

ABSTRACT

Telkom University nano Satellite have 1u dimension $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$ and mass of less than 1 kg. One of the control system is magnet torquer. Kontrol system in nano satellite have dimension of $\pm 0,3\text{kg}$ and 20 mm. Seeing the mass consumption of current magnet torquer technology. There is need of satellite control which have minimum of mass and dimension.

We research in development and realization of magnet torquer patch microstrip model which specification are $< 1\text{ A}$ system current, 5V system voltage, $> 25\text{ uT}$ magnetic force, $0,2\text{ Am}^2$ magnetic moment and torque in orde of $1 \times 10^{-6}\text{Nm}$. The model design use Solid Work software and the system simulated in CST EM software. The developed magnet torquer have autonomous algorithm control system for minimize the power consumption using PWM (Pulse Width Modulation) and H – Bridge in the ATMEGA 328 microcontroller which using ARDUINO UNO board. So that the magnet torquer can control the polarity exchange and the magnetic force in the system.

The realization of the patch microstrip magnet torquer have dimention $1,7\text{mm}$ and 27 gram which produces magnetic force 56 uT are and maximum torque are $9,9456 \times 10^{-6}\text{ Nm}$.

Keywords : *nano satellite, magnet torquer, patch microstrip, H – Bridge, Pulse Width Modulation, Arduino.*