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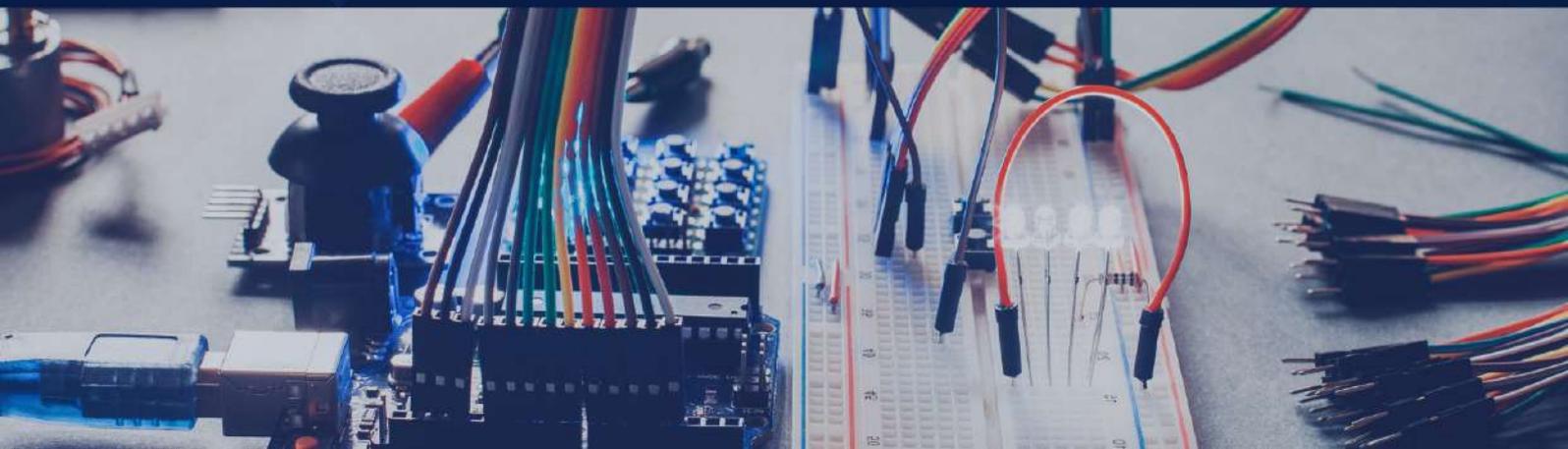
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CONTENTS

1	WIND ENERGY SYSTEM WITH BETTER POWER QUALITY INTERFACED TO THREE PHASE GRID Muthusudar H, Nanthini T, Sanju	1
2	MOBILE ROBOT RACING WITH AN INTELLIGENT HYBRID FUZZY PID CONTROLLER Ranjith C, Raja C1, M Jibin	1
3	WISE ADAPTER SRIKANDAN M, SURESH KRISHNA N, AMUTHA PRIYA N	2
4	A DETAILED STUDY OF THE OPPORTUNITIES AND CHALLENGES OF DRIVING ELECTRIC VEHICLES IN INDIA Renuka Devi S, Rethinakumar S, Mrs. Thanga sakthi	2
5	REVIEW OF PHOTO VOLTAIC ELECTRIC MOBILITY Pon Sudhan R, Prakash M, Pravin Gino D, Mrs. Nithya	3
6	A HIGH BOOST DC/DC CONVERTER COMPARISON Vaikundaraja, Vegin M, Dr. Jabash Samuel G K	3
7	THERMAL POWER PLANT BOILER TUBE LEAK DETECTION SYSTEM BASED ON OPTIMAL ESTIMATION Naveen kumar. M, Rahul. H, Dr. Jabash Samuel GK	4
8	METHODOLOGY OF MAGNETO HYDRODYNAMIC POWER GENERATION AND ITS APPLICATION Gopinath H, Dyson. K, Gopakumar S	4
9	POWER TRANSFER WITHOUT CONTACT FOR AUTOMATED GUIDED VEHICLES (AGVS) Arun jothi. K, Breeze. R. S, Jibin M	5
10	A MODIFIED BUCK BOOST CONVERTER WITH TWO SWITCHES IS EXAMINED Subash kumar. M, suresh Ram S.K, Basker C	5
11	PMSM DRIVE BASED STAND-ALONE WATER PUMPING SYSTEM Karthick. G, Muthukrishnan. N, V Ponselvan	6

Wind energy system with better power quality interfaced to three phase grid

Muthusudar H, Nanthini T, Sanju

Abstract:

In the grid new renewable resources are added to extract more power. This adds more of problems to grid connection. They are voltage fluctuations and harmonic distortion. In this paper various interfacing topologies are analyzed to get wind turbine power within the norms specified in IEC 61400-21. In this paper, a simplified control strategy is used. The front-end voltage source inverter is operated in hysteresis current control mode. The reference signals are derived from one of the phase voltage. The main objective of the proposed control is the three phase supply currents both in its waveform, magnitude and phase to follow three phase reference signals. When this is achieved, ideally the supply current will then be always sinusoidal, with robust control over its magnitude and phase, irrespective of the harmonics and unbalance of the load demand or the supply voltage system. This confirms nearly unity power factor on supply side with active and reactive power support from the wind turbine side.

Mobile robot racing with an intelligent hybrid fuzzy pid controller

Ranjith C, Raja C1, M Jibin

ABSTRACT

In this study, a design methodology is introduced that blends the classical PID and the fuzzy controllers in an intelligent way and thus a new intelligent hybrid controller has been achieved. Basically, in this design methodology, the classical PID and fuzzy controller have been combined by a blending mechanism that depends on a certain function of actuating error. Moreover, an intelligent switching scheme is induced on the blending mechanism that makes a decision upon the priority of the two controller parts; namely, the classical PID and the fuzzy constituents. The simulations done on various processes using the new hybrid fuzzy PID controller provides 'better' system responses in terms of transient and steady-state performances when compared to the pure classical PID or the pure fuzzy controller applications. The controller parameters are all tuned by the aid of genetic search algorithm.

WISE ADAPTER

Srikandan M, Suresh Krishna N, Amutha Priya N

Adapter method is a Structural Design Pattern which helps us in making the incompatible objects adaptable to each other. The Adapter method is one of the easiest methods to understand because we have a lot of real-life examples that show the analogy with it. The main purpose of this method is to create a bridge between two incompatible interfaces. This method provides a different interface for a class. We can more easily understand the concept by thinking about the Cable Adapter that allows us to charge a phone somewhere that has outlets in different shapes. Using this idea, we can integrate the classes that couldn't be integrated due to interface incompatibility.

**A DETAILED STUDY OF THE OPPORTUNITIES AND CHALLENGES OF
DRIVING ELECTRIC VEHICLES IN INDIA**

Renuka Devi S, Rethinakumar S, MRS. Thanga Sakthi

Abstract

Over the years, the exploitation and pollution of natural resources have created the need for renewable and environment-friendly products. One of these products is Electric Vehicles. Electric Vehicles are the replacement for petroleum-based vehicles. They are one of the emerging technologies as well as eco-friendly and viable. The replacement of internal combustion engines with electric engines Many countries around the globe have implemented this technology and are contributing towards amelioration of the environment. We are going to see the opportunities and challenged faced in India over implementing electric vehicles.

Keywords: Pollution; Electric Vehicle; Eco-Friendly; Lithium Battery Abstract Over the years, the exploitation and pollution of natural resources have created the need for renewable and environment-friendly products. One of these products is Electric Vehicles. Electric Vehicles are the replacement for petroleum-based vehicles. They are one of the emerging technologies as well as eco-friendly and viable. The replacement of internal combustion engines with electric engines will reduce pollution to a great extent and be profitable to consumers. Many countries around the globe have implemented this technology and are contributing towards amelioration of the environment. We are going to see the opportunities and challenged faced in India over

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implementing electric vehicles. Keywords: Pollution; Electric Vehicle; Eco-Friendly; Lithium Battery;

REVIEW OF PHOTO VOLTAIC ELECTRIC MOBILITY

Pon Sudhan R, Prakash M, Pravin Gino D, Mrs. Nithya

Abstract

Photovoltaic generation and electric mobility are disruptive technologies in the power and transport sectors, and both pose challenges for power grids. The scholarship has focused on potential synergies when these two technologies are combined, and recent research shows that interactions between photovoltaic generation and electric mobility could decrease the overall burden on power grids, and empower one technology with the other's specificities. Electric vehicles (EV) could use photovoltaic energy (PV) and benefit from cheap carbon-free electricity for charging. In return, PV systems could use the bi-directional flexibility of EV batteries to maximize their self-consumption. As these synergies operate, economic spillovers from these technologies are expected to improve, thus further leveraging their joint deployment.

Here we develop a systematic framework to review the various underlying conditions for synergy as they have been studied in the literature. It emerges that this synergy is driven by technical as well as economic factors. First, it happens in the mid-scale spatial configuration (large workplace buildings and charging stations) and less obviously at other scales (eg. households, territories) and in technologically diversified systems. Second, although under-studied in the literature, the economic context (level of cooperation between stakeholders, regulation and policy, etc.) of interactions between PV and EV is crucial for successful synergy. Finally, we identify several remaining issues with these conditions that warrant further research.

A HIGH BOOST DC/DC CONVERTER COMPARISON

Vaikundaraja, Vegin M, DR. Jabash samuel G K

Abstract: Recent environmental issues have accelerated the use of more efficient and energy saving technologies in renewable energy systems. High power high efficiency boost DC/DC converters for the use in photovoltaic, fuel cell systems are discussed in this paper from the

International Conference On Recent Innovations In Computer And Communication [ICRICC'20]

viewpoint of power losses and efficiency. State of the art converters with switching frequency within the range of 25 kHz with IGBTs to 100 kHz with power MOSFETs and the highest efficiency close to 98%, depending on the load conditions, is considered. A comparison and discussion of the highest efficiency high power DC/DC boost converters is also presented in this paper. Key words: boost DC/DC converters, high efficiency, high power, photovoltaic systems, renewable energy

THERMAL POWER PLANT BOILER TUBE LEAK DETECTION SYSTEM BASED ON OPTIMAL ESTIMATION

Naveen Kumar. M, Rahul. H, DR. Jabash Samuel GK

Abstract

Boiler waterwall tube leakage is the most probable cause of failure in steam power plants (SPPs). The development of an intelligent tube leak detection system can increase the efficiency and reliability of modern power plants. The idea of e-maintenance based on multivariate algorithms was recently introduced for intelligent fault detection and diagnosis in SPPs. However, these multivariate algorithms are highly dependent on the number of input process variables (sensors). Therefore, this work proposes a machine learning-based model integrated with an optimal sensor selection scheme to analyze boiler waterwall tube leakage. Finally, a real SPP test case is employed to validate the proposed model's effectiveness. The results indicate that the proposed model can successfully detect waterwall tube leakage with improved accuracy vs. other comparable models.

METHODOLOGY OF MAGNETO HYDRODYNAMIC POWER GENERATION AND ITS APPLICATION

Gopinath H, Dyson. K, Gopakumar S

Abstract:

A magnetohydrodynamic (MHD) power generation technique is a nonconventional electric power harvesting modality in which the electricity is generated from an ionised fluid flow under a magnetic field. The ionized fluid moving under a magnetic field works as a moving electrical conductor and the MHD generator generates electrical energy according to the Faraday's electromagnetic principle. The concept of MHD based electric power generation was

first time introduced by Michael Faraday in 1832, and since then the MHD power generation method has been studied by several groups of researcher. In this paper the MHD technique has been discussed in details followed by a discussion on its components and instrumentation. A technical review on the research works conducted on MHD power generation has been presented and the major developments have been highlighted. The present scenario and the future trends are also discussed along with the challenges of the technology.

POWER TRANSFER WITHOUT CONTACT FOR AUTOMATED GUIDED VEHICLES (AGVS)

Arun Jothi. K, Breeze. R. S, Jibin M

Abstract:This paper presents a contactless power transfer system for automatic-guided vehicles (AGVs). The system can replace batteries and, therefore, can improve the operation ratio and load capacity of an AGV. The contactless power transformer in this system was designed to enhance the mutual inductance between the primary and secondary. The secondary involving a diode rectifier was modeled to an equivalent circuit, which takes voltage drops across the diodes into account. Based on the model, an optimal primary current control technique maximizing the transfer efficiency was derived. Contactless power transfer tests to the AGV using a prototype of the contactless power transformer were conducted. It is confirmed that the power transfer over 100 W with transfer efficiencies of 80% can be achieved. Furthermore, it is confirmed that the proposed control technique can improve the system efficiency during AGV drive operation.

A MODIFIED BUCK BOOST CONVERTER WITH TWO SWITCHES IS EXAMINED

Subash kumar. M, Suresh Ram S.K, Basker C

Abstract:

Two-switch buck-boost (TSBB) is one of non-isolated DC-to-DC converter that can change its mode from among buck, boost and buck-boost modes. Changing its mode is possible by controlling gate signals. This paper presents a novel modified topology of TSBB converter. Even if the proposed converter has the same number of components as a conventional TSBB converter, the proposed converter has fewer conduction components and switching

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semiconductors than a conventional TSBB. This results in reduced power loss. Moreover, source terminals of metal oxide semiconductor field effect transistor (MOSFET) in the proposed converter are directly connected to ground. This configuration has an advantage in selecting gate driver integrated circuit (IC). Since the IC does not need to necessarily provide high-side gate signals. A printed circuit board (PCB) was designed to evaluate the improvement of the proposed converter.

PMSM DRIVE BASED STAND-ALONE WATER PUMPING SYSTEM

Karthick. G, Muthukrishnan. N, V Ponselvan

Abstract:

This paper deals with the stand alone solar PV (Photo Voltaic) supplied PMSM (Permanent Magnet Synchronous Motor) drive for water pumping system. An interlink Boost converter is used between solar PV panel and DC bus of PMSM drive. The DC bus voltage of PMSM drive is maintained constant by controlling the duty cycle of boost converter. Three phase VSI (Voltage Source Inverter) is controlled to supply PMSM under change in solar irradiation to regulate discharge of water. Solar PV stand-alone water pumping system employing PMSM drive is modelled in MATLAB/SIMULINK environment using the sim power system toolboxes. The performance of the proposed system is obtained under wide variation in PMSM speed with change in solar irradiation.