Errata to
Handbook of Smoke Control Engineering
(2012)

September 19, 2023

Shaded items have been added since the previously published errata sheet dated December 5, 2013.

Page 2 Replace $\Delta p_{ij} = p_i - p_j + p_i g(z_i - z_j)$ with $\Delta p_{ij} = p_i - p_j + p_i g(z_i - z_j)$

Page 3 Replace Equation 1.5 $y = f(x_1, x_2, \ldots, x_n)$ with $y = f(x_1, x_2, \ldots, x_n)$

Page 8 Replace Equation 1.7 $ay' = f(b_1 x_1', b_2 x_2', \ldots, b_n x_n')$ with
$ay' = f(b_1 x_1', b_2 x_2', \ldots, b_n x_n')$

Replace Equation 1.8 $y' = f'(x_1', x_2', \ldots, x_n')$ with $y' = f'(x_1', x_2', \ldots, x_n')$

Replace Equation 1.9 $\varepsilon = \dfrac{af'(x_1', x_2', \ldots, x_n') - f(x_1, x_2, \ldots, x_n)}{f(x_1, x_2, \ldots, x_n)}$ with

$$\varepsilon = \frac{af'(x_1', x_2', \ldots, x_n') - f(x_1, x_2, \ldots, x_n)}{f(x_1, x_2, \ldots, x_n)}$$

Page 286

Replace Equation 13.3 $T_{fan} = \dfrac{\sum_{j=1}^{n} \rho_j V_j T_j}{\sum_{j=1}^{n} \rho_j V_j}$ with $T_{fan} = \dfrac{\sum_{j=1}^{n} \rho_j V_j T_j}{\sum_{j=1}^{n} \rho_j V_j}$

Page 287

Replace $T_{fan} = \dfrac{\sum_{j=1}^{n} \rho_j V_j T_j}{\sum_{j=1}^{n} \rho_j V_j} = \dfrac{0.184(600)(1700) + 0.0315(600)(800) + 0.0462(3300)(400)}{0.184(600) + 0.0315(600) + 0.0462(3300)} =$ with

$$T_{fan} = \frac{\sum_{j=1}^{n} \rho_j V_j T_j}{\sum_{j=1}^{n} \rho_j V_j} = \frac{0.184(600)(1700) + 0.0315(600)(800) + 0.0462(3300)(400)}{0.184(600) + 0.0315(600) + 0.0462(3300)} =$$

Page 293 Replace $m_{ij} = f_{ij}(\Delta p_{ij})$ with $m_{ij} = f_{ij}(\Delta p_{ij})$

Replace $\Delta p_{ij} = p_i - p_j + \rho_i g(z_i - z_j)$ with $\Delta p_{ij} = p_i - p_j + \rho_i g(z_i - z_j)$

Replace $\sum_{j=1}^{M} f_{ij}(\Delta p_{ij}) = 0$ with $\sum_{j=1}^{M} f_{ij}(\Delta p_{ij}) = 0$

Replace

$$f_{11}(\Delta p_{11}) + f_{12}(\Delta p_{12}) + \ldots f_{1N}(\Delta p_{1N}) = 0,$$
$$f_{21}(\Delta p_{21}) + f_{22}(\Delta p_{22}) + \ldots f_{2N}(\Delta p_{2N}) = 0,$$
$$\vdots$$
$$f_{N1}(\Delta p_{N1}) + f_{N2}(\Delta p_{N2}) + \ldots f_{NN}(\Delta p_{1N}) = 0.$$

with

$$f_{11}(\Delta p_{11}) + f_{12}(\Delta p_{12}) + \ldots f_{1N}(\Delta p_{1N}) = 0,$$
$$f_{21}(\Delta p_{21}) + f_{22}(\Delta p_{22}) + \ldots f_{2N}(\Delta p_{2N}) = 0,$$
$$\vdots$$
$$f_{N1}(\Delta p_{N1}) + f_{N2}(\Delta p_{N2}) + \ldots f_{NN}(\Delta p_{1N}) = 0.$$

Page 293 Replace

$$F_1(p_1, p_2, \ldots p_N) = 0,$$
$$F_2(p_1, p_2, \ldots p_N) = 0,$$
$$\vdots$$
$$F_N(p_1, p_2, \ldots p_N) = 0,$$

with

$$F_1(p_1, p_2, \ldots p_N) = 0,$$
$$F_2(p_1, p_2, \ldots p_N) = 0,$$
$$\vdots$$
$$F_N(p_1, p_2, \ldots p_N) = 0,$$

Page 294

$$C_{i,\,k+1} = C_{i,\,k} + \frac{1}{\rho V_i}$$

Replace Equation 14.6 $\left[g_{i,\,k}\Delta t + \sum_j C_{j,\,k} m_{ji} + \sum_j C_{i,\,k} m_{ij} \right]$ with

$$C_{i,\,k+1} = C_{i,\,k} + \frac{1}{\rho V_i}$$

$$\left[g_{i,\,k}\Delta t + \sum_j C_{j,\,k} m_{ji} + \sum_j C_{i,\,k} m_{ij} \right]$$

Page 325

Replace Equation 15.9 $m_v = \dfrac{C A_v \rho_o [2 g d_b (T_s - T_o)(T_o - T_s)]^{1/2}}{[T_s + (A_v / A_i)^2 T_o]^{1/2}}$ with

$$m_v = \frac{C A_v \rho_o [2 g d_b (T_s - T_o)(T_o / T_s)]^{1/2}}{[T_s + (A_v / A_i)^2 T_o]^{1/2}}$$

Page 327

$$v_e = 38\left(gH \frac{T_f - T_o}{T_f} \right)^{1/2}$$

Replace Equation 15.10 with

$$v_e = 0.64\left(gH \frac{T_f - T_o}{T_f} \right)^{1/2} \text{ for SI}$$

$$v_e = 38\left(gH \frac{T_f - T_o}{T_f} \right)^{1/2}$$

$$v_e = 0.64\left(gH \frac{T_f - T_o}{T_f} \right)^{1/2} \text{ for SI}$$

Page 328 Replace $m_v = \frac{CA_v\rho_o[2gd_b(T_s - T_o)(T_o/T_s)]^{1/2}}{[T_s + (A_v/A_i)^2 T_o]^{1/2}}$ with $m_v = \frac{CA_v\rho_o[2gd_b(T_s - T_o)(T_o/T_s)]^{1/2}}{[T_s + (A_v/A_i)^2 T_o]^{1/2}}$

Page 329 Replace $v_e = 38\left(gH\frac{T_f - T_o}{T_f}\right)^{1/2} = 38\left(32.2(9)\frac{611-560}{611}\right)^{1/2} = 236$ fpm (1.20 m/s) with

$v_e = 38\left(gH\frac{T_f - T_o}{T_f}\right)^{1/2} = 38\left(32.2(9)\frac{611-560}{611}\right)^{1/2} = 236$ fpm (1.20 m/s)

Replace $v_e = 38\left(gH\frac{T_f - T_o}{T_f}\right)^{1/2} = 38\left(32.2(9)\frac{580-560}{580}\right)^{1/2} = 190$ fpm (0.96 m/s) with

$v_e = 38\left(gH\frac{T_f - T_o}{T_f}\right)^{1/2} = 38\left(32.2(9)\frac{580-560}{580}\right)^{1/2} = 190$ fpm (0.96 m/s)

Page 340 In the left-hand column, in the first listing of values for Region 2, replace ˜Region 2: z_b $50 ft and W < 32.8 ft ($z_b$ < 15 m and W < 10 m)¯ with ˜Region 2: z_b $50 ft and W < 32.8 ft ($z_b$ $15 m and W < 10 m).¯

Page 355 Replace Equation 17.5 $S = \frac{K\Delta H_c V_s}{K_f \alpha_m y_p Q t}$ with $S = \frac{K\Delta H_c V_s}{K_f \alpha_m y_p Q t}$

Page 375 Replace Equation 18.3 $\Delta E = c_p[\dot{m}_p T_p - \dot{m}_e T_{s1} - \eta\dot{m}_p(T_p - T_o)]\Delta t$ with
$\Delta E = c_p[\dot{m}_p T_p - \dot{m}_e T_{s1} - \eta\dot{m}_p(T_p - T_o)]\Delta t$

Page 378

Replace Equation 18.22 $p\frac{dV}{dt} + V\frac{dp}{dt} = RT\frac{dm}{dt} + mR\frac{dT}{dt}$ with

$$p\frac{dV}{dt} + V\frac{dp}{dt} = RT\frac{dm}{dt} + mR\frac{dT}{dt}$$

Replace Equation 18.28 $\frac{dT_u}{dt} = \frac{1}{\beta}\left(\frac{T_u}{pV_u}\right)\left[\dot{E}_u + \frac{V_u}{(\beta-1)V}\dot{s}\right]$ with

$$\frac{dT_u}{dt} = \frac{1}{\beta}\left(\frac{T_u}{pV_u}\right)\left[\dot{E}_u + \frac{V_u}{(\beta-1)V}\dot{s}\right]$$

Replace Equation 18.29 $\frac{dT_l}{dt} = \frac{1}{\beta}\left(\frac{T_l}{pV_l}\right)\left[\dot{E}_l + \frac{V_l}{(\beta-1)V}\dot{s}\right]$ with

$$\frac{dT_l}{dt} = \frac{1}{\beta}\left(\frac{T_l}{pV_l}\right)\left[\dot{E}_l + \frac{V_l}{(\beta-1)V}\dot{s}\right]$$

Replace Equation 18.30 $\frac{dV_u}{dt} = \frac{1}{p\beta}\left(c_p\dot{m}_u T_u + \dot{E}_u - \frac{V_u}{V}\dot{s}\right)$ with

$$\frac{dV_u}{dt} = \frac{1}{p\beta}\left(c_p\dot{m}_u T_u + \dot{E}_u - \frac{V_u}{V}\dot{s}\right)$$

Page 390

Replace Equation 19.1 $T_{av} = \frac{T_u(H-z) + T_l z}{H}$ with $T_{av} = \frac{T_u(H-z) + T_l z}{H}$

Page 409

Replace Equation 20.7 $y_{p,m} = \sum_{i=1}^{n} f_i y_{p,i}$ with $y_{p,m} = \sum_{i=1}^{n} f_i y_{p,i}$

Replace Equation 20.8 $\Delta H_m = \sum_{i=1}^{n} f_i \Delta H_i$ with $\Delta H_m = \sum_{i=1}^{n} f_i \Delta H_i$

Page 444

Replace Equation 22.6 $y_{Si} = \frac{1}{k}\sum_{j=1}^{k} y_{i-m+j}$ for $i = 1, N$ with

$$y_{Si} = \frac{1}{k}\sum_{j=1}^{k} y_{i-m+j} \text{ for } i = 1, N$$

Page 476

Replace Equation A4.2.6 $\Delta p_{SOav} = \frac{4}{9}\left(\frac{\Delta p_{SOt}^{3/2} - \Delta p_{SOb}^{3/2}}{\Delta p_{SOt} - \Delta p_{SOb}}\right)^2$ with

$$\Delta p_{SOav} = \frac{4}{9}\left(\frac{\Delta p_{SOt}^{3/2} - \Delta p_{SOb}^{3/2}}{\Delta p_{SOt} - \Delta p_{SOb}}\right)^2$$

Replace Equation A4.3.2 $H = \frac{F_R}{B}(\Delta p_{SBt} - \Delta p_{SBb})$ with $H = \frac{F_R}{B}(\Delta p_{SBt} - \Delta p_{SBb})$