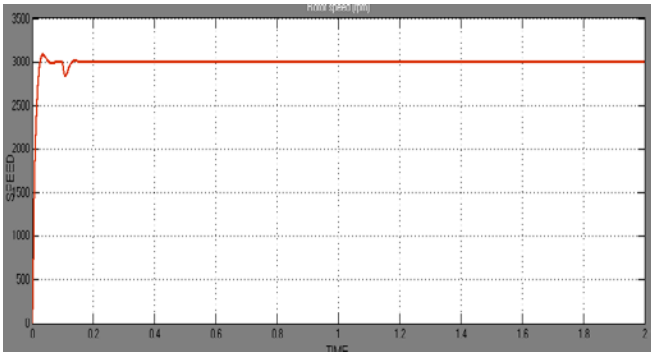

Figure 11: Speed of the BLDC motor drive

Case 2: A Proposed forward buck converter using fuzzy logic controller

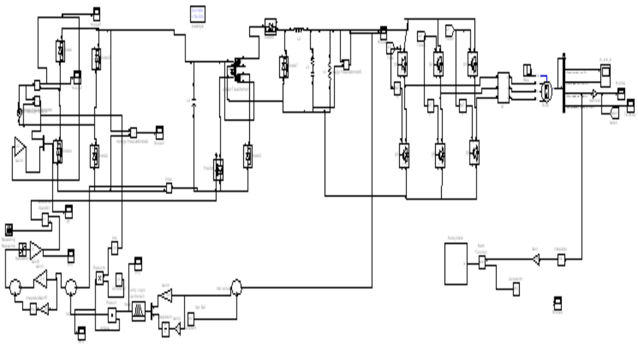

Figure 12: Matlab/Simulink Model of Proposed forward buck converter using fuzzy logic controller

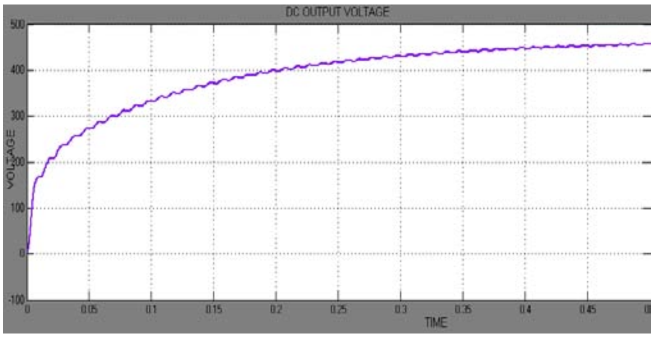

Figure 13: Output voltage of the forward buck converter

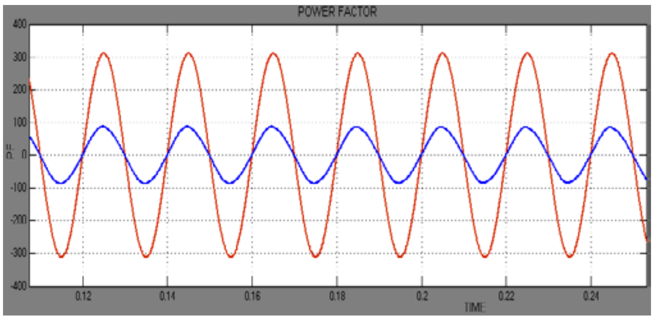

Figure 14: power factor, our voltage and current are in phase

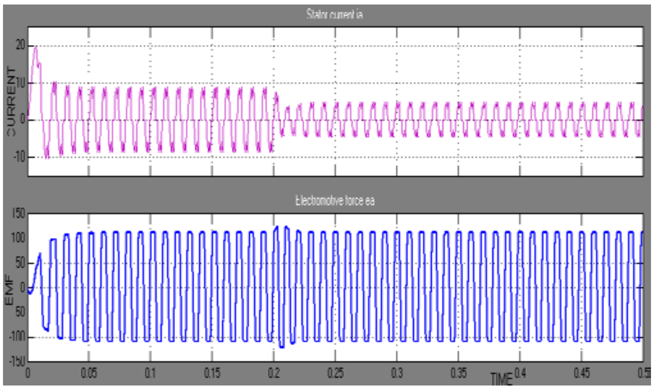

Figure 15: Stator current and electromagnetic torque of the BLDC motor drive

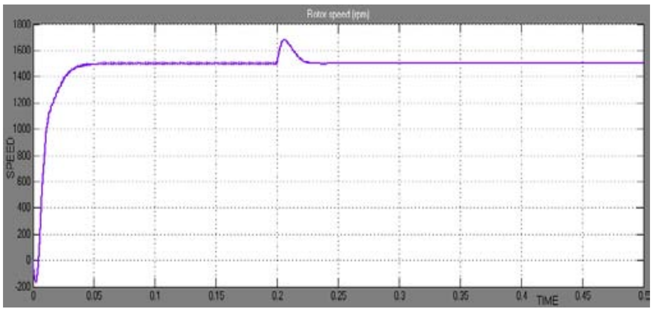

Figure 16: Speed of the BLDC motor drive

5. Conclusion

A single stage PFC control strategy of a VSI fed PMBLDCM drive using forward buck converter using conventional pi controller and fuzzy logic controller has been validated for a compressor load of an air conditioner. The current multiplier approach with average current control has been used for operation of a forward buck converter in continuous conduction mode. The PFC forward buck converter of the proposed drive has ensured nearly unity PF in wide range of the speed and the input AC voltage. Moreover, power quality parameters of the proposed drive are in conformity to the International standard IEC.

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