

```

1  /*
2  * This is the .cpp file for calculating MRT and OT
3  * This code was written entirely by Team 26
4  * using formulas found in Literature.
5  */
6  #include "CALCULATE_MRT.h"
7
8  mrt_and_ot::mrt_and_ot(void)
9  {
10 }
11
12 float mrt_and_ot::calculate_convection_coefficient(float T_g, float T_a) {
13     /*
14     * Calculate convection coefficient using formula in Literature
15     */
16     h = abs(T_g - T_a) / diameter_to_power;
17     h = pow(h, 0.25);
18     return(1.4 * h);
19 }
20
21 void mrt_and_ot::calculate_mrt_and_ot(float T_g, float T_a) {
22     /*
23     * Calculate MRT and OT using formulas found in Literature
24     */
25     T_g = T_g + kelvin_conversion;
26     T_a = T_a + kelvin_conversion;
27     convection_coefficient = calculate_convection_coefficient(T_g, T_a);
28     T_mrt = convection_coefficient / epsilon * (T_g - T_a);
29     T_mrt = T_mrt + pow(T_g, 4);
30     T_mrt = pow(T_mrt, 0.25);
31     T_ot = 0.5 * (T_a + T_mrt);
32 }
33
34 // Getter functions for MRT and OT
35 float mrt_and_ot::get_mrt(void) {return(T_mrt);}
36 float mrt_and_ot::get_ot(void) {return(T_ot);}
37
38

```