Design and Construction of a Coil Winding

Project Completed by:

Humoud Al Qassabi
Suliman Al Sabari
Abdralrhmam Al Hinai
Hamad Al Shebani

Under the supervision of
Dr. Adel Gastli and Dr. Khaled El-Metwally

Project Summary:
The idea of constructing a coil winding machine began with a request from the technicians who work in the Electrical Engineering laboratories. Therefore, they were considered as our clients and we discussed with them their requirements. These discussions helped us in putting the design specifications of the coil winding machine.
The work begun by collecting the needed information from the literature. After accumulating most of the information that are needed, the machine design has started. It started with simple hand drawing sketches and after discussions with the supervisors of the project and improvements of the sketches it was agreed to prepare all the drawings of the mechanical parts using CAD computer programs such as SolidWorks and AutoCAD. Calculation and simulation of the stresses on critical mechanical components were performed with the ALGOR software package. The electrical parts consist mainly of a power supply, two stepper motors and one dc motor, motor controllers, and limit switches. These parts were selected based on their required performance and availability here in Oman. The most challenging part which consumed a lot of our time was the stepper motor controllers. We have opted for digital control of the motors using the Atmel Microcontroller (AT89C2051-24PC). The controllers were built and tested in the labs before mounting them on the machine. Most of the parts were selected according to our need and of course the budget allocated for the project.