

KYM438 Proses Kontrol Uygulamaları

(2 0 2) 3 kredi, 5 AKTS, Seçmeli Ders

KAYNAKLAR

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2. Marlin, E. T., 2000, Process Control: Designing Processes and Control Systems for Dynamic Performance, 2nd ed., McGraw Hill.
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(12. Hafta)

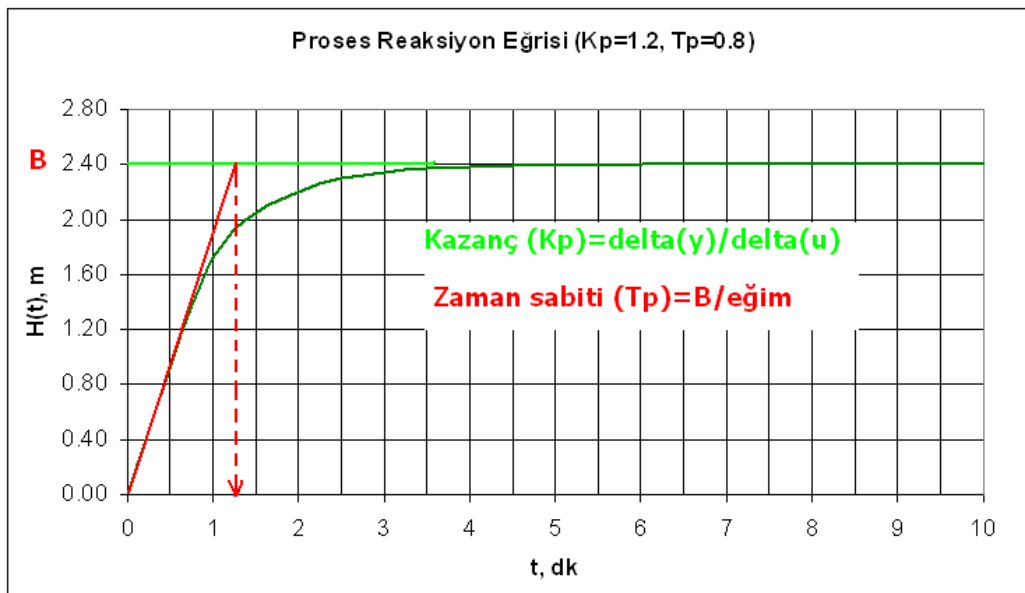
PROJE ÇALIŞMASI- MODEL PARAMETRELERİNİN BELİRLENMESİ

a) 1. Mertebeden Modelin Parametrelerinin Belirlenmesi

1. Mertebeden İletim Fonksiyonu $G(s) = \frac{Y(s)}{U(s)} = \frac{K_p}{\tau_p s + 1}$

1. Mertebeden Prosesin A birim basamak etkiye yanıtımı $Y(t) = AK_p(1 - e^{-t/\tau_p})$

1.Yöntem: Proses Reaksiyon Eğrisi

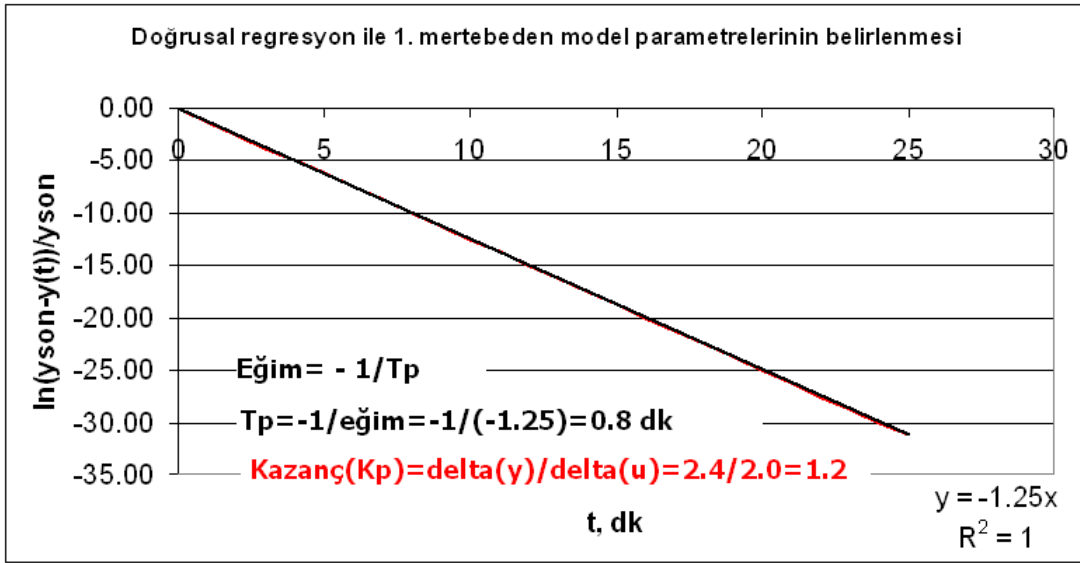


2.Yöntem: Doğrusal (Lineer) Regresyon

$$Y(t) = AK_p(1 - e^{-t/\tau_p})$$

$$AK_p = Y(\infty) \Rightarrow Y(t) = Y(\infty)(1 - e^{-t/\tau_p}) \Rightarrow Y(t) = Y(\infty) - Y(\infty) * e^{-t/\tau_p} \Rightarrow \frac{Y(\infty) - Y(t)}{Y(\infty)} = e^{-t/\tau_p}$$

$$\ln \left[\frac{Y(\infty) - Y(t)}{Y(\infty)} \right] = -\frac{1}{\tau_p} t$$

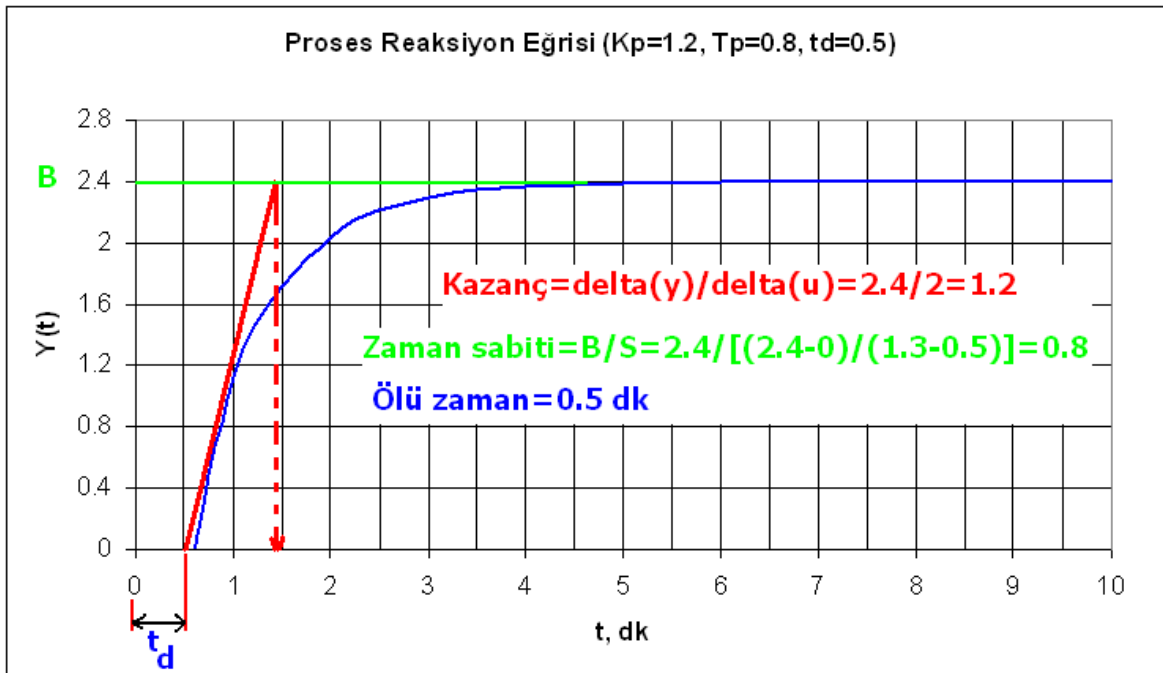


b) 1.Mertebeden Ölü Zamanlı Modelin Parametrelerinin Belirlenmesi

1.Mertebeden İletim Fonksiyonu $G(s) = \frac{Y(s)}{U(s)} = \frac{K_p e^{-\theta s}}{\tau_p s + 1}$

1. Mertebeden Prosesin A birim basamak etkiye yanıtını $Y(t) = AK_p(1 - e^{-(t-\theta)/\tau_p})$

1.Yöntem: Proses Reaksiyon Eğrisi



2.Yöntem: Doğrusal (Lineer) Regresyon

$$Y(t) = AK_p(1 - e^{-(t-\theta)/\tau_p})$$

$$AK_p = Y(\infty) \Rightarrow Y(t) = Y(\infty)(1 - e^{-(t-\theta)/\tau_p}) \Rightarrow Y(t) = Y(\infty) - Y(\infty) * e^{-(t-\theta)/\tau_p} \Rightarrow \frac{Y(\infty) - Y(t)}{Y(\infty)} = e^{-(t-\theta)/\tau_p}$$

$$\ln\left[\frac{Y(\infty) - Y(t)}{Y(\infty)}\right] = -\frac{1}{\tau_p}t + \frac{\theta}{\tau_p}$$

