$$G(s) = \frac{1 - 2s}{(s + 1)^3}$$

Set Point Optimization

Parameters	PID	I-PD	PI-D	PIDA
Controller Transfer Function	$C(s) =$ $\frac{1.669\,s^2+1.812\,s+0.7054}{0.04436\,s^2+2.551\,s}$	$C_1(s) =$ $\frac{0.3615}{s}$ $C_2(s) =$ $\frac{0.8581\,s+0.8966}{0.02268\,s+1.0}$	$C_1(s) =$ 0.7127 $C_2(s) =$ $\frac{0.2282}{s}$ $C_3(s) =$ $\frac{0.6708\,s}{0.01717\,s+1.0}$	$C(s) =$ $\frac{1.59\,s^4+3.873\,s^3+5.583\,s^2+3.253\,s+0.8295}{0.1352\,s^4+1.238\,s^3+3.437\,s^2+2.599\,s}$
IAE	3,915113463	5,690966793	4,548331233	3,501399572
K_p	0,705378511	0,89660022	0,712735615	0,829457176
T_i	2,550846278	2,480548531	3,123110831	2,598851128
T_d	0,910409844	0,934358838	0,941149185	1,083979057
T_a				0,753431437
N	52,35009451	41,20043051	54,82845195	1,324940609
α				2,987419413
MS	2.6493	2.1560	2.5548	3.4229
PM	51.5197	-54.3293	55.5992	48.6249
GM	1.6194	1.8663	1.6495	1.4329

Disturbance Rejection Optimization

Parameters	PID	PIDA
Controller Transfer Function	$C(s) = \frac{1.867\,s^2 + 2.051\,s + 0.8302}{0.02921\,s^2 + 2.458\,s}$	$C(s) = \frac{0.268\,s^4 + 1.885\,s^3 + 4.363\,s^2 + 4.133\,s + 1.407}{0.0003115\,s^4 + 0.02523\,s^3 + 0.5807\,s^2 + 2.723\,s}$
IAE	4,762132088	3,464167873
K_p	0,830217066	1,407424495
T_i	2,458469727	2,723429337
T_d	0,902677062	0,921712956
T_a		0,433020144
N	75,97035316	5,772287959
α		16,17939401
MS	3.6106	33.8264
PM	41.7891	-4.2930
GM	1.3924	1.0346