

PREDICTION OF ELCTRICAL OUTPUT POWER OF COMBINED CYCLE POWER PLANT

Introduction: The Combined Cycle Power Plant or combined cycle gas turbine, a gas turbine generator generates electricity and waste heat is used to make steam to generate additional electricity via a steam turbine. The gas turbine is one of the most efficient use for the conversion of gas fuels to mechanical power or electricity. The use of distillate liquid fuels, usually diesel, is also common as alternate fuels. More recently, as simple cycle efficiencies have improved and as natural gas prices have fallen, gas turbines have been more widely adopted for base load power generation, especially in combined cycle mode, where waste heat is recovered in waste heat boilers, and the steam used to produce additional electricity. The basic principle of the Combined Cycle is simple: burning gas in a gas turbine (GT) produces not only power, which can be converted to electric power by a coupled generator, but also fairly hot exhaust gases. Routing these gases through a water-cooled heat exchanger produces steam, which can be turned into electric power with a coupled steam turbine and generator.

Ambient Temperature(AT):

25.33

Ambient Pressure(AP):

43.36

Exhaust Vacuum(V):

34.36

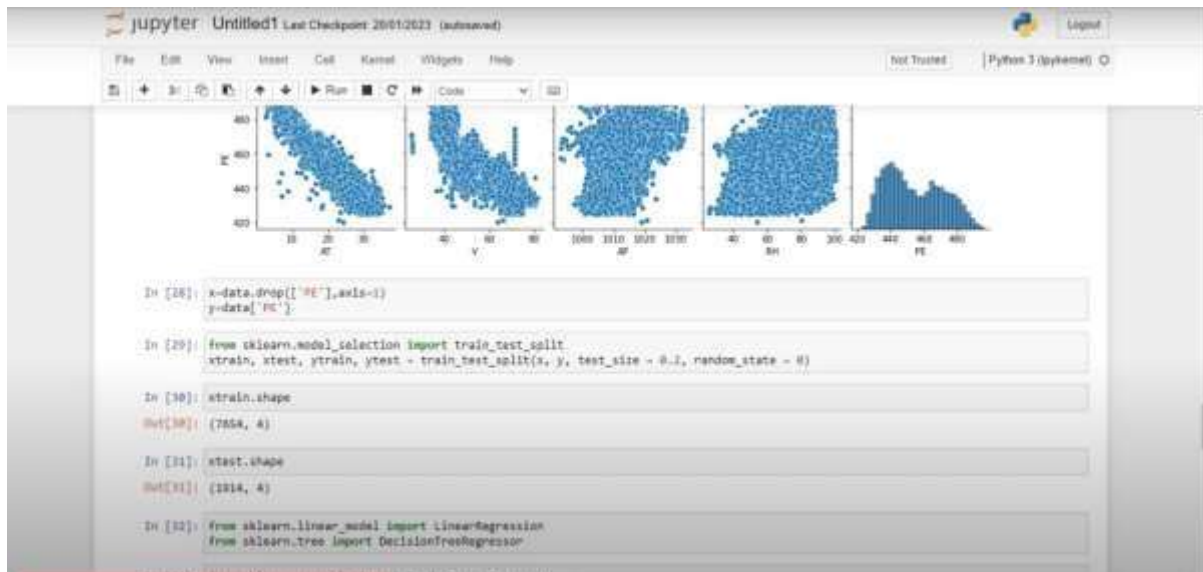
Relative Humidity(RH):

4

Predict

```
1 from flask import Flask, render_template, request # flask is a application
2 # used to create our application
3 # request is used to access the file object is submitted by the user to our application
4 # render_template is used for rendering the html pages
5 import pickle # pickle is used for serializing and de-serializing python object across
6
7 model = pickle.load(open('C:/Users/7a/Downloads/Telegram Desktop/Model/Model.pkl',
8
9 app=Flask(__name__)
10
11 @app.route("/") # rendering the html template
12 def home():
13     return render_template("index.html")
14 @app.route("/predict") # rendering the html template
15 def predict():
16     return render_template("index.html")
17
18 @app.route("/data_predict", methods=['POST']) # route for our prediction
19 def predict():
20     AT = request.form['AT'] # requesting for atm data
21     AP = request.form['AP'] # requesting for pressure data
22     # V = request.form['V'] # requesting for Exhaust Vacuum data
23     RH = request.form['RH'] # requesting for Relative Humidity data
24     # converting data into flask format
25     data = [[float(AT), float(AP), float(V), float(RH)]]
26     # loading model which we saved
27     model = pickle.load(open('C:/Users/7a/Downloads/Telegram Desktop/Model/Model.pkl',
28     prediction = model.predict(data[0])
29     return render_template("index.html", prediction_text = "Prediction of plant's is
30
31 if __name__ == '__main__':
32     app.run()
```

Python 3.8.22 (tags, Aug 22 2023, 23:01:56) [MC + 1839 64 bit (AMD64)]
Type "copyright", "credits" or "license()" for more information.
Dyhaan 3.31.2 -- An enhanced Interactive Python.
In [1]:



jupyter Untitled1 Last Checkpoint: 25/01/2023 (autosaved)

File Edit View Insert Cell Kernel Widgets Help Not Trusted Python 3 (ipykernel)

```
In [12]: import pandas as pd
In [13]: import numpy as np
In [14]: import matplotlib.pyplot as plt
In [15]: import seaborn as sns
In [16]: import pickle

In [17]: data=pd.read_csv('f:/notebook/dev1/prediction/relas5x2_gp.csv')

In [18]: data.head()
Out[18]:
```

	AT	V	AP	RH	PE
0	54.86	41.75	1024.07	73.57	463.26
1	25.16	62.36	1020.04	59.08	444.37
2	5.11	36.40	1012.16	62.54	458.96
3	26.88	57.22	1010.24	70.94	445.40
4	10.82	37.30	1009.23	66.62	472.80

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Ambient Pressure(AP):

Exhaust Vacuum(V):

Relative Humidity(RH):

Prediction of electric output is 443.756800000000034