5. CONCLUSIONS

5.1 Conclusion

Based on the results and analysis that has been carried out, it can be concluded that

1. Crash box from straight beam has different results in each trigger model. Crash box with non-trigger, 2-fold trigger, 2-hole trigger, 5-fold trigger, and 5-hole trigger have absorption energy of 432.40 J, 416.53 J, 348.78 J, 335.74 J and 267.94 J, respectively. Each trigger model has the maximum force of 8168.4 N, 6942.57 N, 6084.26 N, 6964.34 N, and 5720.21 N. The crash box with the non-trigger model has the highest energy absorbed and the maximum force, but a formed fold is not able to be determined in the same place each time a collision so that it will affect the magnitude the absorbed energy later. So, from the five triggers, the optimal and efficient trigger is a 2-fold trigger model in energy absorption because it has larger absorbed energy than the other three trigger models. The formed folds are the same at each collision so that the amount of energy absorbed will be relatively the same.

2. Crash box from S-beam has different results in each trigger model. Crash box with non-trigger, cross-section trigger, and v trigger has energy values of 3398.94 J, 2255.57 J, and 4751.36 J, respectively. Each trigger has a maximum force of 34788.30 N, 33394.12 N, and 33592.30 N. The crash box with the cross-section trigger model has the lowest absorbed energy and the lowest maximum force. In contrast, the crash box with the v trigger model has the highest absorbed energy, so this model is the optimal and efficient trigger in absorbed energy.

3. The velocity difference has been given for each crash box model and trigger model. The speed difference given is 0.2 m/s, 0.02 m/s, and 0.002 m/s conclude that the effect of velocity variations on the maximum force and energy absorbed has no effect. The amount of the maximum force and absorbed energy are relatively the same for a given velocity variation.