



Note on Engineering Details

No: DWM-Schl-extern-002

Title: **Partial Safety Factor γ_M for Bolts**

Ref.: GL Wind "Guideline for the Certification of Wind Turbines", Edition 2003 with Supplement 2004, Section 5.3.2.1 Par 4 and 6.5.2

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Key Words: bolt, bolted connection, partial safety factor, γ_M

The value for the Partial Safety Factor γ_M to be used for the dimensioning of bolts in bolted connections has been subject of intensive discussions recently.

In design calculations for static strength analyses done in accordance to our Guideline

GL Wind "Guideline for the Certification of Wind Turbines", Edition 2003 with Supplement 2004

Sections 5.3.2.1 Para 4 "General strength analysis" and 6.5.2 "Strength analyses of bolted connections" the Partial Safety Factor γ_M for the bolt material may be set to:

$$\gamma_M = 1.0$$

if the torsional loading on the bolt as well as the tensional and bending loading is taken into account in the calculations.

This does not influence the requirements on fatigue analysis in other sections of the Guideline mentioned above.

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