
Speed Control Of Three Phase Induction Motor Using Fpga

Power Electronics Handbook

ELECTRICAL MACHINES

2nd International Conference on Electrical, Communication, Computer, Power and Control Engineering

Microcontroller-based Fuzzy Logic Speed Controller for Three-phase Induction Motor

Power Factor Compensation and Speed Control of Three-phase Induction Motor

Microprocessor-based PWM Controller for Variable-speed Control of a Three Phase Induction Motor Driven Wheelchair

A Step towards Smarter Earth

Distributed Speed Control for Multi-three-phase Motors with Enhanced Power Sharing Capabilities

Intelligent Electrical Systems:

ICECCPCE19 : 13-14 February, 2019, Mosul, Iraq

Sulzer Centrifugal Pump Handbook

Speed Control of Three-phase Induction Motors

A Static Frequency Converter Speed Control System for the Three-phase Squirrel-cage Induction Motor

A Textbook of Mechatronics

S.C.R. Speed Control of Three-phase Squirrel-cage Induction Motors

Microprocessor Control of a Three Phase Induction Motor Speed Control

Power Electronics and Motor Control

Speed Control of a Three-phase Induction Motor by a Thyatron Inverter

INDUSTRIAL ELECTRONICS AND CONTROL

A Primer with MATLAB

2019 2nd International Conference of the IEEE Nigeria Computer Chapter (NigeriaComputConf).

Speed Control of Three-phase Induction Motor Using Variable Frequency Drive

The Efficiency of 3 Phase Induction Motor Under (PWM) Speed Control

Analysis and Performance of a Three-phase Induction Motor in the Presence of a Compensator and Speed Controller with Regard to Power Factor Compensation

Braking Performance and Motor Variation

Electrical Engg-Msbte

System Development in the Practice

Basic Electrical Engineering

Speed Control of Three Phase Squirrel-cage Induction Motor

The Asymmetrical Dual Three-Phase Induction Machine and the MBPC in the Speed Control

Basic Electrical and Instrumentation Engineering

Design and Development of Secondary Impedance Networks Involving Switching Devices for Three-phase Induction Motor Speed Control to Obtain the Best Power

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Speed Control of Wound-rotor Induction Motor with Rotor Impedance Control
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Fuzzy Logic Based Speed Control of Three-Phase Induction Motor Drive

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Phase Induction Motor
Using Fpga*

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Power Electronics Handbook
Butterworth-Heinemann
Electrical and instrumentation engineering is changing rapidly, and it is important for the veteran engineer in the field not only to have a valuable and reliable reference work which he or she can consult for basic concepts, but also to be up to date on any changes to basic equipment or processes that might have occurred in the field. Covering all of the basic concepts, from three-phase power supply and its various types of connection and conversion, to power equation and discussions of the protection of power system, to transformers, voltage regulation, and many other concepts, this volume is the one-stop, "go to" for all of the engineer's questions on basic electrical and instrumentation engineering. There are chapters covering the construction and working principle of the DC machine, all varieties of motors, fundamental concepts and operating principles of measuring, and instrumentation, both from a "high end" point of view and the point of view of developing countries, emphasizing low-cost methods. A valuable reference for engineers,

scientists, chemists, and students, this volume is applicable to many different fields, across many different industries, at all levels. It is a must-have for any library.

ELECTRICAL MACHINES Elsevier
The three-phase squirrel-cage induction motor is rugged, compact, inexpensive, can be totally enclosed and requires little maintenance. Its use as a variable speed drive has been limited, however, by the state-of-the art of control components. The advent and continuing development of the silicon controlled rectifier and associated solid-state components has provided the technology for conceiving a static frequency converter to allow continuous motor speed adjustment over a wide range. The static frequency converter system adjusts the motor input frequency and voltage so the motor can match a given load speed-torque requirement. The high cost and low thermal overload capabilities of the solidstate components required for a prototype dictate the use of modeling and simulation techniques for analysis of complex systems such as the static frequency converter motor speed control system.

*2nd International Conference on
Electrical, Communication, Computer,
Power and Control Engineering* Firewall
Media

This comprehensive, up-to-date introduction to Electrical Machines is designed to meet the needs of undergraduate electrical engineering students. It presents the essential principles of rotating machines and transformers. The emphasis is on the performance, though the book also introduces the salient features of electrical machine design. The book provides accessible, student-friendly coverage of dc machines, transformers, three-phase induction motor, single-phase induction motor, fractional horsepower motors, and synchronous machines. The clear writing style of the book enhanced by illustrative figures and simplified explanations of the fundamentals, makes it an ideal text for gaining a thorough understanding of the subject of electrical machines. Key Features Include:

- Detailed coverage of the construction of electrical machines.
- Lucid explanations of the principles of operation of electrical machines.
- Methods of testing of electrical machines.
- Performance calculations of electrical machines.
- Wealth of diverse solved examples in each chapter to illustrate the application of theory to practical problems.
- Salient features of design of electrical machines.
- Objective type questions to help students prepare for competitive exams.

Microcontroller-based Fuzzy Logic Speed Controller for Three-phase Induction Motor Springer

The book provides tools for the analysis of electrical machines fed on thyristor converters. A detailed exposition of dc and ac drives is given for making the right choice of drive for a required job to give the desired performances. The aspect of phase controlled converters, inverters, frequency conversion using these converters and the method of

improving the line conditions are discussed in detail. Mathematical modelling of both dc and ac motors is given. The aspects of performance of induction and synchronous motors of variable frequency supplies are provided. Also discussed are the features of dc motors operating on converters with respect to commutation, speed range, etc. Methods of improvement in the performance are suggested. A short description of micro-processors in the control of thyristorised ac and dc drives is also included

Power Factor Compensation and Speed Control of Three-phase Induction Motor John Wiley & Sons

This book addresses the vector control of three-phase AC machines, in particular induction motors with squirrel-cage rotors (IM), permanent magnet synchronous motors (PMSM) and doubly-fed induction machines (DFIM), from a practical design and development perspective. The main focus is on the application of IM and PMSM in electrical drive systems, where field-orientated control has been successfully established in practice. It also discusses the use of grid-voltage oriented control of DFIMs in wind power plants. This second, enlarged edition includes new insights into flatness-based nonlinear control of IM, PMSM and DFIM. The book is useful for practitioners as well as development engineers and designers in the area of electrical drives and wind-power technology. It is a valuable resource for researchers and students.

Microprocessor-based PWM Controller for Variable-speed Control of a Three Phase Induction Motor Driven Wheelchair
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Abstract: There are various methods for speed control of induction motors. This

paper specifically describes one of the methods: speed control using variable frequency. The proposed system is a MATLAB simulink model, which is a closed loop model designed to achieve desired speed control of a three-phase induction motor by varying its frequency. The simulink model has four main blocks, namely the inverter, synchronous machine, proportional integral control and current hysteresis control. For accuracy of output results and simplicity, we have used dq to abc transformation block and sin function block. The inverter is comprised of six integrated gate bipolar transistors (IGBTs), which are fired by gate pulses generated by current hysteresis control block. The inverter generates variable frequency and variable voltage output, which is given to motor terminals. The project presents the working principle of variable frequency drive (VFD), its performance, and the use of Pulse Width Modulation (PWM) in a three-phase inverter to control the frequency and thus the speed. The proposed method conformed to performance predictions and delivered the desired outputs.

A Step towards Smarter Earth Speed Control of Three Phase Ac Induction Motor Using Svm

□A Textbook of Mechatronics□ is a comprehensive textbook for the students of Mechanical Engineering and a mustbuy for the aspirants of different entrance examinations including GATE and UPSC. Divided into 10 chapters, the book delves into the subject beginning from Basic Concepts and goes on to discuss elements of CNC Machines and Robotics. The book also becomes useful as a question bank for students as it offers university questions with answers. *Distributed Speed Control for Multi-three-phase Motors with Enhanced*

Power Sharing Capabilities Tata McGraw-Hill Education

This long-awaited new edition is the complete reference for engineers and designers working on pump design and development or using centrifugal pumps in the field. This authoritative guide has been developed with access to the technical expertise of the leading centrifugal pump developer, Sulzer Pumps. In addition to providing the most comprehensive centrifugal pump theory and design reference with detailed material on cavitation, erosion, selection of materials, rotor vibration behavior and forces acting on pumps, the handbook also covers key pumping applications topics and operational issues, including operating performance in various types of circuitry, drives and acceptance testing. Enables readers to understand, specify and utilise centrifugal pumps more effectively, drawing on the industry-leading experience of Sulzer Pumps, one of the world's major centrifugal pump developers Covers theory, design and operation, with an emphasis on providing first class quality and efficiency solutions for high capital outlay pump plant users Updated to cover the latest design and technology developments, including applications, test and reliability procedures, cavitation, erosion, selection of materials, rotor vibration behaviour and operating performance in various types of circuitry

Intelligent Electrical Systems: Firewall Media

The Asymmetrical Dual Three-Phase Induction Machine and the MBPC in the Speed Control.

ICECCPCE19 : 13-14 February, 2019, Mosul, Iraq Cambridge University Press
The project we have chosen to implement "Space Vector Modulation" is

very important from industrial point of view. It is not uncommon to control the speed of induction motors according to the load demand attached with the motor. There are different techniques to fulfill this demand. Most common techniques are PWM techniques. Every PWM technique has its own advantage and sometimes drawback. So we, the group members, have implemented a control for induction motor which can control the speed of motor very effectively and efficiently. SVM is different from other conventional PWM techniques in that it sees the inverter as a single unit and results in high efficiency, high reliability, smoother operation, higher fundamental output voltage. So this technique is preferred over the other techniques due to its desirable features.

Sulzer Centrifugal Pump Handbook S. Chand Publishing

An electric machine is a device that converts mechanical energy into electrical energy or vice versa. It can take the form of an electric generator, electric motor, or transformer. Electric generators produce virtually all electric power we use all over the world. Electric machine blends the three major areas of electrical engineering: power, control and power electronics. This book presents the relation of power quantities for the machine as the current, voltage power flow, power losses, and efficiency. This book will provide a good understanding of the behavior and its drive, beginning with the study of salient features of electrical dc and ac machines.

Speed Control of Three-phase Induction Motors Tata McGraw-Hill Education

Offers key concepts of electrical machines embedded with solved examples, review questions, illustrations

and open book questions.

A Static Frequency Converter Speed Control System for the Three-phase Squirrel-cage Induction Motor Tata McGraw-Hill Education

Three-phase induction motors have been used in a wide range of industry applications; since they are robust, brushless and have simple design. Furthermore, the speed of induction motor can be easily controlled by variable frequency drives. The continuous development in power electronics semiconductors came out with modern electric drives. These drives use high speed power transistors, like IGBT and MOSFET, with various switching techniques. The speed control of induction motor is important to achieve maximum torque and efficiency. In the past decades, conventional control systems, such as proportional-integral derivative (PID) controller, were applied to electric drives to control the speed of induction motor. The PID controller is not a well established control method in motor drive because of the nonlinearity of induction motor. On the other hand, the use of Fuzzy Logic Controller (FLC) improves the performance of the speed control of induction motor. In this research, a microcontroller-based fuzzy logic controller was developed. The FLC replaces the conventional PI controller to improve the speed response of the drive in order to keep the speed of the induction motor constant when the load varies within the operating range. The research also included the design and implementation of a three-phase voltage source inverter (VSI) driven by Space Vector Pulse Width Modulation (SVPWM) signal. The control system in this research was designed using Matlab/Simulink environment. The simulation included a comparison of

speed response of FLC and PI controller. The input to FLC is the linguistic variable of speed error and change of speed error, while the output of FLC is the frequency fed to the inverter. The three-phase inverter was fabricated using MOSFET Hex-bridge connected to a low-pass LC-filter to smooth the inverter output voltage wave. In order to apply FLC and generate corresponding SVPWM signals a PIC16F877A microcontroller was used in the control system. The speed controller was tested using various values of input speed using simulation and experiments. The results showed the superiority of the proposed FLC over the conventional PI controller in the dynamics response of speed. The results also showed the ability of the proposed to generate a three-phase sine wave with desired frequency to control the speed of the induction motor with THD less than 5%.

A Textbook of Mechatronics PHI Learning Pvt. Ltd.

This clear and concise advanced textbook is a comprehensive introduction to power electronics.

S.C.R. Speed Control of Three-phase Squirrel-cage Induction Motors Tata McGraw-Hill Education

Conventional controllers like the proportional integral differential (PID) would have being very effective not just for speed control alone, if not for some complexities with individually controlling its respective controllers and summing up their individual contributions to effectively yield controlled signal output. Also, for its insensitivity to changes made to model parameters which may be as a result of misrepresentation of some control variables. As a result of this, developing an intelligent based fuzzy logic controller (FLC) became eminent, and on this basis, this book is

written. By varying the motor speed with input reference speed, an error signal and a feedback loop is generated. The FLC then operates on the principles of mapping with corrective measure of the error signal generated and it is regulated by sets of IF-THEN rules integrating the Mamdani fuzzy inference approach. The rules projected and formed are used to overcome the drawbacks of conventional controllers. Since induction motors are widely used in many industries today, most especially squirrel caged, an intelligent approach to the control of these motors will save cost, increase reliability and efficiency

Microprocessor Control of a Three Phase Induction Motor Speed Control Elsevier

This book "Three Phase Asynchronous Motors" covers construction, performance, starting, braking, speed control, space harmonics and design of three phase induction motors. The simplicity to a great extent in explaining each subject and the concentration on the different enough examples are the features that have been adopted in developing the text material. Moreover, there are tutorial problems and different review answered questions for revision. Thus, this book has been written to meet the introductory phase of the needs of those students and engineers who are interested in 3-phase induction motors and its applications. The book text material divides itself into five Chapters: The first Chapter is designated to construction and performance of three phase induction motors. The second be allocated to speed control of three phase induction motors. The third Chapter is devoted to 3-phase induction motors starting and electric braking. The fourth Chapter is devoted to space harmonics in 3-phase induction motors. The fifth

one is devoted to 3-phase induction motors design.

Power Electronics and Motor Control CRC Press

Speed Control of Three Phase Ac Induction Motor Using SvmCreatespace Independent Publishing Platform

Speed Control of a Three-phase Induction Motor by a Thyatron Inverter LAP Lambert Academic Publishing

Artificial intelligence has been applied to many areas of science and technology, including the power and energy sector. Renewable energy in particular has experienced the tremendous positive impact of these developments. With the recent evolution of smart energy technologies, engineers and scientists working in this sector need an exhaustive source of current knowledge to effectively cater to the energy needs of citizens of developing countries.

Computational Methodologies for Electrical and Electronics Engineers is a collection of innovative research that provides a complete insight and overview of the application of intelligent computational techniques in power and energy. Featuring research on a wide range of topics such as artificial neural networks, smart grids, and soft computing, this book is ideally designed for programmers, engineers, technicians, ecologists, entrepreneurs, researchers, academicians, and students.

INDUSTRIAL ELECTRONICS AND CONTROL IGI Global

Power electronics, which is a rapidly growing area in terms of research and applications, uses modern electronics technology to convert electric power from one form to another, such as ac-dc, dc-dc, dc-ac, and ac-ac with a variable output magnitude and frequency. Power electronics has many applications in our every day life such as air-conditioners, electric cars, sub-way trains, motor drives, renewable energy sources and power supplies for computers. This book covers all aspects of switching devices, converter circuit topologies, control techniques, analytical methods and some examples of their applications. * 25% new content * Reorganized and revised into 8 sections comprising 43 chapters * Coverage of numerous applications, including uninterruptable power supplies and automotive electrical systems * New content in power generation and distribution, including solar power, fuel cells, wind turbines, and flexible transmission

A Primer with MATLAB Cambridge University Press

The conference aims to provide a premier platform for Engineers, researchers, scientists and academicians to present their work in the emerging areas such as Renewable Energy, Energy storage, Power Electronics & drives, Smart devices and communication systems, Artificial Intelligence, Robotics, Networks an IoT, Control and automation etc.

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