**METU – EEE**

Middle East Technical University – Electrical Electronics Engineering Department

**PROJECT REPORT**

*by* Serhat ÖZKÜÇÜK

within the scope of the course

**EE568**

**SELECTED TOPICS ON ELECTRICAL MACHINES**

*by* Dr. Ozan KEYSAN

2019 – 2020 Spring Semester

**PROJECT REPORT NO** : 01

**PROJECT NAME** : Torque in a Variable Reluctance Machine

**ASSIGN / DUE DATE** : 24.02.2020 / 08.03.2020 , 23:59

Introduction

In this report, a basic model of variable reluctance machine in fig.1 is examined. Analytical expression of torque, reluctance and inductance of the system is derived as a function of rotation of the variable reluctance rotor. 2D FEA model is created in ANSYS/Maxwell 2D and system is analyzed. Linear (constant µ) and non-linear (considering saturation) steel lamination effect is simulated. Also a XX control method is purposed to the model for acceleration with a certain torque.

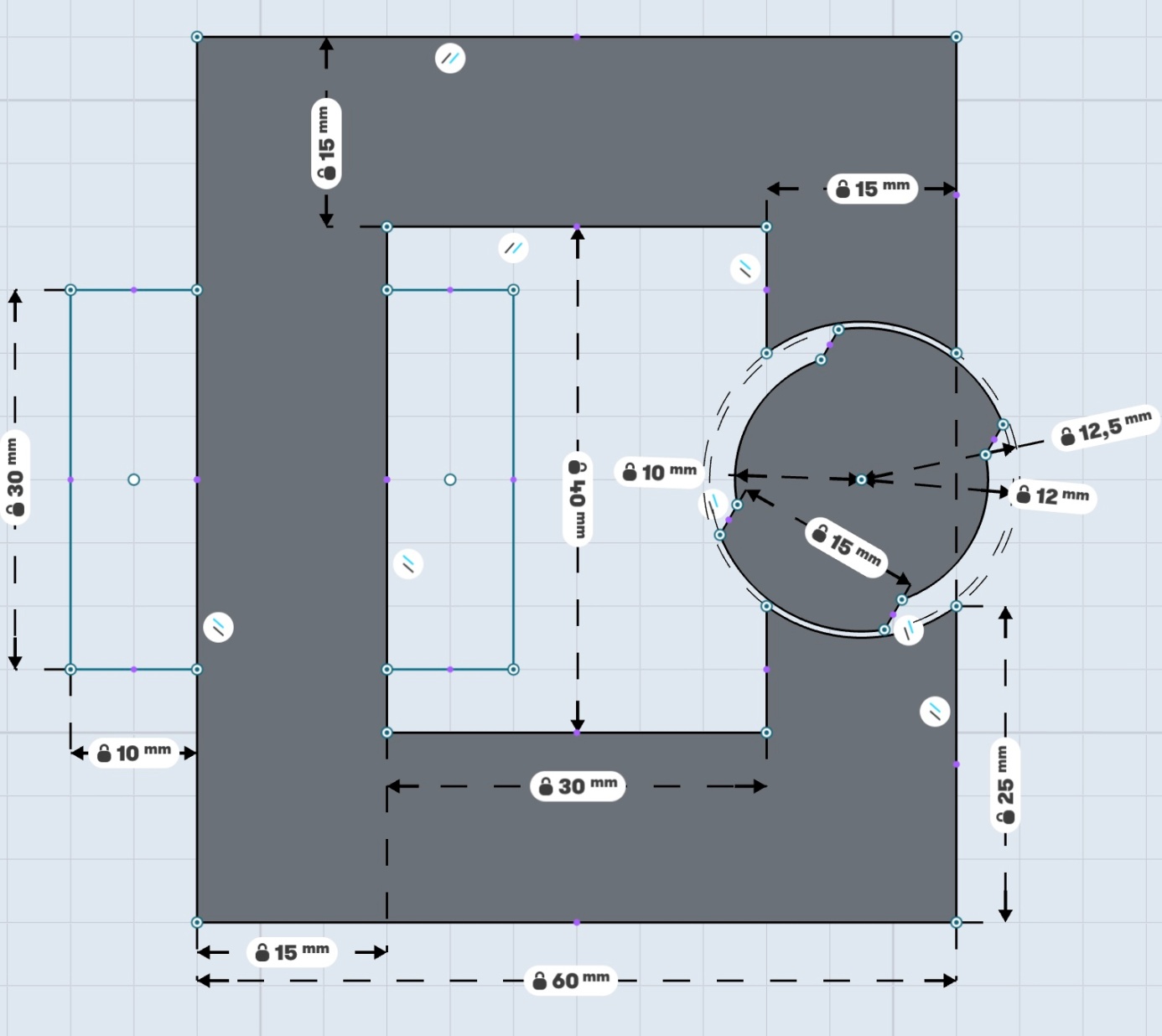


Fig. 1: Physical properties of the variable reluctance machine project model (*Coils are wound within 30mmx10mm rectangle areas, each airgap clearance is 0.5mm, depth of the core is 20mm, number of turns = 250, coil Current = 3 A DC*)

Analytical Modelling