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Openloop Tuning Rules by various researchers.

Type	Settling Criteria	Method	Control Mode	PB , %	I	D
Set-point change / disturbance	25% damping (QAD)	Zieglar-Nichols	P	$100\ t_d\ R_R$		
			PI	$111.1\ \tau_d\ R_R$	$3.33\ \tau_d$	
			PID	$83.3\ \tau_d\ R_R$	$2.0\ \tau_d$	$0.5\ \tau_d$
set-point change	no overshoot & min. response time	Chien, Hrones & Reswick	P	$333\ \iota_d\ R_R$		
			PI	$286\ \iota_d\ R_R$	$1.2\ \iota_d$	
			PID	$167\ \iota_d\ R_R$	ι_d	$0.5\ \iota_d$
set-point change	20% overshoot & min. response time	Chien et. al.	P	$143\ \iota_d\ R_R$		
			PI	$167\ \iota_d\ R_R$	ι_d	
			PID	$105\ \iota_d\ R_R$	$1.35\ \iota_d$	$0.47\ \iota_d$
disturbance	min. control area	Takahashi	P	$110\ \iota_d\ R_R$		
			PI	$110\ \iota_d\ R_R$	$3.3\ \iota_d$	
			PID	$77\ \iota_d\ R_R$	$2.2\ \iota_d$	$0.45\ \iota_d$
disturbance	no overshoot & min. response time	Chien et. al.	P	$333\ \iota_d\ R_R$		
			PI	$167\ \iota_d\ R_R$	$4.0\ \iota_d$	
			PID	$105\ \iota_d\ R_R$	$2.4\ \iota_d$	$0.4\ \iota_d$

Type	Settling Criteria	Method	Control Mode	PB , %	I	D
disturbance	20% overshoot & min. response time	Chien et. al.	P	$143\ \tau_d\ R_R$		
			PI	$143\ \tau_d\ R_R$	$2.3\ \tau_d$	
			PID	$83\ \tau_d\ R_R$	$2\ \tau_d$	$0.42\ \tau_d$
disturbance	QAD	Cohen-Coon	P	$\frac{100}{\left(1 + \frac{\mu}{3}\right)}\ \tau_d\ R_R$		
			PI	$\frac{100}{\left(1 + \frac{\mu}{11}\right)}\ \tau_d\ R_R$	$3.33\ \tau_d \left[\frac{1 + \frac{\mu}{11}}{1 + \frac{11\,\mu}{5}}\right]$	
			PID	$\frac{100}{1.35\left(1 + \frac{\mu}{5}\right)}\ \tau_d\ R_R$	$2.5\ \tau_d \left[\frac{1 + \frac{\mu}{5}}{1 + \frac{3\,\mu}{5}}\right]$	$\frac{0.37\ \tau_d}{1 + \frac{\mu}{5}}$

Note: $\mu = \tau_d / \tau_1$

Closed-Loop Process Identification

Type	Settling Criteria	Method	Control Mode	PB , %	I	D
	QAD	F.G.Shinskey	P	$2\ PB_u$		
			PI	$2\ PB_u$	$0.43\ \tau_n$	
			PID	$4\ PB_u$	$0.5\ \tau_n$	$0.125\ \tau_n$
	QAD	Zieglar-Nichols	P	$2\ PB_u$		
			PI	$2\ PB_u$	$0.833\ \tau_n$	
			PID	$1.66\ PB_u$	$0.5\ \tau_n$	$0.125\ \tau_n$