

Wind PRO

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impact and tracking the production with Park calculations in the Optimize controller. Such a procedure could follow a full optimize or Auto fill optimization to give an initial layout.

A second option, which will be explained below is to find the optimal operation strategy given a fixed layout. Since many turbine types can be reduced in noise output at the cost of production it may be possible to allow a layout which would otherwise not comply with noise restrictions. The noise optimization in WindPRO finds the optimal way to reduce the turbine output at the minimal production loss.

8.1.5.1 Noise reduced WTG's

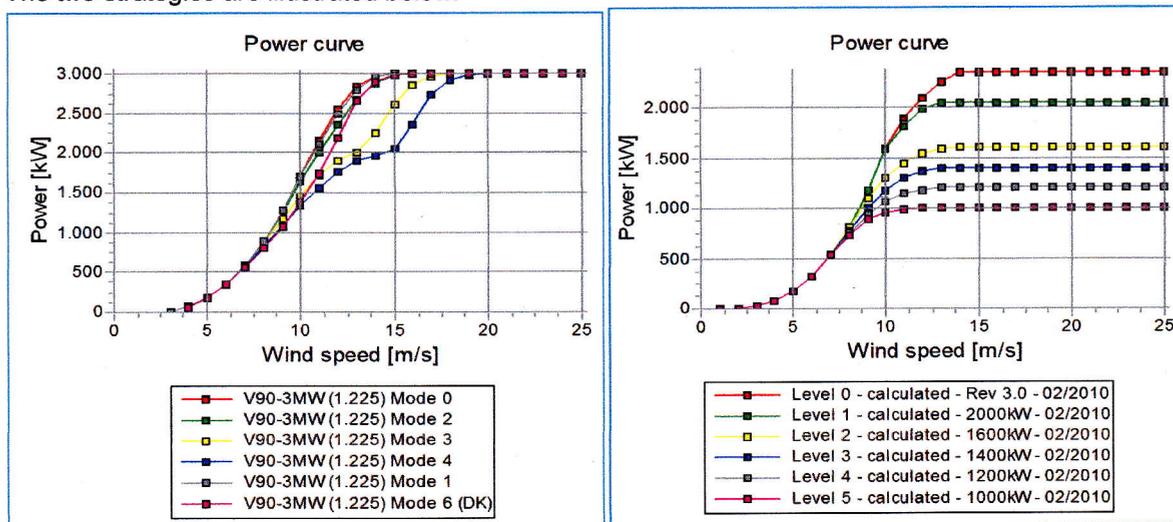
WTG's can often be reduced in noise at the expense of production output. These reduced states are referred to as operation modes. The standard operation mode is labeled Level 0 and will usually be the default setting for the turbine type in WindPRO.

There are two typical strategies for reducing noise.

One method is to reduce the noise emission at specific wind speeds and then let it resume full power above the critical wind speeds. This is sometimes referred to as **the Danish model**, and would be the preferred choice when noise impact is restricted at specific wind speeds.

Another method is to cap the production output and thus reduce the noise. This is sometimes referred to as the German model and is used when the noise codes require noise to be calculated for the maximum noise level.

The two strategies are illustrated below.



In the Basis section of the manual it is described how to select specific noise data and power curves for the WTG object. For the Optimize functions this feature is expanded.

If the hatch is removed from the "Always use default values" box on the WTG(s) tab in WTG properties the individual settings becomes available. Hatch the "Adv." box to enter the advanced mode.

There are two purposes for the advanced mode. Optimize and Lden. The Lden purpose is covered in the Decibel section of the manual. Unfortunately it is not possible to use the optimize functions if the turbine is setup with Lden definitions.

Select the Optimize purpose. Setting 0 is automatically defined with default power curve and noise data. Select a level 0 power curve and a level 0 noise record for the turbine. Be sure the same level is chosen for both power curve and noise record.

Press the “+” button to create the next setting and fill in level 1 power curve and noise data. The three other buttons now become active. The “-” button remove a setting, while the arrow up and down buttons move between the different settings.

The “Use” button indicates which setting is currently used for this turbine.

Press OK to leave the turbine.

If there are many turbines in the project it is useful to highlight objects in the object list and choose “Edit selected objects” and there set the advanced settings.

8.1.5.2 Noise sensitive areas.

The noise sensitive areas to be used for the optimization must be defined on the map. Section 4.1.2.2 explains how to insert and the function of noise sensitive points.