Electrical Load Forecasting using “**ARIMA**” (Seasonal) method

1. In this program forecasting is done for 500 sample data points which is for January 2024 using the data of subsequent previous years viz. 2021 , 2022 , 2023 (all for January only).
2. Here the forecast horizon is about 500 data points .

**MATLAB Code :**

data = xlsread('ForJanOnly.xlsx');

combined\_data = mean(data, 2);

forecast\_horizon =500 ;

Mdl = arima('Constant',0,'D',1,'Seasonality',89, 'MALags', 1:3) ;

try

EstMdl = estimate(Mdl, combined\_data);

catch ME

disp(ME.message);

error('Unable to estimate the SARIMA model. Please adjust the model parameters.');

end

[New\_Var, ~] = forecast(EstMdl, forecast\_horizon, 'Y0', combined\_data);

figure;

plot(1:length(combined\_data), combined\_data, 'b', 'LineWidth', 2);

hold on;

plot(length(combined\_data)+(1:forecast\_horizon), New\_Var, 'r', 'LineWidth', 2);

hold off;

legend('Original Combined Signal', 'Forecasted Signal');

xlabel('Time');

ylabel('Value');

title('Original Combined Signal vs Forecasted Signal');

grid on

figure

error=New\_Var-For500Samples

subplot(2,1,1); plot(For500Samples); hold on ; plot(New\_Var);

legend("actual","forecasted");

subplot(2,1,2);plot(error);

mae=mean(abs(error));

mape=mean(abs(error./For500Samples)\*100);

Result:

For 500 samples: