check if it yields same structural tilting as FEM

3D FEM model (SCD method)

- Metocean data & HAWC2 model

Target PoF: $5 \times 10^{-4}$

Check if it meets target

- Yes: Safe design
- No: Update foundation geometry

Foundation Geometry

Limit State Equation

Safe design

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