

Design of Synchronous Generator based on AutoCAD

Prashant Agravat¹ Vivek Kacha² Karan Marvaniya³ Prof. Harshad Bhakhar⁴

^{1,2,3}B.E Student ⁴Assistant Professor

^{1,2,3,4}Department of Electrical Engineering

^{1,2,3,4}DSTC, Junagadh, Gujarat, India

Abstract— In this project we have done research on the design of synchronous generator. And in this literature it state that the design factors are to be consider for the design visualization on Autocad software. Here research is done on the design analysis. How much material needed , According to requirement data is introduce for designing and after it how it look like and what would be cost , needs and performance are known . Also the technique for designing the synchronous machine is modern, time and cost saving.

Key words: AutoCAD, Synchronous Generator

I. INTRODUCTION

Design of synchronous generator is done in industries and research. Nowadays fast, time saving and less costly technique are used. So for it designing through autocad is one of the good method for designing. Also there should be easily developed the design and cost of casting, molding are to be done. For it better work of designing is done through the autocad software. There is the problem of facing the time required, consumer and manufacturer satisfaction, research and improvement in synchronous generator, etcSo for it the autocad designing is to be performed. It should be adopt on designing for better performance and growth in production of synchronous generator.

In autocad 2D and 3D design can gain while designing. Through autocad 2d design of synchronous generator is gain while drawing according to the data info. 2D and 3D design is gain but firstly the 2D design is to be gain and then 3D design is to be gain and Hence, analysis, modification and other things are performe.

To provide stable, secure, controlled, high quality design on today's condition and to do better utilization of available synchronous generator capacities Design of synchronous generator is done on the autocad software are employed to enhance improvement of synchronous generaor. Here through autocad we can easily design the synchronous generator, within less time and money and also less work to performe.

II. AIM AND OBJECTIVES

The main aim behind this project is to reduce the tims, money and to make improvement in designing of synchronous generator. For producing the design process of converting the 2D design into 3D design and it will be converted into isomer visualization for blueprints and drafting for manufacturing. In the sense here we are using the Autocad software and this software is used for drafting, drawing, visualization and making of the synchronous generator machine. And by using this, reduce the pollution held by casting, save time and money, and the easily designing is held.

The objective of this project was to develop and demonstrate a easy and compact design of synchronous

generator to suspend and react the losses and its analysis. Improvement in the design new research can be perform and new ideas and innovation can be done easily and in quick time.

The technical objectives were designed to achieve a significant reduction of capital equipment costs, thus enhancing the economics of small-scale casting demonstration and power project using this technology compared with other commercial method.

III. SYNCHRONOUS GENERATOR

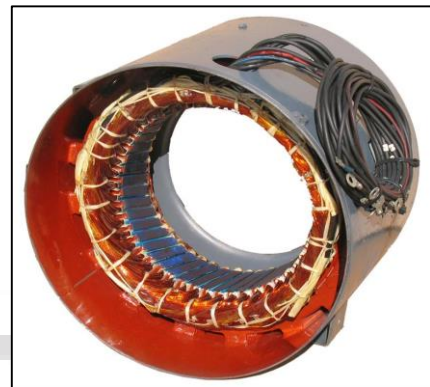


Fig. 1: stator



Fig. 2: rotor

In a synchronous generator, a DC current is applied to the rotor winding producing a rotor magnetic field. The rotor is then driven by external means producing a rotating magnetic field, which induces a 3-phase voltage within the stator winding.

Field windings are the windings producing the main magnetic field (rotor windings for synchronous machines); armature windings are the windings where the main voltage is induced (stator windings for synchronous machines).

IV. INTRODUCTION TO AUTOCAD

The design of an electrical machine is a tedious and time-consuming process involving a complex iterative solution of nonlinear differential equations, coupled with the integration of tabled data sets, empirical relationships, and cost

information. Synchronous machine design in particular does not yield to simple calculation due to the multitude of variables involved in the design process and because the machine output (power, voltage, etc.) is not related to the input parameters of the system (machine geometry, magnetic materials, air gap flux density, etc.) solely through analytic (closed-form) expressions.

Thus, if the design did not achieve the desired or specified performance, the entire process would have to be repeated. Contemporary electrical machine design methods are computer-aided design (CAD) based, and involve the system definition and representation, as well as the specification of the machine parameters and selection of the solution procedure. This general methodology serves as a useful guide for synchronous machine design, and the following outline is thus employed:

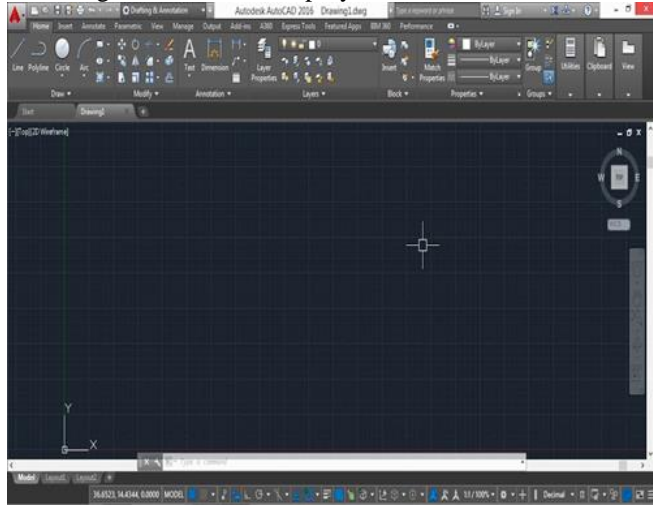


Fig. 3: Work Space of Autocad

A. Basic and Command of 2D Designing

1) Basic in 2d Designs

- First and third angle projection method
- Setting unit
- Object creation and modification tools
- Working with layer and text
- Customization of properties
- Apply hatch and gradient
- Drawing creation
- Preparing isometric drawing
- Applying dimensions with tolerance

B. Command Use in 2d Designs

Generally many commands are used in the 2D design according to requirement. Some of command mostly used is as follows:-

1) Circle – C

According to radius, diameter and according requirement are drawn Circles are two point circles, three point circles.

2) Line – L

It is use to draw the line and its size and shape are set in the setting box. Lines are single line, dotted line, multi-line , etc.

3) Trim – TR

This command is use to cut some portion in the object, and a single object is taken out from a drawing.

4) Properties – PR

It is gives all the dimensions of the object after the objects is drawn.

5) Spline – spl

The use of command in AutoCAD then we can draw any wave shape.

6) Dimension – dim

The use of this command the measure the high, length, circle diameter etc.

V. 2D WIREFRAME CUT SECTION



Fig. 4:

Here 2D design of synchronous generator is shown. It is cut section of 2D generator. And is of 2D wireframe. After it the design is converted into 3D design for the visualization. Also for 2D design the data such as length of rotor core, diameter of the core etc are to be known.

VI. CONCLUSIONS

Here in this project it state in literature that the cost of design, time for design is been save. Also modern technique is used which is good and perfection is gain the manual drawing and drafting. Also work done is fast and well. Hence for variation, analysis, research, manufacturing, this method is good for design.

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