% House Cleaning

clc

close all

clear vars

% Import Data

data = importdata("config1.mat");

data2 = importdata("config2-1.mat");

data3 = importdata("config3.mat");

% Constants

R = 287; %[J/kg\*K]

P\_atm = 83700; %[Pa]

T\_atm = 21.8 + 273; %[K]

% Convert Tables To Arrays

both\_data = table2array(data);

total\_data = table2array(data2);

static\_data = table2array(data3);

% Extract Data Needed

delta\_P = both\_data(:,3);

delta\_P\_max = max(delta\_P);

% Equation for Airspeed

V\_air\_max = sqrt(2 \* delta\_P \* (R\*T\_atm)/P\_atm); %[m/s]

% Error Values

P\_atm\_error = 50; %[Pa]

T\_atm\_error = 0.05; %[K]

delta\_P\_error = 49.76; %[Pa]

% Error Equations

delta\_P\_partial = (R \* T\_atm)/(P\_atm \* sqrt(2 \* delta\_P\_max \* R\*T\_atm/P\_atm));

T\_atm\_partial = (delta\_P\_max \* R)/(P\_atm \* sqrt(2\*delta\_P\_max\*R\*T\_atm/P\_atm));

P\_atm\_partial = (-delta\_P\_max \* R \* T\_atm)/((P\_atm)^2 \* sqrt(2\*delta\_P\_max\*R\*T\_atm/P\_atm));

% Error Calculation

V\_air\_error = sqrt((P\_atm\_error\*P\_atm\_partial)^2 + (T\_atm\_error\*T\_atm\_partial)^2 + (delta\_P\_partial\*delta\_P\_error)^2)