





Najran University
College of Engineering
Electrical Engineering Department



EE publication list from 1/5/2018 till 1/5/2019


Journals publication




No	Article Title	Authors	Journal Title	Date	ISSN	Impact factor ISI/ SCOPUS	Evidences
1.	Super ultra-high resolution liquid-crystal-display using perovskite quantum-dot functional color-filters.	Yun-Hyuk Ko, Mohammed Jalalah, Seung-Jae Lee, Jea-Gun Park	Scientific Report	2018		ISI 4.122	

2.	Correlating nano black spots and optical stability in mixed halide perovskite quantum dots	Yun-Hyuk Ko, Prem Prabhakaran, Mohammed Jalalah, Seung-Jae Lee, Kwang-Sup Lee, Jea-Gun Park	Journal of Materials Chemistry C	2018		ISI 5.976	
3.	One-pot gram-scale, eco-friendly, and cost-effective synthesis of CuGaS ₂ /ZnS nanocrystals as efficient UV-harvesting down-converter for photovoltaics	Mohammed Jalalah, M. S. Al-Assiri, Jea-Gun Park	Advanced Energy Materials	2018		ISI 21.875	
4.	Nanoscale CuO solid-electrolyte-based conductive-bridging, random-access memory cell with a TiN liner	Jong-Sun Lee, Dong-Won Kim, Hea-Jee Kim, Soo-Min Jin, Myung-Jin Song, Ki-Hyun Kwon, Jea-Gun Park, Mohammed Jalalah, Ali Al-Hajry	Journal of the Korean Physical Society	2018		ISI 0.493	
5.	Dispersive optical power splitter: assessment through time domain techniques	M. S. Akond	Opt Quant Electron 50:221	2018		ISI 1.168	



6.	A Novel Non-Intrusive Method to Diagnose Bearings Surface Roughness Faults in Induction Motors	Muhammad Irfan	Journal of Failure Analysis and Prevention	2018			
7.	An unsupervised automated method to diagnose induction motor faults	M. Aman, Nordin Saad, Nursyarizal Bin Mohd Nor, Sheikh Tahir and Muhammad Irfan	Journal of Fundamental & Applied Sciences	2018			
8.	Safety Measurement of Electromagnetic Field Radiation from Mobile Stations at a Najran City in KSA	A. H. M. Almawgani	Global Journal of Engineering Science and Research Management	2019	2349-4506		 1.pdf
9.	Design and Development of Mobile Charging System Using Thermoelectricity	A. H. M. Almawgani, A. T. Hindi, Muhammed Irfan, Hisham Alghamidi, Saifur Rahman	Indonesian Journal of Electrical Engineering and Computer Science	2018	2502-4760	SCOPUS Q3: 0.18	 2.pdf

10.	Design Of Real Time Smart Traffic Light Control System	A. H. M. Almwagani	International Journal of Industrial Electronics and Electrical Engineering	2018	2349-204X		 4.pdf
11.	Design and Development of a Smart Parking System	Mohammed Omar Ba Sabbea, Muhammed Irfan, Saeed Karama ALtamimi, Saeed Mabkhot Saeed, A. H. M. Almwagani, Hisham Alghamdi	Journal of Automation and Control Engineering	2018	2301-3702	IET	 5.pdf
12.	Fuzzy Based Hybrid Incorporating Wind Solar Energy Source by reduced Harmonics.	Ramya K C, K Vinoth Kumar, Muhammad Irfan, Shaghayegh Mesforush, Mohanasundaram K and Vijayakumar V	Special Issue on Intelligent, Smart and Scalable Cyber-Physical Systems, Journal of Intelligent & Fuzzy Systems	2019		ISI 1.426	https://content.iospress.com/articles/journal-of-intelligent-and-fuzzy-systems/ifs169982

13.	<p>An Automated Spectral Extraction Algorithm for the Fault Diagnosis of Gears</p>	<p>Muhammad Irfan, Nordin Saad, Alwadie A, M. Aman, M Awais, V. Kumar</p>	<p>Journal of Failure Analysis and Prevention</p>	<p>2019</p>	<p>98-105</p>	<p>ISI</p>	
14.	<p>Cost Optimization By adding SPV Plant at Load end In a Grid Connected System</p>	<p>Faizan Arif Khan, S. Hasan Saeed, Mohammed Asim, Saifur Rahman, Prabhat Ranjan Sarkar</p>	<p>International Conference on Computational and Characterization Techniques in Engineering & Sciences (CCTES)</p>	<p>2018</p>	<p>978-1-5386-4254-2/18/\$31.00 ©2018 IEEE</p>	<p>IEEE</p>	

15.	Lung Tumour Detection using Ultra-Wideband Microwave Imaging Approach	Adam R. H. Alhawari	Journal of Fundamental and Applied Sciences	2018	1112-9867	Emerging Sources Citation Index (ESCI)	 Lung Tumour Detection.pdf
16.	Near-field and far-field investigation of miniaturized UWB antenna for imaging of wood	Tale Saeidi , Idris Ismail, Adam R. H. Alhawari, and Wong Peng Wen	AIP Advances	2019	2158-3226	ISI 1.653	 Near-field and far-field investigatio
17.	Ultra-Wideband Antennas for Wireless Communication Applications	Tale Saeidi, Idris Ismail, Wong Peng Wen, Adam R. H. Alhawari, and Ahmad Mohammadi	International Journal of Antennas and Propagation	2019	1687-5877	ISI 1.378	 7918765.pdf
18.							
19.							
20.							
21.							
22.							
23.							
24.							

Conferences publication

No.	Article Title	Authors	Conference Title	Place and Data	Evidences
1.	Smart and Efficient Energy Saving System Using PDLC Glass	Hisham Alghamidi and A.H.M. Almawgani	Smart Cities Symposium	Prague 2019	 1.pdf
2.	Smart Parking System for Monitoring Cars and Wrong Parking	Faris Alshehri, A. H. M. Almawgani, Ayed Alqahtani, Abdurahman Alqahtani	IEEE International conference on Computer Applications & Information Security, ICCAIS'2019.	Riyadh, Saudi Arabia 2019	 2 ver 3.pdf

3.

Analysis of Bearing Faulty Cage using Non-Intrusive Condition Monitoring Techniques ,”

Muhammad Irfan, Alwadie. A, Nordin Saad, Muhammad Aman Sheikh

International Conference on Renewable Energies and Power Quality (ICREPQ)

Tenerife, Spain, April, 2019



Analysis of Bearing Faulty Cage using Non-Intrusive Condition Monitoring Techniques

Muhammad Irfan¹, Alwadie. A², Nordin Saad³, Muhammad Aman Sheikh⁴
¹College of Engineering, Electrical Engineering Department, Najran University, King Abdulaziz Road, Najran, Saudi Arabia
²Electrical and Electronic Engineering Department, Universiti Teknologi PETRONAS, Bandar Seri Iskandar, Tronoh, Malaysia
alwadie@hotmail.com²

Abstract— The cage is an important element of the bearing. The cage is used to support the bearing balls and it maintains the fix distance between rotating balls. The defected cage could create defects in the balls and race ways of the bearing. It could lead to premature failure of the bearing which causes machine down time, production loss and huge maintenance cost. Traditionally, periodic checks of the bearing health are performed in industry but they did not avoid the bearing cage failures. Thus, it is essential to develop some real-time health monitoring system to analyze the status of bearing cage. Recent research developments on the bearing fault diagnosis have that non-intrusive stator current and power analysis techniques are most economical and simple as compared to intrusive vibration analysis techniques. However, a limited research has been conducted to check and confirm the effectivity of stator current and power analysis techniques for the diagnosis of cage faults. Thus, the aim of this paper is to analyze cage faults using non-intrusive stator current and power analysis. The comparison of both techniques have been performed experimentally and it has been concluded that power analysis is a most suitable technique to diagnose cage faults.

Keywords: Cage Faults, Non-Intrusive Condition Monitoring, Harmonic Analysis, LabVIEW based Signal Processing.

1. Introduction

Cage is used to maintain a fix distance between balls of the bearing. The load applied on the shaft is transformed to the bearing balls. If balls are positioned at an equal distance then the load will be equally transferred to all balls. The balls of the bearing rotate between race ways [1-5]. Thus, to maintain the uniform motion of the shaft and to distribute the shaft load equally among all balls, the cage plays an important role. The

failure of the cage will cause failure of race ways and eventually failure of the bearing [6-8]. The health of cage could be estimated through periodic checks but it could not guarantee the trouble free operation of the bearing and unexpected breakdowns could occur.

The conventional vibration analysis method could be opted for continuous health monitoring of various elements of the bearing. However, expertise for complex data analysis and high cost of the vibration sensors is the limitation of the vibration analysis technique [9-12].

In a recent years, researchers have developed economical condition monitoring techniques whose data interpretation is simple and easy. The motor current analysis and power analysis are among the methods known as non-intrusive and economical ways for fault diagnosis of the bearing [13, 14].

The Hilbert transform was used by the [15] to analyze the single point defects in bearing race ways. The simulated and experimental results indicate that Hilbert transform has the ability to diagnose faults in race ways. A hybrid approach was adopted by [16] to analyze the eccentric and bearing faults. The data was collected through multi-sensors like vibration sensor, acoustic sensor and current sensor and analyzed using Hilbert-Huang transform. They recorded the true detection rate of approximately 99.9%. The envelope analysis method was used by [17] to diagnose the bearing local faults in the presence of external vibration. The external vibration was simulated using the vibration shaker. In an extended work [18] studied the multiple load faults in bearing using vibration monitoring technique. They concluded that frequency domain analysis provides same frequency information for single fault and multiple faults. However, the amplitude has been observed to be increased in multiple local faults. Motor current analysis was used by [19] to analyze bearing faults using Fast Fourier Transform (FFT) and wavelet transform. Power analysis approach was used to analyze faults in bearing race ways and it was concluded that power

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.				
15.				
16.				
17.				
18.				
19.				

Book chapter

No.	Chapter Title	Authors	Publisher	Data
1.	Invasive Methods to Diagnose Stator Winding and Bearing Defects of an Induction Motors: Invasive Methods to Diagnose Stator Winding and Bearing Defects of an Induction Motors	Muhammad Aman, Nursyarizal, Nordin Saad and Muhammad Irfan	<i>Advanced Condition Monitoring and Fault Diagnosis of Electric Machines</i> (ISBN: 978-1-5225-6989-3)– IGI Global	September 2018
2.	Advanced fault diagnosis monitoring scheme in Asynchronous motor Using Soft Computing method	K. Vinoth Kumar, Ramya K. C and Muhammad Irfan	<i>Advanced Condition Monitoring and Fault Diagnosis of Electric Machines</i> (ISBN: 978-1-5225-6989-3)– IGI Global	September 2018
3.				
4.				
5.				
6.				
7.				
8.				

9.				
10.				
11.				
12.				
13.				
14.				
15.				