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Abstract: This paper presents new integrated model for variable-speed wind energy conversion systems, considering a more accurate dynamic of the wind turbine, rotor, generator, power converter and filter. Pulse width modulation by space vector modulation associated with sliding mode is used for controlling the power converters. Also, power factor control is introduced at the output of the power converters. Comprehensive performance simulation studies are carried out with matrix, two-level and multilevel power converter topologies in order to adequately assert the system performance. Conclusions are duly drawn. (c) 2010 Elsevier Ltd. All rights reserved.

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