```
In [1… import pandas as pd
       import csv
       import matplotlib.pyplot as plt
       import numpy as np
       import seaborn as sns; sns.set()
       from sklearn.linear_model import LinearRegression
       from scipy.fft import rfft, rfftfreq
```

```
In [1… def loadtimeseries(series):
           dict_ts={}
           for i in series:
               dict_ts[i]=[]
               linecount=0
               out=[0]*200

               with open(i) as filein:
                   spamreader=csv.reader(filein)
                   for x in spamreader:
                       if linecount>24:
                           out.append(float(x[0]))
                       linecount=linecount+1

                   for t in out:
                       dict_ts[i].append(t)
           return dict_ts
```

```
In [1… def plott(zz):

           fig, ax=plt.subplots(1,1)
           plt.rcParams["figure.figsize"] = (40,30)
           for r in zz:
               x=[]
               for i in range(len(zz[r])):
                   x.append(i)
               plt.plot(x[:-3500],zz[r][:-3500], label=r,linewidth=
           plt.legend(loc="upper left",fontsize=30)
           ax.set_xlabel('Time', fontsize=40)
           ax.set_ylabel('Amplitude',fontsize=40)
           plt.title('Time Series', fontdict=None, loc='center', pad
           plt.rc('xtick',labelsize=30)
           plt.rc('ytick',labelsize=30)
           plt.legend(loc="upper left",fontsize=40)

           plt.show()
           return
```

```
In [1… def singleQC(zz):
           n=0
           for s in zz:

               if n==0:
                   anom=s
               else:
                   x=[]
                   for i in range(len(zz[s])):
                       x.append(i)
                   fig, ax=plt.subplots(1,1)
                   plt.rcParams["figure.figsize"] = (40,30)
                   diff=[]
                   for i in range(len(zz[s])):
                       diff.append(zz[anom][i]-zz[s][i])
                   plt.plot(x[:-3500],diff[:-3500],"-g", label="dif
                   plt.plot(x[:-3500],zz[s][:-3500],"-r", label=s,l
                   plt.plot(x[:-3500],zz[anom][:-3500],"-b", label='
                   ax.set_xlabel('Time', fontsize=40)
                   ax.set_ylabel('Amplitude',fontsize=40)
                   plt.rc('xtick',labelsize=30)
                   plt.rc('ytick',labelsize=30)
                   plt.legend(loc="upper left",fontsize=30)
                   plt.title('Time Series Comparison', fontdict=None
                   plt.show()
                   print ("the correlation is " ,np.corrcoef(zz[anom
                   print ('peak-2-peak Nominal --> ' + str(max(zz[an
                   print ('peak-2-peak '+ s +' --> ' + str(max(zz[s
                   print ('peak-2-peak difference %  --> negative '
                       + str((((max(zz[anom]+abs(min(zz[anom])))-(ma
                   print ("")
                   print ("")
               n=n+1

           return
```
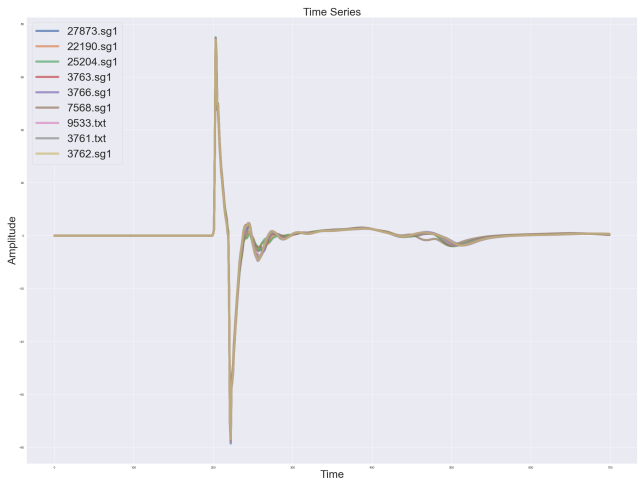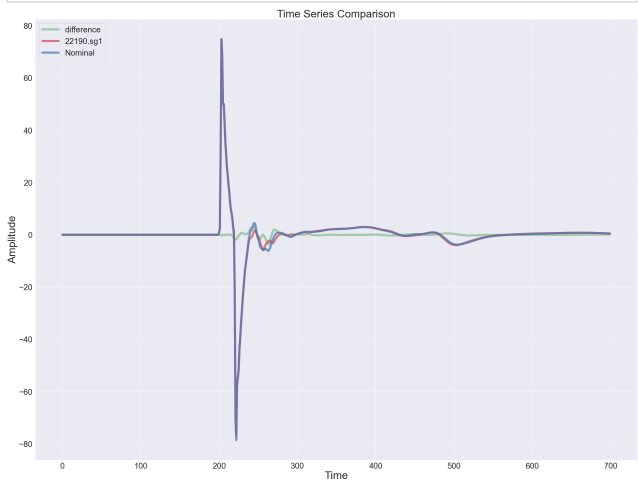
```
In [1… series=['27873.sg1','22190.sg1','25204.sg1','3763.sg1','3766.
```
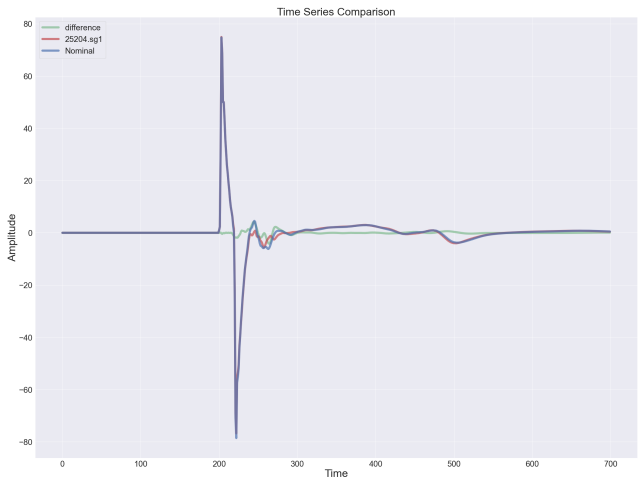
```
In [1… plott(loadtimeseries(series))
```

Let's analyze one by one

```
In [1… singleQC((loadtimeseries(series)))
```
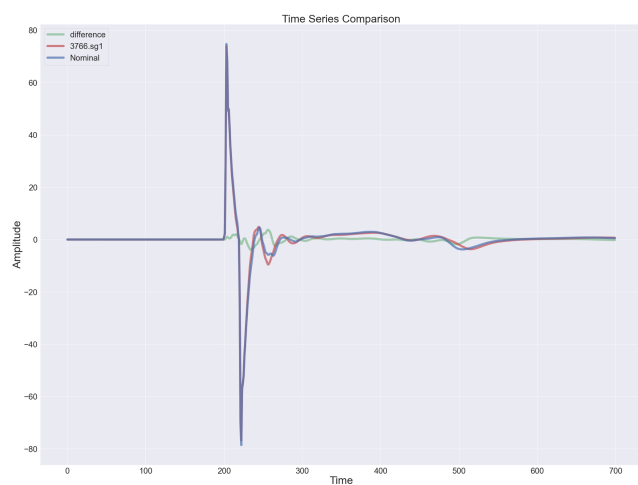


```
the correlation is  0.9982482294743984
peak-2-peak Nominal --> 153.27775
peak-2-peak 22190.sg1 --> 151.71439
peak-2-peak difference %  --> negative 1.0199523414194094
```



```
the correlation is  0.9974651816696463
peak-2-peak Nominal --> 153.27775
peak-2-peak 25204.sg1 --> 151.69946
peak-2-peak difference %  --> negative 1.0296928288678624
```

Time Series Comparison
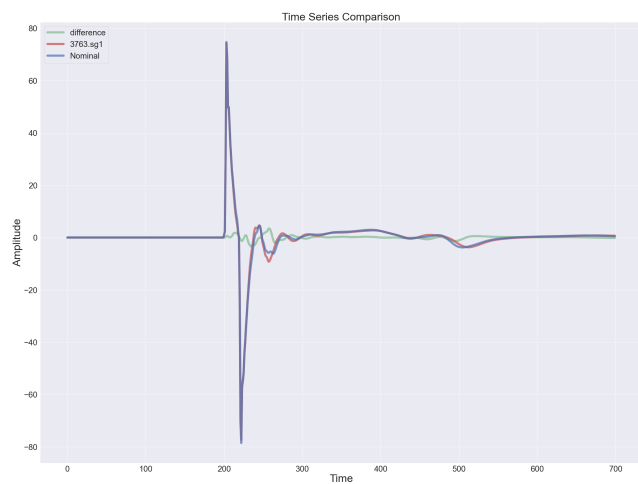
the correlation is 0.99750014521467
peak-2-peak Nominal --> 153.27775
peak-2-peak 3763.sg1 --> 151.55373
peak-2-peak difference % --> negative 1.1247685981820557


Time Series Comparison

the correlation is 0.9964580242088446
peak-2-peak Nominal --> 153.27775
peak-2-peak 3766.sg1 --> 150.68613
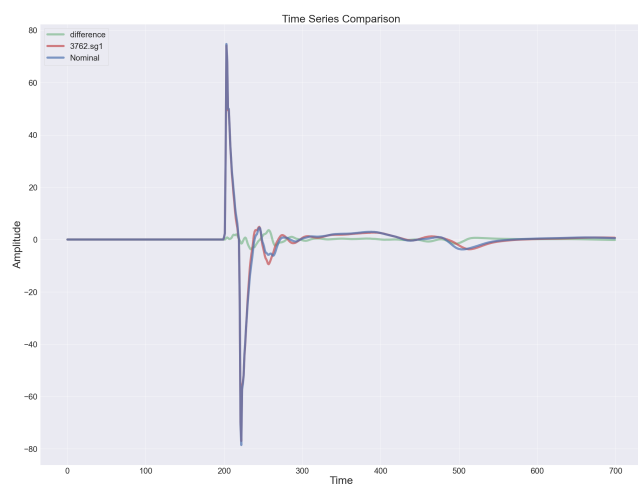peak-2-peak difference % --> negative 1.6907998714751529
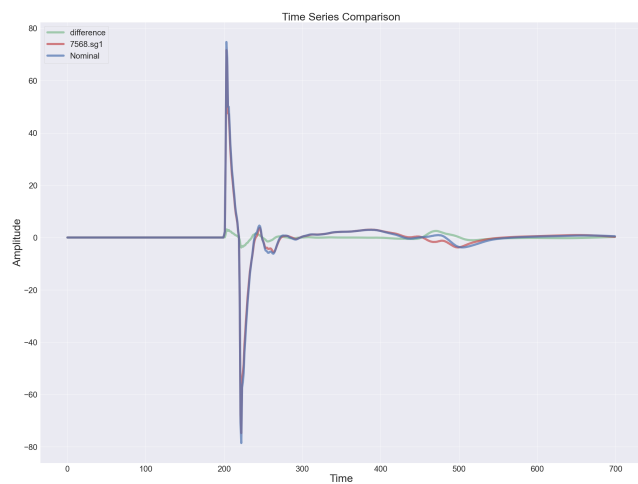
```
the correlation is  0.9978688761246371
peak-2-peak Nominal --> 153.27775
peak-2-peak 7568.sg1 --> 146.36007999999998
peak-2-peak difference %  --> negative 4.513159933519389
```
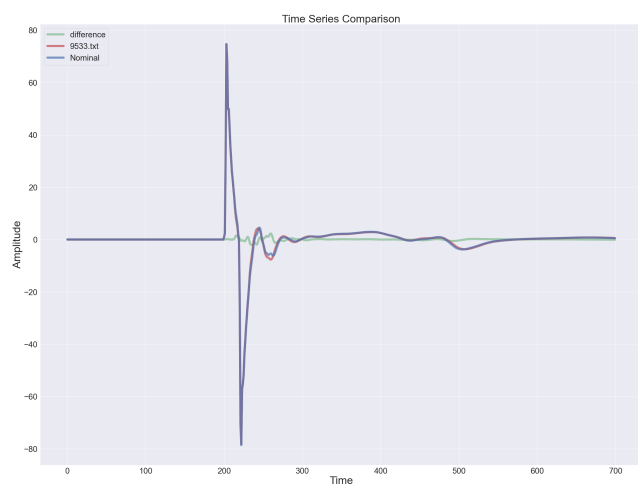


```
the correlation is  0.9991693749144833
peak-2-peak Nominal --> 153.27775
peak-2-peak 9533.txt --> 152.65571
peak-2-peak difference %  --> negative 0.4058253725671197
```

Time Series Comparison
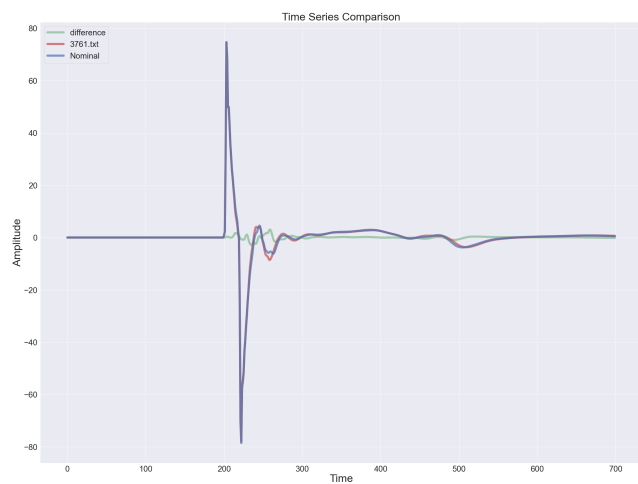
```
the correlation is  0.9984107324945865
peak-2-peak Nominal --> 153.27775
peak-2-peak 3761.txt --> 152.25617
peak-2-peak difference %  --> negative 0.6664894285047896
```


Time Series Comparison

```
the correlation is  0.9969916686309245
peak-2-peak Nominal --> 153.27775
peak-2-peak 3762.sg1 --> 151.09888999999998
peak-2-peak difference %  --> negative 1.4215109498932588
```