ABSTRAK

Perkembangan jumlah produksi dan kerumitan produk di bidang manufaktur menjadi penyebab semakin banyaknya penggunaan mesin CNC. Karena itu, untuk memberikan pengetahuan pada generasi muda perlu diterapkannya pendidikan tentang mesin CNC di sekolah vokasi. DTM SV UGM telah berhasil mengembangkan mesin Gama CNC yang dapat diterapkan di bidang pendidikan tetapi perlu dilakukan pengujian ketelitian pergerakan pada mesin Gama CNC agar sesuai dengan standar industri. Pengujian dilakukan menggunakan laser interferometer, optik *linear*, optik *angular*, dan optik *straightness*. Pengujian dilakukan dengan cara *set-up* alat uji pada mesin Gama CNC, kemudian menggerakkan mesin CNC sesuai program pergerakan. Data yang ditangkap oleh detektor kemudian dikirim ke komputer untuk dilakukan proses analisa data. Data pengujian terdiri dari 9 data *linear measurement*, 4 data *angular measurement*, dan 4 data *straightness measurement*. Berdasarkan analisa data didapatkan 15 dari 17 hasil pengujian yang masuk ke dalam nilai toleransi sehingga mesin Gama CNC dapat digunakan.

Kata kunci – mesin CNC mini, laser interferometer, *linear measurement*, *angular measurement*, *angular measurement*

ABSTRACT

The improvement of productions and the complexity of products in the manufacturing sector are the causes of the increasing use of CNC machines. Therefore, to increasing knowledge about that, we need to apply education about CNC machine in the vocational schools. DTM SV UGM has succeeded in developing Gama CNC that can be applied in the vocational school but it is needs to test the accuracy of the movement on the Gama CNC to fit industrial standards. Testing process using laser interferometer, linear optics, angular optics, and straightness optics. The testing process is carried out by setting up the test equipment on a CNC machine, then moving the Gama CNC according to the movement program. The data captured by the detector is sent to computer for data analysis. The test data consisted of 9 linear measurement data, 4 angular measurement data, and 4 straightness measurement data. Based on the data analysis, 15 of 17 test results were found to be within the tolerance value so that the Gama CNC machine can be used.

Keywords – CNC machine, laser interferometer, linear measurement, angular measurement, angular measurement