

Console Response :

PID_CONT1 =

$$K_p + K_i * \frac{1}{s} + K_d * s$$

with $K_p = 17.6$, $K_i = 12.6$, $K_d = 6.18$

Step Response in PID

S1 =

struct with fields:

RiseTime: 0.5848
TransientTime: 10.1730
SettlingTime: 10.1730
SettlingMin: 0.6895
SettlingMax: 1.6216
Overshoot: 62.1648
Undershoot: 0
Peak: 1.6216
PeakTime: 1.6847

Further Tuning:

PID_CONT2 =

$$K_p + K_i * \frac{1}{s} + K_d * s$$

with $K_p = 16.1$, $K_i = 8.72$, $K_d = 8.76$

Step Response in PID further tuned

S =

struct with fields:

```
RiseTime: 0.5854
TransientTime: 5.2498
SettlingTime: 5.2498
SettlingMin: 0.9280
SettlingMax: 1.3660
Overshoot: 36.6032
Undershoot: 0
Peak: 1.3660
PeakTime: 1.6275
```

On Further Tuning We Observe that

- Transient Time has decreased
- Settling Time has decreased
- Overshoot has decreased