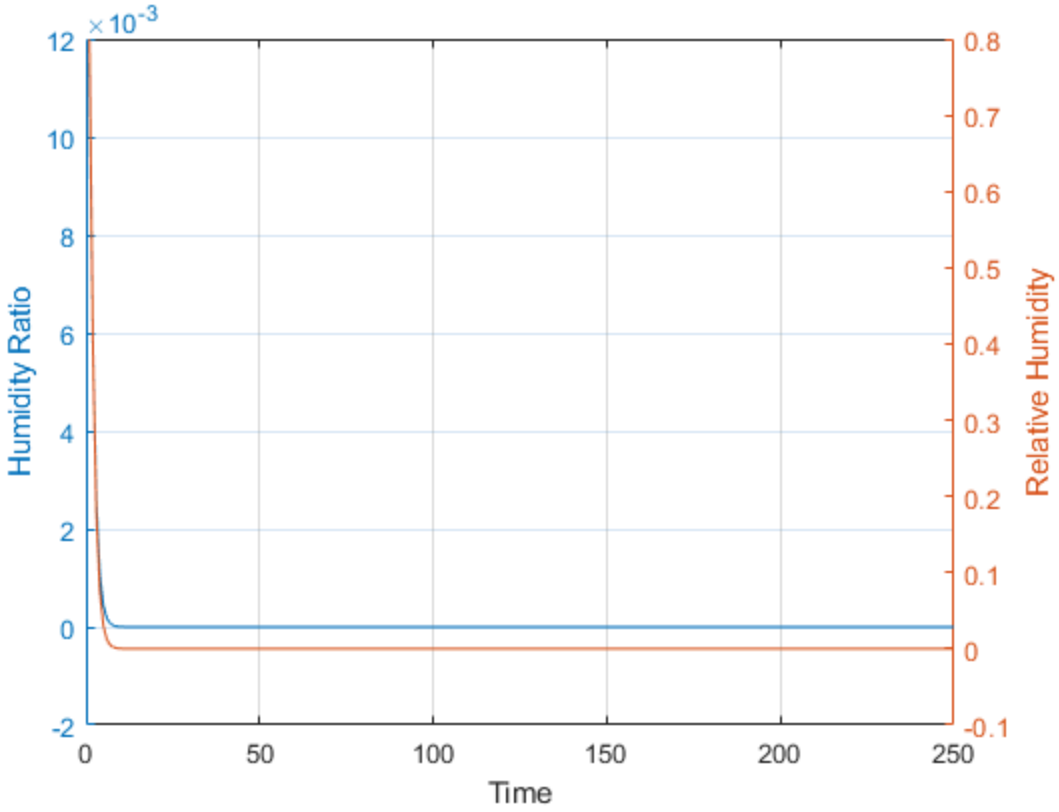
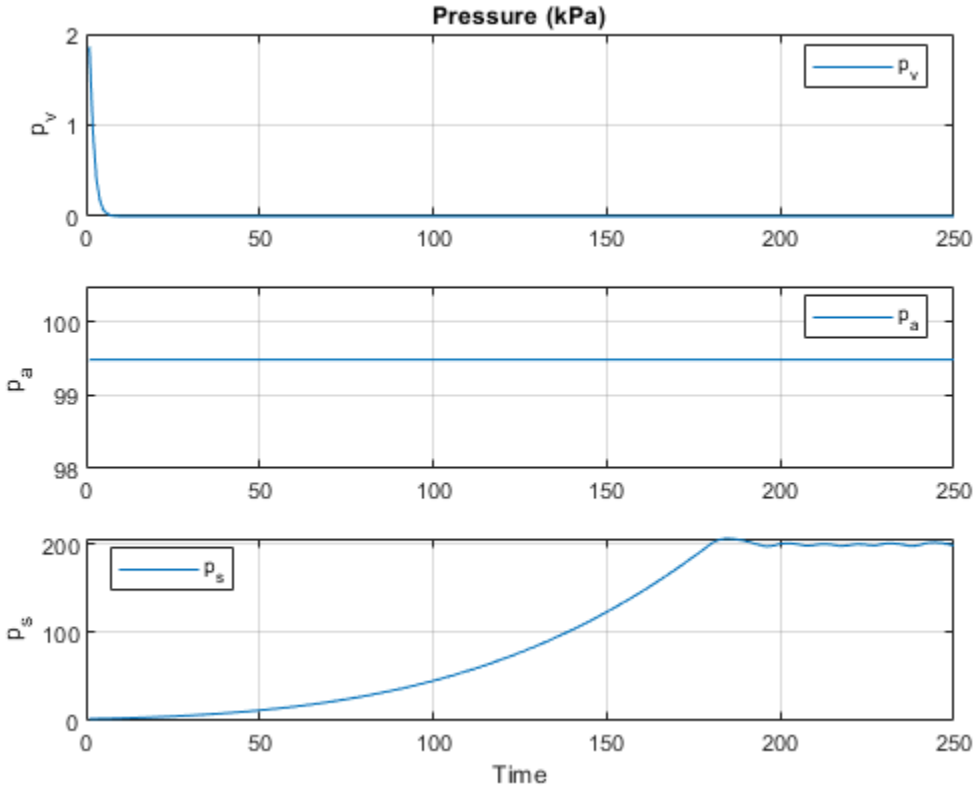
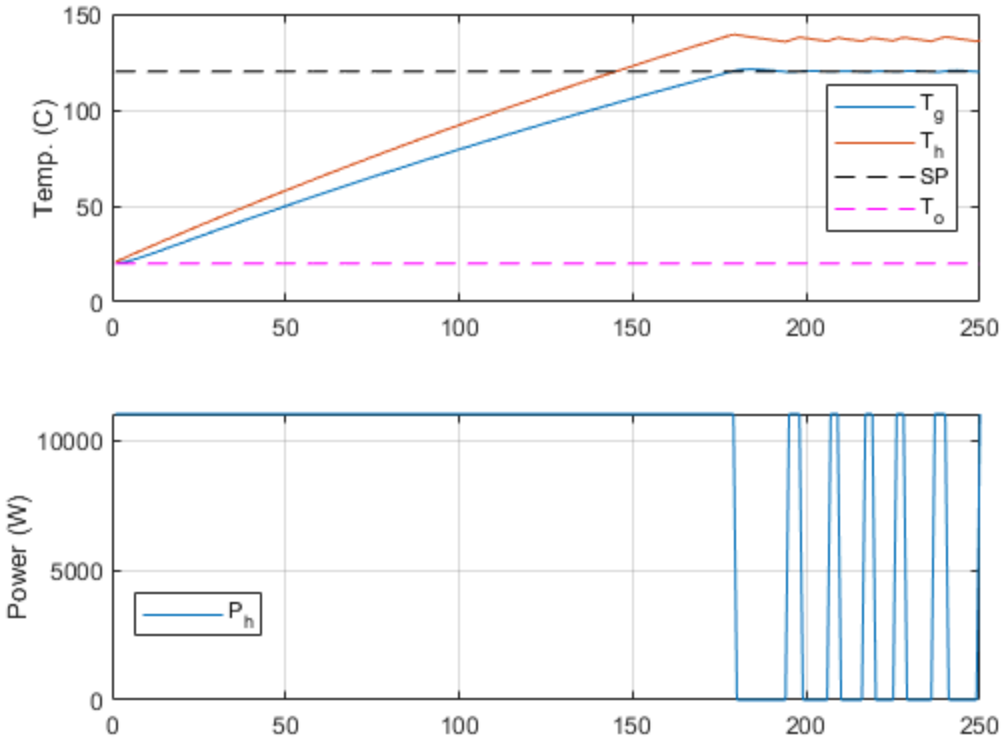
```
clear
close all
clc
T_g0 = 20;
delta_T = 100;
T_o0 = 20;
phi_0 = 0.80;
T_h0 = T_g0;
T_s = 1;
sec = 250;
% [T_g_out, T_h_out, P_h_out, phi_out] = arda_numerical(T_g0, delta_T,
 T_o0, phi_0, T_h0, max_iterations)
[T_g, T_h, P_h, phi_out] = arda_numerical(T_g0, delta_T, T_o0, phi_0,
 T_h0, T_s, sec/T_s);
fprintf('Max heater output (W): %.1f\n', max(P_h))
fprintf('Min heater output (W): %.1f\n', min(P_h))
price = 0.1036;  % $/kWh
cost = 0;
for i = 1:numel(P_h)
   % Needs to be adjusted to account for when Ts is not 1 sec
   cost = cost + price * P_h(i)/(1000*60*60);
end
fprintf('Cost for this run: $%.8f\n', cost)
% M = [T_g' T_h' P_h'];


% [T_g, T_h, P_h] = arda_numerical(T_g(end), T_g0 + delta_T -
 T_g(end), T_o0, phi_out(end), T_h(end), 100);
% % fprintf('Max heater output (W): %f\n', max(P_h))
% % fprintf('Min heater output (W): %f\n', min(P_h))
% % price = 0.1036;  % $/kWh
% % cost = 0;
% % for i = 1:numel(P_h)
% %    % Needs to be adjusted to account for when Ts is not 1 sec
% %    cost = cost + price * P_h(i)/(1000*60*60);
% % end
% % fprintf('Cost for this run: $%.8f\n', cost)
% M = [M; T_g' T_h' P_h'];
% figure
% plot(M(:,1))


pid =

  controller_pid with properties:

                      Ts: 1
                      Kp: 2.6978e+06
                      Ki: 0.0333
                      Kd: 0.0036
                     tau: 0
              min_output: 0
```

```
                  max_output: 0
                  integrator: 0
              previous_error: 0
              differentiator: 0
        previous_measurement: 0
           integral_of_error: 0
                proportional: 0
    derivative_of_measurement: 0
                         out: 0

Max heater output (W): 11000.0
Min heater output (W): 0.0
Cost for this run: $0.06236144
```


×10^-3
Humidity Ratio
Relative Humidity
Time


Pressure (kPa)
p_v
p_a
p_s
Time



Published with MATLAB® R2021a