still of elastic deformation get recovery and the most of the rods do not deform any more. At 180ms, all the rods recover from the deformation and the displace of the electric bus reaches the maxmum 550mm. The crash process ends.

The width of the electric bus body is 2540mm and the width between the seats above left and right battery tanks is 1150mm. The maxmum passenger living space intrusion introduced by battery tank is 158mm which indicates that, the side crash has small influence on passenger living space. However, considering the seats location, the battery tank and right panel deformation may do harm to passenger's waist and legs. Because the crash has occurred in the middle of the bus body, the impact to front and rear panels is not obvious and these panels only move along with the bus.

In the vehicle side crash process, thanks to the cushioning effect of battery tank door and the bus frame, the battery system has not been collided directly, which reduces the harm to battery and protects the battery from squashing and danger. However, because the fast melting insurance is placed in the front of the battery, when crash occurred, the tank door would touch the insurance and might get it damaged or short out, and lead to battery fire. The follow-up assignments of the paper are to optimize the structures of battery tank door and tank frame, to leave a safe distance for the battery tank and to improve the safety of battery system.

V. CONCLUSION

In this paper, the vehicle crash simulation theory has been analyzed and the electric bus' and mobile deformable barrier's finite element models have been built. With the help of Ls-dyna solver, the vehicle side crash simulation and deformation analysis have been conducted. Through the discuss of the impact caused by side crash on passenger living space and battery system, the frame structure crashworthiness has been confirmed. In the end, the frame structure improvement suggestions have been offered.

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