Model Documentation of the 'Binary distillation tower Test and generate the linearized 82-state distillation column'

1 Nomenclature

1.1 Nomenclature for Model Equations

- x state vector
- u control input vector
- w noise vector
- z regulated output vector
- y measurement vector

2 Model Equations

State Vector and Input Vector:

$$x \in \mathbb{R}^8 2u$$
 $\in \mathbb{R}^4 w \in \mathbb{R}^2 z$ $\in \mathbb{R}^4 y \in \mathbb{R}^4$

System Equations:

$$\dot{x}(t) = Ax(t) + B_1 w(t) + Bu(t) \tag{1a}$$

$$z(t) = C_1 x(t) + D_{11} w(t) + D_{12} u(t)$$
(1b)

$$y(t) = Cx(t) + D21w(t) \tag{1c}$$

Outputs: z



Symbol	Value						
	-10.5231162	7.41258	0	0	0	0	
	9.52253619	-16.8948712	7.41258	0	0	0	
	0	9.48229122	-16.8436475	7.41258	0	0	
	0	0	9.43106755	-16.7788931	7.41258	0	
	0	0	0	9.36631312	-16.6977362	7.41258	
	0	0	0	0	9.28515615	-16.5971145	7
	0	0	0	0	0	9.18453448	-16
	0	0	0	0	0	0	9.0
	0	0	0	0	0	0	
	0	0	0	0	0	0	
	0	0	0	0	0	0	
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	0	0	0	0	0	0	

3 Derivation and Explanation

This model is part of the "'COMPleib"' - library and was automatically imported into ACKREP.

The original description was:

BDT2 Binary distillation tower Test and generate the linearized 82-state distillation column "Multivariable feedback control Analysis and design" S. Skogestad and I. Postlethwaite John Wiley and Sons, 1996, Section 12.4 Note Matlab files http://www.nt.ntnu.no/users/skoge/book/matlab.html stored in /export/home/leibfr/Lipinski/matlab/....Examples_Multi_Feedback_Control/matlab_m/cola F. Leibfritz, 29.10.2003 save Dist_Column_82 A B B1 C C1 D12

4 Simulation

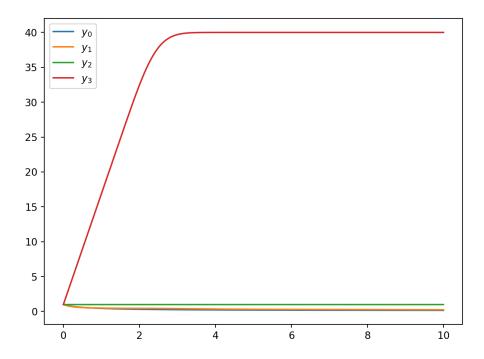


Figure 1: Simulation of the Binary distillation tower Test and generate the linearized 82-state distillation column.

References

[1] Multivariable feedback control Analysis and design" S. Skogestad and I. Postlethwaite John Wiley and Sons, 1996, Section 12.4