

SIMULATION OF VOLTAGE SOURCE INVERTER FED INDUCTION MOTOR DRIVES

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Abstract - This paper presented by voltage source controlled by the inverter by using the induction motor drives controlling and using the generation of firing angles to IGBT of the inverter using modulation produces balancing pulses with Output Voltages, Current waveforms, rotor and stator are the magnitude angles speed and Torque multi wave angles are calculated and harmonic distortion lines. Voltage source inverter in degree in module operation 180 degrees to 360 degrees operation pulses width modulation voltage generating output mechanically operation of microcontroller proper switching of drives circuit consists load impedance.

Key Words: PWM Inverter, Vector Modulation, IGBT, VSI, Induction motor drives, MATLAB, Switching

1.INTRODUCTION

Project involve the using varying the voltage source of Inverter fed induction motor using drives are generating voltage supplies from the pulse generation modulated to integrated from the IGBT switches operation of GTO (Gate turn and off) thyristors insulating gate operations stepped as an integrated operation switches increasing losses operation. Voltage supplies from Asynchronous Machine varying speed operation of the rotor speed and Electromagnetic torque or stator current and finding operation of a pulse modulation techniques. Operation of a conversation of AC link converted from the DC source of operation, Note the values of DC high-link operation of based required from the varying specific values are required and design consideration operation techniques of MATLAB (dc) charges of a capacitor voltage balancing rising values motor performance.

Conversion of a DC-AC inverter operation voltage dc energy to battery are conversion of AC pulse operated voltage have inverter performance easily AC switches to three phase conversion.

1.1 VSI INDUCTION MACHINE

Voltage source inverter controlled by induction motor drives are controlled by the varying frequency obtained from the AC to DC conversion techniques operation of switching devise are GTO Gate turn and off transistor switching of direct current from the asynchronous motor convert from the mechanically to operated harmonic waves of perfect out the varying stepped wave to PWM line voltage waveform. Sinusoidal modulation operation of single line voltage 230v,50hz large number of ripples free dc output operation 180 degrees condition magnitude wave, microwaves voltage and current waves.

Inverter which takes DC supply and constant the magnitude of load current depends on load Impedance. They are communicating device MOSFET, GTO, IGBT operated pulse operation sequence of T/6, each of time duration T/2 the out voltage from ac and input dc input controlling from a stable input device from choppers are using and controlling the motor operation of stable condition filtration input constant varying voltage.

when the not using for (choppers) motor performs the jerky motion, input voltage or current not at stabling condition of waveform. [The main draw back is harmonic is increasing the harmonic losses in motor jerky of rotor speed.] The energy stored capacitor flows the resistance reduce the normal switching (off) condition operation of dynamic braking.

1.2 VOLATAGE SOURCE OF INVERTER

When the supply from the dc voltage coppers is connected as integrated from the IGBT switches of pulse generator connected with chopper linked a conversion of ac source controlled by rectifier Increasing voltage from the jerky motion of rotor speed either low and speed reduces the losses Pulse generating for electrical operation thyristor switching and controlling the using frequency operated of fed induction machine. Voltage source is used to control the

speed and control the motor used the voltage source inverter and either high and low frequency waveforms control speed of inverter used by the constant speed various supply to the load connection and frequency apply the load condition to the source supply to study the maximum supplying control MATLAB /control of study.

The potential difference from two points and active elements from battery, cells, generator etc. The constant speed of a storing capacity of varying source switching operation of IGBT switches particular varying sources voltage of inverter storing cells of active element.

The switching frequency of VSI resulting ripple or current and torque waveforms frequency. This harmonic shifted higher frequency signals fundamental reduced, the total harmonic distortion (THD) of a Sinusoidal waveform can be magnitude harmonic. In this technique of PWM inverter pulses are half basis variation of width half circle of controlled particular harmonic implementing three phase inverters are

1. single pulse width modulation
2. multi pulse width modulation
3. sinusoidal pulse modulation

There modulation techniques to the IGBT and switching from half wave and full-wave rectification techniques and pulse generation of multi-phase generating voltage available. Switching from unipolar and bipolar switching techniques.

2. MATLAB SIMULATION

MATLAB simulation is system of simulate models design and multi models, simulate before moving project to hardware and developing without coding and helps to predict the behavior of a system output comes there in existing design. Simulation their generating the behavior in an environment.

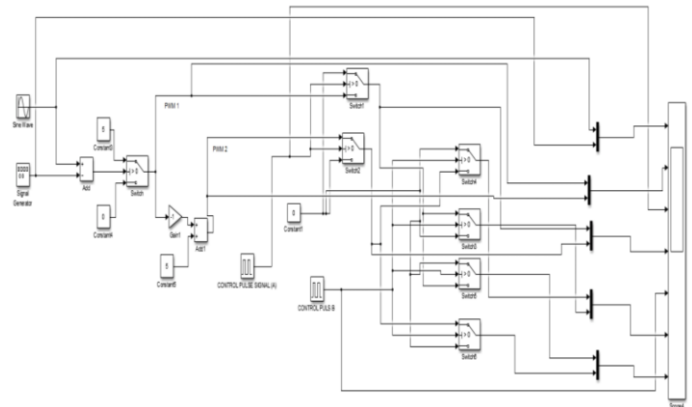
These results are obtained by simulation performance analyzed over simulation of VSI modulation techniques of operation and simulation operation of a voltage source inverter and wave current, voltage, pulse generation operation are using MATLAB simulating operating inverter and IGBT pulses. The total harmonic THD in line phase voltage decrease and component increasing the values are representing simulation of voltage current waves unipolar to bipolar conversion phase representing values techniques.

PULSE GENERATOR

The pulse generation is a generating from six IGBT linked. The pulse controlling from the voltage techniques of operating reducing the voltage and his harmonic efficiency

conversion of DC source to AC conversion reducing the harmonic pulses techniques

Operation of PWM of voltage generation main conversion of voltage magnitude working unipolar switching of induction motor.



Pulse generator IGBT

SIMULATION RESULTS OF VSI FED INDUCTION MOTOR

This project observed that using the connection of proper switching operation of and controlling the voltage source inverter fed induction motor operation of a using the load frequency operation and using controlling the load connection of DC source there in output of sinusoidal wave forms in magnitude and voltage and current and load characteristics find waveforms fire angles torque ratio and direction of induction motor. Various of reliable operation application.

Induction motor such as a large transformer capacitor and a high lighting load on the secondary the inverter which takes a variable frequency from dc supply its connected directly to a battery motor rotates the opposite direction and calculated values their properties voltage torque and magnetic values.

Table -1:

S.no	Ma	Line voltage		Phase voltage	
		THD%	Fundamental	THD%	Fundamental
1	0.7	82.74	180.2	132.85	86.25
2	0.8	71.72	195.4	102.63	104.4
3	0.9	67.64	195.2	93.03	110.8

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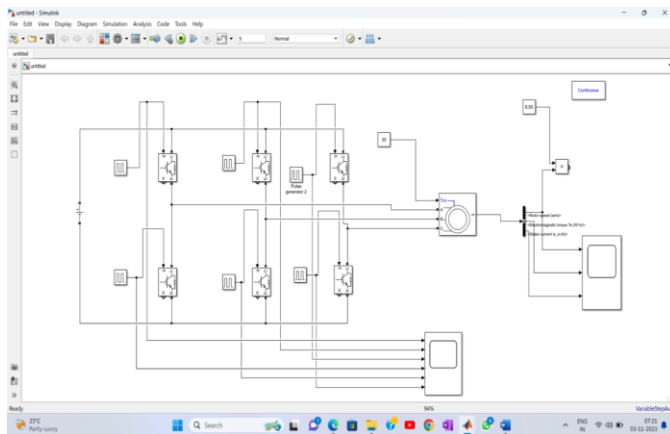


Fig: VSI fed induction

Simulation of VSI component of setup the implementing standing suitable output improve efficiency waveforms voltage and current.

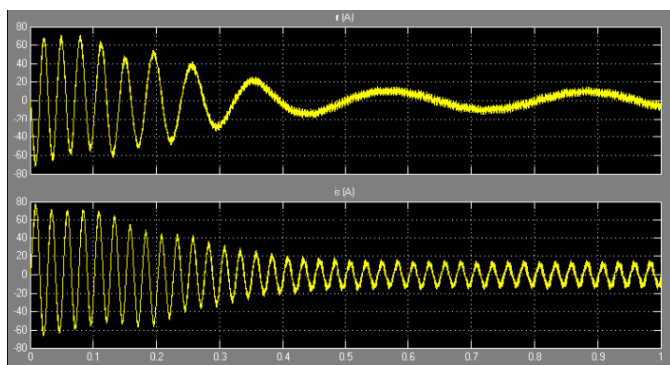


Fig: output waveforms rotor I_r and I_s equal to $m_a=0.7$

From this waveform is line of voltage line and other pulse modulation frequency voltages V_{ab} and V_{ca} voltage range at 50Hz frequency operation input giving voltage of amplitude pulse generation.

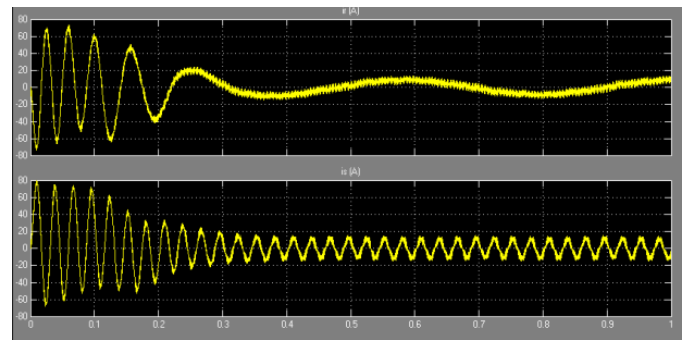


Fig: waveform of rotor and current magnitude of maximum line current $m_a=0.79$

The variation of stator current and voltage as an operation of sending voltage current and come ripples of waveform of operation switching transmitted and 4sec stator and rotor from the [0.35 Sec] magnitude values of pulse generating.

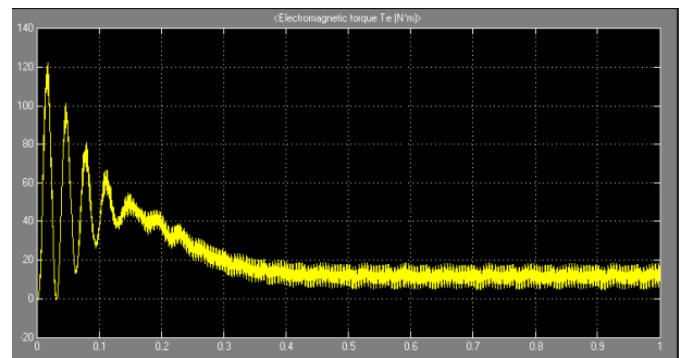


Fig: Torque developed from electromagnetic Torque n-m

The magnetic rotor is presented by rotating speed of acceleration of normal speed to compare the different nominal speed of situation of rotating speed reducing and increasing the motor speed of rotating speed of operation magnitude electro static n-m.

The value of spectrum observes that rotor and current, voltage from several techniques operation of harmonic modulation comparing the sine voltages operation of VSI modulation from higher from the input and output pulse operation controlled.

3. CONCLUSIONS

The paper presented by performance of voltage source of inverter fed induction motor drives MATLAB compare the implementation of drives and there harmonic and pulse scheme as compare the switching cover drives. Either controlling the sudden changing faults and over increase and decrease the fault emission system and modulation techniques.

The operation of THD and modulation operation from switching pulses and power of IGBT switching of six pulse

generators should be controlled by the several point controlling and varying the voltage source, the operation of the VSI fed operation compression voltage values and current, magnitude controlling they are the operated the minimum condition operating the V_L line voltage R_L source current comparing the systematic line system. The rotor value is increase and the decrease the several operations of input sending to the receiving end system modulation voltage phase line voltage and phase current as a stability.

The harmonic distribution of THD and phase voltage increase the increase modulation index value operation of voltage and current.

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