Compare Motion Profiles and Closed Loop Control

PI with Velocity, Acceleration and Jerk Feed Forward

PI Control Using a 3rd Order Motion Profile
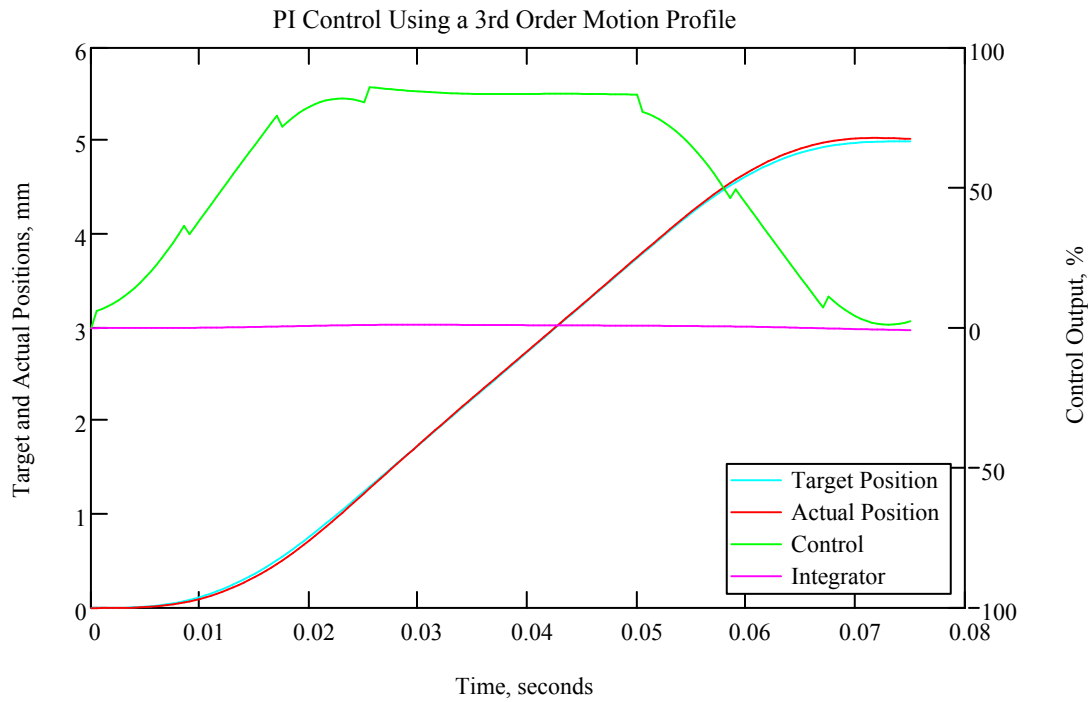
$$\sum_{n}\left[\left(r_n\right)_0 - \left(x_n\right)_0\right]^2 = 0.100308$$

The sum of squared errors is much less with a 3rd order than a 2nd order motion profile. The only difference is the 3rd order motion profile and using jerk feedforwards.

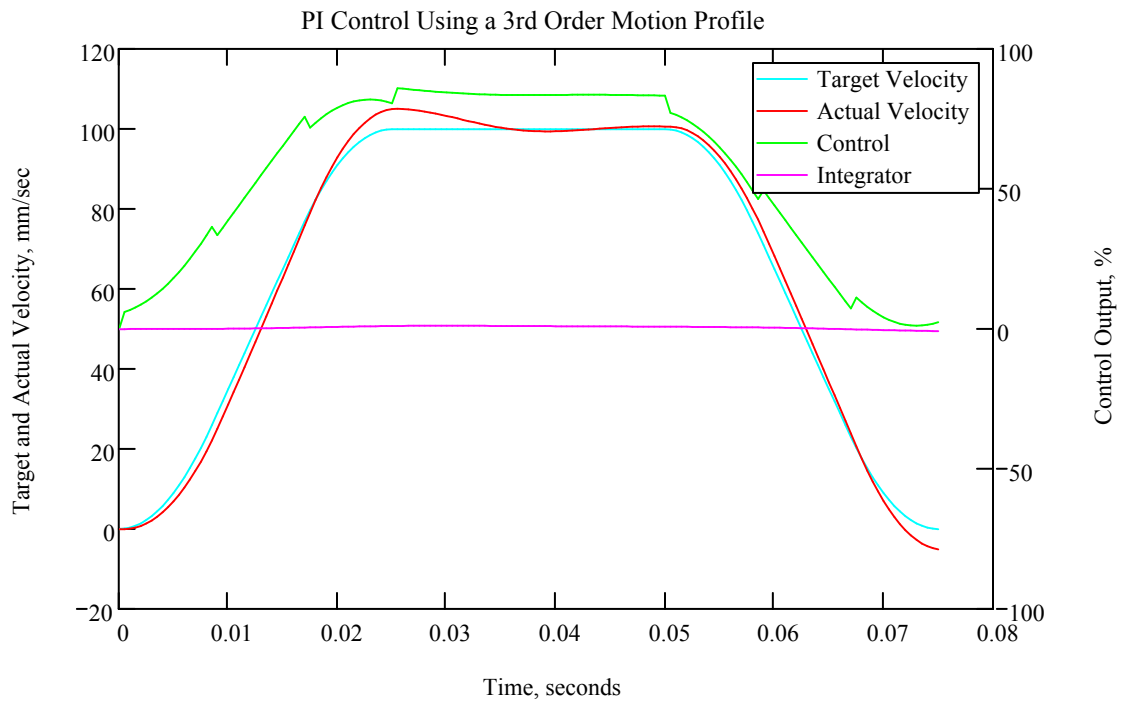K = 1.2 ζ = 0.333333 ω_n = 314.159265

Ki = 1967.320836   Kp = 77.570189

Kv = 0.833333   Ka = 0.001768   Kj = 8.443432×10^{-6}

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The velocity error isn't quite as bad as the 2nd order motion profile