Temperature profile (2 ODEs, interface at point 1.5) $\chi_{eff} = 0.0369 \ m^2/s$ Temperature in Region 2 Temperature in Region 3 Temperature in Region 1 (2024-05-27 17:00:17 - 2024-05-28 08:19:44) (2024-05-28 10:30:01 - 2024-05-28 12:59:56) (2024-05-28 17:00:15 - 2024-05-29 06:59:47) Mean temperature [43.5 46. 45.7 45.8] Mean temperature [33.4 31.7 30.7 30.8] Mean temperature [45.7 45. 45. 44.9] 45.8 46 34 45.6 Temperature [°C] $v = -0.0938 \ m/s$ $v = -0.0928 \ m/s$ $v = -0.089 \ m/s$ Pe = -8.8Pe = -8.44Pe = -8.9°] 33 45.4 e 1 45.2 1 45.2 $\dot{T}_{heat} = 0.00717 \text{ K/s}$ $T_{heat} = 0.0346 \ K/s$ $T_{heat} = 0.0231 \text{ K/s}$ $\dot{Q}_{heat} = 1140.0 \ W$ $\dot{Q}_{heat} = 763.0 \ W$ $\dot{Q}_{heat} = 236.0 \ W$ Tempera SE \dot{Q}_{heat} per 1 $m^3 = 144.0 \ kW/m^3$ <u>8</u> 45.0 \dot{Q}_{heat} per 1 $m^3 = 29.9 \ kW/m^3$ \dot{Q}_{heat} per 1 $m^3 = 96.6 \ kW/m^3$ $T_{[0,\xi]}^*(z) = 31.1 + 12.9 * e^{-8.8 \cdot z}$ $T_{[0,E]}^*(z) = 46.3 + -17.1 * e^{-8.9 \cdot z}$ $T_{[0,\xi]}^*(z) = 45.0 + 0.644 * e^{-8.44 \cdot z}$ ₽ 44.8 31 $T_{[\xi, 1]}^*(z) = 31.5 + 11.5 * e^{-8.8 \cdot z} + \frac{7.68}{-8.8} \cdot z$ $T_{[\xi,1]}^*(z) = 45.1 + 0.224 * e^{-8.44 \cdot z} + \frac{2.38}{-9.44} \cdot z$ 43 $T_{15,11}^*(z) = 46.9 + -19.2 * e^{-8.9 \cdot z} + \frac{11.5}{9.0} \cdot z$ 44.6 30 0 - Absorber process tank (excluded) 0 - Absorber process tank (excluded) 0 - Absorber process tank 1 - tank bottom 1 - tank bottom (excluded) 1 - tank bottom 2 - pack bottom 2 - pack bottom 2 - pack bottom 3 - pack mid 3 - pack mid 3 - pack mid 4 - pack top 4 - pack top 4 - pack top 5 - gas outlet 5 - gas outlet 5 - gas outlet Temperature in Region 4 Temperature in Region 5 Temperature in Region 6 (2024-05-29 15:22:13 - 2024-05-29 21:59:56) (2024-05-29 11:00:04 - 2024-05-29 13:47:43) (2024-05-29 14:00:05 - 2024-05-29 15:14:53) 31.75 Mean temperature [30.7 30.1 30.2 30.] Mean temperature [30.7 30.3 30.3 30.1] Mean temperature [31.3 31.1 30.7 30.7] 32.0 31.25 31.50 ੁ 31.00 · ္ဌာ 31.5 ို $v = -0.0912 \ m/s$ $v = -0.0913 \ m/s$ $v = -0.0479 \ m/s$ Pe = -4.54Pe = -8.65Pe = -8.6631.25 ° 30.75 ature 31.0 $T_{heat} = 0.0205 \ K/s$ $\dot{T}_{heat} = 0.0144 \text{ K/s}$ $T_{heat} = 0.00883 \ K/s$ ਸ਼੍ਰੇ 31.00 $\dot{Q}_{heat} = 676.0 \ W$ $\dot{Q}_{heat} = 473.0 \ W$ $\dot{Q}_{heat} = 291.0 \ W$ # 30.50 교 30.5 \dot{Q}_{heat} per 1 $m^3 = 85.6 \ kW/m^3$ \dot{Q}_{heat} per 1 $m^3 = 59.9 \ kW/m^3$ \dot{Q}_{heat} per 1 $m^3 = 36.8 \ kW/m^3$ ≗ 30.75 ਫ਼ੇ 30.25 $T_{[0,\xi]}^*(z) = 30.4 + 0.364 * e^{-8.66 \cdot z}$ $T_{[0,\,\xi]}^*(z) = 31.0 + 0.329 * e^{-4.54 \cdot z}$ $T_{[0.E]}^*(z) = 30.1 + 0.514 * e^{-8.65 \cdot z}$ 30.50 30.00 30.0 $T_{[\xi, 1]}^*(z) = 30.7 + -0.858 * e^{-8.66 \cdot z} + \frac{6.82}{9.66} \cdot z$ $T_{[\xi, 1]}^*(z) = 31.5 + -0.574 * e^{-4.54 \cdot z} + \frac{4.77}{-4.54} \cdot z$ $T_{[\xi, 1]}^*(z) = 30.3 + -0.0106 * e^{-8.65 \cdot z} + \frac{2.93}{-8.65} \cdot z$ 30.25 29.75 29.5 3 0 - Absorber process tank 0 - Absorber process tank 0 - Absorber process tank 1 - tank bottom (excluded) 1 - tank bottom (excluded) 1 - tank bottom (excluded) 2 - pack bottom 2 - pack bottom 2 - pack bottom 3 - pack mid 3 - pack mid 3 - pack mid 4 - pack top 4 - pack top 4 - pack top 5 - gas outlet 5 - gas outlet 5 - gas outlet Temperature in Region 7 Temperature in Region 8 Temperature in Region 9 (2024-05-30 00:00:12 - 2024-05-30 08:59:53) (2024-06-26 17:00:07 - 2024-06-27 21:20:45) (2024-06-25 23:05:10 - 2024-06-26 08:19:56) 47.0 46.25 Mean temperature [45.8 45. 45.1 45.] Mean temperature [30.6 30.2 30.1 29.9] Mean temperature [46. 45.5 45.3 45.] 30.8 46.00 46.5 30.6 $v = -0.092 \ m/s$ $v = -0.0454 \ m/s$ $v = -0.0923 \ m/s$ ୁ 45.75 Pe = -8.73Pe = -4.3146.0 Pe = -8.7530.4 atnre 45.5 -**º** 45.50 $T_{heat} = -0.00161 \, \text{K/s}$ $T_{heat} = 0.00764 \ K/s$ $T_{heat} = 0.0374 \ K/s$ $\dot{Q}_{heat} = -52.9 \ W$ $\dot{Q}_{heat} = 252.0 \ W$ $\dot{Q}_{heat} = 1230.0 \ W$ 30.2 45.25 \dot{Q}_{heat} per 1 $m^3 = -6.7 \ kW/m^3$ \dot{Q}_{heat} per 1 $m^3 = 31.9 \ kW/m^3$ Q_{heat} per 1 $m^3 = 156.0 \ kW/m^3$ 45.00 -5 45.0 30.0 $T_{[0,\xi]}^*(z) = 45.6 + 0.37 * e^{-8.75 \cdot z}$ $T_{[0,\xi]}^*(z) = 45.0 + 0.763 * e^{-8.73 \cdot z}$ $T_{[0,\xi]}^*(z) = 30.1 + 0.495 * e^{-4.31 \cdot z}$ $T_{[\xi, 1]}^*(z) = 45.0 + 0.859 * e^{-8.73 \cdot z} + \frac{-0.533}{-8.73} \cdot z$ $T_{[\xi, 1]}^*(z) = 46.2 + -1.87 * e^{-8.75 \cdot z} + \frac{12.4}{-8.75} \cdot z$ $T_{[\xi, 1]}^*(z) = 30.4 + -0.00312 * e^{-4.31 \cdot z} + \frac{2.54}{-4.31} \cdot z$ 29.8 44.5 44.50 29.6 44.0 0 - Absorber process tank 0 - Absorber process tank 0 - Absorber process tank 1 - tank bottom (excluded) 1 - tank bottom (excluded) 1 - tank bottom (excluded) 2 - pack bottom 2 - pack bottom 2 - pack bottom 3 - pack mid 3 - pack mid 3 - pack mid 4 - pack top 4 - pack top 4 - pack top 5 - gas outlet 5 - gas outlet 5 - gas outlet Temperature in Region 11 Temperature in Region 10 Temperature in Region 12 (2025-03-05 12:50:11 - 2025-03-05 13:56:00) (no heat production) (2024-06-27 23:00:15 - 2024-06-28 11:39:41) (2025-03-05 11:40:03 - 2025-03-05 12:31:49) 32.0 -31.5 Mean temperature Mean temperature [30.9 30.7 30.3 30.] [32.3 31.4 30.8 31.8] 35 [30.7 29.8 29.7 29.6] 31.5 [o] 31.0 $v = -0.0434 \ m/s$ oerature [°C] 31.0 $v = -0.0912 \ m/s$ $v = -0.0391 \ m/s$ Pe = -4.11Pe = -8.65mperature [Pe = -3.7 $T_{heat} = 0.0514 \ K/s$ $T_{heat} = -0.0455 \ K/s$ $T_{heat} = 0.0 \text{ K/s}$ $Q_{heat} = 1690.0 W$ $Q_{heat} = -1500.0 W$ 30.5 $Q_{heat} = 0.0 W$ Q_{heat} per 1 $m^3 = 215.0 \ kW/m^3$ Q_{heat} per 1 $m^3 = -190.0 \ kW/m^3$ $Q_{heat} \text{ per 1 } m^3 = 0.0 \text{ kW/m}^3$ **声** 30.0 $T_{[0,\xi]}^*(z) = 30.7 + 1.56 * e^{-4.11 \cdot z}$ $T_{[0,\xi]}^*(z) = 30.7 + 0.153 * e^{-8.65 \cdot z}$ 30.0 $T_{[0,1]}^*(z) = 29.6 + 1.13 * e^{-3.7 \cdot z}$ 31 $T_{[\xi, 1]}^*(z) = 31.5 + -2.9 * e^{-8.65 \cdot z} + \frac{17.1}{-8.65} \cdot z$ $T_{[\xi,1]}^*(z) = 28.7 + 4.63 * e^{-4.11 \cdot z} + \frac{-15.1}{-4.11} \cdot z$ 29.5 30 29.0 0 - Absorber process tank 0 - Absorber process tank 0 - Absorber process tank 1 - tank bottom (excluded) 1 - tank bottom (excluded) 1 - tank bottom (excluded) 2 - pack bottom 2 - pack bottom 2 - pack bottom 3 - pack mid 3 - pack mid 3 - pack mid 4 - pack top 4 - pack top 4 - pack top 5 - gas outlet 5 - gas outlet 5 - gas outlet Temperature in Region 13 Temperature in Region 14 Temperature in Region 15 (2025-03-06 12:00:14 - 2025-03-06 12:29:58) (no heat production) (2025-03-05 14:16:03 - 2025-03-05 14:39:46) (2025-03-06 10:00:18 - 2025-03-06 10:59:46) 32.5 31.0 Mean temperature [31.8 30.9 30.6 31.7] Mean temperature 36.0 [35.9 33.9 33.4 34.7] Mean temperature [30.9 30.1 30. 29.9] 32.0 30.8 ature [°C] 35.0 $v = -0.0435 \ m/s$ ○ 30.6 $v = -0.0502 \ m/s$ $v = -0.0392 \ m/s$ Pe = -4.12Pe = -3.72 $T_{heat} = -0.0759 \ K/s$ $T_{heat} = -0.0595 \ K/s$ $T_{heat} = 0.0 \text{ K/s}$ $Q_{heat} = -1960.0 \ W$ 듐 30.4 $Q_{heat} = -2500.0 W$ 31.0 $Q_{heat} = 0.0 W$ ਰੂ 34.0 Q_{heat} per 1 $m^3 = -317.0 \ kW/m^3$ Q_{heat} per 1 $m^3 = -248.0 \ kW/m^3$ 90.2 30.2 $Q_{heat} \text{ per 1 } m^3 = 0.0 \text{ kW/m}^3$ ₽ 33.5 <u>₽</u> 30.5 $T_{[0,\xi]}^*(z) = 33.0 + 2.81 * e^{-4.76 \cdot z}$ $T_{[0,\xi]}^*(z) = 30.3 + 1.49 * e^{-4.12 \cdot z}$ $T_{[0,1]}^*(z) = 29.9 + 0.983 * e^{-3.72 \cdot z}$ 30.0 $T_{[\xi, 1]}^*(z) = 30.3 + 7.45 * e^{-4.76 \cdot z} + \frac{-25.2}{-4.76} \cdot z$ $T_{[\xi,1]}^*(z) = 27.7 + 5.49 * e^{-4.12 \cdot z} + \frac{-19.7}{-4.12} \cdot z$ 33.0 30.0 29.8 0 - Absorber process tank 0 - Absorber process tank 0 - Absorber process tank 1 - tank bottom (excluded) 1 - tank bottom (excluded) 1 - tank bottom (excluded) 2 - pack bottom 2 - pack bottom 2 - pack bottom 3 - pack mid 3 - pack mid 3 - pack mid 4 - pack top 4 - pack top 4 - pack top 5 - gas outlet 5 - gas outlet 5 - gas outlet Temperature in Region 16 Temperature in Region 17 (2025-03-06 14:00:10 - 2025-03-06 15:14:55) (2025-03-06 17:00:10 - 2025-03-06 23:59:43) Mean temperature [33.9 32.3 32. 33.1] [46.4 45.6 45.4 46.4] 34.0 -8.0 48 33.5 33.5 33.0 32.5 32.5 $v = -0.0443 \ m/s$ $v = -0.0505 \ m/s$ Pe = -4.79Pe = -4.2Temperature [95 97 0.6 $T_{heat} = -0.0658 \ K/s$ $T_{heat} = -0.0569 \text{ K/s}$ $\dot{Q}_{heat} = -2170.0 \ W$ $\dot{Q}_{heat} = -1880.0 \ W$ \dot{Q}_{heat} per 1 $m^3 = -237.0 \ kW/m^3$ \dot{Q}_{heat} per 1 $m^3 = -274.0 \ kW/m^3$ 0.4 $T_{[0,\xi]}^*(z) = 31.6 + 2.28 * e^{-4.79 \cdot z}$ $T_{[0,\xi]}^*(z) = 45.0 + 1.35 * e^{-4.2 \cdot z}$ 32.0 $T_{[\xi, 1]}^*(z) = 29.3 + 6.29 * e^{-4.79 \cdot z} + \frac{-21.8}{-4.79} \cdot z$ 0.2 45 $T_{[\xi, 1]}^*(z) = 42.6 + 5.13 * e^{-4.2 \cdot z} + \frac{-18.9}{-4.2} \cdot z$ 31.5 0.0 -0.0 0.4 0.6 8.0 0.2 0 - Absorber process tank 0 - Absorber process tank 1 - tank bottom (excluded) 1 - tank bottom (excluded) 2 - pack bottom 2 - pack bottom 3 - pack mid 3 - pack mid 4 - pack top 4 - pack top 5 - gas outlet 5 - gas outlet