Frequency response tester for a capacity sensor
PAN, June 11th, 2011

1. Introduction

A bachelor thesis at BFH deals with the development of a capacitive sensor.
This sensor should detect the straight border between a material A and B of different dielectric constants at a speed of 10mm/sec and an accuracy of 0.05mm.

2. Test device

This test device contains a rotating drum of material A and B, the border is monitored by a magnetic system.
The capacitive sensor (DUT) will be mounted on the top of this test device.

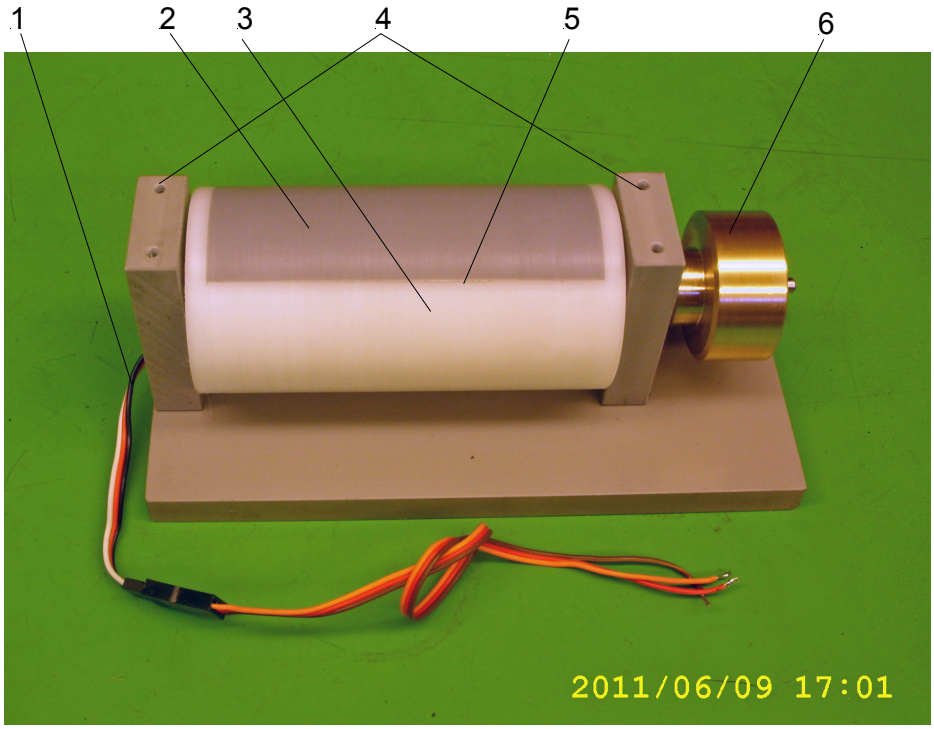

Fig. 1. Test device
1: Magnetic sensor; 2: Material A: PVC; 3: Material B: Ertalyte, 4; Fixture for the capacitive sensor system DUT; 5: Border to be detected; 6: Fly wheel

3. Sensor system for detecting the border between material A and B

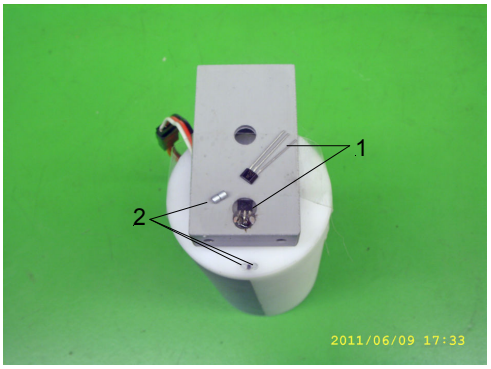

Fig. 2. Magnetic sensor system
1: Hall sensor Allegro A1321LUA
2: Magnets D2x2, opposite polarity

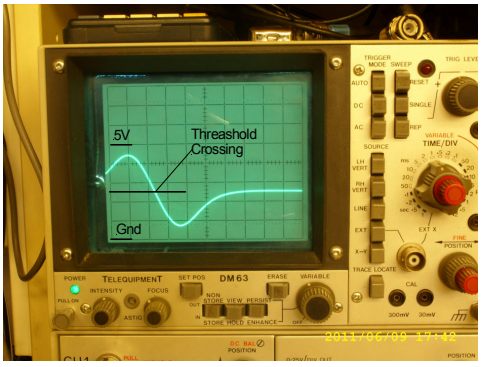

Fig.3. Hall sensor signal
Oscilloscope settings: 1ms/div, 1V/div
Fast detection of crossing the border!

4. Drawing of the test device

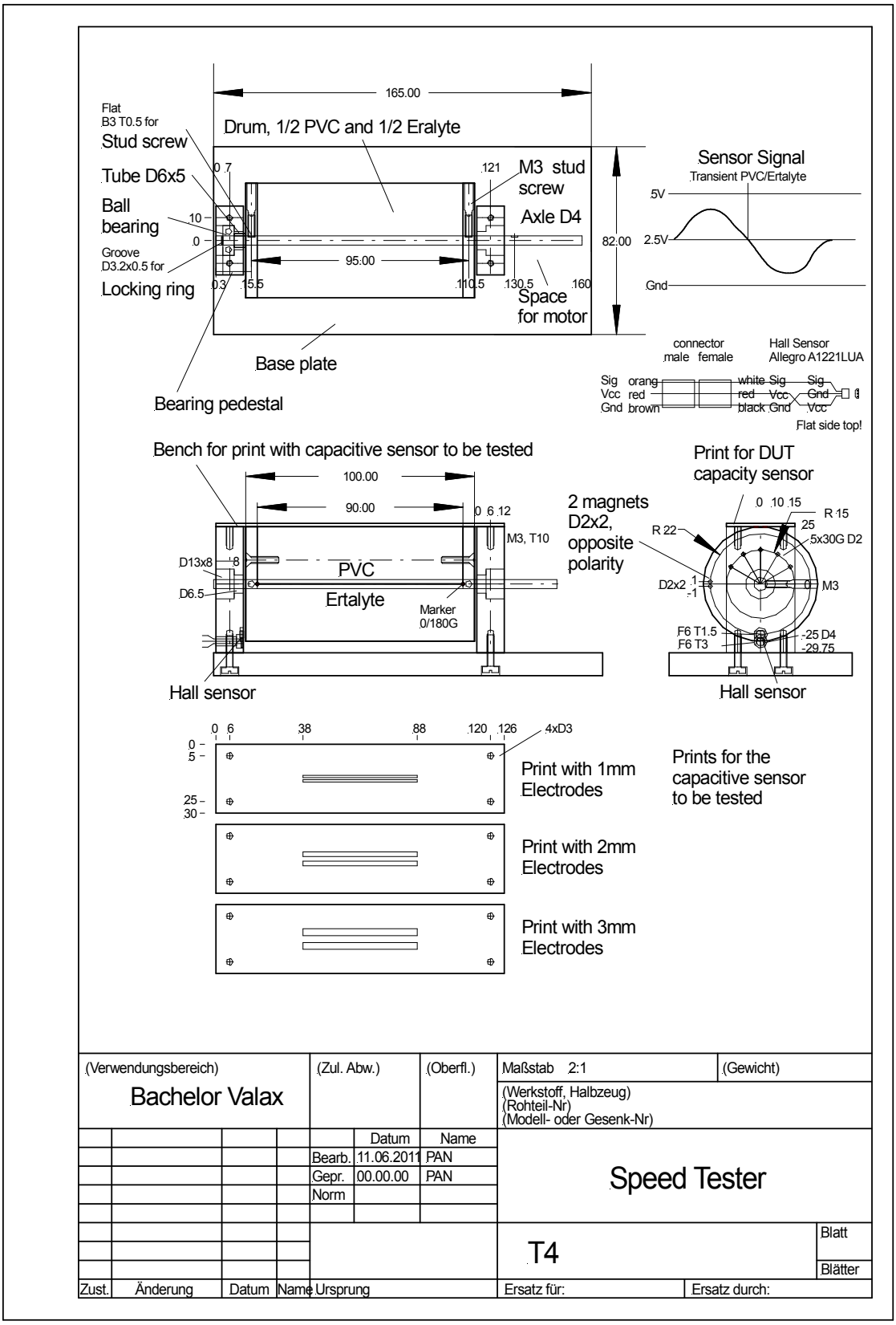

Fig.4. Sketch of the test device