

Test Cases q = 0.90

COSTI RANDOM, PESI NOISE, $\Delta = 10$, n=100, q=0.5

Istanza 73

100; 10; 0.500000; [4.83, 8.92, 2.31, 1.98, 3.54, 4.89, 8.64, 8.36, 4.76, 8.12, 5.09, 4.14, 1.31, 4.96, 8.05, 4.31, 5.2, 2.47, 1.67, 7.79, 8.03, 2.91, 7.08, 3.28, 1.14, 1.6, 6.37, 1.49, 2.59, 3.07, 5.38, 1.98, 6.11, 9.94, 4.94, 1.83, 8.44, 6.67, 1.98, 1.71, 6.77, 6.35, 9.66, 9.14, 1.5, 8.07, 8.78, 2.93, 3.35, 7.71, 4.21, 5.79, 7.26, 2.81, 3.24, 9.24, 4.94, 3.07, 2.65, 2.08, 7.7, 8.86, 5.5, 7.2, 5.92, 9.65, 5.35, 8.09, 6.33, 7.8, 7.93, 7.62, 5.29, 6.35, 2.33, 6.31, 8.57, 7.81, 3.2, 1.0, 9.07, 3.4, 8.69, 5.01, 9.04, 5.29, 7.29, 8.24, 8.01, 5.47, 3.33, 8.93, 6.12, 9.53, 4.03, 3.87, 5.08, 5.92, 7.87, 5.93]; 0.010194138178217672 0.009513218414285929
0.008698535584690395 0.009367621077237041 0.008725931565217202 0.007871545800405978
0.0097851716328429 0.010437703320122433 0.01027226107059464 0.009201074766004638
0.011363586181874337 0.011976650066577669 0.009816699770190755 0.007277724817609481
0.010070096944606319 0.009247897126451764 0.008511467312345294 0.00958084307255645
0.011295872629888749 0.010698017045356743 0.012381766713888215 0.011834849272674568
0.009916433343238669 0.010881321222934299 0.008617669670804403 0.012352721885744565
0.009303783684601054 0.0116688725879799 0.00904343285018395 0.009162294600588209
0.009114011581821704 0.00942058448564358 0.009849658836710604 0.011748223388111326
0.009122114843705918 0.00890768634150567 0.009164999368423308 0.011311394589931044
0.01089577848451152 0.010257269704913181 0.011371544741526912 0.010428834886370131
0.009181649723902566 0.011666722908764561 0.008703592290871958 0.010525727001154919
0.009487104805120434 0.009716210642387802 0.012279963174652866 0.00812786175721584
0.010329340688457632 0.009312573293203136 0.014073893066303998 0.011357061752171464
0.008311866736366686 0.010802153978758028 0.01207226190510446 0.009886924285376927
0.01115262404622137 0.009556161305662808 0.008464489343052778 0.011547282836546007
0.009349167633657784 0.008644427414573105 0.009994794414425662 0.009408531806084244
0.009223697862739366 0.008191682683972032 0.008917550700608172 0.010580739415548254
0.008188749552530695 0.011916640545538799 0.010231981766705856 0.010356412187424948
0.011741825300905877 0.010832747375068154 0.01147082045916598 0.011889860510499629
0.008761994290319913 0.009341432521802175 0.010968284275288377 0.010980094876309935
0.011597511545696252 0.008813997357787111 0.008307707727422044 0.010627329841228215
0.008127025213894828 0.008794392899141877 0.009052647245694179 0.009121881351760699
0.010047868417301084 0.011091143196275573 0.008988154488163575 0.008194232589424472
0.009506728917677629 0.008601679365268388 0.01082708580701653 0.009705087435736217
0.010863726623232867 0.009523595379924315

f obiettivo: 168.63000000000002, Time: 0.8449616432189941, Status: optimal, Best bound:
168.63000000000002; f obiettivo: 168.630000, Time: 0.008974075317382812, Status: /, Best Bound: /

Istanza 74

100; 10; 0.500000; [9.06, 3.2, 4.22, 6.56, 2.65, 5.59, 1.74, 4.53, 1.32, 3.78, 6.56, 8.47, 1.32, 3.6, 8.71, 5.89, 3.7, 3.37, 6.79, 1.96, 9.78, 3.56, 7.51, 5.68, 4.38, 6.21, 5.7, 4.71, 5.32, 7.29, 5.44, 2.76, 7.84, 3.84, 9.93, 2.36, 4.78, 8.95, 8.57, 9.83, 9.07, 8.95, 2.79, 8.2, 7.71, 4.22, 8.73, 6.72, 8.29, 7.13, 4.04, 4.19, 3.98, 6.25, 9.16, 4.41, 3.36, 2.57, 7.36, 7.65, 3.91, 2.51, 5.78, 5.18, 8.42, 1.29, 9.09, 2.07, 2.36, 1.53, 3.52, 2.9, 4.33, 8.81, 3.58, 3.33, 4.22, 7.88, 6.52, 3.05, 6.8, 5.16, 3.32, 6.38, 8.52, 8.6, 2.15, 5.16, 6.14, 3.73, 5.98, 8.1, 6.84, 4.18, 1.03, 8.37, 4.07, 9.56, 6.06, 4.62]; 0.00996267769742602 0.009935014659772798 0.00959162451400551
0.010666838751207192 0.008204325083216215 0.011692430341608887 0.009544490792222025

0.009516043267187663 0.009940547215224537 0.00959372724556391 0.008797868379707013
0.007237187724893048 0.007956070284335544 0.009595906243816203 0.008811955754803973
0.007591889614362251 0.010823664667110176 0.010029520360747064 0.009424076916092972
0.010378895704273111 0.012432524623256138 0.010083582089715156 0.010862386387553376
0.009597975502872964 0.008497938110895756 0.009370126101761043 0.011109129335902777
0.009701829690358434 0.00916020061996221 0.01068321698790242 0.008963201862429132
0.00951475383371536 0.008616177424332658 0.01164483613229945 0.01096498120068029
0.00975313031522745 0.010119642078584115 0.0108699591191391 0.010956785703402359
0.008611090516198463 0.008536179673417736 0.010772597888464812 0.010461696292461756
0.011479034053828283 0.011095386583639073 0.010840843348976472 0.010667936542372254
0.010071362170160829 0.011322428061400804 0.008561618718608874 0.010742923050382082
0.008557065159293097 0.009385414414693469 0.01038862260287883 0.010609702617298976
0.009411409131528343 0.011955645757948484 0.007412477505306643 0.010111498730910974
0.00979130865612294 0.009213419860171462 0.011480757018148258 0.011037295721038575
0.01044581760762341 0.009418637279006761 0.010016799088718458 0.01160017486844942
0.010525348980880835 0.009772855830547558 0.010168629185490299 0.008614256067176525
0.009830344865721975 0.009766892550843648 0.012437495168163146 0.00980470745007361
0.010009152829751318 0.01007272952733616 0.011080035359549087 0.009646761289714883
0.010168796767190912 0.009015790106675999 0.011787262223816115 0.010148165402955218
0.013105724448419221 0.009368807985459733 0.011186038976816297 0.011644522459952825
0.010190639916227723 0.01197210679729016 0.008120365874015462 0.010333740126254156
0.007811454853550431 0.011041435556941958 0.011397645036877917 0.012140709263665502
0.009961832456314362 0.00893482389684975 0.007947066867597968 0.007261479798773905
0.00853610682248978

f obiettivo: 170.05, Time: 0.9018857479095459, Status: optimal, Best bound: 170.04999999999995; f
obiettivo: 171.510000, Time: 0.007995367050170898, Status: /, Best Bound: /

Istanza 75

100; 10; 0.500000; [8.25, 2.32, 6.23, 2.7, 2.77, 2.96, 6.61, 9.24, 2.41, 1.31, 6.15, 2.56, 3.65, 3.95, 5.15, 1.77,
5.18, 7.16, 6.01, 6.1, 9.08, 4.93, 8.59, 8.65, 8.98, 6.13, 9.89, 9.92, 7.17, 6.96, 4.4, 4.74, 3.93, 2.81, 3.14, 6.35,
6.8, 7.52, 5.32, 2.69, 7.98, 2.98, 8.11, 7.15, 8.95, 3.64, 2.89, 9.91, 9.05, 8.17, 4.28, 2.71, 3.24, 2.99, 1.97,
3.63, 6.76, 5.33, 9.97, 4.41, 5.82, 5.41, 1.13, 5.83, 8.38, 2.08, 9.56, 2.42, 4.16, 9.79, 2.7, 3.63, 4.39, 8.17,
2.01, 4.89, 2.49, 8.29, 7.32, 2.53, 8.92, 6.91, 1.4, 2.36, 5.9, 5.07, 8.88, 9.79, 5.4, 1.86, 7.34, 1.92, 1.42, 6.26,
5.61, 3.05, 9.41, 5.89, 2.46, 8.49]; 0.01037154626370013 0.01242690504089423 0.01079062498621523
0.008174461131446945 0.011635555290546417 0.010551209471175247 0.008772214167156813
0.010992780819034667 0.010010020199524662 0.010526779760892647 0.01098014180826086
0.009209065523302144 0.008746150195676535 0.009685769785173543 0.009904850128321787
0.012119245059564653 0.010325532444738078 0.0073661157617967155 0.010017480034893297
0.010225490457855152 0.010016771906549333 0.009010858349751662 0.009305358689549405
0.009526753643201524 0.01189605413545065 0.010804451914931526 0.009840643049263425
0.00954993436610898 0.009882012502998161 0.008796580851790206 0.010497071517430187
0.010239864746216416 0.00944737973478936 0.009789257500367009 0.008159525983995665
0.010625435975496412 0.01005239022666131 0.008853579708695922 0.009614363596502633
0.010624771100394642 0.010913799283912395 0.011061607599007522 0.007974884843031478
0.009745500949859098 0.010383699093843422 0.00868101133930682 0.010675156398965968
0.009822028065494951 0.010265694966050913 0.00994133904542488 0.012239682436811377
0.008920984742134758 0.009933499683835256 0.010074998971429206 0.011378508877338002
0.012477340747736564 0.00869574561826274 0.010597626577846523 0.009770173440623914

0.007948314329081283 0.010166969895746275 0.00988345214858677 0.01099775654976289
0.011110033693146452 0.01064151673355508 0.01109844788436785 0.01126922950723355
0.00898141932597489 0.008734309985938847 0.009376443462339413 0.010678233123363662
0.009304987504668238 0.01038792555135994 0.007422287601409386 0.01150716637467949
0.011011642542191887 0.008110464966724525 0.008745223207428628 0.01044977330224975
0.010230792353733222 0.0122612168141608 0.00812330292684759 0.010903549478490933
0.010145171516274759 0.011020128347444235 0.009963557733635855 0.009046440691715342
0.007217518770954813 0.009324935358011393 0.009431139269615677 0.009966068251425231
0.010614063043056569 0.007205093946271725 0.012152213630275988 0.01190317845484047
0.007521087227052301 0.009255043340432026 0.012199616281628654 0.00889953490889014
0.011872469454203442

f obiettivo: 157.98999999999998, Time: 1.101585865020752, Status: optimal, Best bound:
157.98999999999998; f obiettivo: 160.560000, Time: 0.009685516357421875, Status: /, Best Bound: /

Istanza 76

100; 10; 0.500000; [8.08, 3.21, 6.63, 6.12, 5.54, 7.16, 8.21, 6.07, 3.38, 4.82, 5.59, 8.28, 9.51, 2.11, 6.69,
3.23, 3.89, 7.82, 5.68, 2.13, 7.66, 7.84, 2.72, 2.44, 9.01, 4.03, 6.7, 4.06, 4.3, 3.1, 9.19, 3.34, 2.52, 5.16, 7.14,
6.37, 9.57, 6.96, 1.14, 9.45, 1.08, 9.89, 7.12, 2.06, 7.95, 9.49, 4.22, 1.85, 7.12, 3.25, 7.66, 7.21, 4.94, 5.37,
8.08, 3.87, 5.86, 2.98, 9.37, 7.32, 1.05, 8.15, 4.41, 6.01, 5.53, 2.42, 3.12, 4.32, 4.21, 4.61, 7.89, 8.68, 5.99,
2.55, 6.97, 9.73, 2.8, 4.81, 6.19, 4.36, 4.36, 4.69, 6.36, 6.45, 2.55, 1.9, 7.11, 6.14, 5.07, 1.67, 2.44, 4.44, 9.97,
2.13, 2.45, 4.66, 2.96, 3.79, 5.09, 5.85]; 0.010404408056162476 0.013049944686426647
0.0075182838424390445 0.011066245980094735 0.008602891250075668 0.012287950997982099
0.010129376135902429 0.009532307116792786 0.010684664410759586 0.010943225676236429
0.009123744308234882 0.009210641451607325 0.007948940193256478 0.009648963145876948
0.00937838744822852 0.010925877286884428 0.009225192751453637 0.009313728624317915
0.009217807890852601 0.00992363102528958 0.009204141957632233 0.00792660545487106
0.011199447409822387 0.00822509184668698 0.009183323683809079 0.010394976502063662
0.00962113549804677 0.010376975260033292 0.009693835508887583 0.010465488359380696
0.010500651757630168 0.009461523716608279 0.009743620979929134 0.00990115901405649
0.010236051726553 0.01133754817087534 0.01045130154455699 0.009702085411576382
0.010061544374789531 0.007550339521251286 0.006521446471442171 0.011363944234852442
0.009161523541067917 0.010543783886293243 0.01006635184267715 0.009580224244912441
0.00682138244174088 0.009599890996664405 0.007588533269236533 0.010169035456192618
0.011787578491027486 0.011327864540573818 0.010469464074958293 0.010636185726174472
0.007368559257820136 0.009350789992430844 0.010577330357040697 0.010565559289423156
0.012012166522289387 0.00874016141393407 0.008632042632981535 0.007483219893457612
0.010238213256143542 0.010946460739880577 0.01023946940434026 0.010203523538000065
0.008203437973742303 0.009470333017992319 0.0130965712364133 0.011303058228234268
0.009286239980664598 0.010880978386468936 0.011627004032772031 0.010254382352226733
0.010123555447349773 0.009020240075861781 0.011700172722795641 0.01145024717946006
0.009934705717734573 0.009649870162039354 0.008733191921449885 0.010417960528667093
0.009340757565334904 0.009778697796486624 0.009361844032247676 0.009950751357945195
0.011218998933233464 0.010897664650484664 0.010346398385098394 0.011953353734093198
0.011547460221147892 0.009904313561459608 0.011911381311368065 0.01086659974712873
0.010178044292749232 0.011337514494177279 0.012055902334082387 0.008365581178762118
0.010363627965909887 0.010012437093578856

f obiettivo: 162.47000000000003, Time: 0.7948102951049805, Status: optimal, Best bound:
162.47000000000003; f obiettivo: 162.680000, Time: 0.0075244903564453125, Status: /, Best Bound: /

COSTI RANDOM, PESI NOISE, $\Delta = 3$, $n=200$, $q=0.5$

Istanza 77

200; 3; 0.500000; [7.85, 4.5, 1.06, 3.19, 6.33, 1.92, 7.89, 5.59, 4.97, 8.6, 1.11, 1.04, 7.14, 2.6, 8.46, 1.03, 4.08, 5.46, 4.85, 9.72, 4.99, 4.9, 3.0, 1.7, 5.33, 5.78, 2.1, 3.29, 2.87, 8.76, 9.17, 7.84, 1.22, 9.09, 9.74, 4.55, 2.36, 6.24, 2.67, 2.67, 9.63, 6.19, 8.5, 5.89, 3.67, 7.24, 4.63, 1.58, 9.5, 3.05, 3.33, 8.12, 9.3, 8.77, 4.92, 9.73, 8.21, 8.46, 4.8, 4.65, 4.42, 1.54, 3.79, 3.41, 1.56, 1.83, 7.01, 9.79, 9.45, 8.99, 2.84, 6.8, 1.25, 1.5, 5.3, 1.86, 3.47, 2.96, 1.04, 8.26, 9.32, 2.66, 1.93, 6.28, 8.73, 8.75, 4.15, 1.5, 3.12, 9.22, 9.11, 3.35, 1.89, 2.18, 7.87, 2.74, 4.01, 7.24, 6.1, 7.29, 8.44, 9.85, 5.85, 9.06, 7.49, 2.66, 5.97, 3.74, 7.52, 4.45, 2.98, 1.78, 1.46, 2.15, 7.32, 8.82, 7.45, 4.7, 5.27, 3.85, 3.87, 5.59, 4.75, 6.82, 1.34, 6.05, 8.16, 7.58, 2.31, 4.43, 3.52, 4.28, 6.38, 5.0, 8.13, 8.31, 1.1, 4.46, 3.6, 9.69, 6.68, 7.93, 6.64, 6.85, 4.37, 4.98, 9.01, 6.19, 1.23, 1.6, 4.12, 9.79, 4.91, 8.74, 6.35, 1.38, 4.52, 1.92, 8.33, 2.74, 9.48, 9.75, 6.43, 2.2, 4.36, 9.91, 8.87, 4.79, 7.02, 7.44, 9.36, 8.13, 4.73, 7.3, 6.81, 6.89, 2.75, 4.05, 3.67, 4.19, 2.35, 3.91, 3.84, 4.54, 7.76, 4.21, 4.07, 7.76, 3.96, 2.24, 6.49, 4.04, 4.17, 3.58, 4.48, 9.25, 2.13, 6.62, 7.57, 8.2]; 0.00461979624054292 0.005053103264777495
0.005313233084307321 0.00557111879022604 0.005778816368666036 0.004276847831319742
0.004897540513668124 0.004316669779435973 0.005178584292941094 0.005085451152497323
0.0036612219311821332 0.004581494566325322 0.004970848820723728 0.006122503407275408
0.00573697952893753 0.005042374975085593 0.00524504263686824 0.005585322501662206
0.0054804845130363095 0.0049832559080106465 0.005040602776793968 0.005571947348854192
0.005877984167361921 0.0051928053107430415 0.004850680375551816 0.00529150324216313
0.0053229192574069896 0.004855895161993165 0.00508272873631465 0.006231385390275225
0.004956070246790134 0.005184614126463525 0.004576550572203724 0.004954880391062739
0.004952706309820393 0.004094741665407282 0.004868590609366483 0.005422861929384947
0.005522928346021104 0.005247528532953016 0.004519383124666038 0.006120594067326372
0.005563458320400612 0.004797010831624135 0.005308284808722278 0.005527297253169965
0.004575335475030253 0.0038959651607890595 0.005532297041286601 0.004366758220842941
0.005238850735257894 0.006514646155845302 0.003991768721362341 0.003996236958338008
0.005388726444590833 0.005023738973404746 0.006149306346287768 0.004396472405495048
0.004879294940345649 0.004650813070061669 0.005685230244364693 0.0033382717825326293
0.00468637487804843 0.0050662468546364865 0.004613119064407162 0.005071406180584034
0.0045787090751161184 0.005129741929089455 0.005400210582429215 0.004782971985720431
0.005243745707106848 0.005187869200577466 0.004931270725472382 0.005918758049992398
0.005291191553085359 0.00516568099761075 0.006002718811169793 0.00561899015627394
0.004841479848670211 0.004842125550560188 0.005172494989186165 0.005910165261836411
0.004630215383330527 0.005020688158155199 0.005075099712235596 0.004270583612708388
0.00435159203514766 0.004588192901171188 0.004320667130598794 0.006160564834588071
0.005222586479501266 0.0051169620848202915 0.0036470116315999277 0.004304028732425201
0.004455648433330817 0.004705042367687373 0.004676607760952459 0.0050587547531849705
0.0058228866449639965 0.005100251194746573 0.005023832060217197 0.004728208945622857
0.005514753628462058 0.004594858891328287 0.004863684978409106 0.005072610158084985
0.004093541320493063 0.005927281274032338 0.005122018322703466 0.004968681480693302
0.0038993862308807927 0.005475392115568293 0.005998527971788014 0.0054261397429668885
0.005683311813591436 0.00533471635431273 0.0045646805142946275 0.005590564589570628
0.005112940838836432 0.0048291466210459025 0.006110355412019116 0.004978861635130025
0.0035953247877304026 0.005732665776977403 0.00445295335685387 0.005402419701621489
0.004970797902603614 0.005334486152172297 0.004764257368660387 0.004249747417098043
0.005167823478278433 0.0058157118823870205 0.0055195957225321075 0.004363889231953308
0.004688409454651127 0.003962613413874468 0.004439411624987985 0.0057522409779962435
0.004303315205400834 0.004913757877275105 0.004413276297482171 0.004745544200042759

0.005626348651208318 0.004136050889401707 0.004351303671754811 0.0052642598424416
0.006092189377109388 0.004699965279284346 0.0053432895871701035 0.004287306645053883
0.00549072731517281 0.005179962675054189 0.005150475322643974 0.005468539332497471
0.005583237233799157 0.0051063069684273415 0.005359973180093563 0.005409617456381219
0.004520740288203857 0.004810803382759998 0.005634656585835459 0.005693546333376921
0.004968768347823266 0.005145555246477013 0.004759442899806371 0.005144307512565859
0.00574528066260976 0.004774419748664348 0.004430835768975931 0.004223999247066135
0.003699611711562116 0.004769786286658432 0.005365926465899842 0.004539095156791792
0.004290361347163086 0.0038461301781476586 0.005190626175629298 0.004740127340198134
0.004353666526722833 0.005682425859517893 0.004492511980152652 0.004847789940118986
0.004371023265236074 0.006080976412698027 0.005087789727760056 0.004703861215327356
0.003977699481234332 0.004313753038385725 0.0047747114918388865 0.005350635493907464
0.00426627805251046 0.004717618348124227 0.004867306427503426 0.005731488258797525
0.00494860820629449 0.004011524332739803 0.005696951535554061 0.005945440704722691
0.004423507897601035 0.004966110020025469

f obiettivo: 372.64, Time: 300.4943151473999, Status: feasible, Best bound: 354.77; f obiettivo:
414.820000, Time: 0.1176614761352539, Status: /, Best Bound: /

Istanza 78

200; 3; 0.500000; [8.17, 3.74, 2.79, 1.7, 9.59, 1.03, 1.68, 6.35, 9.89, 2.66, 7.74, 6.11, 2.02, 2.96, 5.13, 3.29,
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6.29, 9.48, 3.64, 4.69, 1.11, 8.21, 3.61, 7.53, 1.92, 5.41, 2.26, 9.92, 1.77, 1.34, 2.02, 4.62, 6.58, 4.03, 8.57,
5.25, 2.72, 2.94, 7.38, 5.82, 1.91, 1.81, 4.25, 6.49, 7.0, 4.27, 8.52, 5.01, 7.33, 1.87, 9.47, 2.33, 6.14, 8.58,
2.24, 3.22, 3.89, 6.06, 4.1, 4.97, 1.68, 6.41, 3.66, 2.65, 3.9, 6.72, 3.51, 4.98, 4.94, 2.65, 7.22, 7.79, 8.82, 7.29,
5.91, 2.03, 5.37, 9.2, 8.86, 3.52, 6.86, 6.23, 8.09, 3.78, 6.78, 6.27, 9.36, 7.95, 1.39, 6.14, 8.22, 2.63, 2.93,
2.66, 9.37, 6.26, 7.59, 5.6, 8.95, 8.59, 1.73, 8.19, 8.08, 7.38, 5.87, 7.15, 1.27, 5.82, 9.64, 2.94, 3.08, 9.97,
9.55, 4.93, 9.19, 3.52, 2.37, 9.75, 1.88, 9.41, 5.73, 8.87, 5.61, 5.83, 6.9, 1.48, 5.56, 6.44, 7.46, 4.45, 6.89,
6.56, 4.02, 4.31, 1.35, 6.08, 4.35, 5.82, 4.19, 8.9, 3.78, 6.43, 1.43, 3.88, 8.28, 1.7, 2.45, 4.82, 5.24, 6.2, 5.91,
8.6, 9.35, 5.28, 5.59, 9.32, 9.26, 7.31, 8.76, 5.15, 4.44, 8.88, 7.42, 7.26, 6.24, 7.07, 7.6, 4.14, 7.59, 4.83, 9.56,
5.35, 9.03, 1.2, 1.07, 4.27, 3.94, 3.22, 4.04, 2.45]; 0.005563608892893301 0.006087778128925497
0.005647309807300563 0.006022234198833069 0.00437209744981326 0.005823787935772522
0.003988565096329725 0.004703465159659589 0.004461034250845697 0.006399881573420673
0.004180467524129926 0.005463755701529638 0.005023509890655003 0.004430201824194378
0.00591544850153912 0.004596628270763832 0.0060834576227532956 0.00579965365915392
0.004530087444879958 0.00459071821044766 0.004612852718318638 0.0037861934361041656
0.005421227503937146 0.004215205201340945 0.004969906003839683 0.004870970950880771
0.006050351419152528 0.004956696863256301 0.005383358261735805 0.004701161119682678
0.00503739525114452 0.004743504735538699 0.004807406338622444 0.004815142064694188
0.004074862945387678 0.004326664621123685 0.00453447586179555 0.004382392497906746
0.004975689553494682 0.005222624957893255 0.0045225036154085945 0.0038696436834696735
0.004395815299192081 0.00527921945227149 0.004738990874960001 0.005380609321055334
0.005323886037426985 0.005516727714802811 0.00446885211386798 0.006310957480548807
0.005391072589547798 0.005665643454988515 0.005219524258477951 0.00529922445236432
0.003941065345838268 0.004246605328761651 0.004169333132054753 0.0042307398458556215
0.004691975243058626 0.005556659335481959 0.0055267382573601954 0.005335399569953373
0.005179624629047032 0.005341348259716122 0.00502634909775934 0.004815829426596598
0.0065904044959558565 0.00591315407412387 0.004939527578537934 0.004696319446287949
0.004745787122376893 0.005100917026848839 0.00429471781038077 0.0048235290009197625

0.0058348022015843725 0.00538730287258315 0.005930834565494717 0.004601852499128208
0.005356109377193522 0.005710021936398674 0.005480271861324205 0.005446019164341293
0.004820413448912366 0.005368476208607447 0.005836749359130286 0.0040801021392207325
0.0051842521336392736 0.005127530249979127 0.005641150892671844 0.005202988945249761
0.005283010790801108 0.0038543076663287348 0.004201570648848234 0.005223835502741455
0.004681939401481141 0.004723393435040083 0.005513742948696877 0.005379571418151676
0.005146887190688025 0.004495792086040546 0.0034635330957437987 0.003938484112312472
0.0046389867362280485 0.004529942966497302 0.004771809402827755 0.004804636918180039
0.005629107119721517 0.0045520423446292705 0.004828683744609241 0.005309038881845715
0.006385650677249321 0.004059301308055215 0.003878939178482039 0.005101538380700857
0.0050008762463748324 0.005573731471218547 0.005564448014730615 0.004632461642578031
0.005415271112668513 0.005827357998915548 0.005068912780082804 0.004261842374889301
0.004525658516496082 0.005117272192700865 0.004018678564472669 0.005551052392164272
0.0055683288790712064 0.004198711997023532 0.004285531137284565 0.006021209153857002
0.0056958539783102235 0.004405327246843734 0.0064201619455390956 0.004573613937563803
0.005209764574265391 0.004962685631941096 0.005160549046053574 0.005172330071121239
0.0055902158876447615 0.004395968798990891 0.004534752594332563 0.003951115756737102
0.005598449631509709 0.005495613676329697 0.005267729237573514 0.005136552140238478
0.0051977527519344955 0.0051009102059677265 0.0044176453905971635 0.005694154682092369
0.0037983962563448975 0.003698445928142444 0.004660759451050667 0.0061126997187698285
0.0045332612984967735 0.004577680601831351 0.004664451623114933 0.006065461731950329
0.005108901421544279 0.0050426671377987375 0.00420962299505638 0.004618067892023381
0.005606834177203033 0.005322042601777572 0.005152779763550846 0.0047379756617893995
0.0053744959452568936 0.005755222800015505 0.0044990593302684035 0.004234929658058401
0.005033852401148442 0.004479156507628551 0.004793028239618539 0.0036985094100213064
0.005492956190441287 0.004900388918129495 0.004426645124262664 0.004819326328187178
0.004844779948477669 0.005692437036786868 0.00459633247687434 0.004507391713141744
0.00532069576211807 0.004312632881668238 0.0044435534074615535 0.0046125299260587685
0.005511835149034696 0.005861221562593706 0.006152460095586168 0.004074329932411722
0.005343319568353455 0.005567057537864882 0.005148308199327849 0.004859858451450493
0.005128358532632981 0.0050630960111576065 0.0053130580959683165 0.005580964633399876
0.005873476413629639 0.004637100774070869

f obiettivo: 376.35, Time: 300.2994558811188, Status: feasible, Best bound: 351.21; f obiettivo:
415.600000, Time: 0.11272215843200684, Status: /, Best Bound: /

Istanza 79

200; 3; 0.500000; [5.54, 8.35, 4.92, 5.03, 2.69, 9.42, 4.3, 5.79, 3.09, 2.56, 8.55, 1.55, 8.8, 9.35, 7.81, 3.98,
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8.96, 6.6, 7.67, 5.33, 6.83, 4.79, 4.53, 1.46, 1.78, 7.58, 4.49, 8.94, 3.78, 9.72, 5.96, 7.97, 7.52, 9.72, 8.99,
6.92, 6.24, 1.24, 3.39, 4.27, 4.75, 4.99, 9.47, 2.32, 7.19, 3.06, 1.73, 2.69, 7.49, 4.8, 6.89, 3.91, 3.5, 5.23, 2.89,
2.46, 7.69, 7.07, 4.26, 2.0, 7.47, 6.57, 5.22, 5.17, 8.77, 3.47, 5.79, 5.75, 8.8, 1.16, 1.85, 9.0, 1.86, 3.91, 9.55,
7.4, 5.02, 6.75, 5.16, 9.35, 6.55, 1.07, 7.89, 4.99, 5.32, 8.51, 7.51, 9.67, 3.49, 8.74, 4.72, 7.82, 9.72, 3.53,
4.28, 9.65, 7.99, 4.21, 3.79, 7.76, 8.2, 7.68, 1.49, 7.21, 4.98, 4.54, 6.31, 1.07, 1.05, 4.72, 7.07, 7.42, 2.98,
4.53, 5.52, 9.7, 8.69, 5.31, 8.66, 9.36, 3.32, 7.2, 4.7, 3.28, 6.3, 3.32, 8.09, 3.6, 9.61, 2.85, 1.9, 2.98, 4.06, 7.8,
8.45, 1.44, 7.13, 4.99, 9.06, 2.89, 2.04, 3.73, 5.65, 3.65, 2.73, 1.89, 3.57, 3.27, 9.9, 5.01, 7.86, 5.35, 1.53,
4.91, 8.55, 2.05, 9.07, 8.62, 3.31, 9.95, 3.44, 8.94, 6.21, 7.39, 2.3, 4.85, 5.06, 9.5, 6.83, 1.94, 3.42, 2.96, 7.98,
4.13, 7.11, 8.52, 6.21, 8.56, 8.18, 9.49, 1.34]; 0.00517773919651382 0.005124927872514117
0.004192986832363496 0.005030676371915223 0.004132438781798199 0.0038625949408120654

0.005129430204325075 0.006254081358483765 0.0057626150811756205 0.005950986550105637
0.004762277965136985 0.004603341414481669 0.005554560027498662 0.004689093998087787
0.00515344623939747 0.004298305180051851 0.005585141210770345 0.005499275520993173
0.006126797115849412 0.006343319434951283 0.005648348292076335 0.004641790889980652
0.005729883668164976 0.0050676966435816 0.005536336125481069 0.004751555986708838
0.006272646121286826 0.005257360910234869 0.006033240993964645 0.006545358886044658
0.0048597639059184405 0.005026645742599232 0.005265661592896436 0.0065356912314725275
0.00504671148373825 0.0051357363131430064 0.004710868113491362 0.005786875651147497
0.005515871257607746 0.005110943370749834 0.004804083478800248 0.005237969881503038
0.003862029217473675 0.004214091232275786 0.006025585843003606 0.005089688267391225
0.004585227331162945 0.004595644182274953 0.004979873656783861 0.005472240165089305
0.004436347370078186 0.0055743990461290015 0.0050248374341347705 0.007026730655398979
0.0040283160178956265 0.0035532317294994977 0.0034833010407926447 0.006160167274280865
0.005141145469345072 0.003906736876014726 0.004118824996398874 0.006864548897772802
0.004797842271701042 0.004382091125101826 0.004977344009738568 0.004104650170509404
0.004509906175980979 0.005519843116384627 0.004053592627063655 0.004570158942020422
0.004953543530184304 0.0035422589412761247 0.0056690910227634355 0.005312012123220226
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0.004691093193390333 0.005325914134954133 0.005079444249488075 0.0043273322620824345
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0.005964486426944929 0.004296165528816652 0.005048482231007322 0.005280431599834528
0.005176011633766952 0.005471159208215078 0.005570624287494653 0.0056751946487397995
0.004914200760194714 0.005057556206578288 0.005079435712825372 0.004855262329629054
0.0055179073983572064 0.004924628490973858 0.005414723778669764 0.004999368133334101
0.005300422324803031 0.004427658559530649 0.004880295156683377 0.005100577538146775
0.0055043690035248265 0.004581881794750186 0.0042979939778673626 0.005593513094493728
0.005329209305358221 0.005050391288145236 0.005289020912701557 0.00462477551285881
0.004281474227293468 0.004947812606176731 0.0057652792813650605 0.004960049535715988
0.005380198905387511 0.004663326535209158 0.005700484098755695 0.005698598086345175
0.004982591281592717 0.004330205417091022 0.005379618923837108 0.0057237258692200135
0.004069246964372572 0.0048987458246579985 0.0045006143483343145 0.005292522781830676
0.005703501963962922 0.005400053345242757 0.005411280050267163 0.004618034568794405
0.0048638907321056505 0.004579005506877474 0.0062569406825055875 0.004539078951543233
0.005116672101824708 0.004298534163455858 0.005227324323280824 0.0052949303355456084
0.005269193452986325 0.004958828074378932 0.004385456128192579 0.004838916775213842
0.005251761439873036 0.005106732169346005 0.003915041055136165 0.005140074890156697
0.004262699761887403 0.00393544524292996 0.005348671448670813 0.0036139952622599087
0.005499365116659152 0.005609367766274772 0.005830916630862144 0.005866843224944516
0.0054405739232241315 0.005354526588779405 0.004717387738619282 0.00484295419741235
0.0054471428499834095 0.005923030721891005 0.0032153163730691166 0.004982200581611541
0.005266550862764711 0.003946333029240134 0.005114065944727452 0.005408002355381324
0.0048999228899551835 0.005097996350518156 0.004982327010901734 0.004687960732162774
0.005297136432914981 0.003573310769589094 0.004422648967775296 0.005567707372834269
0.005060084840602619 0.0033576073444994917 0.00491019800367096 0.004407999695694364
0.004115060096789517 0.004071920600600093

f obiettivo: 399.14, Time: 300.37935042381287, Status: feasible, Best bound: 385.11; f obiettivo: 415.470000, Time: 0.12260842323303223, Status: /, Best Bound: /

Istanza 80

200; 3; 0.500000; [4.87, 3.62, 1.25, 5.36, 4.43, 7.5, 5.56, 4.27, 5.98, 1.65, 3.64, 2.68, 8.73, 9.8, 5.18, 4.86, 1.36, 9.41, 5.88, 9.52, 6.82, 8.89, 1.36, 1.85, 8.95, 7.52, 4.98, 5.07, 2.32, 3.81, 2.92, 4.53, 6.77, 2.46, 2.35, 4.04, 3.92, 4.66, 7.95, 9.96, 1.51, 3.44, 8.99, 4.05, 8.06, 3.22, 1.34, 2.84, 4.87, 4.72, 9.05, 3.27, 2.06, 8.23, 2.38, 4.47, 9.38, 1.52, 2.71, 3.42, 7.74, 5.02, 6.98, 3.68, 5.82, 3.29, 7.72, 4.48, 6.58, 3.44, 1.51, 5.35, 8.62, 9.68, 4.34, 2.11, 1.9, 4.34, 4.21, 6.23, 6.38, 3.08, 5.9, 9.89, 9.29, 9.48, 6.07, 9.24, 6.27, 2.53, 3.69, 8.83, 9.86, 6.9, 6.48, 2.23, 6.19, 7.5, 9.95, 4.76, 9.84, 4.65, 5.57, 9.88, 2.03, 1.04, 3.87, 9.41, 5.13, 9.23, 1.1, 8.86, 5.48, 8.91, 5.31, 2.17, 5.05, 8.89, 6.07, 3.45, 7.23, 1.48, 7.59, 8.4, 6.49, 4.74, 9.2, 2.22, 4.65, 7.16, 4.6, 4.17, 3.83, 9.95, 9.41, 7.77, 2.43, 6.16, 5.61, 9.04, 9.4, 7.83, 7.15, 2.26, 6.42, 6.71, 5.59, 5.71, 1.23, 9.14, 2.72, 2.71, 7.79, 4.7, 9.16, 5.01, 5.58, 1.74, 1.53, 1.07, 5.97, 2.56, 3.25, 7.23, 1.96, 8.16, 4.62, 7.58, 2.56, 3.41, 4.03, 5.68, 4.91, 1.1, 2.33, 1.52, 5.45, 6.38, 6.08, 7.5, 7.12, 8.69, 4.12, 5.98, 9.59, 1.43, 9.3, 1.02, 2.9, 3.97, 3.95, 1.07, 6.02, 3.58, 9.65, 5.33, 1.73, 8.48, 7.66, 4.57]; 0.0056718639017988666 0.005157578703629483 0.004686752496247647 0.005229415401868856 0.0047369387269022315 0.0053470917661452375 0.005078222962883353 0.0057506522042223935 0.005368234151202687 0.004254738676471435 0.005353065854553455 0.005269564166210155 0.005316277302972677 0.0046800603044836525 0.0045016632893450145 0.004481168505456903 0.004803034835830292 0.004308637865091528 0.004975896552843309 0.004946318193331083 0.0051520863233232945 0.0051843662753713994 0.004150768112096921 0.005639906378664511 0.005144300604231611 0.004804150738159417 0.005825149764128895 0.005811665819375949 0.004493176707229716 0.0048984050438389765 0.00528694127897202 0.004951887481580885 0.0046919951114702116 0.005088445787841014 0.004826340478788386 0.003749508188400526 0.004601649535561581 0.005787680911061577 0.0050784650754824145 0.0055064067047921415 0.004982453599387168 0.005098418777684998 0.0048390057085772225 0.005897079618677852 0.006156396598007054 0.004496239547472436 0.00516060456974128 0.005753302790746513 0.00437010070879971 0.006068150481440382 0.005118004811927098 0.004712584494054838 0.004192688547421102 0.005649522262580608 0.0053912539966554625 0.005248391537790563 0.00523374566261847 0.006260619470390033 0.005283953448171133 0.005318224829069583 0.005656282493678156 0.004853468388577038 0.005229660171830927 0.005542131428444083 0.004941852319898133 0.0056843261559768035 0.004202072227140908 0.0055749340866071756 0.0044215101651676695 0.005885271114087748 0.0045229948636379205 0.005063952725400143 0.004602947496095384 0.0034143013816957915 0.005133042641135343 0.005136015433634345 0.004275261996987698 0.005516313368849546 0.005357976823613406 0.005112598113434656 0.004239081931084574 0.005774656586500813 0.0041548962156725 0.005573180345426964 0.004731046703291228 0.004425629748009575 0.00488876354120447 0.004518011334742455 0.0044294389965042185 0.00502053662247961 0.004725773983002445 0.004918745625660248 0.00496590627937688 0.004541544957267555 0.005240419281362236 0.00480506806504675 0.004926587637501611 0.004123006035020772 0.005091775224851971 0.005327035888596591 0.004538376982074907 0.004390373985514385 0.004770219313937222 0.004805192163108347 0.006326008599280367 0.005752884917159919 0.005317958276762897 0.0046973861937778 0.0049293470353427675 0.0054711940440595784 0.005626035521506124 0.005014880699487572 0.005165573801319474 0.004599801913207253 0.005225269630544527 0.005707557064818847 0.00534164252822717 0.00450279480068198 0.005624199707099484 0.004489142112792856 0.006125347742722435 0.004504583343300586 0.005526152757793997 0.005248650782864826 0.005260952743760426 0.005515220290644864 0.006043671939988202 0.004536858674176839 0.005796917433297655 0.00537207365440932 0.004799647844184328 0.004704495487922523 0.0056114979600183435 0.004374854495042726 0.00502850398101255 0.003390629696923713 0.004090574413824417 0.00543534939311019

0.004528079708720996 0.003992888474973922 0.004622381446531559 0.0046570840326312915
0.005054218867641636 0.004769687224555208 0.005220271832225366 0.005332129078802311
0.005302777468580228 0.005364465684600456 0.004776064896605832 0.005464320927027224
0.004775617765051101 0.003966130214781465 0.005592501151472648 0.005336114807233724
0.0037510319953875148 0.004186339441701033 0.004916334244838667 0.004440577754895053
0.0055795480575508705 0.004795071565283974 0.005017113963033535 0.0049952992096558
0.004696022171438636 0.006153140042788035 0.005237178938403173 0.004744257862318702
0.004739874969429229 0.00636740860914287 0.004614964568889656 0.005234170083201054
0.0036330426792865415 0.005687421152251966 0.0043471644698866345 0.004302449267628394
0.004105280143052993 0.004965653791180359 0.004678731655573349 0.004360007299585244
0.0050193714928602 0.00396036717938172 0.004896107856720807 0.005814147650706578
0.0051575070444286 0.00472711552795807 0.005243338206211405 0.004770064864273081
0.005140082875706099 0.004447047021386516 0.004837547051999362 0.004347565610097673
0.005263783150497895 0.006071647045489435 0.0044853213256650535 0.006093968903133625
0.004124627547766535 0.005315856722740918 0.005637822908410543 0.005516467592719442
0.00427553904746174 0.004520831889273923

f obiettivo: 376.44000000000005, Time: 300.3846752643585, Status: feasible, Best bound: 343.5; f
obiettivo: 488.650000, Time: 0.19895267486572266, Status: /, Best Bound: /

COSTI RANDOM, PESI NOISE, $\Delta = 5$, $n=200$, $q=0.5$

Istanza 81

200; 5; 0.500000; [7.77, 9.05, 9.27, 4.06, 7.05, 9.71, 6.85, 8.77, 1.36, 3.81, 4.89, 4.99, 9.44, 8.66, 6.14, 3.86,
5.42, 5.86, 5.32, 3.54, 6.16, 5.06, 3.37, 2.07, 2.52, 4.12, 1.28, 6.91, 1.25, 2.86, 9.83, 8.8, 5.96, 9.41, 5.16, 7.0,
9.34, 8.97, 4.24, 3.42, 7.14, 7.57, 2.25, 4.62, 7.92, 5.37, 2.5, 3.44, 7.95, 8.32, 2.14, 7.24, 8.39, 5.06, 7.03,
2.57, 8.46, 8.52, 9.15, 3.03, 2.64, 7.6, 6.08, 4.34, 2.65, 3.95, 1.3, 9.11, 4.04, 8.07, 3.71, 6.98, 1.98, 8.63, 1.13,
2.86, 3.68, 2.63, 8.21, 3.42, 5.91, 6.99, 1.58, 2.09, 1.5, 6.83, 9.88, 3.52, 7.1, 2.6, 1.77, 4.56, 7.55, 8.84, 9.6,
7.15, 6.52, 4.23, 9.8, 2.04, 6.7, 8.14, 2.63, 2.07, 5.21, 1.65, 3.46, 7.94, 9.96, 5.96, 7.82, 5.51, 6.86, 4.66, 6.88,
9.2, 3.38, 8.52, 1.96, 8.18, 3.49, 4.19, 2.3, 4.86, 8.97, 3.1, 3.4, 9.0, 6.84, 2.79, 8.15, 7.67, 1.08, 7.49, 9.3,
6.72, 9.43, 8.79, 8.78, 8.38, 6.99, 3.87, 1.75, 1.75, 4.86, 6.75, 5.72, 6.88, 8.7, 3.06, 7.68, 2.75, 4.66, 4.53,
8.72, 1.77, 9.36, 7.43, 8.09, 7.94, 7.92, 6.54, 9.49, 3.38, 5.89, 3.9, 3.6, 5.54, 4.77, 5.52, 8.67, 5.7, 9.63, 8.17,
6.11, 3.56, 2.88, 7.6, 4.91, 2.67, 8.6, 7.8, 1.06, 5.53, 4.97, 4.08, 2.55, 3.09, 2.14, 4.0, 5.25, 3.35, 4.48, 8.07,
6.48, 9.76, 4.66, 1.86, 8.09, 5.91]; 0.004451219476354019 0.00522925237829343 0.004103338280814634
0.005376417722424874 0.004174811524359713 0.004620290097961315 0.004966706861624802
0.005784579137291319 0.004670735349397786 0.004567559698527011 0.0046914969775780115
0.005407685010787834 0.0040211818985185985 0.0045030117631498475 0.005887554551652317
0.004994972108100338 0.0033906158506344327 0.004584822112007091 0.004674009406378485
0.005542399432843915 0.00502025311287693 0.0038603577342756694 0.004083337948343064
0.005428398882694594 0.005449980191433946 0.006596172806574854 0.005739760322867709
0.005281411186582434 0.0047755610762414205 0.004701465227652776 0.004722119786264699
0.004844020851972168 0.005141548918697381 0.004506696578573785 0.004719776666728553
0.0040674903172249165 0.0042339919646978055 0.005898410227127482 0.005101777457041274
0.004829779060001454 0.004440029513215761 0.005674409498880266 0.004926729463817926
0.004705281687612588 0.003999675014333655 0.005246662833861035 0.00463050756526376
0.0054007081295794545 0.006652395797515787 0.005664508099558139 0.005319490645884591
0.005589880292301123 0.0044045643655717896 0.004725167966593976 0.005533624070345867
0.00548778408775517 0.004323475420310626 0.004860623562724123 0.004757368669624746
0.0047675097397925454 0.004220581359254832 0.005008244144259187 0.005074636645697489
0.005143151897368903 0.005222514963034789 0.004392496869996968 0.005377577344637769

0.006096075736473086 0.005422449243463856 0.004057408155738766 0.004728451022960059
0.004877269111580025 0.005330674986938142 0.004937085643268903 0.004368567008317314
0.00549365412118456 0.004851459430839077 0.00478561739234271 0.0051740712406916165
0.005604848241624515 0.004354705938134345 0.004638249877677401 0.00577978248804061
0.005452203669951232 0.004324821945880514 0.004905659475461225 0.005107481810651442
0.0056031028002630975 0.004726992393788269 0.004836136904801705 0.004378430566062261
0.004926517156807879 0.005133947366855251 0.004750101090848823 0.0055276059718083
0.004939016999224129 0.005012585133622447 0.005656757039855986 0.003566991901076728
0.005136729620427578 0.005533576779327392 0.004599597177624442 0.004138726623182707
0.004378048294494244 0.0056929735933381916 0.0044605481790713514 0.005261562680732001
0.006277930940988955 0.00433683041473539 0.004977374323480033 0.004598447711327392
0.005494800211205825 0.004749985671347708 0.005722077524959648 0.004930768448626388
0.004254634314999148 0.004161212115780161 0.0048137428737273415 0.005739152641520234
0.005425861574151385 0.005354101747335717 0.005376658636607602 0.0049072700215797875
0.005290871450700672 0.004858600847487184 0.004673394491976226 0.004622203261806453
0.005990824887084749 0.0040511055813983975 0.006116461812475586 0.004321285811190092
0.00484759766136256 0.0057752670979673345 0.0032754952450707113 0.0045363113895340165
0.00501721585149312 0.005649488991033187 0.004222945297707001 0.005410455491870333
0.004705268076753867 0.004931575533065643 0.004862392622917343 0.005406835475078351
0.004956049399296503 0.0032633815540108325 0.005652499790667359 0.005267392771749523
0.004624733884027846 0.004353705415218108 0.005722715219481632 0.006078818390228252
0.005236268202170736 0.004933316496781963 0.004978533467783669 0.004402369781732189
0.006287171092367685 0.004781872850659746 0.005404120995508656 0.005670997731095094
0.0038598159494451527 0.005611493767849235 0.005591984719437505 0.0050742831402814745
0.00507340730294199 0.004998915326217636 0.004634579141478017 0.0049348204495832425
0.005576251086684539 0.005024995317100354 0.005166980412156079 0.004953929418590292
0.006257826659200038 0.004228471073779216 0.004912219984831359 0.005285432188519153
0.005288849685730356 0.005311999409882305 0.005384138215661749 0.005751056348034246
0.006594318632139897 0.0057430861302561085 0.005686933832762966 0.004707274698533406
0.004862205669516068 0.0049799478096850406 0.00495348695304933 0.006138233447965346
0.004634066773416888 0.004821756598421506 0.00485824271909835 0.004879556271907765
0.0055527841208901476 0.004574850904140717 0.0041978200518684025 0.0032196182726530274
0.004974682995467316 0.005645355138800513 0.0047636679787730635 0.005725690412560236
0.005519523477767443

f obiettivo: 338.87000000000006, Time: 17.449860095977783, Status: optimal, Best bound: 338.87; f
obiettivo: 394.610000, Time: 0.10923361778259277, Status: /, Best Bound: /

Istanza 82

200; 5; 0.500000; [4.73, 6.43, 3.61, 4.29, 4.54, 6.91, 4.53, 7.08, 8.47, 2.17, 1.69, 1.13, 4.59, 1.61, 1.8, 3.41,
3.84, 9.94, 1.85, 3.68, 7.39, 5.57, 1.08, 4.62, 5.08, 6.57, 9.96, 3.62, 5.25, 8.3, 5.24, 2.48, 8.99, 7.71, 8.87,
5.12, 8.23, 6.29, 3.13, 5.59, 1.29, 9.04, 5.84, 6.97, 2.23, 6.79, 3.09, 7.45, 1.31, 8.99, 8.2, 2.69, 5.23, 3.62,
5.47, 3.54, 1.86, 6.12, 2.1, 4.86, 7.81, 9.05, 2.94, 1.28, 5.93, 7.53, 4.93, 6.87, 4.28, 8.69, 7.31, 1.88, 6.9, 9.77,
1.39, 4.12, 2.46, 5.88, 1.39, 6.17, 5.57, 7.4, 6.6, 1.23, 7.53, 9.19, 3.95, 3.62, 9.15, 1.08, 9.65, 4.16, 1.96, 9.39,
6.25, 1.4, 4.63, 7.36, 2.47, 7.64, 8.63, 2.42, 9.18, 7.9, 7.6, 9.24, 2.21, 9.83, 4.82, 1.03, 4.13, 1.71, 3.47, 2.35,
1.5, 1.09, 4.75, 9.77, 8.26, 6.13, 5.85, 4.12, 6.94, 9.99, 6.35, 8.04, 3.61, 2.57, 8.16, 9.52, 1.24, 4.57, 8.89,
2.16, 7.78, 1.17, 3.51, 3.55, 8.0, 6.13, 3.69, 5.88, 5.9, 3.47, 8.5, 5.7, 9.55, 8.11, 7.57, 6.16, 1.38, 7.96, 7.34,
1.85, 9.0, 1.05, 7.68, 2.46, 3.3, 3.07, 7.63, 8.39, 5.16, 7.58, 3.28, 5.38, 2.55, 1.47, 3.18, 2.69, 6.8, 6.07, 3.04,
9.56, 2.6, 9.78, 4.62, 5.48, 7.95, 9.56, 8.64, 9.37, 7.17, 5.18, 4.76, 1.61, 7.16, 7.11, 3.45, 9.13, 2.89, 7.73,

8.59, 3.54, 7.21, 4.6, 4.81, 4.7, 7.12, 8.16]; 0.005382740213629896 0.005564611079854202
0.005872356390401033 0.004362937079178231 0.005181783271133292 0.004924562549979136
0.004313876115964253 0.004744782346510336 0.005987725462116209 0.004293003467288264
0.005274630627692964 0.005653431855311815 0.0044789190894191705 0.0037075274848436717
0.005680161122614424 0.005037965863781238 0.005067211666596408 0.004138204203909041
0.005444939579199843 0.003913874117839365 0.0044501217021450665 0.004517093182618856
0.004110406687816424 0.0057958973536601805 0.004649843880111708 0.005035647392783817
0.005104367670063173 0.004127214378230087 0.004916518972954058 0.0056055376191319764
0.00543502728756357 0.005202722620033032 0.00526977233966036 0.005530280842819743
0.004716740923543832 0.004847217149510941 0.005709155569894953 0.0039823759616044625
0.005764371527495379 0.004723468469139618 0.005325264718339636 0.005299268937765398
0.0045737535395843805 0.005279374114852679 0.003958478776559418 0.0048796246259673525
0.003971301853850744 0.0051580961792847945 0.004657347005867317 0.004939877583757381
0.00594563872071097 0.004944281309664007 0.005275736048334962 0.004728140017456137
0.0045717356892376335 0.006110857195634371 0.005544589275489054 0.004809215884148719
0.004427141650005734 0.006045834423660039 0.006034219340404262 0.005691801435524039
0.004739407815598399 0.006373618676546926 0.0051651296791243384 0.004956221383472678
0.005726466938099017 0.004777524530519712 0.004627033779119738 0.00614130465003733
0.0044300852668964705 0.005418118977047454 0.005188624685174786 0.005416306750752555
0.004259955682413282 0.004578471462378006 0.00489114123127191 0.005996071431478922
0.00515805726712435 0.004272600568266911 0.004930749793412309 0.005428021835819868
0.005369313759757887 0.004309955085045503 0.004962193712632276 0.0044196709762436255
0.004680313787405694 0.004724284781218804 0.005160270014618844 0.005386525319771875
0.005708749584126747 0.004569027301255263 0.005314691592646502 0.005369047917660684
0.004359740823090128 0.00523257511792384 0.006219097814198515 0.004298705584671117
0.0046991584635751515 0.003966634078456399 0.005119420871750997 0.006075290322934927
0.0047705039028477425 0.004533000153115438 0.004494453174094385 0.004489444097470246
0.005351101868950709 0.005322736980785194 0.004801879113092605 0.004073793367862644
0.004026027070059715 0.004357148094770042 0.004710590498421831 0.005512894553376455
0.004076583969681928 0.00493324936111528 0.004816094303983998 0.00485017447104357
0.00503168180324875 0.004581224954209476 0.004874271602054073 0.005371741346593443
0.004198284538274756 0.004787946856864105 0.00493280861344431 0.005258970103477992
0.004783216021304829 0.005945228057823919 0.005576743190203449 0.0047468707402621825
0.0035722591266538596 0.005427219898760311 0.00663316692919615 0.005253907221559993
0.0038401492351739616 0.005819815346485018 0.005481780300292652 0.005060681034279198
0.00585013501359583 0.005069818010299193 0.003835723812731317 0.004728544785192319
0.00565043900015357 0.004234969219930449 0.005164252858663781 0.0053191418698994115
0.005354483896663706 0.003666389835006822 0.00529839750548121 0.005031488718917747
0.005075201062798571 0.005601355149654748 0.0061345722358709465 0.005183463700959239
0.005287660193031752 0.004805884679830469 0.0043162229914110225 0.005300334098094028
0.005858464679830144 0.003969327574952537 0.005341870144406911 0.00557838954116612
0.004782035322838788 0.004376230485867228 0.00550122599845255 0.005874333416476966
0.00454412121650533 0.0048536458928089945 0.004034499866351129 0.006149731033267474
0.004469413003979586 0.005110230789981339 0.0047733956902761355 0.006726310143616663
0.004998064706587493 0.004620471745077246 0.004985710208083442 0.003885775129978925
0.005126095254222749 0.005185377045042226 0.004632310444674499 0.003943362605716858
0.005871625566330827 0.004502245464487139 0.005387721190650648 0.005795740317170825
0.005305564053194013 0.005417593976855723 0.004347099363302705 0.0044409089420742775
0.004774499184320228 0.005321235156824969 0.0043498916222129 0.004506525305353779

0.0058401204563164845 0.005371434529503631 0.00426377048510728 0.0059736624686037125
0.005019633985098979 0.0038740326957270254

f obiettivo: 322.11, Time: 13.414852619171143, Status: optimal, Best bound: 322.109999999999984; f
obiettivo: 334.180000, Time: 0.07232427597045898, Status: /, Best Bound: /

Istanza 83

200; 5; 0.500000; [3.1, 3.24, 8.33, 3.66, 5.12, 9.73, 3.11, 6.94, 2.9, 7.14, 3.7, 4.23, 2.53, 9.34, 1.37, 5.57,
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2.67, 3.4, 6.19, 1.48, 3.47, 9.94, 8.44, 9.54, 3.62, 3.24, 6.84, 4.86, 6.23, 1.12, 8.77, 2.1, 7.45, 6.08, 7.98, 5.88,
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9.22, 8.68, 5.39, 7.24, 1.8, 7.93, 9.98]; 0.004818241518395108 0.0046996349591970485
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0.004127299003662379 0.0043720285233355164 0.005091162252065869 0.0051046240620934765
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0.004885705079087629 0.005371658207191197 0.005011480930652114 0.004953383449687768
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0.00588506076338634 0.004073187158630334 0.004985338804623986 0.004748990307263614
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0.004855420006348359 0.004833713161830221 0.004664856254515328 0.00527975808261723
0.005363444142537161 0.004798294965163053 0.004562164390984366 0.005013392635312135
0.005083113134625219 0.005511080129270731 0.00522265236519017 0.004925282276984275
0.005418584583293658 0.007075701073460097 0.0045411754382821716 0.004807894442144916
0.005039662199144315 0.004752594761864315 0.005288721049333551 0.004707418122752225
0.005518399192253678 0.0038727023600626203 0.0067367691389568305 0.005660674865602131
0.0048113962619270425 0.0036382618547465277 0.0044785727014755895 0.006062322024113607
0.004134542249562339 0.004678003237864373 0.0045286976993635765 0.005055933139818621
0.005622185716491516 0.005777763577509155 0.0051277886942103406 0.005206819681473042
0.005402441104168341 0.004599153172506045 0.003780496485165326 0.004322573506838237
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0.004642017666136749 0.0059792000160837095 0.004375709890190812 0.0050882119128625525
0.003696981271879358 0.005099207386341779 0.0051025225970679116 0.003837848458791722
0.004408402298846576 0.0039285314649963165 0.005931179546989492 0.004566721983501857
0.005365660366698614 0.005486529873135308 0.004524866209864504 0.004986212403816618
0.0058105774791164435 0.005755736071611242 0.005678803599107434 0.004721295817502297
0.004950224811746188 0.006409269059735876 0.004553614935880624 0.0041558377027283416
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0.004721443034534728 0.004995962012317654 0.0036763458144632335 0.0035460792226717497
0.00450349914490224 0.006463198743136261 0.005472867027434592 0.004537157493061153
0.00485938481080549 0.004019342025372691 0.006322617941661191 0.00613092342031176
0.005099368023385584 0.0053022766159672085 0.005374518148467674 0.00434991383192359

0.005377466580840171 0.004390829235881855 0.005428182769284546 0.005214201841023403
0.0060969455770022146 0.004759286219951677 0.004309762792003106 0.004704097222203194
0.005824961691343062 0.006069535623788715 0.004484707023356036 0.005730917950712838
0.0039687138258337916 0.004072558058802519 0.004963502991779892 0.006757593982468877
0.005545109866273552 0.004536382353217201 0.006138793657112701 0.003647180348330691
0.004575280344960393 0.005614110090920622 0.005464720271376124 0.0045228225094593125
0.00558750390367728 0.005404776466367882 0.004619977284416841 0.00543213565517745
0.004892297331004998 0.004391914231212607 0.004913371491913819 0.004541595767452465
0.005635757658056295 0.005226265900453243 0.004925953742041913 0.005218737339428597
0.005672557171866454 0.0053163983162502785 0.00505518519051051 0.005535006701596856
0.0049568662591018536 0.005014268996556695 0.005416007392835994 0.005873661827132261
0.004606097645447836 0.004868376877888059 0.005658378352458659 0.00425770473615086
0.004869612504941824 0.005077662859291077 0.004454313527234078 0.0048237460490254905
0.004783184742695651 0.005412770428158669 0.005351166545856828 0.006144383697298295
0.0056573754590603705 0.004341496144311085 0.0052730172660079115 0.004452231292384799
0.005805486826846639 0.0052912169175803716 0.004639763540696255 0.005253899635956247
0.005478374950443347 0.00451115993526738 0.00428226490411017 0.004762507486896025
0.004300272564618921 0.004328361591338843 0.0048081133780512 0.0035291191085561704
0.005373402505825493 0.0058191745381402085

f obiettivo: 336.94000000000005, Time: 27.263424396514893, Status: optimal, Best bound:
336.93999999999994; f obiettivo: 337.400000, Time: 0.07631659507751465, Status: /, Best Bound: /

Istanza 84

200; 5; 0.500000; [1.66, 6.45, 1.59, 1.95, 1.42, 2.99, 6.49, 2.67, 4.47, 7.81, 4.62, 4.21, 3.88, 1.95, 6.79, 8.06,
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4.65, 7.54, 2.98, 7.4, 9.25, 3.85, 7.78, 1.28, 3.56, 9.49, 5.49, 7.13, 1.38, 8.85, 6.55, 8.54, 1.16, 1.99, 2.68,
8.75, 7.33, 9.36, 7.24, 6.24, 7.59, 1.84, 1.45, 8.48, 1.34, 5.93, 3.92, 8.25, 9.84, 9.88, 4.84, 8.32, 2.99, 5.6,
2.46, 6.41, 1.26, 7.55, 7.67, 1.05, 4.44, 4.63, 6.54, 9.01, 1.95, 6.64, 1.03, 5.06, 6.45, 4.08, 7.17, 1.18, 8.64,
1.77, 9.84, 1.49, 1.47, 2.33, 8.89, 6.97, 2.13, 7.83, 8.13, 5.52, 5.16, 4.4, 4.04, 5.75, 8.83, 6.48, 7.54, 7.68,
7.96, 3.43, 9.42, 6.48, 5.43, 2.56, 5.5, 4.4, 9.61, 7.94, 2.23, 1.25, 9.86, 6.45, 2.08, 8.76, 8.04, 1.82, 2.25, 5.15,
4.98, 2.52, 2.29, 3.43, 3.91, 7.89, 9.05, 6.13, 3.54, 4.32, 4.18, 5.36, 7.43, 6.48, 7.08, 4.49, 5.31, 7.87, 8.47,
2.23, 3.23, 2.72, 4.3, 6.56, 7.22, 3.77, 6.84, 7.03, 7.84, 7.96, 6.47, 2.81, 1.43, 1.05, 2.69, 8.77, 9.75, 6.9, 7.19,
6.57, 4.36, 4.33, 1.41, 4.08, 5.86, 2.15, 9.39, 8.33, 4.78, 4.06, 8.88, 5.69, 7.57, 2.05, 1.6, 7.29, 1.94, 5.66, 6.2,
2.44, 6.13, 6.14, 1.98, 9.48, 6.24, 8.97, 4.71, 6.1]; 0.00631201139906313 0.004155415703433997
0.005244122635191176 0.00541811395841859 0.0050740888553048764 0.004598984144867948
0.005150613872450419 0.005469682762378656 0.005608883512755122 0.004257748634132351
0.004368560760440592 0.005589896868872076 0.0050732844892562665 0.0051044995570295165
0.005895912434668669 0.004254825493230771 0.005579870264154427 0.005050948027668435
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0.004377187589129303 0.004688548632306493 0.003915352720379875 0.0049361617621852686
0.004950968529763967 0.003970549922901457 0.005428274458187465 0.004363232967015026
0.004316421120947935 0.004124392016107924 0.004706933344948132 0.005688864859059591
0.005470476923288428 0.0051861198742073475 0.004906618447438046 0.005013301853895281
0.005856725026056015 0.00535984018913011 0.004906091025239105 0.004675081366330928
0.004075319544334658 0.004546003641298835 0.004362152307002219 0.004340376225954166
0.003923999703632558 0.005515560085363557 0.0046735262510839886 0.004228236209279425
0.005170937432128331 0.004905892162887417 0.005164663825251112 0.004871843992655077
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0.005892121820511731 0.005142036318110176 0.004439025094594724 0.005097672920361724
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0.005546201133800064 0.005117288394847389 0.005095157885424932 0.004946527797668948
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0.005531466306050344 0.00443523436799727 0.003971917721983865 0.0055988320131258075
0.0051309898493270695 0.004897024825173724 0.004705451642055826 0.004899975121956906
0.005289875763602198 0.006430457255314302 0.0061114900470899845 0.005228861702066074
0.00455962363479466 0.004789516645118887 0.004785498089862212 0.005369203787425742
0.005384481795107247 0.0037302253428820958 0.0049952785750420345 0.004564009070454848
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0.004971316367229218 0.004008506313257567 0.0040051717003721215 0.004781611933751604
0.004924463340103944 0.004952075321708787 0.004761311775216065 0.005484208400368043
0.005664067296483021 0.005430444498843139 0.005388806969810903 0.004109106745053989
0.004766161095544436 0.004844473388986852 0.004261192478703036 0.005868506686376508
0.004026814820823415 0.004397015457730289 0.005627284622929461 0.004331525134739903
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0.0045518752270409255 0.004603367754477661 0.004928044836804614 0.005483698950741433
0.004709403836129702 0.00584914823500056 0.005305269049900169 0.006941301890509887
0.004685502711003612 0.0055384644274125965 0.004669847321130168 0.004846935783308195
0.005153623849774046 0.005107334154407039 0.005986249917884808 0.004459884476639613
0.0047828564701620484 0.005169688599243829 0.00532595968441526 0.005557169713145769
0.005079652811720607 0.005758082110430693 0.004210026838607558 0.004659966163349464
0.005368988316922055 0.005402725409091466 0.005983320990233452 0.0036864782790018195
0.005092505661815858 0.004445736858033014 0.004760738422502122 0.00486494257035541
0.006067244699430301 0.004503209194234035

f obiettivo: 311.90999999999997, Time: 14.358729362487793, Status: optimal, Best bound:
311.90999999999997; f obiettivo: 349.840000, Time: 0.09427547454833984, Status: /, Best Bound: /

COSTI RANDOM, PESI NOISE, $\Delta = 10$, $n=200$, $q=0.5$

Istanza 85

200; 10; 0.500000; [5.62, 1.56, 1.98, 9.38, 9.52, 2.67, 4.99, 4.21, 4.4, 2.83, 6.28, 8.43, 2.06, 6.35, 1.37, 9.03,
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2.17, 6.07, 3.68, 8.45, 2.3, 9.57, 1.28, 2.51, 6.17, 6.73, 6.27, 9.99, 1.5, 7.99, 7.88, 3.56, 1.43, 8.11, 4.56, 7.83,
4.57, 6.87, 1.71, 8.17, 8.37, 3.45, 1.58, 4.0, 4.62, 1.25, 8.35, 3.68, 6.65, 6.86, 9.96, 7.77, 2.63, 4.49, 8.16,
9.77, 6.13, 9.97, 8.7, 9.01, 3.36, 8.23, 6.23, 4.89, 4.84, 9.8, 5.5, 8.19, 3.63, 9.9, 6.6, 3.79, 2.86, 5.99, 3.11,
2.32, 7.33, 1.82, 9.65, 8.64, 6.86, 4.72, 1.81, 9.32, 4.76, 6.59, 6.87, 4.19, 8.88, 2.34, 2.31, 1.99, 4.75, 5.08,

8.2, 7.91, 2.87, 8.5, 9.24, 3.32, 1.02, 5.87, 6.29, 7.43, 3.48, 3.15, 3.69, 6.04, 5.37, 8.14, 4.49, 2.92, 5.02, 9.44, 9.96, 7.05, 4.56, 5.95, 8.45, 3.44, 5.92, 4.26, 4.71, 9.24, 9.49, 5.62, 3.09, 2.27, 5.04, 6.34, 1.46, 8.98, 7.3, 3.68, 3.04, 5.76, 1.38, 7.65, 2.59, 8.78, 6.43, 2.71, 8.89, 6.59, 5.47, 5.17, 1.77, 8.66, 9.4, 6.97, 4.58, 8.81, 9.55, 1.59, 8.6, 1.71, 2.9, 5.79, 8.64, 6.26, 2.97, 1.21, 2.23, 4.39, 5.97, 7.29, 6.76, 6.01, 4.34, 2.11, 1.31, 8.74, 4.9, 7.15, 6.68, 4.43, 4.22, 6.45, 6.67]; 0.005344779336582099 0.005261046196948854
0.005336380818067572 0.004636279893311201 0.005120452598578547 0.0064247775477383655
0.004880738611015 0.005390779433424837 0.004812957532457218 0.005591094047900572
0.004928783049657076 0.0056143405131822526 0.005513932415454695 0.004953755269913027
0.005198067984105474 0.005202035501737774 0.00558114234865166 0.00467905255370537
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0.0047602034888063515 0.004957372837035557 0.004640142271286519 0.004975932841578958
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0.004280523448765789 0.005026434930381869 0.003554958978986902 0.0044949572134983596
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320.34000000000003; f obiettivo: 320.340000, Time: 0.055013418197631836, Status: /, Best Bound: /

Istanza 86

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4.6, 8.63, 6.19, 5.56, 5.78, 8.46, 8.03, 2.77, 6.25, 8.63, 2.03, 2.81, 5.04, 9.5, 1.23, 6.72, 1.53, 7.82, 3.87, 5.29,
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f obiettivo: 334.27000000000004, Time: 6.995577096939087, Status: optimal, Best bound:
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Istanza 87

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4.17, 2.2, 9.3, 3.39, 2.77, 1.48, 4.11, 8.08, 1.18, 8.25, 9.51, 5.8, 6.0, 2.62, 3.44, 5.82, 9.71, 5.39, 2.18, 1.22,
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Istanza 88

200; 10; 0.500000; [9.29, 8.98, 8.15, 1.76, 8.82, 7.29, 4.25, 4.15, 4.99, 6.84, 6.83, 9.09, 9.56, 4.04, 3.04,
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3.42, 3.01, 2.54, 2.28, 9.12, 2.62, 9.01, 8.61, 2.46, 8.11, 8.26, 5.14, 9.58, 6.03, 9.09, 8.61, 8.51, 2.51, 3.2,
8.25, 7.49, 8.82, 3.28, 9.29, 6.08, 4.63, 4.7, 4.54, 5.5, 4.31, 3.05, 7.63, 7.35, 4.21, 7.85, 6.46, 3.18, 8.13, 6.77,
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Istanza 89

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