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Wake and Power Characteristics of a Fixed Bottom Offshore Wind Turbine ONDREJ FERCAK, JULIAAN BOSSUYT, RAUL BAYOAN CAL, Portland State University — Wind turbine energy production and what specific conditions drive the efficiency, life cycle, and placement of the turbines is becoming more detailed. A scaled wind turbine model was fixed to a large water tank with a wave generator upstream and a damping beach downstream. A standard 2D PIV set-up was used to capture the wave profile of the turbine at different conditions. Three image planes were used to capture the full development of the wake from near the turbine to far downstream. Wake momentum, Reynolds stresses, and power production using standard PIV and power measurement averaging are performed with the intent of addressing how the power production and wake of a fixed bottom wind turbine behave based on the interaction between specific wave conditions and the wake.

Ondrej Fercak
Portland State University

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