IMC based PID Controller Design

Controller : $g_c(s) = K_c(1 + \frac{1}{\tau_I s} + \tau_D s)(\frac{1}{\tau F\ s+1})$

Process	Filter	K_c	τ_I	τ_D	τ_F
$\frac{k_p}{\tau_p s+1}$	$\frac{1}{\lambda s+1}$	$\frac{\tau_p}{k_p \lambda}$	τ_p		
$\frac{k_p}{\tau_p s+1}$	$\frac{\gamma s+1}{(\lambda s+1)^2}$	$\frac{2\tau_p - \lambda}{k_p \lambda}$	$\frac{2\tau_p \lambda - \lambda^2}{\tau_p}$		
$\frac{k_p}{(\tau_1 s+1)(\tau_2 s+1)}$	$\frac{1}{\lambda s+1}$	$\frac{\tau_1 + \tau_2}{k_p \lambda}$	$\tau_1 + \tau_2$	$\frac{\tau_1 \tau_2}{\tau_1 + \tau_2}$	
$\frac{k_p}{\tau^2 s^2 + 2\zeta\tau s+1}$	$\frac{1}{\lambda s+1}$	$\frac{2\zeta\tau}{k_p \lambda}$	$2\zeta\tau$	$\frac{\tau}{2\zeta}$	
$\frac{k_p}{\tau^2 s^2 + 2\zeta\tau s+1}$	$\frac{1}{(\lambda s+1)^2}$	$\frac{\zeta\tau}{k_p \lambda}$	$2\zeta\tau$	$\frac{\tau}{2\zeta}$	$\frac{\lambda}{2}$

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Process	Filter	K_c	τ_I	τ_D	τ_F
$\frac{k_p(-\beta s+1)}{\tau^2 s^2 + 2\zeta\tau s + 1}$	$\frac{-\beta s+1}{(\beta s+1)(\lambda s+1)}$	$\frac{2\zeta\tau}{k_p(2\beta+\lambda)}$	$2\zeta\tau$	$\frac{\tau}{2\zeta}$	$\frac{\beta\lambda}{2\beta+\lambda}$
$\frac{k_p(-\beta s+1)}{\tau^2 s^2 + 2\zeta\tau s + 1}$	$\frac{-\beta s+1}{\lambda s+1}$	$\frac{2\zeta\tau}{k_p(\beta+\lambda)}$	$2\zeta\tau$	$\frac{\tau}{2\zeta}$	
$\frac{k}{s}$	$\frac{1}{\lambda s+1}$	$\frac{1}{k\lambda}$			
$\frac{k}{s}$	$\frac{2\lambda s+1}{(\lambda s+1)^2}$	$\frac{2}{k\lambda}$	2λ		
$\frac{k}{s(\tau s+1)}$	$\frac{1}{\lambda s+1}$	$\frac{1}{k\lambda}$		τ	
$\frac{k}{s(\tau s+1)}$	$\frac{2\lambda s+1}{(\lambda s+1)^2}$	$\frac{2\lambda+\tau}{k\lambda^2}$	$2\lambda + \tau$	$\frac{2\lambda\tau}{2\lambda+\tau}$	

Controller : $g_c(s) = K_c(1 + \frac{1}{\tau_I s} + \tau_D s)(\frac{1}{\tau F\ s+1})$

Process	K_c	τ_I	τ_D	τ_F
$\dfrac{k_p e^{-\theta s}}{\tau_p s+1}$	$\dfrac{\tau_p + \frac{\theta}{2}}{k_p(\theta+\lambda)}$	$\tau_p + \dfrac{\theta}{2}$	$\dfrac{\tau_p\theta}{2\tau_p+\theta}$	$\dfrac{\lambda\theta}{2(\lambda+\theta)}$
$\dfrac{k_p e^{-\theta s}}{\tau_p s+1}$	$\dfrac{\tau_p + \frac{\theta}{2}}{k_p\left(\lambda+\frac{\theta}{2}\right)}$	$\tau_p + \dfrac{\theta}{2}$	$\dfrac{\tau_p\theta}{2\tau_p+\theta}$	
$\dfrac{ke^{-\theta s}}{s}$	$\dfrac{2\lambda+\theta}{k(\lambda+\theta)^2}$	$2\lambda + \theta$		
$\dfrac{ke^{-\theta s}}{s}$	$\dfrac{2}{k\left(\lambda+\frac{\theta}{2}\right)}$	$2\lambda + \theta$	$\dfrac{\lambda\theta+\frac{\theta^2}{4}}{2\lambda+\theta}$	