

Errata for *Principles of Sustainable Energy Systems Third Edition*
May 3, 2019

- Pg. 20, last sentence of first paragraph. “The Earth is about 15°C warmer...” should read, “The Earth is about 33°C warmer...”
 - Pg. 25. 7th line in Sec. 1.4.4, “utility factor” should be “utilization factor.”
 - Pg. 62, following equation 2.11. Replace i with i' in equation for PVOM.
 - Pg. 64, Table 2.4. The heading of the sixth column should be “Net Taxable Income”
 - Pg. 95, third line from bottom. “capacity factor, U ” should be “capacity factor.”
 - Pg. 171, Example 5.1. There are three references to Table 5.1. All three of these should reference Table 5.3 instead.
 - Pg. 192. In problem 5.10, replace “capacity factor” with “capacity credit” in the two places it appears.
 - Pg. 254, below Eq. 8.10. The units on ω should be rad/sec
 - Pg. 257, last line. “one fifth of the blade tip cross section” should read “one fifth of the distance along the blade to the blade tip.”
 - Pg. 263, third line above Sec. 8.6.5, “increased by approximately 18% from 72 to 95 m” should read “increased by approximately 18% from 40 to 95 m”
 - Pg. 263, last line before Sec. 8.6.5, should read “increase by $(8.5/7.2)^3 = 1.64$ or 64%.”
 - Pg. 302, Problem 8.7. Replace “MW rating” with “5 MW rating”
 - Pg. 313, Example 9.1, next-to-last line in item 1. Replace “10,860 km” with “10,860 km²”
 - Pg. 366, Example 10.1. Equation for $\sin \alpha$ should appear as follows:

$$\sin \alpha = \cos L \cos \delta_s \cos h_s + \sin L \sin \delta_s$$
 - Pg. 379, paragraph immediately preceding Example 10.5. Replace the last two sentences that begin with “Figure 10.15 shows the spectral irradiance” with the following: “Table 10.2 [13,14] shows the spectral irradiance with the mean Earth-sun distance for a solar constant of 1353 W/m² as a function of wavelength according to the standard spectrum data published by NASA in 1971. This is illustrated in the following example.”
 - Pg. 395. Problem 10.14 should read: Derive Eq. 10.31 relating profile angle γ to altitude angle α and azimuth angle a .
 - Pg. 401, first line. Replace “covalent bands” with “covalent bonds”
 - Pg. 408, next-to-last line should read “current density at maximum power”
 - Pg. 416, 2nd paragraph, 6th line. Add units on the dimensions: 400 cm x 40 cm x 40 cm
 - Pg. 451, Eq. 12.5. Remove extraneous I in the equation (the one without the subscript c)
 - Pg. 455, 2nd line before Eq. 12.14. This should read, “Since $(T_{f,i} - T_a) = 0$,”
 - Pg. 458. Eq. 12.16. a_s should be replaced by α
 - Pg. 458, Eq. 12.19 should read as follows:

$$h_c = 0.82 \frac{U_\infty v \rho c_p}{L V_0}$$
- Also replace “ H is the height of the collector in m” with “ L is the length of the collector in the wind direction in m”
- Pg. 482, 3rd line from bottom. Replace “Acciona” with “Abengoa”

- Pg. 483, Example 2.3. Replace “Equation 12.25” with “Equation 12.24” in the three places it appears. In the two equations on the bottom of the page, replace “Eq 12.25” with “Eq 12.24.” Also, the exponent on the last term should be 0.33 not 33.
- Pg. 491, next-to-last paragraph. Replace “geometric concentration, C,” with “geometric concentration, C_g ,”
- Pg. 520, 1st line after Eq. 13.4. Replace “P = 26.6 MW” with “ ρ (seawater) = 1030 kg/m³, P= 28.2 MW”
- Pg. 520, Eq. 13.5. Replace 2g in denominator with 2t
- Pg. 520, line before sentence beginning “Tidal power.” Replace 16.1 MW with 17.6 MW
- Pg. 523, 3rd line. Replace “100 W m” with “100 W/m²”
- Pg. 524, last line of 1st paragraph. Replace Figure 13.18 with Figure 13.17
- Pg. 525, Eq. 13.10 should read as follows:

$$p_1 - p_2 = \rho g \Delta z = \rho g a e^{kz} \sin \omega t$$

- Pg. 525, Eq. 13.13, last term on the right ($g\lambda/2\pi$) should be raised to the exponent $\frac{1}{2}$
- Pg. 526. Eq. 13.15 should appear as:

$$P' = \left(\frac{\rho g a^2 \omega}{2} \right) \left(\frac{1}{2} \right) \left(\frac{g T^2}{4\pi^2} \right) = \frac{\rho g^2 a^2 T}{8\pi}$$

and Eq. 13.16 should appear as:

$$P' = \frac{\rho g a^2}{4} \left(\frac{\lambda g}{2\pi} \right)^{1/2}$$

- Pg. 530, 3rd line under Eq. 13.17. 9.8 m/s^s should be 9.8 m/s²
- Pg. 550, next-to-last line before Sec. 14.2.3. Change VAES to CAES
- Pg. 550, after Eq. 14.3. Change units in definition of inertia I from kg/m² to kg-m²
- Pg. 553, Example 14.2. The first two sentences should be replaced by two sentences as follows: “Estimate the internal and external resistances for a lead-acid battery with an EMF of 12.7 V if the current is 50 A and the voltage across the battery terminals is 11.1 V (see Figure 14.8). If the external resistor were replaced by one with a resistance of 3 Ω , find the new current and the voltage drop across the battery terminals.”
- Pg. 566, Sec. 14.7.1, second line. Change “lost per unit mass” to “lost per unit volume”
- Pg. 591, 6th line from top. Change www.greet.es.anl.gov to <https://greet.es.anl.gov>
- Pg. 591, Figure 15.5. Add to caption: CSS should be CCS = carbon capture and storage, CC should be ACC.
- Pg. 596. 5th definition under Eq. 15.2 should read: η_3 is the well-to-tank efficiency
- Pg. 600, Eq. 15.6. In the first line of this equation, replace MGO_i with MF_{ij} . In the last line of the equation, replace MGO_1 with MGO_i
- Pg. 607, Problem 15.5. Replace 260 A/h with 260 Ah