# Problem Overview

* This is an electric transformer hour-by-hour dataset. We provide you with the data of 2 transformers.

# Dataset

* The dataset contains 6 features per time point which is as follows HUFL = High Voltage Useful Load (active power on high voltage side) HULL = High Voltage Useless Load (reactive power on high voltage side) MUFL = Medium Voltage Useful Load (active power on medium voltage side) MULL = Medium Voltage Useless Load (reactive power on medium voltage side) LUFL = Low Voltage Useful Load (active power on low voltage side) LULL = Low Voltage Useless Load (reactive power on low voltage side) OT = Oil Temperature (the target variable to predict)

# Task Description:

* You need to predict the oil temperature of a time point based on data from previous time points without ever using oil temperature information from any time point
* We want you to try three configurations based on the usage of data from previous time points: (1) use past N (you can tune this) time point data starting from the 4 time points prior to the one to be forecasted - you are trying to predict oil temperature for the next hour (2) use past N (you can tune this) time point data starting from the 96 time points prior to the one to be forecasted for - you are trying to predict what will happen to oil temperature after 1 day (3) use past N (you can tune this) time point data starting from the 672 time points prior to the one to be forecasted for - you are trying to predict what will happen to oil temperature after 1 week Note:
  + You cannot use any load information from the time point for which you are predicting the oil temperature for in any of the above configurations
  + You cannot use oil temperature from any time point

# Train-Test Data:

* Your training data should be completely disjoint from your test data
* If you are using time point 1-50,000 in any of your training samples, then the test samples cannot belong to any of those time points
* My recommendation is to divide the data into time point groups and randomly assign 80% of the groups to training and 20% to testing
* Consider some mean normalization
* Perform cross validation on the training dataset to develop and choose your model; the test set should be kept only for testing the final model.

# Expectations:

* Proper time-series feature visualization
* Feature selection attempts through correlation analysis
* You are expected to explore both deep learning based time series modeling and traditional ML techniques