

Fault detection methods for tower sensors

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Abstract—The abstract goes here.

I. INTRODUCTION

Renewable energy source is playing an important role in the global energy mix, as a mean of reducing the impact of energy production on climate change.

Supervisory control and data acquisition (SCADA) is an application that collects data from a system and sends them to a central computer for monitoring and controlling. Current CM systems essentially provide the necessary sensor and capability of data capture required for monitoring A wind turbine (WT) is a machine used for converting the kinetic energy in wind into mechanical energy.

A. Notas bibliografica

Diagnosis and prognosis of the wind turbine based upon SCAD data using a AI based framework [1].

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[6] Survey of the wind turbine condition monitoring done in 2014 [7].

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Exploration of exisisting wind turbine SCADA data fro development of fault detections and diagnostic technicaques for wind turbine using clustering algorithms and principal components analysis [9].

II. FAILURE IN THE SENSOR TOWERS

III. SENSOR TOWER DIAGNOSTICS WITH SCADA DATA

IV. ALGORITHMS

V. RATIO

VI. PEARSON CORRELATIONS

VII. RESULTS AND DISCUSSION

VIII. CONCLUSION

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REFERENCES

- [1] K.-S. Wang, V. S. Sharma, and Z.-Y. Zhang, "Scada data based condition monitoring of wind turbines," *Advances in Manufacturing*, vol. 2, no. 1, pp. 61–69, 2014.
- [2] A. Kusiak and W. Li, "The prediction and diagnosis of wind turbine faults," *Renewable Energy*, vol. 36, no. 1, pp. 16–23, 2011.
- [3] B. Lu, Y. Li, X. Wu, and Z. Yang, "A review of recent advances in wind turbine condition monitoring and fault diagnosis," in *2009 IEEE Power Electronics and Machines in Wind Applications*. IEEE, 2009, pp. 1–7.
- [4] M. Schlechtingen and I. Santos, "Condition monitoring with ordinary wind turbine scada data—a neuro-fuzzy approach," in *Offshore 2011*, 2012.
- [5] M. Schlechtingen and I. F. Santos, "Comparative analysis of neural network and regression based condition monitoring approaches for wind turbine fault detection," *Mechanical systems and signal processing*, vol. 25, no. 5, pp. 1849–1875, 2011.
- [6] W. Yang, P. J. Tavner, C. J. Crabtree, Y. Feng, and Y. Qiu, "Wind turbine condition monitoring: technical and commercial challenges," *Wind Energy*, vol. 17, no. 5, pp. 673–693, 2014.
- [7] P. Tchakoua, R. Wamkeue, M. Ouhrouche, F. Slaoui-Hasnaoui, T. Tameghe, and G. Ekemb, "Wind turbine condition monitoring: State-of-the-art review, new trends, and future challenges," *Energies*, vol. 7, no. 4, pp. 2595–2630, 2014.
- [8] M. L. Wymore, J. E. Van Dam, H. Ceylan, and D. Qiao, "A survey of health monitoring systems for wind turbines," *Renewable and Sustainable Energy Reviews*, vol. 52, pp. 976–990, 2015.
- [9] K. Kim, G. Parthasarathy, O. Uluyol, W. Foslien, S. Sheng, and P. Fleming, "Use of scada data for failure detection in wind turbines," National Renewable Energy Lab.(NREL), Golden, CO (United States), Tech. Rep., 2011.