

Optimierung

Datensatz VersuchsDatenSmA2020

Variablendefinition:

Variable Definitions

VariablesMin/MaxFormulaConst. Constr. Linear Constr. Non-lin. Constr. Performance

Types of Variables:

a. **process variables.** Process variables are measured and may be influenced by the automation system.

b. **disturbance variables.** Disturbance variables influence the process. They are measured but they cannot be directly influenced by the automation system.

c. **decision variables.** Decision variables are measured and may be influenced by the automation system. They are used to determine the **performance index**.

#	Variable	Variable Type	Abbreviation
1	BatchRunTime	Process Variable ▾	PBatTim
2	L21003	Process Variable ▾	PL1
3	L22003	Process Variable ▾	PL2
4	L23003	Process Variable ▾	PL3
5	N11001	Not Used ▾	
6	N12001	Not Used ▾	
7	N22500	Decision Variable ▾	EN25
8	PD14006_SP	Not Used ▾	
9	ScenID	Not Used ▾	
10	Y14001	Not Used ▾	
11	Y14005	Not Used ▾	
12	Y21001	Decision Variable ▾	EY2101
13	Y21006	Not Used ▾	
14	Y22004	Not Used ▾	
15	Y22006	Not Used ▾	
16	Y23001	Decision Variable ▾	EY2301
17	Y23006	Not Used ▾	

Lineares Modell:

The equation for the linear model and a table with coefficients is presented.

$$P_{\text{dependent}} = c_0 + c_{EN25} E_{N25} + c_{EY2101} E_{Y2101} + c_{EY2301} E_{Y2301}$$

☐ Show all digits

Linear coefficients

$P_{\text{dependent}}$	c_0	c_{EN25}	c_{EY2101}	c_{EY2301}
BatchRunTime	1,269.86	0.094	-9.84	-4.71
L21003	36.18	0.005	-0.24	-0.20
L22003	6.12	-0.001	0.003	0.020
L23003	6.94	0.004	-0.20	0.19

Quadratisches Modell:

Equations for Quadratic approximation for Process Variables

The equation for the quadratic model and a table with coefficients is presented.

$$P_{\text{dependent}} = c_0 + c_{EN25} E_{N25} + q_{EN25} E_{N25}^2 + m_{EN25,EY2101} E_{N25} E_{Y2101} + m_{EN25,EY2301} E_{N25} E_{Y2301} + c_{EY2101} E_{Y2101} + q_{EY2101} E_{Y2101}^2 + m_{EY2101,EY2301} E_{Y2101} E_{Y2301} + c_{EY2301} E_{Y2301} + q_{EY2301} E_{Y2301}^2$$

☐ Show all digits

Quadratic coefficients

Status	$P_{\text{dependent}}$	c_0	c_{EN25}	c_{EY2101}	c_{EY2301}	q_{EN25}	q_{EY2101}	q_{EY2301}	$m_{EN25,EY2101}$	$m_{EN25,EY2301}$	$m_{EY2101,EY2301}$
Ok	BatchRunTime	610,175.87	128.08	-12,525.32	-6,713.61	0.001	-0.034	-0.052	1.98	-3.82	150.56
Ok	L21003	6,058.87	-2.16	-22.72	-118.83	0.000	-0.016	-0.008	-0.032	0.063	0.81
Ok	L22003	-2,143.29	0.54	30.58	23.07	0.000	-0.001	-0.000	-0.008	-0.000	-0.33
Ok	L23003	465.35	3.17	-13.00	-45.44	0.000	-0.000	0.004	-0.039	-0.007	0.74

Performance Index (Gütekriterium):

Performance Index Formula

Supported Functions and Examples

C=PBatTim

PBatTim: BatchRunTime, PL1: L21003, PL2: L22003, PL3: L23003, EN25: N22500, EY2101: Y21001, EY2301: Y23001
The performance index is stored in variable **C**. Thus, please assign **C** in the last line of the formula.
Conformality with javascript and python will be checked.

Optimiertes, quadratisches Modell:



