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% Load original daily solar production
solarData = readtable('Corrected_House_1_Solar_Production.xlsx');
dailySolar = solarData.Power; % [365x1]

% Time vector for daily data (in days)
t_daily = (0:length(dailySolar)-1)'; % 0 to 364

% New hourly time vector (in days)
t_hourly = linspace(0, 364, 365*24)'; % 8760 points

% Interpolate to hourly resolution (linear by default)
hourlySolar = interp1(t_daily, dailySolar, t_hourly, 'linear');

% Optional: mimic actual daylight profile (more realistic)
% Multiply each day by a typical bell-shaped sunlight curve
daylightProfile = sin((pi/24)*(0:23)); % Typical solar shape for 24 hours
daylightProfile(daylightProfile < 0) = 0;

% Repeat for each day
fullProfile = repmat(daylightProfile, 365, 1);
hourlySolarProfile = reshape(hourlySolar, 24, []);
hourlySolarRealistic = hourlySolarProfile .* fullProfile;

% Flatten to 1D
hourlySolarRealistic = reshape(hourlySolarRealistic', [], 1);

% Create hourly timeseries
t_hourly = (0:length(hourlySolarRealistic)-1)'; % In hours
solarTS = timeseries(hourlySolarRealistic, t_hourly);
solarTS.Name = 'SolarHourly';
solarTS.TimeInfo.Units = 'hours';

% Assign to Simulink workspace
assignin('base', 'solarTS', solarTS);

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