Project no. 2: Test stand for AGV drives

The customer would like to build a test bench to test electric drives for automated guided vehicles (AGV), based on a permanent magnet synchronous motor with a gearbox. The hardware is already prepared, but without a control system. Now, the customers demands a control system for the test-bench.

Test bench is designed as drive-against-drive loading with a permanent magnet synchronous motor as a load machine (Fig. 1). The test procedure should use a cyclic operation, consisting from a short movement followed by an idle time (Fig. 2). At first, a control system for an AGV drive should be designed.

The requirements are:
- drive control should be highly dynamic and precise
- test cycle parameters in Fig. 2 should be settable
- test procedure should be controlled from a remote PC
- test-bench operation should have a possibility to fast-stop the drive (emergency stop) from the PC and locally
- actual status should be displayed on remote PC and locally using LCD and signal lights
- drive should be protected against overload and overspeed

The customer demands a complete software solution for an existing HW with source code (programming language C), including code documentation and user guide.
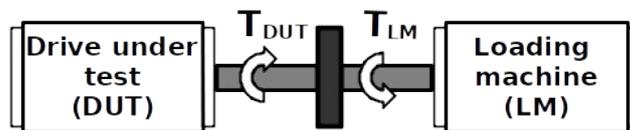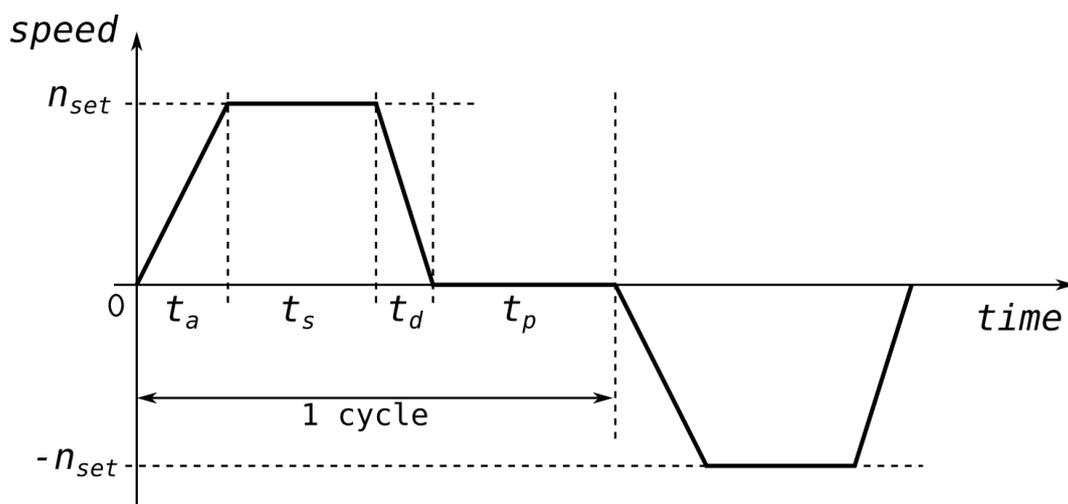

Fig. 1: Test-bench concept

Fig. 2: An example of test cycle
(t_a – acceleration time, t_s – steady state time, t_d – deceleration time, t_p – idle time, n_{set} – set speed)

Task 1 – Missing information

Task 2 – Project management and time schedule 1

Roles assignment:
(name) – (role)

1. …………………… - ……………………………………..
2. …………………… - ……………………………………..
3. …………………… - ……………………………………..
4. …………………… - ……………………………………..
5. …………………… - ……………………………………..
6. …………………… - ……………………………………..

Time schedule - initial

Task & responsible person	Week												
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13

Task 3 – Meeting with customer - agenda

1. ……………………………………………………………..

2. ……………………………………………………………..

3. ……………………………………………………………..

4. ……………………………………………………………..

5. ……………………………………………………………..

6. ……………………………………………………………..

7. ……………………………………………………………..

8. ……………………………………………………………..

Task 4 – Firmware architecture and Time schedule revised

Task & responsible person	Week												
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13