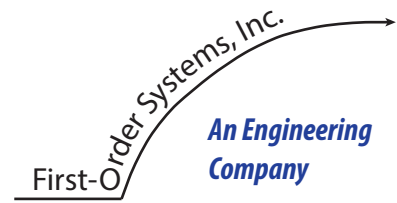


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**Background**

Read the memo from FOS.

In this milestone, your team will test the robustness of your parameter identification algorithm with 2 time histories, one heating and one cooling.

**M3 Parameter Identification UDF Feedback Review**

What are the main points of your feedback?

List any negative feedback.

List any positive feedback.

How can you use this feedback to begin work on M4?

**Test Data**

Open the following .csv files in the M4 folder:

[M4\\_Data\\_CoolingTimeHistory](#)

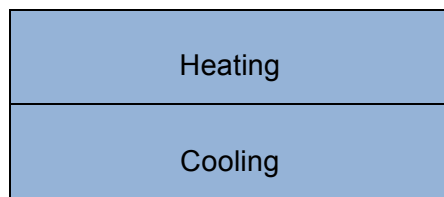
[M4\\_Data\\_HeatingTimeHistory](#)

For each of these data files, the first column is time (sec) and the second column is temperature (deg F).

**Testing Your Parameter Identification UDF**

Using your executive function, test the robustness of your parameter identification UDF by using the data representing one cooling time history and one heating time history. These data files are located in the M4 folder.

- A. Using your **M3\_Exec\_sss\_tt.m**, call your **M3ParameterID\_sss\_tt.m** to identify the parameters for each time history.
- B. In the executive function, using the outputs from your **M3ParameterID\_sss\_tt.m**, call your **M2Piecewise\_sss\_tt.m** to calculate the modeled  $y(t)$  values for each time history. Next, using these modeled  $y(t)$  values, call your **M2SSEmod\_sss\_tt.m** to calculate the SSEmod for each time history.
- C. Modify your **M2Plots\_sss\_tt.m** UDF to create a figure that contains a 2 x 1 arrangement of subplots as shown below. Each subplot plots the given  $y_i$  vs time overlaid with the modeled  $y(t)$  values from the Piecewise Equation UDF.



In the executive function, call your **M2Plots\_sss\_tt.m** to create a figure of two subplots.

- D. In the **ANALYSIS** section, answer the following using full sentences:

Use the following **three pieces of evidence** and the actual identified parameter values in Table 1 and Table 2 to evaluate the quality of your parameter identification algorithm.

## FOS Project Milestone 4 Instructions

1. The actual identified parameter values

Table 1

Identified Parameters From Heating Time History

$y_L$	-4.55°F
$y_h$	-3.15°F
$t_s$	16s
$\tau$	0.4s (same as cooling)

Table 2

Identified Parameters From Cooling Time History

$y_L$	0.5°F
$y_h$	0.875 °F
$t_s$	7.9s
$\tau$	0.4s (same as heating)

2. The  $SSE_{\text{mod}}$  values
3. The output plots of your models (Look closely at  $t < t_s$  and  $t \geq t_s$ .)

Explain your observations and conclusions based on the above evidence for each time history:

Q1: Heating data

Q2: Cooling Data

- E.** Publish your executive function code to a PDF file and save it using the name format given in the deliverables list for this problem.

Complete the Draft Technical Brief using the template provided.

### **Team Roles**

Provide a clear description of **each** individual's contribution/non-contribution and evidence of why it is significant to the team's performance.

*The instructor and GTA have the right to deduct half of the possible points to any student who did not contribute effectively according to his/her teammates. This grade will be final once the milestone grade is posted to blackboard and cannot be changed.*

### **Submission Requirements**

#### **Submission Instructions:**

Compress all deliverables into one **zip file** named M4\_sss\_tt.zip. Submit the zip file to the M4 drop box on Bb **before class 28**. This folder must contain:

- **M3ParameterID\_sss\_tt.m**
- **M2Piecewise\_sss\_tt.m**
- **M2SSEmod\_sss\_tt.m**
- **M2Plots\_sss\_tt.m**
- **M3Exec\_sss\_tt.m**
- **M3Exec\_sss\_tt\_report.pdf**
- **M4TechnicalBrief\_sss\_tt.docx**

#### **Notes:**

- Only one submission is required per team (not one per team member).
- Only the last submission is graded.
- After submission, distribute the submitted files to all team members. *At no time during this project should only one member of your team be in possession of project documentation.*
- *Failure to submit ALL required files in the appropriate format will result in a ZERO for the milestone, NO EXCEPTIONS.*