



Ashegoda Wind Farm

Foundations of the wind turbines

2009 - 2012



**ETHIOPIA -
Ashegoda
Client**

VERGNET

Owner

Ethiopian Electric Power Corporation (EEPCo)

Highlights

- 30 wind turbines 1 MW
- 300 micropiles from 4 to 21 m long
- 3500 m of micropiles
- 2700 m³ of concrete for the foundations



The Project

In the context of an EPC contract, VERGNET was in charge of the project "Ashegoda Wind Farm" in Ethiopia.

With a capacity of 120 MW, it was the largest wind farm in sub-Saharan Africa at the start of the project (October 2009).

With the supply and installation of wind turbines, this project also includes the construction of roads to access the turbines (about 35 km in total), power grids (underground and aerial 33 kV) and the 33kV / 230kV substation which injects the energy produced into the national transport network.

Key features

- Definition and follow-up of the soil testing campaign
- Geotechnical synthesis
- Design of cable anchors
- Follow-up and interpretation of the micropiles pull-out tests
- Follow-up of the foundations execution

Our Services

TERRASOL carried out, on behalf of VERGNET, the geotechnical studies for the wind turbines' foundations, including the design of the anchoring micropiles for the stays of the turbines, as well as their execution follow-up.

The geology of the Ashegoda site corresponds to the Mekele sedimentary basin and is formed by the marl-limestone layers of the Agula shale and the jurassic age Antalo limestone: essentially an alternation of calcareous beds and marly layers of pluridecimeteric to plurimetric thickness.

The 6 wires of each device are anchored with micropiles which undergo cyclically varying traction forces.

TERRASOL developed a design method based on the concept of a cyclic stability diagram: this approach consists in defining a stability domain of the cyclic sollicitations in a plane with their average component in abscissa and their cyclical component in ordinate, and then comparing this domain resulting from the properties of the micropile and of the surrounding soil with the cyclic forces endured by the foundation.

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