

## Norwin Support to Tower Factories

Norwin is an established wind turbine technology company that designs and offers some of the most reliable wind turbines in the mid-size range based on the Danish design concept.

Norwin has been in the wind turbine business since 1992, and with roots going back to the beginning of modern wind industry we have gained a broad and in-depth technological knowledge, which has made us an innovative, experienced and reliable partner for wind turbine customers.

In connection with set-up of tower factory production, we offer this broad and in-depth technological knowledge to our customers in terms of general consultancy, technology transfer, show how and know how.



Our support within tower factories may be divided into four categories:

### **Facility planning**

Assistance in: working out plant layout and preparation of production flow chart based on lean principles, selection of the correct tools and equipment, and determination of personnel requirements.

### **Production preparation**

Support in connection with preparation and testing of welding procedures (pWPS, PQR and WPS), preparation of NDT procedures and workout of coating manual and quality plans.

### **Production support**

Practical hands-on "Show-how" support in connection with steelwork and welding, surface treatment and mounting of internals. Support in connection with preparation of production record packages based on customer requirements and the quality control system.

### **Inspection and Audit**

Execution of Audit of the quality system, incoming inspection of materials and components, process Audit (a hands-on audit, following the production), in-process inspection, trial assembly (assembly and inspection of the black tower before surface treatment), and First Article Inspection (inspection of completed tower sections after painting and mounting of internals).



## OUR LATEST PROJECTS

### Global Wind Power Ltd., India

Global Wind Power (GWPL) is a wind turbine manufacturer with tower factory and nacelle assembly facilities located near Silvassa, 140 km north from Mumbai. GWPL has a license agreement with Norwin and in 2008 they started production of the Norwin 47 - 750 kW turbine in Silvassa. The tower factory is designed to have an overcapacity compared with the need for towers for GWPL wind turbines and has today obtained a record of delivering towers for the leading wind turbine companies such as Vestas, Siemens and GE.



During the facility planning period of the tower factory, Norwin assisted with plant layout and selection of tools and equipment. As part of the production preparation Norwin assisted in preparation and testing of welding procedures, preparation of NDT procedures, and workout of manuals and quality plans. Furthermore, Norwin was in charge of the various inspections throughout the project and made audits on the quality system, the production processes, and trial assembly.

GWPL is today a high quality wind turbine tower manufacturer.



### Ventower Industries LLC, Michigan, USA

Ventower is a newly started independent wind turbine manufacturer located in Monroe, Michigan. The first order taken by Ventower was three 65m towers for Aeronautica Windpower in Massachusetts, the Norwin license partner in USA. During production of the first towers, Ventower agreed with Norwin to support the process with know-how and show-how to ensure lean production, compliance with specifications, and the delivery of high-quality towers. The Norwin team have been present at the premises in Monroe for a longer period from audit in the production preparation period, to show-how during production and FAI of completed tower sections.

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