

Special data register DT90052 is designed to operate the counter to reset or forbid counting. Therefore, we can set the value to control the movement of servo-motor to realize the sudden stop of the platform if wrong operations occur in the process of experiments. The program is shown in Fig.6.

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8 ST R 25
9 OR R 60
10 OR R 61
11 DF
12 FSHS
13 F 0 (MV)
    H 108
    DT 90052
18 F 0 (MV)
    H 100
    DT 90052

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Fig.6 The program of emergency stop

IV. CONCLUSION

According to the methods discussed above, we build up the experimental platform shown in Fig.7.



Fig.7 The experimental platform

After the actual test, the experimental platform designed has ability to meet demands used to have an optimization, including variable rates and placement forces at which the prepreg are laid up. Fig.8 shows the difference of the actual speed and designed speed at 1500r/min. The curve of actual speed fits designed curve very well and the max error in constant area is 17r, nearly one percent of the speed in need. Fig.9 is the placement force error curve diagram of 100N in use, the max error in diagram is $\pm 3N$, nearly five percent of the force in need. So, the experimental platform designed is able to ensure the accuracy of the parameters used to be tested.

When wrong operations occur in the process of experiments, the two limit switches has capacity to ensure the safety of the platform.

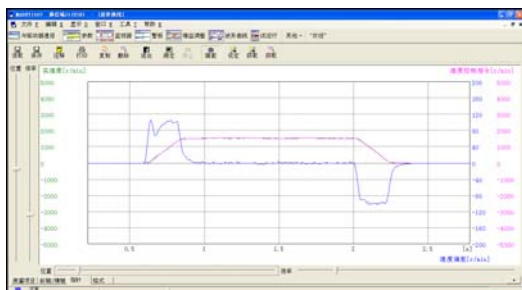


Fig.8 Speed curve diagram

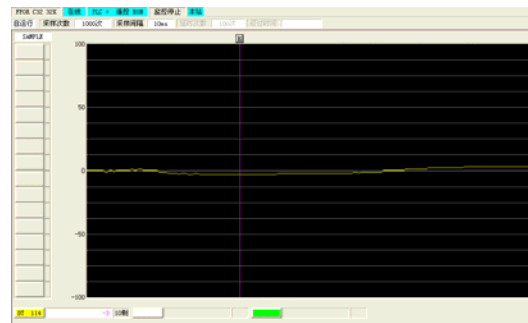


Fig.9 Placement force error curve diagram

The experimental platform is designed to test influences of the parameters during the laying process of prepreg to the quality of the productions. This apparatus has limited capacities to simulate the rates and placement forces at which prepreg are laid up. But, there are a number of variables influencing the tack of the prepreg and its adherence to an underlying substrate. So, it is necessary to develop a newer equipment to study influences of more parameters during lay-up of prepreg to the quality of the products in the following research.

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