## Errata, Modeling of Combustion Systems – A Practical Approach, [first printing of] 2<sup>nd</sup> ed., Colannino, J. © 2025 (last updated 12 April 2025)

As found:	$\alpha_w = \frac{W_a}{W_f} \left(\frac{100}{21}\right) \left(1 + \frac{\Psi}{4}\right)$	Equation 13-14a	
Corrected:	$\alpha_w = \frac{W_a}{W_f} \left(\frac{100}{21}\right) \left(1 + \frac{\Psi}{4}\right) (1 + \epsilon)$	p 28	
As found:	To convert emissions referenced at 3% to a new basis of 15%, multiply by 7/3.	2 <sup>nd</sup> sentence	
Corrected:	To convert emissions referenced at $0\%$ to a new basis of $15\%$ , multiply by $7/3$ .	p 43	
As found:	How can one estimate a fuel's maximum temperature and how is it affected by preheated air?	2 <sup>nd</sup> sentence p 46	
Corrected:	How can one estimate a fuel's maximum combustion temperature and how is it affected by preheated air?		
As found:	$\alpha_w = \frac{W_a}{W_f} \left(\frac{100}{21}\right) \left(1 + \frac{\Psi}{4}\right) (1 + \varepsilon)$	Example 4.5-1 p 50	
Corrected:	$\alpha_w = \frac{W_a}{W_f} \left(\frac{100}{21}\right) \left(1 + \frac{\Psi}{4}\right) (1 + \epsilon)$	note form of epsilon	
As found:	(5.1-2a)	Ean number	
Corrected:	(5.1-2a, b)	p 52	
As found:	(or 8.6 [mm]/0.34 [in.] draft) 2 <sup>nd</sup> I from bottom	last sentence therein	
Corrected:	(or 8.6 [mm], 0.34 [in.] draft)	p 54	
As found:	Summary of Control Method Effects on Fan Performance	Title, Table 5.3-1	
Corrected:	Summary of Control Method Effects on Fan Curve	p 66	
As found:	For example, Rankine and Kelvin are ratio scales for temperature: $[K] = 273.15^{\circ}C$ , $[R] = [^{\circ}F] + 459.67[^{\circ}F]$ . Although the ratios $95[^{\circ}C]/5[^{\circ}C]$ or $203^{\circ}/_{10}$ no meaning, ratios in absolute temperatures are valid: $(95+273.15) [K]/[(5+27)] = (203+459.67)[R]/(5+459.67)[R] \approx 1.324$ .	= [°C] + 4°F have 3.15)[K] 2 <sup>nd</sup> ¶ p 94	
Corrected:	For example, Rankine and Kelvin are ratio scales for temperature: $[K] = [^{\circ}C] + units$ in 273.15[ $^{\circ}C$ ], $[R] = [^{\circ}F] + 459.67[^{\circ}F]$ . Although the ratios 95[ $^{\circ}C$ ]/5[ $^{\circ}C$ ] or 203[ $^{\circ}F$ ]/4[ $^{\circ}F$ ] brackets have no meaning, ratios in absolute temperatures are valid: (95+273.15)[K]/[(5+273.15)[K] = (203+459.67)[R]/(5+459.67)[R] \approx 1.324.		
As found:	$n = \sum k = 1_{\mathrm{T}} 1$	(876)	
Corrected:	$n = \sum_{k=1}^{\infty} k = 1^{\mathrm{T}} 1$	p 113	
As found:	$\frac{1}{n} = \frac{1}{\sum k} = (1_{\rm T}1)^{-1}$	(8.7-7) p 113	
Corrected:	$\frac{1}{n} = \frac{1}{\sum k} = (1^{\mathrm{T}}1)^{-1}$ note superscription	pt and bold typeface	

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As found:	$\bar{v} = \frac{\sum v}{n} = (1$	<sub>T</sub> 1) <sup>-1</sup> 1 <sup>T</sup> V	<i>v</i>		(8.7-8) p 113
Corrected:	$\bar{v} = \frac{\sum v}{n} = (1$	<sup>T</sup> 1) <sup>-1</sup> 1 <sup>T</sup>	v	note superscript ar	nd bold typeface
As found:	$\sum u = 1^{\mathrm{T}}\mathbf{u} =$	<b>= u</b> <sup>T</sup> 1			(8.7-10) p 113
Corrected:	$\sum u = 1^{\mathrm{T}}\mathbf{u} =$	= <b>u</b> <sup>T</sup> 1		note bo	old number ones
As found:	" noting that $\mathbf{X}^{\mathrm{T}} \mathbf{\varepsilon} = \mathbf{\varepsilon}^{\mathrm{T}} \mathbf{X} \mathbf{a} = 0^{\mathrm{T}} \mathbf{a} = 0$	= 0; there:	fore, $\boldsymbol{\varepsilon}^{\mathrm{T}} \mathbf{X} = 0^{\mathrm{T}}$ and $\boldsymbol{\varepsilon}$	$\mathbf{T}\mathbf{X} = 0^{\mathrm{T}}$ and	sentence above
Corrected:	" noting that $\mathbf{X}^{\mathrm{T}} \mathbf{\varepsilon} = \mathbf{\varepsilon}^{\mathrm{T}} \mathbf{X} \mathbf{a} = 0^{\mathrm{T}} \mathbf{a} = 0$	= <b>0</b> ; there	fore, $\boldsymbol{\varepsilon}^{\mathrm{T}} \mathbf{X} = 0^{\mathrm{T}}$ and $\boldsymbol{\varepsilon}$	$\mathbf{T}\mathbf{X} = 0^{\mathrm{T}}$ and	9.3-1, p 120 note bold zeroes
As found:	$\mathbf{X}^{\mathrm{T}} \boldsymbol{\varepsilon} = 0$				(9.3-2)
Corrected:	$\mathbf{X}^{\mathrm{T}} \mathbf{\epsilon} = 0$				p 120 note bold zero
As found:	" which are s	imilarity t	to"		sentence above
Corrected:	" which are s	imilar to.	"		9.3-8 p 122
As found:	Ambiguous limits due to typ	esetting			T 11.
Corrected:	TableTableTableTableTable9.4-1all from -1 to +1:the limits for Chebyshev II, Jacobi II, Shifted Legendre, andShifted Chebychev I are all from 0 to 1; the limits for Laguerre and GeneralizedLaguerre are all from 0 to + $\infty$ ; the limit for the Hermite polynomials is $-\infty$ to $+\infty$ .126-infinity.				
	Series		Orthogonal	Weight	
			Polynomial	Function	
	Taylor/Mac	aurin	Legendre		
As found	Normal Prob	ability	Hermite	$e^{-\frac{x^{-}}{2}}$	
7 15 IOund.	Arrheniu	15	Laguerre	e <sup>-x</sup>	
	Exponent	ial	Chebyshev	$e^{-\frac{1}{x}}$	
	Trigonome	etric	Fourier	$e^{\theta i}$ (i.e., $\sin x$ ,	TABLE
	6			$\cos x$ )	9.5-1
		I	Outhogonal	Weight	p128
	Series		Polynomial	Function	

Legendre

Hermite

Laguerre

Fourier

 $\frac{1}{e^{-\frac{x^2}{2}}}$ 

 $e^{-x}$ 

 $e^{\theta i}$  (i.e.,  $\sin x$ ,

 $\cos x$ )

Taylor/Maclaurin

Normal Probability

Exponential

Trigonometric

Corrected	
Concelled.	

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As found:	" and a diagonal matrix of eigenvalues ( $\Lambda$ )"	last sentence, p 149
Corrected:	" and a diagonal matrix of eigenvalues ( $\Lambda$ )"	note bold lambda
As found:	$\mathbf{b} = \Lambda^{-1} \mathbf{U}^{\mathrm{T}} \mathbf{y} = \mathbf{U}_{\mathrm{L}}^{-1} \mathbf{y} = \mathbf{K}^{\mathrm{T}} \mathbf{a}$	(11.3-2b)
Corrected:	$\mathbf{b} = \mathbf{\Lambda}^{-1} \mathbf{U}^{\mathrm{T}} \mathbf{y} = \mathbf{U}_{\mathrm{L}}^{-1} \mathbf{y} = \mathbf{K}^{\mathrm{T}} \mathbf{a}$	note bold lambda
As found:	" the cross products in A to give $\Lambda$ "	second sentence p 153
Corrected:	" the cross products in A to give $\Lambda$ "	wrong point size for $\Lambda$
As found:	$x_k = \frac{\xi_k - \xi_k}{\hat{\xi}_k}$	(12.1-1a) p 166
Corrected:	$x_k = \frac{\xi_k - \overline{\xi}_k}{\widehat{\xi}_k}$	note overbar
As found:	"Then, for the factorial design, the information for the factorial design"	2 <sup>nd</sup> sentence p 173
Corrected:	"Then, the information for the factorial design"	remove redundancy
Corrected: As found:	"Then, the information for the factorial design" vf	remove redundancy Table 12.5-2
Corrected: As found: Corrected:	"Then, the information for the factorial design" vf 7.8	remove redundancy Table 12.5-2 top-right entry p 177
Corrected: As found: Corrected: As found:	"Then, the information for the factorial design" vf 7.8 " comprising 16 runs: 2 <sub>6-2</sub> ="	remove redundancy Table 12.5-2 top-right entry p 177 First sentence below Section 12.10, p 185
Corrected: As found: Corrected: As found: Corrected:	"Then, the information for the factorial design" vf 7.8 " comprising 16 runs: $2_{6-2} =$ " " comprising 16 runs: $2^{6-2} =$ "	remove redundancy Table 12.5-2 top-right entry p 177 First sentence below Section 12.10, p 185 note superscript
Corrected: As found: Corrected: As found: Corrected: As found:	"Then, the information for the factorial design" vf 7.8 " comprising 16 runs: $2_{6-2} =$ " " comprising 16 runs: $2^{6-2} =$ " $x_1 x_2 x_3 x_4$	remove redundancy Table 12.5-2 top-right entry p 177 First sentence below Section 12.10, p 185 note superscript 1 <sup>st</sup> paragraph, 3 places
Corrected: As found: Corrected: As found: Corrected: As found: Corrected:	"Then, the information for the factorial design" vf 7.8 " comprising 16 runs: $2_{6-2} =$ " " comprising 16 runs: $2^{6-2} =$ " $x_1 x_2 x_3 x_4$ $x_1 x_2 x_3 x_4$ $x_1 x_2 x_3 x_4$ 192	remove redundancy Table 12.5-2 top-right entry p 177 First sentence below Section 12.10, p 185 note superscript 1 <sup>st</sup> paragraph, 3 places p 185 note removal of spaces
Corrected: As found: Corrected: As found: Corrected: As found: Corrected: As found:	"Then, the information for the factorial design" vf 7.8 " comprising 16 runs: $2_{6-2} =$ " " comprising 16 runs: $2^{6-2} =$ " $x_1 x_2 x_3 x_4$ $x_1 x_2 x_3 x_4$ $x_1 x_2 x_3 x_4$ "Then, MSB = SSB/DFB"	remove redundancy Table 12.5-2 top-right entry p 177 First sentence below Section 12.10, p 185 note superscript 1 <sup>st</sup> paragraph, 3 places p 185 note removal of spaces Text below
Corrected: As found: Corrected: As found: Corrected: As found: Corrected: As found: Corrected:	"Then, the information for the factorial design" vf 7.8 " comprising 16 runs: $2_{6-2} =$ " " comprising 16 runs: $2^{6-2} =$ " $x_1 x_2 x_3 x_4$ $x_1 x_2 x_3 x_4$ $x_1 x_2 x_3 x_4$ "Then, MSB = SSB/DFB" "Here, <i>u</i> is the number of unique points, replicated or not. Then, MSB = SSB/DFB"	remove redundancy Table 12.5-2 top-right entry p 177 First sentence below Section 12.10, p 185 note superscript 1 <sup>st</sup> paragraph, 3 places p 185 note removal of spaces Text below 12.12-a,b p 190, add text
Corrected: As found: Corrected: As found: Corrected: As found: Corrected: As found: Corrected: As found:	"Then, the information for the factorial design" vf 7.8 " comprising 16 runs: $2_{6-2} =$ " " comprising 16 runs: $2^{6-2} =$ " $x_1 x_2 x_3 x_4$ $x_1 x_2 x_3 x_4$ $x_1 x_2 x_3 x_4$ "Then, MSB = SSB/DFB" "Here, <i>u</i> is the number of unique points, replicated or not. Then, MSB = SSB/DFB" 5. With burner has the shortest length.	remove redundancy Table 12.5-2 top-right entry p 177 First sentence below Section 12.10, p 185 note superscript 1 <sup>st</sup> paragraph, 3 places p 185 note removal of spaces Text below 12.12-a,b p 190, add text

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As found	"Ling 2"	and contan as under Solution		
As lound.	Using 26-3	p 207		
Corrected:	"Using 2 <sup>6-3</sup> "	note superscript		
As found:	" gives a design is identical to"	last sentence of 2 <sup>nd</sup> ¶ p 208		
Corrected:	" gives a design identical to"	omit "is"		
As found:	" Lewallen et al. <sup>8</sup> have	Second to last sentence above		
Corrected:	" Lewallen et al [6] have"	incorrect reference		
As found:	horizontal line below C <sub>2</sub> H <sub>6</sub>	Table 15.4-1		
Corrected:	move horizontal line below C5+	misplaced line		
Add6. Lewallen J. et al, Burner testing, in John Zink Combustion Handbook, 1st ed.,Reference:Baukal, C.E. Jr., CRC Press, Boca Raton, FL, Ch 14, 2001, p 435.				
As found:	When $ \mathbf{X}^{\mathrm{T}}\mathbf{X} =0$ the matrix when $ \mathbf{X}^{\mathrm{T}}\mathbf{X} =0$	2 <sup>nd</sup> to last sentence, p 253		
Corrected:	When $ \mathbf{X}^{T}\mathbf{X} =0$ the matrix when $ \mathbf{X}^{T}\mathbf{X} =0$	correct font color of left brackets		
As found:	This figure shows the O2 ' O2 leverage	Caption, Figure 16.8.1		
Corrected:	This figure shows the O2 $\times$ O2 leverage	p 267		
As found:	Then $\hat{\mathbf{Y}}^{\mathrm{T}} = (1 \ \hat{\mathbf{y}})$ and for a particular value, $\hat{\mathbf{y}}^{\mathrm{T}} = (1 \ \hat{\mathbf{y}})$	Text above		
Corrected:	Then $\hat{\mathbf{Y}}^{\mathrm{T}} = (1  \hat{\mathbf{y}})$ and for a particular value, $\hat{\mathbf{y}}^{\mathrm{T}} = (1  \hat{y})$	(16.9-1a,b) p 268		
(Note that entries in first set of parentheses are bold and entries in the second set are not.)				
As found:	" referred to as the right axes)."	4 <sup>th</sup> line of Figure 16.9-1		
Corrected:	" referred to the right axes)."	caption, p 269 omit "as"		
As found:	figure occurs on p 275 before callout in Section 17.2	Figure 17.2-1		
Corrected:	place figure on p 276 after callout in Section 17.2	p 275		
As found:	" then a cubic equation will do"	2 <sup>nd</sup> sentence after 18.1-9		
Corrected:	" then a quartic equation will do"	p 281		
As found:	"e.g., $0.1714 \cdot 10^{-8}$ or $5.67 \cdot 10^{-8}$ "	Sentence after 18.2-1		
Corrected:	"e.g., $0.1714 \cdot 10^{-8}$ or $5.67 \cdot 10^{-8}$ "	p 284 note form of unary minus		
As found:	"and $T\infty$ is the ambient temperature"	Sentence after 18.2-1		
Corrected:	"and $T_{\infty}$ is the ambient temperature"	p 294 note subscript		
As found:	" adjusted per Equation 19.5-9."	Caption, Figure 19.5-1		
Corrected:	" adjusted per Equation 19.5-8."	p 304		
As found:	missing horizontal line under 20.3-1c	Equation 20.3-1c		
Corrected:	add long horizontal line under 20.3-1c	p 318		
As found:	missing horizontal line under 20.3-3d	Equation 20.3-3d		
Corrected:	add long horizontal line under 20.3-3d	p 319		