



MODELING AND EXPERIMENTAL ANALYSIS FOR THE INTEGRATION OF ZF-TRW HIL AND TYRE TEST BENCH

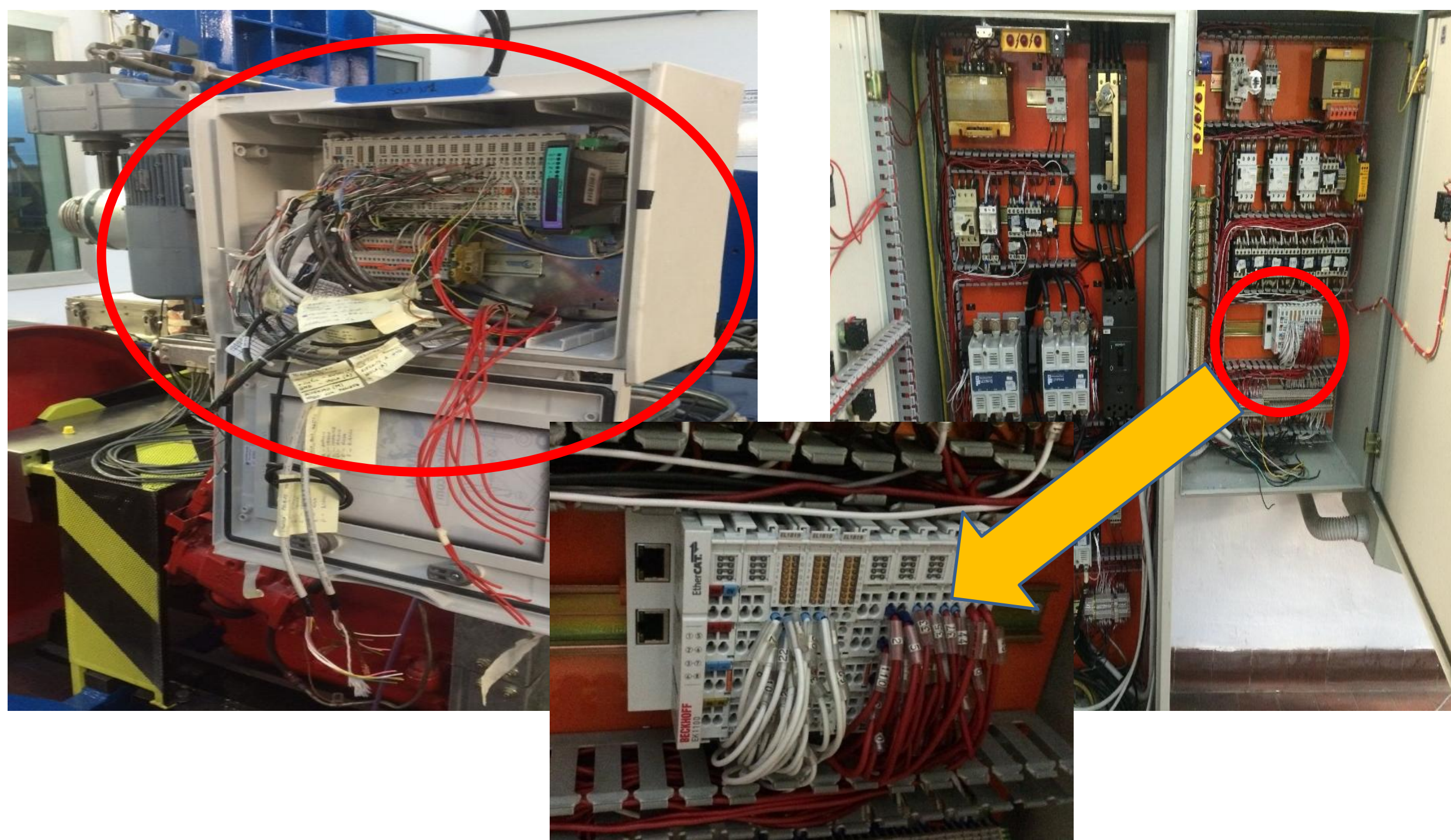
Goal of activity:

This activity is focused on development and integration of an experimental tire test bench with ZF-TRW HIL. This system is aimed to investigate the tyre transient behaviour and its effects on active control system (e.g. ABS)

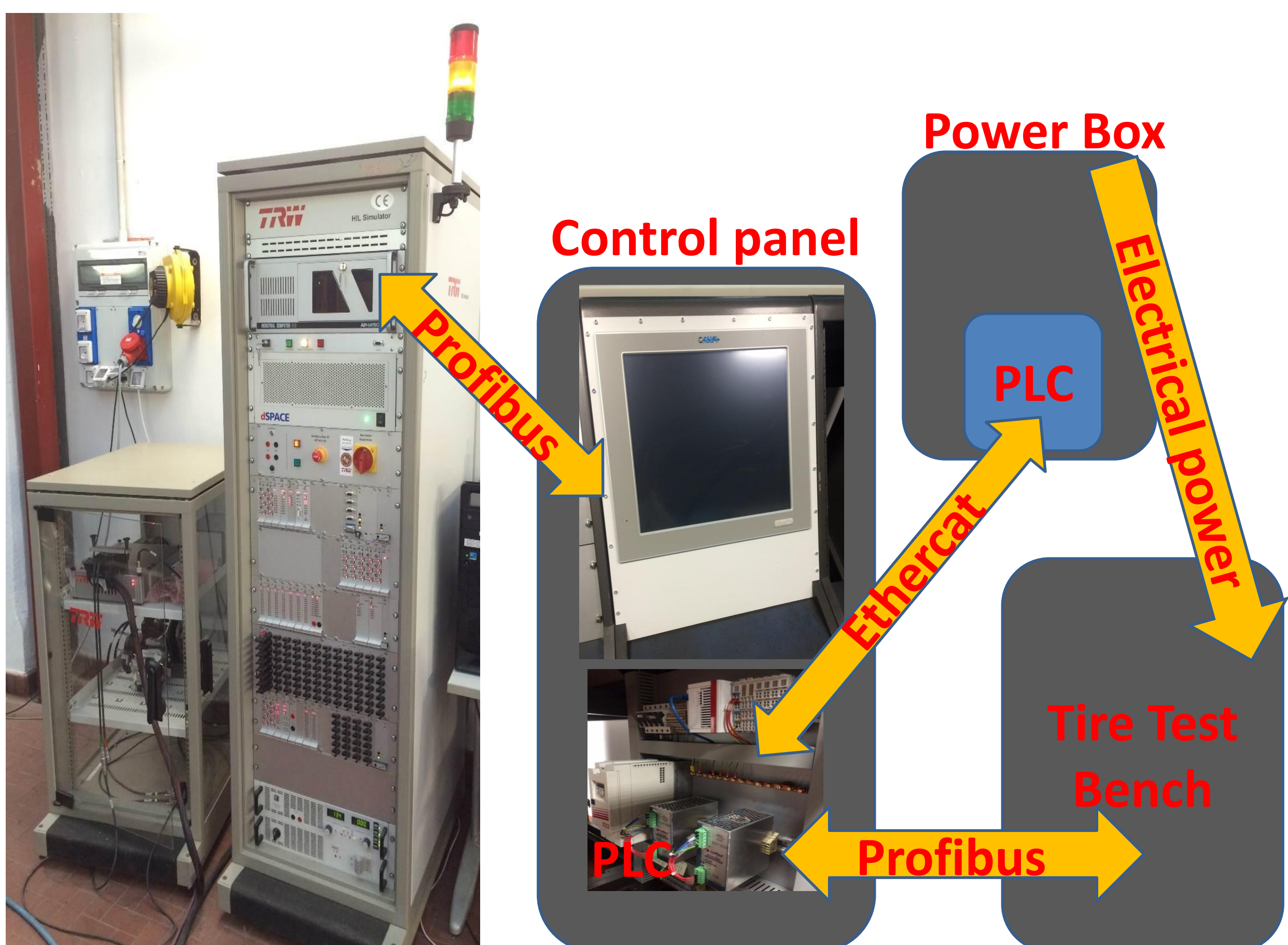


Upgrade the Tire test bench:

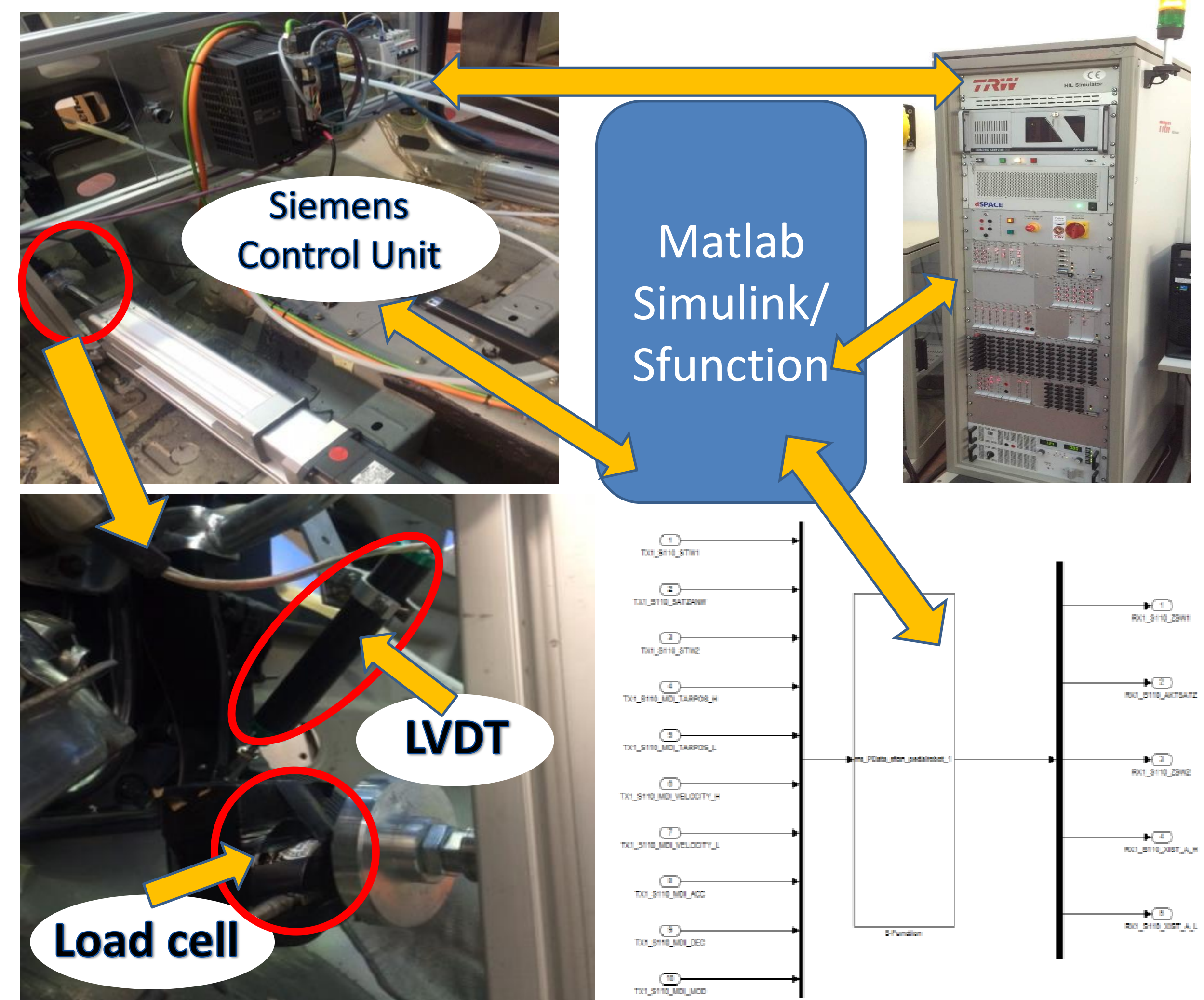
- Mechanical upgrade of Tire test bench (Done)
- Design the new electric schematic (Done)
- Realization of TTB wiring for PLC control (Done)
- Realization of TTB control panel (In progress)



TTB and HIL integration: (In Progress)



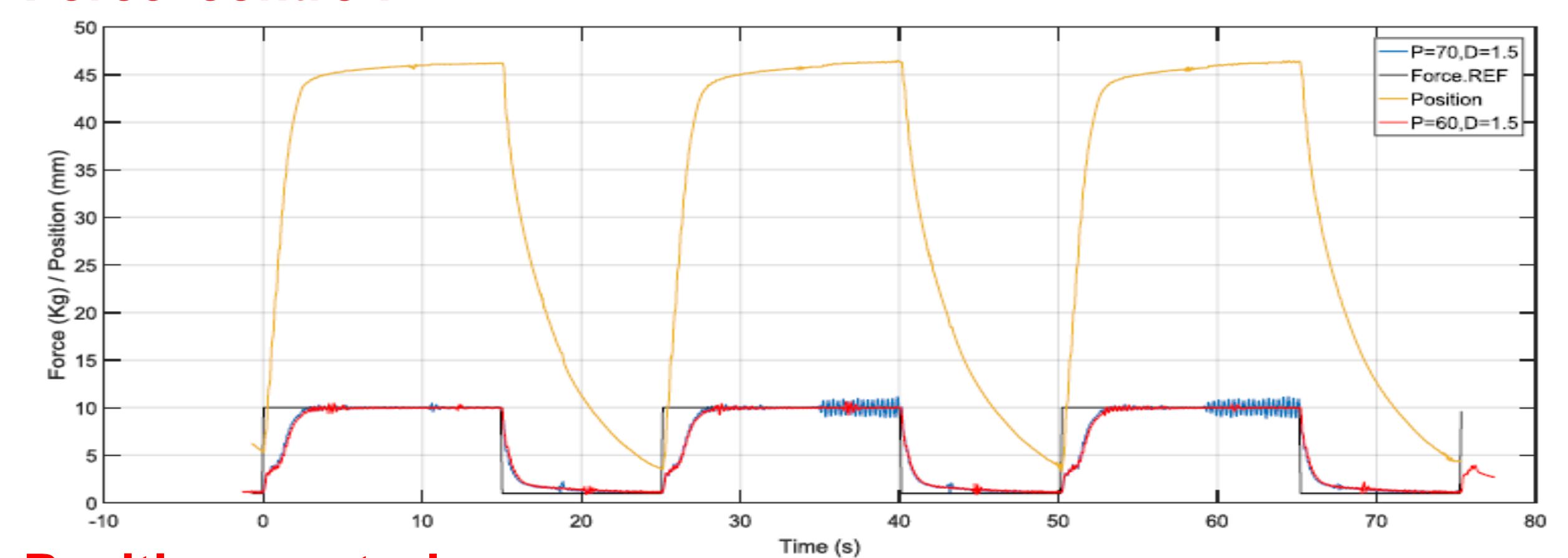
Integration of the Pedal robot with HIL via Profibus: (Done)



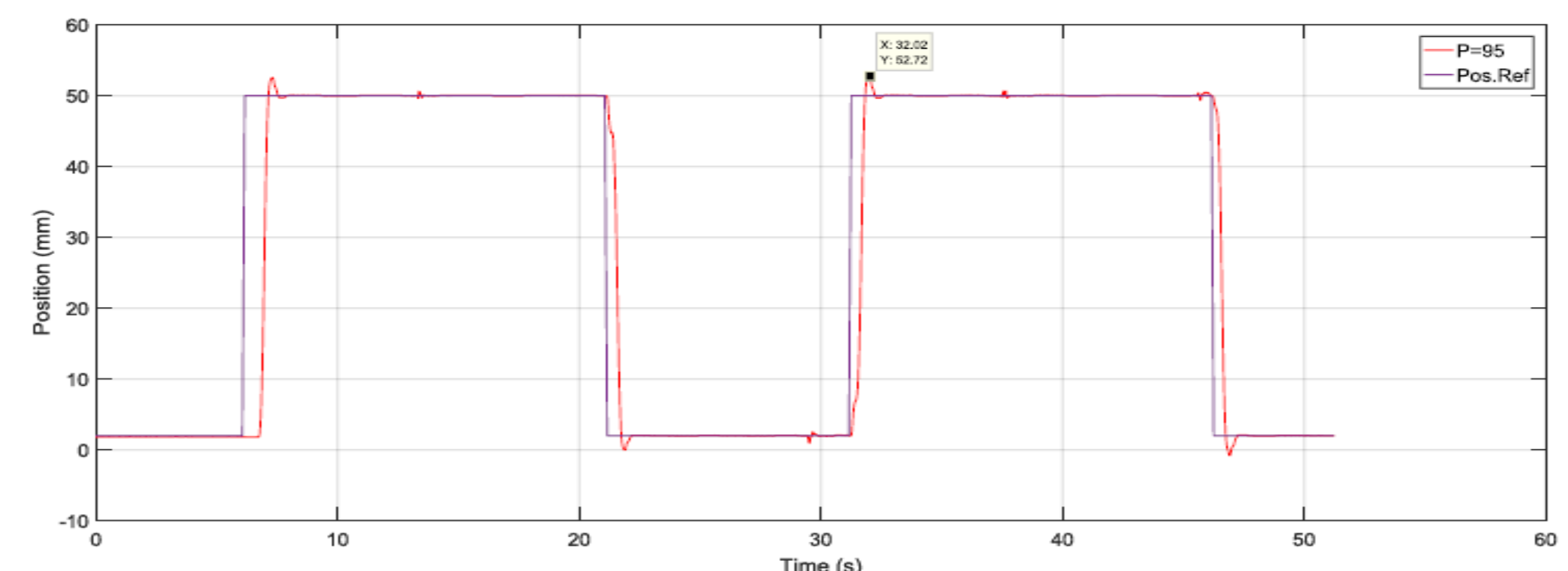
Success of integration can be defined by force and position control of brake pedal robot via Control desk(dSPACE).

Force and position control by applying PID controller:

Force control:



Position control:



Future works:

- TTB control through PLC and Profibus
- Integration of the TTB in the HIL
- Test and development activities using HIL-TTB

Publications:

Two Conferences: 19th international conference on automotive, mechanical engineering (London, Jan 2017)
 5th international conference on Control, mechatronics and Automation (Alberta University, Canada, Oct 2017)

One publication in Journal: International Journal of Mechanical, Aerospace, Mechatronic and Manufacturing Engineering.