معادلات نظم الري بالتنقيط المتقدم ٥٢١ هزر (صفر ١٤٢٨هـ)

$u_1 = \omega r_1$ and $u_2 = \omega r_2$

$Q = (2\pi r_1 B_1)\, \upsilon_{F1} = (2\pi r_2 B_2)\, \upsilon_{F2}$

$\sigma = \dfrac{u_2}{(2gH_t)^{1/2}} = \dfrac{2\pi r_2 N}{60(2gH_t)^{1/2}}$

$\varepsilon = \dfrac{v_{f_2}}{(2gH_t)^{1/2}} = \dfrac{Q}{2\pi r_2 B_2 (2gH_t)^{1/2}}$

$T = \rho \int_Q r_2\, V_2 \cos\alpha_2\, dQ - \rho \int_Q r_1\, V_1 \cos\alpha_1\, dQ$

$T = \rho Q\, (r_2\, V_2 \cos\alpha_2 - r_1\, V_1 \cos\alpha_1)$

$H = \eta_h\, H_i = H_i - H_L$

$H_i = \dfrac{u_2\, V_2\, \cos\alpha_2}{g}$

$P_r = T\, \omega = \gamma\, Q\, H_i$

$H_i = \dfrac{u\,(V_2\, \cos\alpha_2 - V_1\, \cos\alpha_1)}{g}$

$H_i = \dfrac{u_2\, V_2\, \cos\alpha_2 - u_1\, V_1\, \cos\alpha_1}{g}$

$H_i = C_1 - C_2\, Q$

$H_i = \dfrac{u_2\, V_2\, \cos\alpha_2}{g} = \dfrac{u_2^{\,2} + u_2\, v_2\, \cos\beta_2}{g}$

$N_s = \dfrac{n\sqrt{Q}}{H^{3/4}} = \text{constant}$

$H_i = \dfrac{u_2\, V_2\, \cos\alpha_2}{g}$

$u_2 = \pi\, D_2\, N$

$u_1 = \pi D_1 N$

$v_2 = \sqrt{2g\, H_t}$

$V_1^{\,2} = v_{f1}^{\,2} + v_{w1}^{\,2}$

$V_2^{\,2} = v_{f2}^{\,2} + v_{w2}^{\,2}$

$\sigma = \dfrac{u_2}{\upsilon_2}$ $\varepsilon = \dfrac{\upsilon_{f2}}{\upsilon_2}$

$H_i = \dfrac{u_2 \cdot v_{w2}}{g}$ $H = H_i - H_L$

$u_1^{\,2} = V_1^{\,2} + v_1^{\,2}$

$\eta_h = \dfrac{W.P}{B.P}$ $\eta_h = \dfrac{H}{H_i}$ $\eta_m = \dfrac{(Power)_i}{SHP}$

$WP = \gamma Q H_i$

$BP = \gamma Q H$

$\dfrac{H_2}{H_1} = \dfrac{n_2^2\, D_2^2}{n_1^2\, D_1^2}$ $\dfrac{Q_2}{Q_1} = \dfrac{n_2\, D_2^3}{n_1\, D_1^3}$ $\dfrac{BP_2}{BP_1} = \dfrac{n_2^3\, D_2^5}{n_1^3\, D_1^5}$ $T = \dfrac{\gamma \cdot Q \cdot H_i^{\,2}}{2\pi N}$

$h_f = f \dfrac{L}{d} \dfrac{V^2}{2g} = \dfrac{f \cdot L \cdot Q^2}{12.1 d^5}$

$H_m = H_{st} + h_f$ $H_m = H_{st} + K \cdot Q^2$

$H_{st} = h_s + h_d$

$q_e = b\, H^{\beta}$ $E_a = \dfrac{V(1 - D_P)}{3600 Q_t t_a}$

$H_{var} = \dfrac{H_m - H_n}{H_m} \times 100$

$C_v = \dfrac{S_d}{q_a}$ $C_{vs} = \dfrac{C_v}{\sqrt{N_P}}$ $\beta = \dfrac{\log(q_1/q_2)}{\log(H_1/H_2)}$

$q_{var} = \dfrac{q_m - q_n}{q_m} \times 100$

$S_d = \sqrt{\dfrac{\Sigma (q_i - q_a)^2}{n-1}}$ $Eu_f = \dfrac{q_n}{q_a} \times 100$

$q_{var} = \left[1 - (1 - H_{var})^{\beta}\right] \times 100$

$Eu_d = \left(1 - 1.27 \dfrac{C_v}{\sqrt{N_P}}\right) \times \dfrac{q_n}{q_a} \times 100$

$E_{ua} = 0.5 \left[\dfrac{q_n^-}{q_a} + \dfrac{q_a}{q_8}\right] \times 100$

$C_v = \beta \cdot C_{hh}$ $(C_{hh})_2 = \dfrac{\beta_2}{\beta_1} \times (C_{hh})_1$

$U_S = (1 - C_v) \times 100$

$(U_S)_h = (1 - C_{hh}) \times 100$

$(U_S)_P = (1 - C_{hP}) \times 100$

$C_{ht} = \sqrt{C_{hP}^{\,2} + C_{hh}^{\,2}}$

$C_{hP} = \sqrt{C_v^{\,2}{}_{+} + C_P^{\,2}}$

$(U_S)_t = (1 - C_{ht}) \times 100$