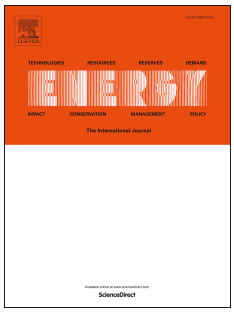
Accepted Manuscript



Maintenance optimization of power systems with renewable energy sources integrated

E. Shayesteh, J. Yu, P. Hilber

PII: S0360-5442(18)30294-9

DOI: 10.1016/j.energy.2018.02.066

Reference: EGY 12366

To appear in: *Energy*

Received Date: 1 November 2016

Revised Date: 12 February 2018

Accepted Date: 14 February 2018

Please cite this article as: Shayesteh E, Yu J, Hilber P, Maintenance optimization of power systems with renewable energy sources integrated, *Energy* (2018), doi: 10.1016/j.energy.2018.02.066.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Maintenance Optimization of Power Systems with Renewable Energy Sources Integrated

E. Shayesteh[1], J. Yu, and P. Hilber

School of Electrical Engineering, KTH Royal Institute of Technology, Stockholm, Sweden

Abstract - This paper proposes a quantitative maintenance optimization problem for developing reliability centred maintenance for a power system with renewable energy sources. Reliability and cost are two important interlinked aspects considered by system operators in many deregulated power systems. Reliability centred maintenance is an effective method to consider both of these aspects when performing the maintenance optimization. Nevertheless, this method has not adequately studied for a power system with renewable energy sources included.

According to the maintenance optimization problem proposed in this paper, first, the most critical components of the system are selected. Then, a set of maintenance strategies are proposed for all critical components. After that, the total cost of each maintenance strategy for all critical components are calculated as the summation of operation, maintenance, environmental, and interruption costs. Finally, the best maintenance strategy for each critical component is selected by identifying the lowest total cost of different maintenance strategies. The proposed method is tested on IEEE 14-bus system. The results show that the proposed maintenance optimization method provides a useful way for deciding the most proper maintenance strategies for the studied system.

Keywords: Power system maintenance optimization, Renewable Energy Sources (RES), Reliability Centred Maintenance (RCM), Environmental cost calculation, Severity Risk Index (SRI).

[1] Corresponding author. Tel.: +46 8 790 6258; fax: +46 8 790 6510
Email addresses: ebrahim.shayesteh@ee.kth.se (E. Shayesteh); jia.yu@hotmail.com (J. Yu); patrik.hilber@ee.kth.se (P. Hilber).

Download English Version:

https://daneshyari.com/en/article/8071944

Download Persian Version:

https://daneshyari.com/article/8071944

Daneshyari.com