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Wind energy conversion affected by turbulent wind conditions JOACHIM PEINKE, MATTHIAS WAECHTER, PATRICK MILAN, ForWind University of Oldenburg — Wind turbines are put up into the turbulent boundary layer of windy regions. The standard operational description is mainly based on simple statistical quantities like averaged wind speeds and turbulence degree (standrad deviation). Short time fluctuations are expected to be Gaussian. In this contribution we show that the intermittent - non Gaussian structure of small scale wind turbulence plays an important role for the working condition of a wind turbine and leads to additional mechanical loads as well as to fluctuations of the power production with many short time extreme events.

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