



## REVIEW PAPER ON SINGLE-PHASE TO THREE PHASE DRIVE SYSTEM USING TWO PARALLEL SINGLE PHASE RECTIFIER

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### ABSTRACT

This paper comprises of a phase to three phases of AC powertrain composed of two single phase corrective devices, three phase inverters and a retractor. The paper's major advantageous position is to lower the flow of the rectifier switch, to twist the consonant at the converter input side, to improve the fit for the internal defect quality and to allow the motor to function at any stacking situation. In fact, the total energy loss of the frame is less than the normal framework even as the quantity of switches increases. The model is derived from the framework and the decline in the present course is demonstrated to be an improvement target of the framework plan. It required voltage for inverter utilising PWM procedure. This project is a solitary stage to three stage drive framework made out of two equal single stage rectifiers utilising MATLAB Simulink model

**Keywords:** Switches, three phase, MATLAB

### I. INTRODUCTION

Most power change applications involve an AC-to-DC change stage rapidly following the AC source. The DC yield obtained after alteration is thus used for extra stages. There by a climate control system to dc converter has become an essential piece of generally all of the electronic supplies. Predominantly, it is used as an interface among utility and an enormous part of the power electronic sorts of stuff These electronic supplies also structure a huge piece of weight on the utility. Two factors that give a quantitative extent of the power quality in an electrical structure are Power Factor (PF) and Total Harmonic Distortion (THD). The proportion of supportive power being eaten up by an electrical system is fantastically settled by the PF of the structure. Overall, to change over line repeat ac to dc, a line repeat diode interface rectifier is used. To diminish the wave in the dc yield voltage, a suitable channel capacitor just as an inductor is used at the rectifier yield. However, on account of these open sections, the current drawn by this converter is peaky in nature, especially fluctuated from sinusoidal shape. This information current is well off in lower demand music. Also, as power devices supplies are dynamically being used in power change, they implant low solicitation sounds into the utility. In light of the presence of these sounds, the total symphonious turning is high when so many are gathered in an enormous electronic structure. Likewise, the information power factor turns out to be more heartbreaking. In light of the burdens related with low power factor and sounds, utilities maintains (in specific countries) consonant standards and rules which will confine the proportion of current bending allowed into the utility. Examining the certifiable effects created by standard converters, the clear diode rectifiers should not be used. There is a need to achieve revision at close to fortitude force factor and uninformed current mutilation.

### II Literature Survey

1. Three-Phase Induction Motor Drive System with Function of Harmonic Current Injection for Non-Linear Load IEEE2020 This paper presents three-stage enrollment motor drive structure with limit of consonant current imbue for non-straight weight using Matlab/Simulink. The drive system involves two converters. A lone stage grid related converter which is the principle converter in the drive structure is overseen by PI controller of DC-interface voltage control circle, and traded by hysteresis control. Moreover, the converter can deliver consonant current to kill symphonious current in

structure with symphonious acknowledgment estimation. The other is three-stage three-leg voltage source inverter for three-stage acknowledgment motor drive controlled with close circle V/F speed control. The proliferation results revealed that the motor could keep speed consistent assessed speed, having been taken assessed load power at 10 Nm. Additionally, the grid converter could keep DC-interface voltage steady at 540 V for assessed voltage of the motor, further created structure current waveform taking after sinusoidal waveform and discarded symphonious of organization current...

2 A Novel Modelling Approach of Modular Multi Three-phase Drive System for High Performance Applications IEEE 2019 There is a developing consideration in the mechanical and scholastic areas for the multi-stage drive for high force and high velocity applications. The multi three-stage drive with autonomous unbiased focuses is a famous alternative for this application, as it considers the utilization of standard control and standard force hardware for the individual three-stage frameworks. This work presents a novel model of multi three-stage drive. The numerical displaying of multi three-stage perpetual magnet coordinated machine (PMSM) and particular three-stage converters is introduced. The electromagnetic force conditions of multi three-stage PMSM took care of by secluded converters are determined. At long last, mathematical outcomes in a double three-stage drive are introduced to approve the logical models.

3 Variable Switching Frequency Control for Efficiency Improvement of Motor Drive System by Using GaN Three Phase Inverter IEEE2020

This paper hopes to propose another traction motor control system for electric vehicles (EVs). EVs are expected to have higher energy viability in motor control structures for cruising longer distance. In any case, motor control structures, which are generally outfitted with Si-IGBT inverters, have cutoff points of the energy adequacy. Thus, new inverters, which use wide bandgap (WBG) semiconductor devices like Gallium Nitride (GaN), are depended upon to be a response for additional foster the energy capability. Having less energy hardship in coordinating and trading movement than Si-IGBT inverters, the GaN inverters can extend the trading repeat. In like manner, the reduction of symphonious loss of the motors will engage us to additionally foster the energy efficiencies of the entire motor control structure. Though past investigates have shown the introduction of various inverters, the tests showed only inverters of little restricts that are missing to be applied in balance motor control of EVs. Then, our investigation pack are attempting to extend the power of GaN inverters and to comprehend their practical application to limited EVs. In this assessment, the trading repeat of the GaN inverter was dynamically changed to check the higher energy usefulness of the motor control system. The outcomes of the examination have shown that the supreme energy capability can be improved by up to about 1.5% and the total incident can be diminished by up to about 10%.

### III Concept

The proposed system is considered to work where the single-stage utility framework is the novel option open.

2. Diverged from the ordinary topography, the proposed structure licenses: to diminish the rectifier switch streams; the hard and fast consonant twisting (THD) of the grid mutt rent with same trading repeat or the trading repeat with same THD of the organization current; and to extend the variation to inside disappointment characteristics.
3. Also, the mishaps of the proposed system may be lower than that of the normal accomplice.
4. To protect the fundamental weights from power impedances.
5. To analyze an all out circuit plan

### IV Problem Identification

1. To stay away from the coursing current, the accompanying three methodologies are utilized regularly I. Seclusion. In this methodology, the general equal framework is massive and expensive due to extra power supplies or the air conditioner line-recurrence transformer.
2. High impedance. They can't forestall a low recurrence flowing current. iii. Synchronized control. This methodology isn't appropriate for secluded converter plan. At the point when more converters are in equal, the framework turns out to be exceptionally convoluted to plan and control.
3. To utilized Parallel converters to further develop the force capacity, dependability, proficiency, and excess. Equal converter procedure can be utilized to work on the exhibition of dynamic channels

#### 4. Block Diagram

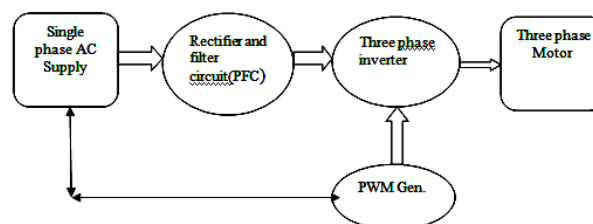


Fig. 1. Proposed single-phase to three-phase drive system

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## V Future Scope

1. The future scope of this work is to implement fault diagnosis technique of VSI operating under variable load conditions at different frequencies using single level of transformation. Also, to diagnose more number of VSI by using easy plug-and-play type wireless network so as to reduce the efforts of maintainer to add or remove any fault parameter sensing node in the network.
2. This can also help the maintainer to setup a network quickly and cope up with a new kind of system under monitoring. A gathering of all fault information data from the group of machines with the help of wireless sensor network contributing to better understanding of the present status of electrical apparatus health and operating environment.
3. It is further useful to tune up the new machine fault parameter setting and to regain the full production capability within minimum lead time

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## VI Conclusion

This work proposes a solitary stage to three-stage drive framework made out of two comparable single-stage rectifiers, a three-stage inverter, and an enlistment engine. The proposed geography grants to diminish the rectifier switch streams, the consonant mutilation at the information converter side, and presents overhauls for the variety to inward frustration credits. Actually, even with the increase in the measure of switches, the absolute energy loss of the proposed design might be lower than that of a customary one. The model of the framework is concluded, and it is shown that the decrease of encompassing current is a basic goal in the construction plan.

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