runfile('C:/Users/jrjim/Downloads/Improve\_Hornsrev1\_Layout\_JRJ\_02\_03\_2025.py', wdir='C:/Users/jrjim/Downloads')

Original AEP: 664.334531 GWh

Enter Wind Turbine Radius in meters: 40

Enter Number of Iterations on each Generation: 200

Enter Number of Genetic Generations: 10

Best solution on reference layout randomized Generation 0:

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6148120.5902413 , 6147558.33871215]))

aep\_best\_sol on reference layout randomized Generation 0: 664.3383620138301

Best solution on Genetic Generation 1:

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aep\_best\_sol on Genetic Generation 1: 664.3622174023701

Best solution on Genetic Generation 2:

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aep\_best\_sol on Genetic Generation 2: 664.4111256510881

Best solution on Genetic Generation 3:

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aep\_best\_sol on Genetic Generation 3: 664.4527528266622

Best solution on Genetic Generation 4:

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aep\_best\_sol on Genetic Generation 4: 664.5092344464139

Best solution on Genetic Generation 5:

([423946.66966172453, 424012.0876222565, 424083.5367666329, 424152.8778131811, 424260.83604895556, 424328.432508349, 424367.7504712865, 424438.9736925348, 424523.21318411734, 424597.0926117969, 424701.1076146401, 424724.4947406035, 424809.4965201799, 424875.93336832116, 424942.4766995683, 425023.7988379253, 425093.8709551616, 425159.1680650344, 425218.9937752436, 425291.4572715667, 425371.26387890545, 425421.4988055128, 425504.42269489786, 425543.8040080948, 425657.8121578244, 425739.0350410542, 425783.94950997835, 425850.1413810808, 425919.03743692045, 426011.53764571476, 426058.7432096702, 426114.20777081663, 426194.0060794759, 426262.2246001608, 426351.4370208941, 426421.9415027581, 426484.1770140635, 426552.7453353472, 426604.9430584863, 426689.80164279125, 426799.5300204892, 426836.7645346421, 426894.73491807183, 426976.50984990416, 427055.2848630802, 427120.3675512257, 427190.1002684888, 427252.66509298113, 427315.2003077716, 427412.5129638991, 427480.62805929873, 427567.4014646799, 427607.8714120447, 427666.5973802299, 427752.2578909421, 427816.7963778704, 427888.2239293144, 427983.86747568025, 428041.66861861775, 428129.20860338386, 428148.19748123834, 428240.46717510966, 428307.0641674792, 428384.71184074035, 428453.6859445777, 428534.97874155565, 428594.7574878895, 428641.0039671032, 428736.435933328, 428794.5029689661, 428861.7621672497, 428946.829032228, 429031.70098276844, 429101.0218940779, 429177.0888599243, 429221.9715245622, 429298.23909108154, 429361.3841493626, 429449.75850332004, 429503.9218499151], [6151452.479571072, 6150899.879838874, 6150349.332985434, 6149772.277178452, 6149234.714985442, 6148653.660681714, 6148112.139788893, 6147555.017099516, 6151453.316473863, 6150892.890884799, 6150343.996009878, 6149783.783483458, 6149227.218453103, 6148667.940871405, 6148103.416453453, 6147549.6479039155, 6151458.050090489, 6150893.233063685, 6150348.942760833, 6149781.035432393, 6149227.299073055, 6148657.6407132195, 6148131.331453676, 6147564.003152513, 6151448.7895001285, 6150907.223629024, 6150343.159693622, 6149771.068909566, 6149221.402387415, 6148681.5695024505, 6148104.422798554, 6147569.878066917, 6151457.013280983, 6150897.645834068, 6150341.314437562, 6149791.916352773, 6149213.337470613, 6148675.047612, 6148099.183183039, 6147553.814969229, 6151468.951592275, 6150899.481559522, 6150321.205193183, 6149773.066696098, 6149240.97387572, 6148655.625673427, 6148112.43263517, 6147529.248858857, 6151450.787213234, 6150893.3677004315, 6150336.44228411, 6149781.855851922, 6149230.0884490665, 6148648.840258431, 6148121.494012775, 6147543.788619861, 6151458.027302575, 6150899.418903831, 6150349.828044416, 6149793.788031887, 6149224.897861639, 6148653.523588585, 6148114.494568889, 6147541.602797088, 6151458.166491269, 6150891.57690095, 6150353.740134935, 6149801.96881217, 6149219.62923727, 6148653.539672749, 6148105.76160952, 6147529.557845973, 6151463.826544822, 6150873.928899766, 6150331.139037741, 6149775.302189747, 6149205.31950943, 6148666.333044721, 6148112.82828488, 6147543.657747293])

aep\_best\_sol on Genetic Generation 5: 664.552400162578

Best solution on Genetic Generation 6:

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aep\_best\_sol on Genetic Generation 6: 664.6197130437192

Best solution on Genetic Generation 7:

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aep\_best\_sol on Genetic Generation 7: 664.7005597162339

Best solution on Genetic Generation 8:

([423951.08035770105, 423996.1839694486, 424064.44281558815, 424133.7495730783, 424248.48745696736, 424307.2490531654, 424361.84041563654, 424444.1699484597, 424510.0580607754, 424608.62361891463, 424691.29924554675, 424718.1776679932, 424807.6977596306, 424889.9768404207, 424950.8468847516, 425023.200838203, 425097.67768174375, 425156.16504123807, 425212.11663669726, 425299.90251898725, 425361.91081924766, 425428.08298093843, 425504.55068487726, 425533.62677422224, 425659.35182047484, 425732.18992488075, 425790.4314777908, 425846.9468121389, 425929.6605186468, 425997.00854594656, 426066.1558450517, 426116.3120109013, 426211.4816501552, 426271.6415673042, 426344.1168175758, 426418.10923866974, 426489.02544570266, 426563.4286018365, 426624.560583728, 426700.63144253194, 426811.0577374827, 426843.3434784263, 426893.3745668582, 426994.4848914092, 427052.70020167064, 427129.2020610981, 427185.4380445, 427255.78051762166, 427306.06842295843, 427410.1906493223, 427479.84493192233, 427566.6550152898, 427614.388763538, 427666.1271251127, 427766.39939774264, 427819.7984749248, 427867.7612870491, 427976.07412184903, 428046.348890819, 428126.0564052074, 428143.8495834287, 428219.4757020715, 428317.1089452027, 428384.69899311435, 428457.6899915452, 428549.9671889294, 428591.69314587594, 428654.9591590925, 428737.86258513783, 428791.2696975218, 428872.00345330656, 428944.0503911716, 429046.0230384999, 429125.43370997976, 429174.7291269091, 429239.06116710464, 429304.23754089023, 429373.2962479547, 429455.89990940614, 429513.2788135198], [6151457.095873892, 6150894.173511999, 6150336.4342806265, 6149753.356525717, 6149221.5290170815, 6148635.264261216, 6148112.1654315535, 6147540.6027832115, 6151454.662701595, 6150893.75697527, 6150349.122168465, 6149770.600090309, 6149229.760344347, 6148668.348231758, 6148114.3224821845, 6147534.300121212, 6151464.354955176, 6150891.1407995755, 6150365.2359293755, 6149783.798688478, 6149226.825443035, 6148674.9231583215, 6148131.527549976, 6147546.533800163, 6151467.734655012, 6150908.222235341, 6150350.782304117, 6149776.646035952, 6149224.538429704, 6148677.52630148, 6148116.112231612, 6147561.927100374, 6151447.928879601, 6150899.71394315, 6150332.550889674, 6149790.541660773, 6149208.70383546, 6148670.810656263, 6148117.443260949, 6147543.729281886, 6151465.747085429, 6150900.009578604, 6150308.691682621, 6149776.554538986, 6149240.26182424, 6148647.630567706, 6148118.186568863, 6147528.554152739, 6151462.686984277, 6150893.625203026, 6150352.674758309, 6149768.456056047, 6149207.893795723, 6148652.1130231675, 6148123.755745856, 6147530.084837631, 6151470.078268716, 6150919.819658268, 6150346.52887676, 6149796.519734623, 6149236.875511238, 6148641.563279857, 6148102.347199679, 6147531.146545605, 6151453.035749706, 6150880.973990033, 6150348.949261914, 6149800.121260621, 6149209.452755678, 6148635.382067605, 6148094.930358464, 6147535.835548461, 6151477.29483134, 6150876.204766461, 6150340.783329114, 6149767.072094432, 6149204.701558411, 6148667.986372552, 6148128.342179883, 6147559.8332375055])

aep\_best\_sol on Genetic Generation 8: 664.8323829738156

Best solution on Genetic Generation 9:

([423946.5281187457, 423986.44629156066, 424068.38794104994, 424142.9400073633, 424239.5063791983, 424304.7330970931, 424361.66169352614, 424440.15143197554, 424507.25987303804, 424612.74718117196, 424697.8165485822, 424710.530257439, 424814.2796095463, 424887.48397891544, 424955.17855624226, 425030.7673269869, 425103.6758518762, 425149.3887796137, 425207.32875505806, 425293.8566713306, 425371.24577013694, 425428.0393222147, 425502.48051277903, 425524.0448795208, 425656.11421677447, 425740.3956740945, 425795.49728687614, 425853.08534184576, 425927.9216462447, 425992.6680464103, 426058.1220680747, 426120.5488294486, 426208.8370873371, 426266.78901307716, 426351.9451510596, 426422.5666533537, 426483.4154932379, 426567.55220794486, 426624.9166916854, 426709.6588073906, 426807.02015393384, 426836.5719683239, 426892.9246784703, 426987.82880294614, 427051.7837471776, 427133.84853833553, 427181.0213757586, 427246.1651596128, 427296.69992749917, 427409.83817856957, 427488.32347804203, 427559.1819800829, 427618.94623148063, 427676.0524732679, 427763.3575206091, 427829.2082261341, 427866.0406998485, 427975.3621041056, 428040.65025622805, 428133.92398429743, 428153.0369827796, 428229.0760117142, 428314.3160195872, 428378.5629103676, 428459.9927618682, 428559.5114888516, 428597.95903174125, 428645.0658664263, 428741.76846417965, 428787.2865178862, 428876.2801622505, 428953.6286831199, 429050.68144470744, 429131.90405342635, 429170.1131891713, 429248.1917327572, 429309.4280776415, 429379.1088109637, 429459.77950119635, 429521.6236408142], [6151453.465024018, 6150885.32181086, 6150334.206668581, 6149746.133785914, 6149213.304905325, 6148627.71401458, 6148113.99963714, 6147542.450154779, 6151463.341796279, 6150900.003627352, 6150357.827656661, 6149766.114254928, 6149223.718397425, 6148658.631999462, 6148118.004861982, 6147535.029787905, 6151467.974833596, 6150895.506300786, 6150374.420702433, 6149786.1567181675, 6149218.020615279, 6148665.550203344, 6148132.049070462, 6147541.178185847, 6151468.3125663055, 6150902.062837217, 6150357.080392146, 6149782.970372543, 6149233.107623334, 6148683.945391572, 6148124.595645938, 6147556.602115488, 6151448.437933639, 6150904.705622513, 6150325.48162886, 6149797.756479904, 6149214.544145661, 6148664.052158873, 6148116.602627136, 6147533.977715488, 6151474.951416129, 6150907.56635378, 6150307.934442788, 6149785.215315598, 6149240.894395003, 6148654.447904588, 6148110.25662851, 6147520.247956636, 6151453.706860924, 6150902.819309538, 6150361.415683792, 6149772.353576269, 6149202.560713313, 6148661.758885702, 6148119.58374796, 6147521.559593462, 6151466.837056049, 6150911.608637117, 6150337.840075849, 6149797.716331902, 6149239.936158585, 6148650.345093958, 6148096.184662484, 6147528.9377822485, 6151446.636220916, 6150885.156401464, 6150349.211864274, 6149793.2369686, 6149209.387131806, 6148632.553010634, 6148100.431889498, 6147534.970875438, 6151483.606644428, 6150867.365431471, 6150344.664607299, 6149762.756019908, 6149212.258741463, 6148665.973069547, 6148133.157158786, 6147550.426886938])

aep\_best\_sol on Genetic Generation 9: 664.9123384060201

Best solution on Genetic Generation 10:

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aep\_best\_sol on Genetic Generation 10: 664.9602936955612

finalsolution

([423943.28715385555, 423996.3689086079, 424059.9085585438, 424135.4496652642, 424233.86755529494, 424301.64278535824, 424357.07255983865, 424448.6781062146, 424510.4729354347, 424603.8956350037, 424688.74137936626, 424706.74235406436, 424812.42497389857, 424882.0895228514, 424957.05230769643, 425024.1292697518, 425108.49236151495, 425152.01920565387, 425205.20293067483, 425296.3549119968, 425376.8888494573, 425433.6920083662, 425493.78955752, 425524.83807754, 425665.22967368364, 425736.83568058163, 425795.19182497927, 425861.18299326167, 425921.741378917, 425985.5259268803, 426067.7984541761, 426125.89811495406, 426203.0488601201, 426273.47028974595, 426342.35391870927, 426427.9659299146, 426477.27990272286, 426572.67090418795, 426623.53910410695, 426704.96707313304, 426816.5107714876, 426831.3772028376, 426895.72001650435, 426985.52309284714, 427055.26660044945, 427126.3969714487, 427186.2829116514, 427249.7081349064, 427298.5245203639, 427405.03896477184, 427487.2772169054, 427561.31002733135, 427622.8536532525, 427674.46283112635, 427761.08136866055, 427823.48276416754, 427870.21057335753, 427971.8292709939, 428044.04518778145, 428130.3889675032, 428149.9806717776, 428231.9739657688, 428307.1274614622, 428372.27258592215, 428455.734400717, 428552.92667533463, 428602.1658862465, 428640.55955586844, 428733.06827923795, 428783.2327109204, 428877.1061179679, 428955.3031519778, 429041.43382952095, 429128.57146006107, 429177.8274167985, 429249.6688762208, 429313.2798375723, 429382.0777236418, 429460.7917630199, 429512.47390808247], [6151449.906359429, 6150894.932550287, 6150339.346939646, 6149745.442219907, 6149207.699719145, 6148625.421296623, 6148110.0789457215, 6147543.235779905, 6151456.230886003, 6150894.08043015, 6150364.667888604, 6149773.759662912, 6149215.770477179, 6148663.656190238, 6148122.360479814, 6147541.429637404, 6151476.178505426, 6150891.769323167, 6150380.406093328, 6149793.443621181, 6149217.889890316, 6148669.253608274, 6148126.006644762, 6147551.052849208, 6151477.798393031, 6150901.461969664, 6150351.788509198, 6149782.437836288, 6149227.096181913, 6148676.375855433, 6148128.496243511, 6147551.713943956, 6151440.21533344, 6150899.003173163, 6150327.934633373, 6149804.845046773, 6149208.833484318, 6148655.29723443, 6148122.588880242, 6147526.981913286, 6151484.590602596, 6150909.191690516, 6150313.719119001, 6149787.4361875625, 6149237.757767168, 6148656.8404500475, 6148110.292278718, 6147523.8500140365, 6151445.488553188, 6150908.952648371, 6150364.572014887, 6149777.205370652, 6149207.470626105, 6148661.403528065, 6148122.509925617, 6147518.226197425, 6151458.433349514, 6150911.596493661, 6150340.939084028, 6149800.404094615, 6149242.5370828025, 6148645.465993406, 6148087.913156736, 6147520.805888654, 6151444.789558895, 6150890.54888769, 6150342.137691213, 6149787.2245268775, 6149216.595210619, 6148641.830801909, 6148095.233423214, 6147525.063524528, 6151489.969786918, 6150862.96208947, 6150341.390563208, 6149771.588641048, 6149216.286052881, 6148670.774233962, 6148127.637433257, 6147541.083240742])

aep\_ref: 664.3345305655693

aep\_max: 664.9602936955612

Gráfico, Gráfico radial

El contenido generado por IA puede ser incorrecto.

Imagen que contiene Calendario

El contenido generado por IA puede ser incorrecto.

Gráfico, Gráfico de dispersión

El contenido generado por IA puede ser incorrecto.

Gráfico, Gráfico de dispersión

El contenido generado por IA puede ser incorrecto.

Gráfico, Gráfico de dispersión

El contenido generado por IA puede ser incorrecto.