

POST-TENSIONED CONCRETE WIND TURBINE BASES DENMARK

CCL Client: Siemens

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Vertical post-tensioning was carried out on three 84-metre-high concrete wind turbine bases by Skandinavisk Spændbeton, using 9-15 and 5-15/1-15 tendons.

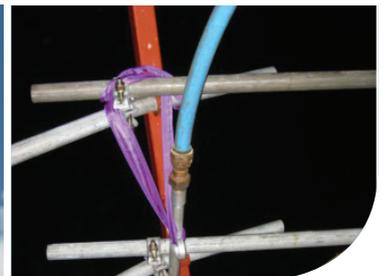
Ten 9-15 tendons, which started in a horizontal plane in the tower foundation, passed through a 90° steel tube and continued all the way up to the top of the structure within a plastic tube. From here they were fed into the ducts that ran from the top to the bottom of the tower.

This method of strand location was selected over the alternative method of pushing the strand into the base of the tower and then up to the top, because of the height of the tower. The 9-15 tendons were stressed at the top of the tower using a multistrand jack that was suspended from a small steel crane, constructed at the top of the tower.

A special grout, which could withstand very high pressure was then pumped up the entire 84 metres of the tower through valves that were built into the side of the structure at the base. The capacity of the grout pump was increased to ensure that the grout reached the top in one operation, and the ducts were locked into position in order to withstand the pressure.

Ten 5-15 unbonded tendons began approximately nine metres from the bottom of the tower and stretched upwards, ending as 1-15 cables at a height of 50-52 metres. Anchors were installed on the 1-15 cables at intervals of 0.5m because of space restrictions.

Stressing of the 5-15 cables, using a monostrand jack, was carried out from inside the tower at the bottom of the tendon, which, at a height of nine metres, was accessed by means of a lift. After the stressing was complete and the strands cut, plastic caps were secured to protect the strands from the concrete.



Post-Tensioning - Skandinavisk Spændbeton

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