

Wireless Power Transmission - Exploring Source to Load Inductive Link Under Resonance and Varying Load Condition

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Abstract

Wireless Power Transmission for powering up of the electronic gadgets, electric vehicles, and biomedical implants is being researched heavily these days. It has been proving to be the only in the electric vehicles battery charging systems, as it is hassle free, more efficient and easy to install. In many-to-one as well in one-to-many power transfer selective resonant technique plays a vital role. The many-to-one principle is mainly in the battery charging system of electric vehicles. This paper explores the source-to-load-coil (one - to-one and one-to-two) links using the magnitude of the reflective impedance (ZRef) as a parameter estimating the power transfer efficiency. The analytic expressions and simulation results have been explored in this analysis, showing the effect of resonant and load matching.

Keywords

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1. **Characterization of inductive changes by resonant circuit technique** Times Cited: 2
By: Arshad, Atika; Ngah, Bt Awang; Athirah, Nur; et al.
SMART INSTR MEAS APP Pages: 1-4 Published: 2014
Publisher: IEEE
[\[Show additional data\]](#)
2. **Wireless power transfer system via magnetic resonant coupling at fixed resonance frequency-Power transfer system based on impedance matching** Times Cited: 8
By: Beh, T.; Kato, M.; Imura, T.; et al.
WORLD ELECT VEHICLE Volume: 4 Pages: 744-753 Published: 2010
[\[Show additional data\]](#)
3. **Wireless Power Transmission System Based on Magnetic Inductive Resonance of Couple Circuit** Times Cited: 1
By: Bobby, Rounakul I.; Mansor, Hasmah B.; Gunawan, Teddy S.; et al.
2014 INTERNATIONAL CONFERENCE ON COMPUTER AND COMMUNICATION ENGINEERING (ICCCCE) Pages: 107-110 Published: 2014
4. **Optimized magnetic design for inductive power transfer coils** Times Cited: 6
By: Bosshard, R.; Muhlethaler, J.; Kolar, J. W.; et al.
P 28 APPL POW EL C E Published: 2013
[\[Show additional data\]](#)
5. **Dipole-Coil-Based Wide-Range Inductive Power Transfer Systems for Wireless Sensors** Times Cited: 25
By: Choi, Bo H.; Thai, V. X.; Lee, Eun S.; et al.
IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS Volume: 63 Issue: 5 Pages: 3158-3167 Published: MAY 2016
6. **Advances in Wireless Power Transfer Systems for Roadway-Powered Electric Vehicles** Times Cited: 184
By: Choi, Su Y.; Gu, Beom W.; Jeong, Seog Y.; et al.
IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS Volume: 3 Issue: 1 Special Issue: SI Pages: 18-36 Published: MAR 2015
7. **Wireless power transmission: an innovative idea** Times Cited: 11
By: Choudhary, V.; Singh, S. P.; Kumar, V.; et al.
International Journal of Educational Planning & Administration Volume: 1 Issue: 3 Pages: 203- 210 Published: 2011
[\[Show additional data\]](#)
8. **ON CERTAIN INTEGRALS OF LIPSCHITZ-HANKEL TYPE INVOLVING PRODUCTS OF BESSEL FUNCTIONS** Times Cited: 1,261
By: EASON, G; NOBLE, B; SNEDDON, IN
PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY OF LONDON SERIES A-MATHEMATICAL AND PHYSICAL SCIENCES Volume: 247 Issue: 935 Pages: 529-551 Published: 1955
9. Title: [not available] Times Cited: 141
By: Elissa, K.
UNPUB
unpublished Title of paper if known
10. **Analysis of Power Transfer Efficiency of Inductive Coupled Telemetry System for Wireless Power Transfer** Times Cited: 3
By: Habib, Mohammad Shawkat; Rahman, Mohammad Mizanur; Arshad, Atika; et al.
2014 INTERNATIONAL CONFERENCE ON COMPUTER AND COMMUNICATION ENGINEERING (ICCCCE) Pages: 32-35 Published: 2014
11. **Detection of breast cancer cells using targeted magnetic nanoparticles and ultra-sensitive magnetic field sensors** Times Cited: 66
By: Hathaway, Helen J.; Butler, Kimberly S.; Adolph, Natalie L.; et al.
BREAST CANCER RESEARCH Volume: 13 Issue: 5 Article Number: R108 Published: 2011
12. **Design and realization of a four coils excited wireless power transmission region via magnetic resonances** Times Cited: 1
By: Huang, Juntao.
APPL POW EL C EXP AP Published: 2014

13. **Fine particles, thin films and exchange anisotropy (effect of finite dimensions and interfaces on the basic properties of ferromagnets)** Times Cited: **1,234**
 By: Jacobs, I.S.; Bean, C.P.
 Magnetism Pages: 271-344 Part: Vol.3 Abstract Number: A1964-17637 Published: 1963
14. **Topology Selection and Efficiency Improvement of Inductive Power Links** Times Cited: **57**
 By: Jegadeesan, Rangarajan; Guo, Yong-Xin
 IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION Volume: 60 Issue: 10 Pages: 4846-4854 Published: OCT 2012
15. **Wireless Transfer of Power to Low Power Implanted Biomedical Devices: Coil Design Considerations.** Times Cited: **3**
 By: Khan, Imran M.; Khan, Sheroz; Khalifa, Othman O.
 INSTR MEAS TECHN C I Pages: 1-5 Published: 2012
 Publisher: IEEE
16. **Design and Analysis of a Resonant Reactive Shield for a Wireless Power Electric Vehicle** Times Cited: **72**
 By: Kim, Seonghwan; Park, Hyun-Ho; Kim, Jonghoon; et al.
 IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES Volume: 62 Issue: 4 Special Issue: SI Pages: 1057-1066 Part: 2 Published: APR 2014
17. **Resonant System for Wireless Power Transmission to Multiple Receivers** Times Cited: **2**
 Patent Number: 9,231,412
 Inventor/Assignee: Lisi, G.; Socci, G.G.; Djabbari, A.; et al.
 US Patent Published: 5 January 2016
[\[Show additional data\]](#)
18. Title: [not available] Times Cited: **1,895**
 By: Maxwell, J. Clerk.
 a Treatise on Electricity and Magnetism Volume: 2 Pages: 68-73 Published: 1892
 C. H. Xie, Y. M. Cheng, and Y. K. Chen, PN Sequence Estimation and Spread-Spectrum Steganalysis, Acta Electronica Sinica, vol. 2, pp. 255-259, 2011
 Publisher: Clarendon, Oxford
19. **Title of paper with only first word capitalized** Times Cited: **510**
 By: Nicole, R.
 J. Name Stand. Abbrev.
 in press
20. **Smart Zigbee/IEEE 802.15.4 MAC for Wireless Sensor Multi-Hop Mesh Networks** Times Cited: **1**
 By: Shabani, Hikma; Ahmed, Musse Mohamud; Khan, Sheroz; et al.
 PROCEEDINGS OF THE 2013 IEEE 7TH INTERNATIONAL POWER ENGINEERING AND OPTIMIZATION CONFERENCE (PEOCO2013) Pages: 282-287
 Published: 2013
21. **Optimization Design of an Inductive Energy Harvesting Device for Wireless Power Supply System Overhead High-Voltage Power Lines** Times Cited: **9**
 By: Wang, Wei; Huang, Xueliang; Tan, Linlin; et al.
 ENERGIES Volume: 9 Issue: 4 Article Number: 242 Published: APR 2016
22. **Electron spectroscopy studies on magneto-optical media and plastic substrate interface** Times Cited: **253**
 By: Yorozu, T.; Hirano, M.; Oka, K.; et al.
 IEEE Translation Journal on Magnetism in Japan Volume: TJMJ-2 Issue: 8 Pages: 740-1 Published: Aug. 1987
23. Title: [not available] Times Cited: **1,367**
 By: Young, M.
 TECHNICAL WRITERS HD Published: 1989
 Publisher: University Science, Mill Valley CA
24. **Selective Wireless Power Transfer to Multiple Loads Using Receivers of Different Resonant Frequencies** Times Cited: **47**
 By: Zhang, Yiming; Lu, Ting; Zhao, Zhengming; et al.
 IEEE TRANSACTIONS ON POWER ELECTRONICS Volume: 30 Issue: 11 Pages: 6001-6005 Published: NOV 2015

