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 μ_r) [] (σ_r

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$$EMC_{\infty} = \frac{\sum_{k=1}^n \left((B_{pu,max}^k - \Delta B_{pu,max}^k) \times \alpha_{1k} + (B_{pu,avg}^k - \Delta B_{pu,avg}^k) \times \alpha_{2k} \right)}{\left(\alpha_{1max_{selected}} + \alpha_{2max_{selected}} \right) \times n} \quad ()$$

$$\left(\begin{array}{c} B_{\max} \\ B_{\text{avg}} \end{array} \right)$$

$\cos \varphi$

k

$$\alpha_2 \leq \alpha_1 \quad \alpha_1 \geq \alpha_2$$

$$1 \leq \alpha_2 \leq 5 \quad 1 \leq \alpha_1 \leq 10$$

$$\Delta B^k$$

$$\Delta B_{pu,avg}^k \quad \Delta B_{pu,max}^k \quad k$$

$$\left(\begin{array}{c} \Delta B^k \end{array} \right)$$

$$SE = 20 \log \frac{B_{out}^k}{B_{in}^k} \quad ()$$

$$\left(\begin{array}{c} \alpha_{1k} \end{array} \right)$$

$$SE = 3.34t \sqrt{\mu_r \sigma_r f} + 168 - 10 \log_{10} \left(\frac{\mu_r f}{\sigma_r} \right) \quad ()$$

$$\mu_r \quad \sigma_r$$

$$P_x = P_{wire} + P_{conduit} + \alpha P_{salary} \quad x \in \{A, B, C, \dots\} \quad ()$$

$$P_{conduit} \quad P_{salary} \quad P_{wire}$$

$$\alpha$$

$$\Delta V_M = \frac{\sum_{j=1}^t \alpha_j \Delta V\%}{\Delta V_{base} \times \sum_{j=1}^t \alpha_j \times t} \quad ()$$

$$\left(\begin{array}{c} [G^i] \end{array} \right)$$

$$:$$

$$([M])$$

$$\Delta V\% = \alpha = \frac{100 \rho L I \cos \varphi}{a} \quad ()$$

t

$$(\alpha_j)$$

$$[G^i] = \begin{bmatrix} 1 & RW_{AB}^i & RW_{AC}^i \\ 1/RW_{AB}^i & 1 & RW_{BC}^i \\ 1/RW_{AB}^i & 1/RW_{BC}^i & 1 \end{bmatrix}, i \in \{EMC, Price, \Delta V\}$$

$$()$$

$$\Delta V_M$$

$$\Delta V\%$$

$$) I \quad L \quad \rho \quad a$$

$$[M] = \begin{bmatrix} 1 & RW_{EMC}^{price} & RW_{\Delta V}^{price} \\ 1/RW_{EMC}^{price} & 1 & RW_{\Delta V}^{EMC} \\ 1/RW_{\Delta V}^{price} & 1/RW_{\Delta V}^{EMC} & 1 \end{bmatrix} \quad ()$$

$$[G^i - \lambda I]$$

$$\lambda_{max} \quad ()$$

$$[G^i - \lambda_{max} I] \times W = 0$$

$$\begin{pmatrix} \lambda_{max} & & \\ & \lambda_{max} & \\ & & \lambda_{max} \end{pmatrix} n$$

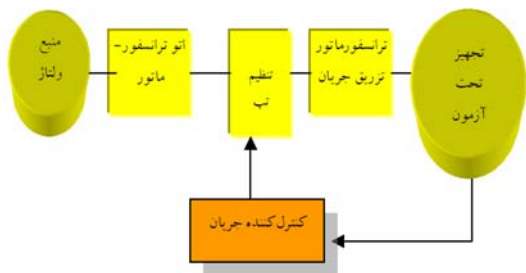
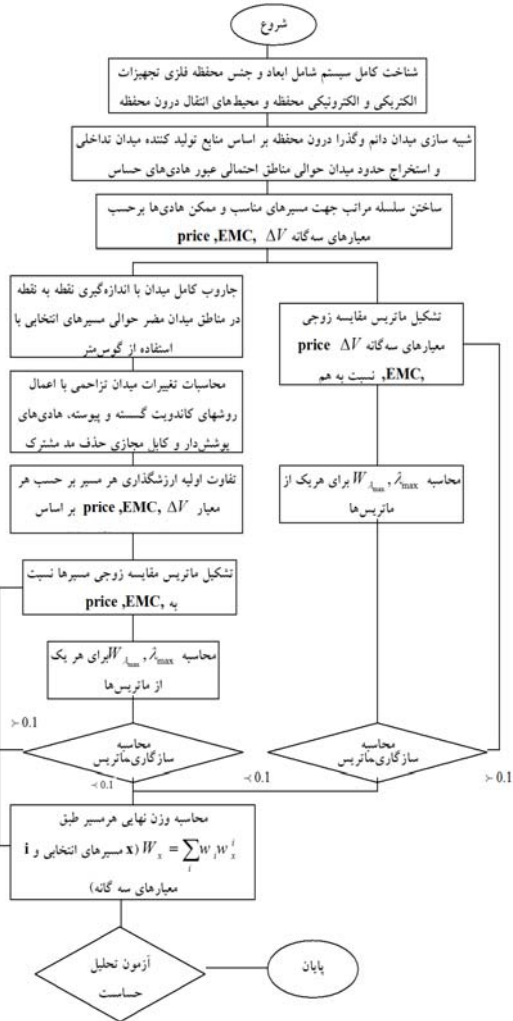
$$\lambda_{max} - n$$

$$W_i = \sum_x W_x W_i^x$$

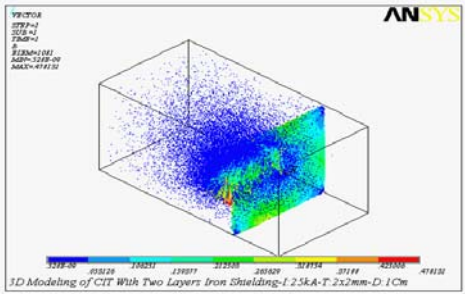
$$I.I = \frac{\lambda_{max} - n}{n - 1} \quad ()$$

$$I.R = \frac{I.I}{II.R}$$

IR
IIR



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(x,y,z) (cm)						
	B_x (mT)	B_y (mT)	B_z (mT)	B_x (mT)	B_y (mT)	B_z (mT)
()	/	/	/	/	/	/
()	/	/	/	/	/	/
()	/	/	/	/	/	/
()	/	/	/	/	/	/
()	/	/	/	/	/	/

()

()

(x,y,z) (cm)						
	B_x (mT)	B_y (mT)	B_z (mT)	B_x (mT)	B_y (mT)	B_z (mT)
()	/	/	/	/	/	/
()	/	/	/	/	/	/
()	/	/	/	/	/	/
()	/	/	/	/	/	/
()	/	/	/	/	/	/

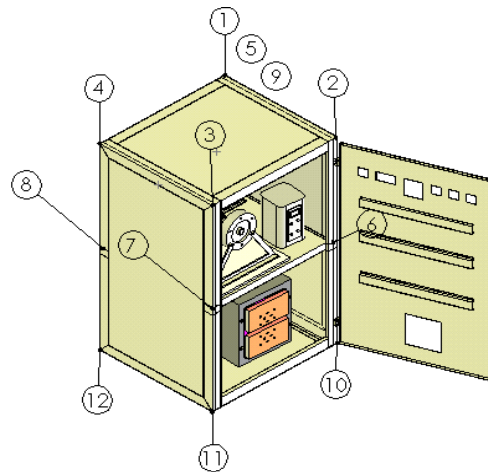
()

)

(

(() ())

y x z



C B A ()

() ()

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$A = \{(12, 9), (9, 5), (5, 1), (1, 2), (7, 8), (8, 4), (4, 1)\}$

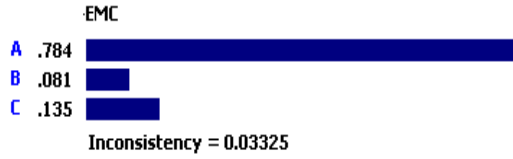
$B = \{(12, 9), (9, 5), (5, 1), (1, 2)\}$

$C = \{(12, 9), (9, 5), (5, 6)\}$

() ()

()

y



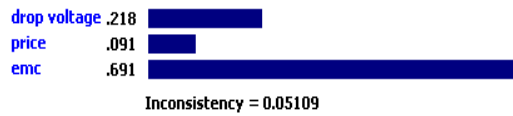
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$$w = \begin{pmatrix} EMC & \Delta V & Price \\ 1 & 4 & 6 \\ 1/4 & 1 & 3 \\ 1/6 & 1/3 & 1 \end{pmatrix}$$

	$\Delta V\%$	Price	EMC
A	/		/
B	/	/	/
C	/	/	/

()



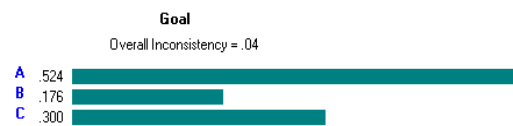
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$$\Delta V = \begin{pmatrix} 1 & 1/4 & 1/5 \\ 4 & 1 & 1/2 \\ 5 & 2 & 1 \end{pmatrix}$$

$$Price = \begin{pmatrix} 1 & 1/3 & 1/4 \\ 3 & 1 & 1/2 \\ 4 & 2 & 1 \end{pmatrix}$$

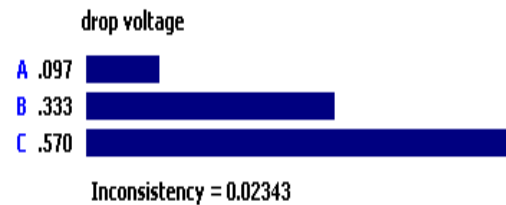
$$EMC = \begin{pmatrix} 1 & 8 & 7 \\ 1/8 & 1 & 1/2 \\ 1/7 & 2 & 1 \end{pmatrix}$$

()



() ()

()
A C B A



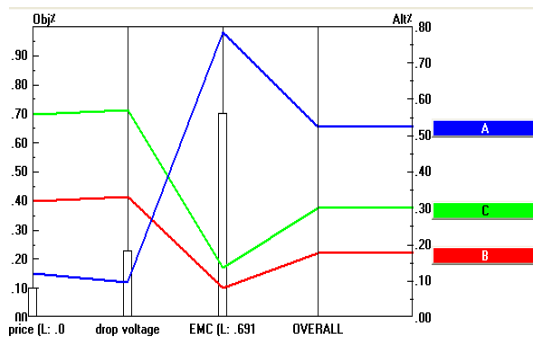
$$C_T^P = \frac{P}{T} \cdot \frac{\partial T}{\partial P}$$

()

A

((S₁))

C B ((S₆))



B

C

()

B

()

((S₂))

)

/

(

/

/

((S₅))

()

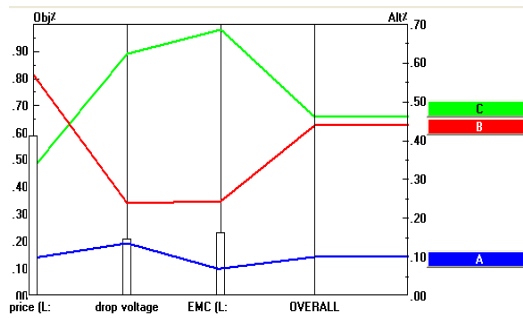
C

((S₃))

((S₄))

() ()

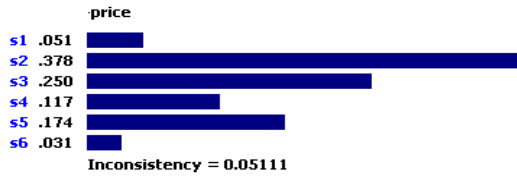
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	ΔV	price	EMC
S ₁	/ %		/
S ₂	/ %	/	/
S ₃	/ %	/	/
S ₄	/ %	/	/
S ₅	/ %	/	/
S ₆	/ %	/	/

C

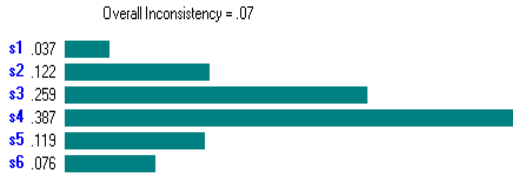
B



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$$\Delta V = \begin{pmatrix} S1 & S2 & S3 & S4 & S5 & S6 \\ 1 & 1/4 & 1/5 & 1/5 & 1/4 & 1 \\ 4 & 1 & 1/2 & 1/2 & 1 & 4 \\ 5 & 2 & 1 & 1 & 2 & 5 \\ 5 & 2 & 1 & 1 & 2 & 5 \\ 4 & 1 & 1/2 & 1/2 & 1 & 4 \\ 1 & 1/4 & 1/5 & 1/5 & 1/4 & 1 \end{pmatrix}$$

(())



$$Price = \begin{pmatrix} S1 & S2 & S3 & S4 & S5 & S6 \\ 1 & 1/6 & 1/5 & 1/4 & 1/5 & 3 \\ 6 & 1 & 2 & 4 & 3 & 7 \\ 5 & 1/2 & 1 & 3 & 2 & 6 \\ 4 & 1/4 & 1/3 & 1 & 1/2 & 5 \\ 5 & 1/3 & 1/2 & 2 & 1 & 6 \\ 1/3 & 1/7 & 1/6 & 1/5 & 1/6 & 1 \end{pmatrix}$$

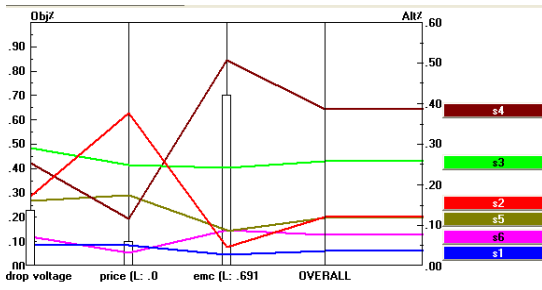
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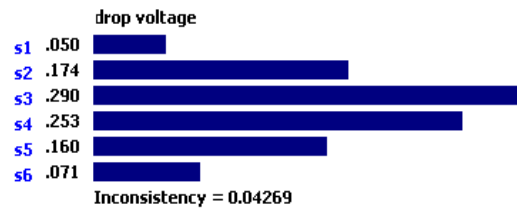
$$EMC = \begin{pmatrix} S1 & S2 & S3 & S4 & S5 & S6 \\ 1 & 1/3 & 1/6 & 1/9 & 1/5 & 1/5 \\ 3 & 1 & 1/4 & 1/8 & 1/3 & 1/3 \\ 6 & 4 & 1 & 1/4 & 5 & 5 \\ 9 & 8 & 4 & 1 & 7 & 7 \\ 5 & 3 & 1/5 & 1/7 & 1 & 1 \\ 5 & 3 & 1/5 & 1/7 & 1 & 1 \end{pmatrix}$$

S₄

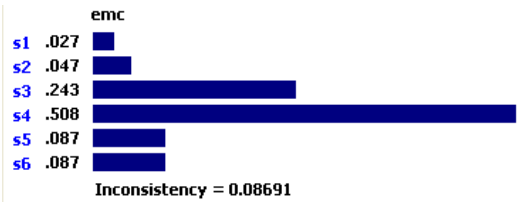
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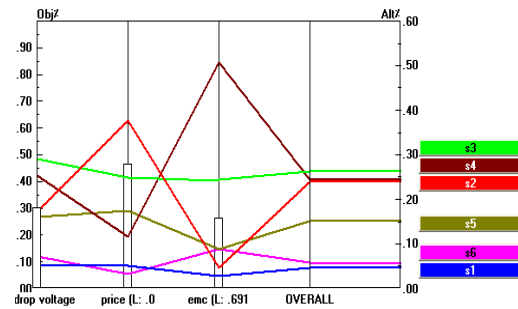


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(()) S₃

S₂



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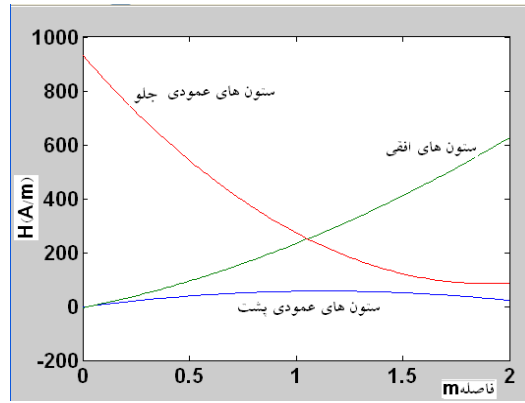
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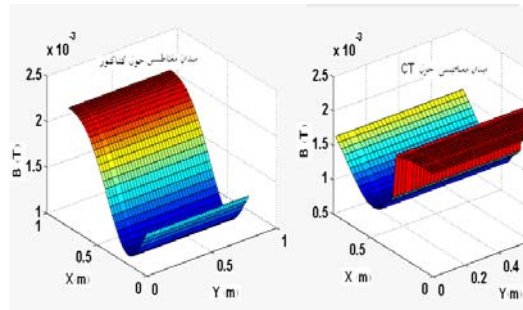


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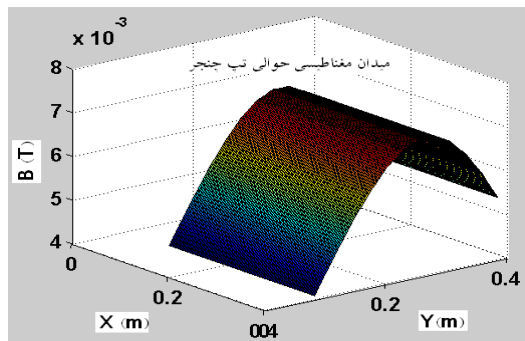
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