Chapter 7

CONCLUSION

The method of study of Nonlinear Phenomenon as outlined in the chapter 5 and same is used to study the same for conventional machines and found that it is very much effective. Following conclusions may be drawn:

- Generalized machine is a general form of representation of all conventional electrical machines. A method of studying nonlinear phenomenon of generalized machine is proposed and confirmed through a case study. As the generalized machine is a hypothetical machine with higher dimension, only numerical investigation can provide fruitful results, analytical approach cannot reach to the final result and experimental study is not possible.
- It also has been established that generalized machine is a rich source of nonlinear phenomenon with Lorenz like dynamics.
- In the light of nonlinear phenomenon of generalized machine, the nonlinear phenomenon of conventional machines are predicted.
- The proposed method of studying nonlinear behavior of generalized machine have been applied to conventional machines and their nonlinear dynamics have been studied successfully. It confirms the applicability of the proposed method. It also establishes that the proposed method can be applied to study the nonlinear dynamics of all conventional machines.
- Comparison of the results obtained from simulation and experiments assures that the proposed method accurately describes the nonlinear phenomenon of generalized and conventional machines and it also validates the proposed method.

FURTHER WORKS

The study of Nonlinear Phenomenon of Generalized Machine is effectively done and same is effectively applied on some conventional machines. Still some works are outlined here which can be carried out in future.

1. Though the effectiveness of the proposed method has been studied for some conventional machines, some machines are yet to be tried out. Those machines, especially the single phase and commutator machines may be modeled using generalized theory and effectiveness of proposed method as used for generalized machine may be explored on those models.
2. The nonlinearity arising due to saturation is not considered in the present work. Saturation may also be considered for Generalized machine and conventional machines and nonlinear phenomenon may then further be studied.
3. Conventional machines with inherent nonlinearity are now being used with switching mode power supply with switching nonlinearity in closed loop. Then their operation is becoming more complex. Those machines may be considered as the hybrid systems with both inherent and switching nonlinearity. The nonlinear phenomenon for those machines may further be studied[86],[11]-[16].