```
Initial Parameters...
R(load) = 500 ohms
c1 = 0.50
c2 = 0.50
r = 1.00
w = 0.90

---------
INITIAL Particle 1 ::   pos(duty)=   0.40000000    fitness(Output Power)=  10.64447425
INITIAL Particle 2 ::   pos(duty)=   0.60000000    fitness(Output Power)=  24.91191014
INITIAL Particle 3 ::   pos(duty)=   0.80000000    fitness(Output Power)=  91.01744190

==============================================
++++++++++++++Start of Iterations++++++++++++++
==============================================
Iteration No: 1
velocity =

    0.0800
    0.0400
         0

Particle 1 ::   pos(duty)=   0.48000000    fitness(Output Power)=  17.91242412
Particle 2 ::   pos(duty)=   0.64000000    fitness(Output Power)=  31.65212326
Particle 3 ::   pos(duty)=   0.80000000    fitness(Output Power)=  91.01744190


Updated best Fitness Position =   0.80000000


--------
Iteration No: 2
velocity =

    0.1360
    0.0680
         0

Particle 1 ::   pos(duty)=   0.61600000    fitness(Output Power)=  31.65212326
Particle 2 ::   pos(duty)=   0.70800000    fitness(Output Power)=  44.38993712
Particle 3 ::   pos(duty)=   0.80000000    fitness(Output Power)=  91.01744190


Updated best Fitness Position =   0.80000000


--------
Iteration No: 3
velocity =

    0.1592
    0.0796
         0

Particle 1 ::   pos(duty)=   0.77520000    fitness(Output Power)=  72.28276608
```

```
Particle 2 ::   pos(duty)=   0.78760000    fitness(Output Power)=  82.01614752
Particle 3 ::   pos(duty)=   0.80000000    fitness(Output Power)=  91.01744190


Updated best Fitness Position =   0.80000000


--------
Iteration No: 4
velocity =

    0.1482
    0.0741
         0

Particle 1 ::   pos(duty)=   0.92344000    fitness(Output Power)=  86.64539757
Particle 2 ::   pos(duty)=   0.86172000    fitness(Output Power)= 162.62390096
Particle 3 ::   pos(duty)=   0.80000000    fitness(Output Power)=  91.01744190


Updated best Fitness Position =   0.86172000


--------
Iteration No: 5
velocity =

    0.1211
    0.0667
    0.0123

Particle 1 ::   pos(duty)=   0.95000000    fitness(Output Power)=  37.05981391
Particle 2 ::   pos(duty)=   0.92842800    fitness(Output Power)=  75.75066699
Particle 3 ::   pos(duty)=   0.81234400    fitness(Output Power)= 103.25372637


Updated best Fitness Position =   0.86172000


--------
Iteration No: 6
velocity =

    0.0860
    0.0334
    0.0210

Particle 1 ::   pos(duty)=   0.95000000    fitness(Output Power)=  37.05981391
Particle 2 ::   pos(duty)=   0.96178200    fitness(Output Power)=  21.25496667
Particle 3 ::   pos(duty)=   0.83332880    fitness(Output Power)= 123.71128026


Updated best Fitness Position =   0.86172000
```

```
--------
Iteration No: 7
velocity =

    0.0544
   -0.0100
    0.0246

Particle 1 ::   pos(duty)=   0.95000000    fitness(Output Power)=  37.05981391
Particle 2 ::   pos(duty)=   0.95177580    fitness(Output Power)=  34.33485682
Particle 3 ::   pos(duty)=   0.85789336    fitness(Output Power)= 156.97385306


Updated best Fitness Position =   0.86172000


--------
Iteration No: 8
velocity =

    0.0260
   -0.0450
    0.0229

Particle 1 ::   pos(duty)=   0.97601821    fitness(Output Power)=   8.17499686
Particle 2 ::   pos(duty)=   0.90674790    fitness(Output Power)= 128.44079617
Particle 3 ::   pos(duty)=   0.88076679    fitness(Output Power)= 180.19084688


Updated best Fitness Position =   0.88076679


--------
Iteration No: 9
velocity =

   -0.0061
   -0.0547
    0.0206

Particle 1 ::   pos(duty)=   0.96986867    fitness(Output Power)=  13.07999053
Particle 2 ::   pos(duty)=   0.85202099    fitness(Output Power)= 148.22868244
Particle 3 ::   pos(duty)=   0.90135288    fitness(Output Power)= 143.37746934


Updated best Fitness Position =   0.88076679


--------
Iteration No: 10
velocity =

   -0.0326
   -0.0416
    0.0103
```

```
Particle 1 ::   pos(duty)=   0.93722798    fitness(Output Power)=  58.31385570
Particle 2 ::   pos(duty)=   0.81045573    fitness(Output Power)=  99.33598333
Particle 3 ::   pos(duty)=   0.91164593    fitness(Output Power)= 115.46679567


Updated best Fitness Position =   0.88076679


--------
Iteration No: 11
velocity =

   -0.0434
   -0.0131
   -0.0031

Particle 1 ::   pos(duty)=   0.89380152    fitness(Output Power)= 163.06094779
Particle 2 ::   pos(duty)=   0.79736207    fitness(Output Power)=  91.01744190
Particle 3 ::   pos(duty)=   0.90855801    fitness(Output Power)= 123.58672466


Updated best Fitness Position =   0.88076679


--------
Iteration No: 12
velocity =

   -0.0417
    0.0178
   -0.0139

Particle 1 ::   pos(duty)=   0.85211076    fitness(Output Power)= 148.22868244
Particle 2 ::   pos(duty)=   0.81513030    fitness(Output Power)= 103.25372637
Particle 3 ::   pos(duty)=   0.89466240    fitness(Output Power)= 161.16008511


Updated best Fitness Position =   0.88076679


--------
Iteration No: 13
velocity =

   -0.0235
    0.0384
   -0.0181

Particle 1 ::   pos(duty)=   0.82865844    fitness(Output Power)= 117.43974535
Particle 2 ::   pos(duty)=   0.85356695    fitness(Output Power)= 150.14168463
Particle 3 ::   pos(duty)=   0.87659811    fitness(Output Power)= 179.07847733


Updated best Fitness Position =   0.88076679
```

```
--------
Iteration No: 14
velocity =

    0.0023
    0.0417
   -0.0146

Particle 1 ::   pos(duty)=   0.83100163    fitness(Output Power)= 120.64004399
Particle 2 ::   pos(duty)=   0.89523051    fitness(Output Power)= 159.70968504
Particle 3 ::   pos(duty)=   0.86200772    fitness(Output Power)= 162.62390096


Updated best Fitness Position =   0.88076679


--------
Iteration No: 15
velocity =

    0.0246
    0.0279
   -0.0056

Particle 1 ::   pos(duty)=   0.85562352    fitness(Output Power)= 153.71605220
Particle 2 ::   pos(duty)=   0.92313287    fitness(Output Power)=  87.19001309
Particle 3 ::   pos(duty)=   0.85638000    fitness(Output Power)= 155.38315122


Updated best Fitness Position =   0.88076679


--------
Iteration No: 16
velocity =

    0.0348
    0.0044
    0.0047

Particle 1 ::   pos(duty)=   0.89044747    fitness(Output Power)= 170.16367659
Particle 2 ::   pos(duty)=   0.92748921    fitness(Output Power)=  77.92991048
Particle 3 ::   pos(duty)=   0.86106976    fitness(Output Power)= 161.31340061


Updated best Fitness Position =   0.88076679


--------
Iteration No: 17
velocity =

    0.0294
```

```
   -0.0186
    0.0121

Particle 1 ::   pos(duty)=   0.91985289    fitness(Output Power)=  95.35709418
Particle 2 ::   pos(duty)=   0.90891158    fitness(Output Power)= 122.50593560
Particle 3 ::   pos(duty)=   0.87316937    fitness(Output Power)= 176.68027529


Updated best Fitness Position =   0.88076679


--------
Iteration No: 18
velocity =

    0.0128
   -0.0318
    0.0139

Particle 1 ::   pos(duty)=   0.93261946    fitness(Output Power)=  67.03274838
Particle 2 ::   pos(duty)=   0.87712445    fitness(Output Power)= 179.49937519
Particle 3 ::   pos(duty)=   0.88709798    fitness(Output Power)= 175.70736453


Updated best Fitness Position =   0.88076679


--------
Iteration No: 19
velocity =

   -0.0073
   -0.0279
    0.0100

Particle 1 ::   pos(duty)=   0.92530445    fitness(Output Power)=  82.83271443
Particle 2 ::   pos(duty)=   0.84924449    fitness(Output Power)= 144.13593671
Particle 3 ::   pos(duty)=   0.89710126    fitness(Output Power)= 154.74934663


Updated best Fitness Position =   0.88076679


--------
Iteration No: 20
velocity =

   -0.0225
   -0.0132
    0.0025

Particle 1 ::   pos(duty)=   0.90284201    fitness(Output Power)= 139.14522282
Particle 2 ::   pos(duty)=   0.83603299    fitness(Output Power)= 126.65788382
Particle 3 ::   pos(duty)=   0.89957042    fitness(Output Power)= 148.08677762
```

```
Updated best Fitness Position =   0.88076679


--------
Iteration No: 21
velocity =

   -0.0271
    0.0053
   -0.0053

Particle 1 ::   pos(duty)=   0.87573186    fitness(Output Power)= 178.54700287
Particle 2 ::   pos(duty)=   0.84130768    fitness(Output Power)= 134.79195338
Particle 3 ::   pos(duty)=   0.89427121    fitness(Output Power)= 162.11551499


Updated best Fitness Position =   0.88076679


--------
Iteration No: 22
velocity =

   -0.0234
    0.0198
   -0.0102

Particle 1 ::   pos(duty)=   0.85233971    fitness(Output Power)= 150.14168463
Particle 2 ::   pos(duty)=   0.86111008    fitness(Output Power)= 161.31340061
Particle 3 ::   pos(duty)=   0.88410016    fitness(Output Power)= 178.85965631


Updated best Fitness Position =   0.88076679


--------
Iteration No: 23
velocity =

   -0.0107
    0.0250
   -0.0105

Particle 1 ::   pos(duty)=   0.84165063    fitness(Output Power)= 134.79195338
Particle 2 ::   pos(duty)=   0.88606646    fitness(Output Power)= 177.19356301
Particle 3 ::   pos(duty)=   0.87361287    fitness(Output Power)= 177.11954390


Updated best Fitness Position =   0.88076679


--------
Iteration No: 24
velocity =
```

```
    0.0050
    0.0196
   -0.0066

Particle 1 ::   pos(duty)=   0.84666993    fitness(Output Power)= 141.94982779
Particle 2 ::   pos(duty)=   0.90567886    fitness(Output Power)= 131.66623792
Particle 3 ::   pos(duty)=   0.86703587    fitness(Output Power)= 170.12016625


Updated best Fitness Position =   0.88076679


--------
Iteration No: 25
velocity =

    0.0171
    0.0070
   -0.0004

Particle 1 ::   pos(duty)=   0.86381906    fitness(Output Power)= 165.05471546
Particle 2 ::   pos(duty)=   0.91263673    fitness(Output Power)= 112.75434793
Particle 3 ::   pos(duty)=   0.86660894    fitness(Output Power)= 169.21479793


Updated best Fitness Position =   0.88076679


--------
Iteration No: 26
velocity =

    0.0212
   -0.0072
    0.0053

Particle 1 ::   pos(duty)=   0.88502538    fitness(Output Power)= 178.21129434
Particle 2 ::   pos(duty)=   0.90542236    fitness(Output Power)= 132.20281575
Particle 3 ::   pos(duty)=   0.87188785    fitness(Output Power)= 175.14535021


Updated best Fitness Position =   0.88076679


--------
Iteration No: 27
velocity =

    0.0164
   -0.0171
    0.0083

Particle 1 ::   pos(duty)=   0.90140065    fitness(Output Power)= 142.85053599
Particle 2 ::   pos(duty)=   0.88833874    fitness(Output Power)= 174.01939861
```

```
Particle 3 ::   pos(duty)=   0.88019044    fitness(Output Power)= 180.21989981


Updated best Fitness Position =   0.88019044


--------
Iteration No: 28
velocity =

    0.0054
   -0.0192
    0.0075

Particle 1 ::   pos(duty)=   0.90676259    fitness(Output Power)= 128.44079617
Particle 2 ::   pos(duty)=   0.86909096    fitness(Output Power)= 172.54202137
Particle 3 ::   pos(duty)=   0.88766277    fitness(Output Power)= 175.05443013


Updated best Fitness Position =   0.88019044


--------
Iteration No: 29
velocity =

   -0.0067
   -0.0135
    0.0037

Particle 1 ::   pos(duty)=   0.90006776    fitness(Output Power)= 146.52419647
Particle 2 ::   pos(duty)=   0.85559455    fitness(Output Power)= 153.71605220
Particle 3 ::   pos(duty)=   0.89139894    fitness(Output Power)= 168.47832284


Updated best Fitness Position =   0.88019044


--------
Iteration No: 30
velocity =

   -0.0149
   -0.0029
   -0.0011

Particle 1 ::   pos(duty)=   0.88519977    fitness(Output Power)= 177.97251331
Particle 2 ::   pos(duty)=   0.85267294    fitness(Output Power)= 150.14168463
Particle 3 ::   pos(duty)=   0.89027809    fitness(Output Power)= 170.57358426


Updated best Fitness Position =   0.88019044


--------
```

```
Iteration No: 31
velocity =

   -0.0163
    0.0078
   -0.0050

Particle 1 ::   pos(duty)=   0.86892313    fitness(Output Power)= 171.78207902
Particle 2 ::   pos(duty)=   0.86043729    fitness(Output Power)= 161.31340061
Particle 3 ::   pos(duty)=   0.88523426    fitness(Output Power)= 177.97251331


Updated best Fitness Position =   0.88019044


--------
Iteration No: 32
velocity =

   -0.0110
    0.0143
   -0.0066

Particle 1 ::   pos(duty)=   0.85788936    fitness(Output Power)= 156.97385306
Particle 2 ::   pos(duty)=   0.87471327    fitness(Output Power)= 177.89690255
Particle 3 ::   pos(duty)=   0.87867729    fitness(Output Power)= 180.03895504


Updated best Fitness Position =   0.88019044


--------
Iteration No: 33
velocity =

   -0.0019
    0.0144
   -0.0053

Particle 1 ::   pos(duty)=   0.85598768    fitness(Output Power)= 153.71605220
Particle 2 ::   pos(duty)=   0.88913932    fitness(Output Power)= 172.54591014
Particle 3 ::   pos(duty)=   0.87338128    fitness(Output Power)= 176.68027529


Updated best Fitness Position =   0.88019044


--------
Iteration No: 34
velocity =

    0.0071
    0.0088
   -0.0020
```

```
Particle 1 ::   pos(duty)=   0.86306556    fitness(Output Power)= 165.05471546
Particle 2 ::   pos(duty)=   0.89793001    fitness(Output Power)= 152.72094640
Particle 3 ::   pos(duty)=   0.87133853    fitness(Output Power)= 174.55697645


Updated best Fitness Position =   0.88019044


--------
Iteration No: 35
velocity =

    0.0123
    0.0002
    0.0017

Particle 1 ::   pos(duty)=   0.87539389    fitness(Output Power)= 178.54700287
Particle 2 ::   pos(duty)=   0.89813261    fitness(Output Power)= 152.21055604
Particle 3 ::   pos(duty)=   0.87304082    fitness(Output Power)= 176.68027529


Updated best Fitness Position =   0.88019044


--------
Iteration No: 36
velocity =

    0.0121
   -0.0076
    0.0044

Particle 1 ::   pos(duty)=   0.88744869    fitness(Output Power)= 175.38478286
Particle 2 ::   pos(duty)=   0.89052488    fitness(Output Power)= 170.16367659
Particle 3 ::   pos(duty)=   0.87743273    fitness(Output Power)= 179.49937519


Updated best Fitness Position =   0.88019044


--------
Iteration No: 37
velocity =

    0.0070
   -0.0116
    0.0051

Particle 1 ::   pos(duty)=   0.89443540    fitness(Output Power)= 161.63900563
Particle 2 ::   pos(duty)=   0.87893095    fitness(Output Power)= 180.03895504
Particle 3 ::   pos(duty)=   0.88248853    fitness(Output Power)= 179.81169973


Updated best Fitness Position =   0.88019044
```

```
--------
Iteration No: 38
velocity =

   -0.0004
   -0.0102
    0.0036

Particle 1 ::   pos(duty)=   0.89406615    fitness(Output Power)= 162.58952587
Particle 2 ::   pos(duty)=   0.86874831    fitness(Output Power)= 171.78207902
Particle 3 ::   pos(duty)=   0.88611952    fitness(Output Power)= 176.91423626


Updated best Fitness Position =   0.88019044


--------
Iteration No: 39
velocity =

   -0.0068
   -0.0048
    0.0009

Particle 1 ::   pos(duty)=   0.88722422    fitness(Output Power)= 175.70736453
Particle 2 ::   pos(duty)=   0.86390889    fitness(Output Power)= 166.17936770
Particle 3 ::   pos(duty)=   0.88701577    fitness(Output Power)= 176.02189553


Updated best Fitness Position =   0.88019044


--------
Iteration No: 40
velocity =

   -0.0099
    0.0019
   -0.0019

Particle 1 ::   pos(duty)=   0.87729367    fitness(Output Power)= 179.49937519
Particle 2 ::   pos(duty)=   0.86581413    fitness(Output Power)= 168.25745543
Particle 3 ::   pos(duty)=   0.88509227    fitness(Output Power)= 178.21129434


Updated best Fitness Position =   0.88019044


--------
Iteration No: 41
velocity =

   -0.0084
    0.0072
```

```
   -0.0037

Particle 1 ::   pos(duty)=   0.86893552    fitness(Output Power)= 171.78207902
Particle 2 ::   pos(duty)=   0.87302747    fitness(Output Power)= 176.68027529
Particle 3 ::   pos(duty)=   0.88140039    fitness(Output Power)= 180.08928929


Updated best Fitness Position =   0.88019044


--------
Iteration No: 42
velocity =

   -0.0036
    0.0091
   -0.0038

Particle 1 ::   pos(duty)=   0.86533580    fitness(Output Power)= 167.24628517
Particle 2 ::   pos(duty)=   0.88213277    fitness(Output Power)= 179.92015731
Particle 3 ::   pos(duty)=   0.87759371    fitness(Output Power)= 179.67072353


Updated best Fitness Position =   0.88019044


--------
Iteration No: 43
velocity =

    0.0021
    0.0072
   -0.0024

Particle 1 ::   pos(duty)=   0.86745856    fitness(Output Power)= 170.12016625
Particle 2 ::   pos(duty)=   0.88929871    fitness(Output Power)= 172.54591014
Particle 3 ::   pos(duty)=   0.87520639    fitness(Output Power)= 178.23730632


Updated best Fitness Position =   0.88019044


--------
Iteration No: 44
velocity =

    0.0064
    0.0026
   -0.0002

Particle 1 ::   pos(duty)=   0.87388243    fitness(Output Power)= 177.11954390
Particle 2 ::   pos(duty)=   0.89185285    fitness(Output Power)= 167.61038422
Particle 3 ::   pos(duty)=   0.87505143    fitness(Output Power)= 178.23730632
```

```
Updated best Fitness Position =   0.88019044


--------
Iteration No: 45
velocity =

    0.0077
   -0.0026
    0.0019

Particle 1 ::   pos(duty)=   0.88160777    fitness(Output Power)= 180.08928929
Particle 2 ::   pos(duty)=   0.88923471    fitness(Output Power)= 172.54591014
Particle 3 ::   pos(duty)=   0.87696756    fitness(Output Power)= 179.30226694


Updated best Fitness Position =   0.88019044


--------
Iteration No: 46
velocity =

    0.0067
   -0.0062
    0.0030

Particle 1 ::   pos(duty)=   0.88827711    fitness(Output Power)= 174.01939861
Particle 2 ::   pos(duty)=   0.88300878    fitness(Output Power)= 179.54972644
Particle 3 ::   pos(duty)=   0.87998124    fitness(Output Power)= 180.20559914


Updated best Fitness Position =   0.88019044


--------
Iteration No: 47
velocity =

    0.0031
   -0.0070
    0.0028

Particle 1 ::   pos(duty)=   0.89132831    fitness(Output Power)= 168.47832284
Particle 2 ::   pos(duty)=   0.87602621    fitness(Output Power)= 178.82705206
Particle 3 ::   pos(duty)=   0.88277722    fitness(Output Power)= 179.68804741


Updated best Fitness Position =   0.88019044


--------
Iteration No: 48
velocity =
```

```
   -0.0014
   -0.0049
    0.0015

Particle 1 ::   pos(duty)=   0.88990271    fitness(Output Power)= 171.37850719
Particle 2 ::   pos(duty)=   0.87115569    fitness(Output Power)= 174.55697645
Particle 3 ::   pos(duty)=   0.88425890    fitness(Output Power)= 178.85965631


Updated best Fitness Position =   0.88019044


--------
Iteration No: 49
velocity =

   -0.0049
   -0.0010
   -0.0003

Particle 1 ::   pos(duty)=   0.88501823    fitness(Output Power)= 178.21129434
Particle 2 ::   pos(duty)=   0.87013422    fitness(Output Power)= 173.25678950
Particle 3 ::   pos(duty)=   0.88396502    fitness(Output Power)= 179.05174434


Updated best Fitness Position =   0.88019044


--------
Iteration No: 50
velocity =

   -0.0060
    0.0029
   -0.0018

Particle 1 ::   pos(duty)=   0.87897455    fitness(Output Power)= 180.03895504
Particle 2 ::   pos(duty)=   0.87298549    fitness(Output Power)= 176.20566917
Particle 3 ::   pos(duty)=   0.88219070    fitness(Output Power)= 179.92015731


Updated best Fitness Position =   0.88019044


--------
>>
```