# REPORT ON STEP RESPONSE TEST

**Date** : 31st May, 2019.

**Name** : Siril Teja Dukkipati

**Test** : Step response of pressure sensor in the Artificial muscle (TIM)

**Categories** : 20 psi and 30 psi

**No of trails** : 10 in total, 5 each

To determine the PID gains for the valve cotroller, Step response test has been done on one muscle.

10 trails in total have been performed. 5 trails with a step of 20 psi and 5 with a step of 30 psi.

The sensor response has been plotted against time.

At t=0 sec, plotting is started, valve is in off position.

At t=5 sec, Valve is turned ON (0 to 20 psi) (0 to 30 psi)

At t=15 sec, Valve is turned OFF (20 psi to 0) (30 psi to 0)

At t=20 sec, plotting is stopped (for 20 psi category)

At t=20 sec, plotting is stopped (for 30 psi category).

Graphs have been attached below. (both the Average response and the Individual trails)

**Observations** :

1. There is a consistent overshoot in the sensor valve ( 10 – 15 % of the change in pressure for a period of about 2.5 sec)
2. There is a consistent delay in the sensor reaction when the value rises. (about 2 seconds)
3. There is a consistent delay in the sensor reaction when the value drops. (about 5 seconds)