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**Title:** A hybrid PSO-ANFIS approach for short-term wind power prediction in Portugal

**Source:** ENERGY CONVERSION AND MANAGEMENT, 52 (1): 397-402 JAN 2011

**Language:** English

**Document Type:** Article

**Author Keywords:** Wind power; Prediction; Swarm optimization; Neuro-fuzzy

**KeyWords Plus:** NEURAL-NETWORK APPROACH; FUZZY INFERENCE SYSTEM; ARIMA MODELS; SPEED; GENERATION; ALGORITHMS

**Abstract:** The increased integration of wind power into the electric grid, as nowadays occurs in Portugal, poses new challenges due to its intermittency and volatility. Wind power prediction plays a key role in tackling these challenges. The contribution of this paper is to propose a new hybrid approach, combining particle swarm optimization and adaptive-network-based fuzzy inference system, for short-term wind power prediction in Portugal. Significant improvements regarding forecasting accuracy are attainable using the proposed approach, in comparison with the results obtained with five other approaches. (C) 2010 Elsevier Ltd. All rights reserved.

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**Publisher:** PERGAMON-ELSEVIER SCIENCE LTD

**Publisher Address:** THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, ENGLAND

**ISSN:** 0196-8904

**DOI:** 10.1016/j.enconman.2010.07.015

**29-char Source Abbrev.:** ENERG CONV MANAGE

**ISI Document Delivery No.:** 687AT