

Test Cases per la tesi

COSTI RANDOM, PESI NOISE, $\Delta = 3$, $n=100$, $q=0.95$

Istanza 1:

100; 3; 0.950000; [3.36, 7.1, 5.16, 2.27, 6.89, 2.1, 3.33, 9.88, 4.39, 6.74, 3.7, 1.55, 5.13, 5.01, 4.0, 9.3, 7.22, 8.09, 9.89, 2.8, 7.36, 8.77, 4.66, 7.9, 1.42, 3.81, 6.91, 1.34, 7.86, 8.05, 9.58, 3.38, 6.42, 9.66, 4.35, 5.19, 5.64, 1.94, 6.69, 1.66, 4.45, 7.65, 7.71, 4.27, 6.51, 8.42, 8.42, 9.02, 2.93, 5.75, 9.7, 1.0, 9.79, 1.01, 8.98, 1.89, 9.39, 1.01, 6.35, 8.11, 7.35, 9.92, 2.22, 8.24, 4.82, 1.88, 4.93, 5.19, 4.31, 3.19, 6.78, 9.64, 9.18, 3.47, 2.47, 5.33, 2.74, 6.06, 1.09, 3.06, 9.37, 6.15, 4.96, 6.76, 1.94, 1.86, 6.95, 1.85, 5.64, 4.94, 6.72, 3.12, 4.09, 5.5, 1.69, 6.41, 1.67, 6.0, 2.23, 9.81];
0.01109213062527498 0.010216733840570607 0.01160556822027561 0.01103795729093768
0.01023541560990356 0.008423210217606347 0.00846715530972117 0.010038746581662173
0.010722119242145771 0.009864286780883259 0.008818661946830056 0.011015781373456894
0.009121715806883757 0.009215458610031244 0.008192964813922553 0.010566402757475162
0.008014642973327954 0.010267653790852305 0.009103162425503512 0.011025442185454815
0.006921390762643296 0.009324500101193805 0.009453791912911236 0.00898545366274925
0.009093418581383078 0.009182254741060587 0.010981734057111852 0.009109608008898692
0.009198568835618771 0.009076197834841274 0.00909969246329265 0.00936882902930321
0.010085912338428944 0.009230207286017138 0.009562752576192452 0.011747301138286198
0.010630289394383123 0.010452262147862641 0.008412080217498563 0.009374799104160713
0.01100520380267845 0.010044873692186273 0.01258022604214815 0.012348974470788799
0.010580711520422982 0.011066653139001575 0.010035699811841096 0.009643924727031726
0.010683474440994774 0.010843331660606451 0.009570088796633586 0.01028661696970022
0.01032840537744124 0.01269630082752473 0.009085521484458988 0.00726725660903474
0.00912962487303377 0.010525187047044965 0.01022932876189825 0.010813069096506265
0.010177770718906472 0.009432946293444225 0.00858993565675724 0.010608806359639037
0.008751344436740166 0.010199405003869351 0.009754709859533396 0.009042262344442373
0.009599323651072585 0.008643045778666498 0.011093325314723235 0.011271505409844175
0.009351792869282656 0.007243378013525802 0.009836186666794151 0.011069599498575564
0.011462166977522514 0.00924312825331124 0.010542070070873856 0.010796420459237269
0.009108341244791124 0.00968450262605396 0.011653340725500096 0.011972913100753007
0.010628254248888025 0.011232441069861975 0.009125255341218483 0.011287933219502659
0.00922367471865302 0.010622958153147571 0.010141024040704945 0.010996419078411262
0.010243601286856014 0.009507809978453135 0.012601099605336922 0.009565541852852213
0.00918002539251998 0.009600450835938374 0.0114446900495421 0.01036987204671952

f obiettivo: 493.09999999999997, Time: 0.9621791839599609, Status: optimal, Best bound: 493.09999999999997; f obiettivo: 495.980000, Time: 0.029628753662109375, Status: /, Best Bound: /

Istanza 2

100; 3; 0.950000; [6.87, 2.81, 7.34, 7.62, 4.71, 8.99, 1.88, 6.92, 9.75, 2.59, 4.9, 6.59, 3.16, 6.61, 5.95, 9.91, 8.74, 4.24, 9.05, 6.61, 3.81, 6.84, 6.51, 3.78, 8.47, 2.99, 1.42, 5.19, 1.02, 4.92, 2.25, 4.67, 7.19, 2.72, 4.33, 2.7, 7.15, 8.3, 5.6, 9.03, 7.3, 9.36, 3.1, 5.32, 4.59, 2.48, 9.17, 5.34, 7.47, 3.54, 6.9, 9.89, 3.98, 7.84, 7.46, 5.57, 4.03, 5.42, 3.7, 9.01, 3.26, 2.55, 6.37, 7.65, 6.11, 1.18, 4.9, 9.75, 8.32, 8.16, 3.56, 7.54, 9.94, 7.71, 1.47, 1.34, 7.12, 3.85, 9.42, 1.17, 5.15, 7.67, 7.25, 3.17, 4.47, 3.26, 6.92, 5.41, 9.25, 1.78, 7.43, 5.87, 3.67, 3.45, 6.32, 7.59, 6.3, 8.01, 4.35, 5.33]; 0.010779861709698356
0.010585990765333961 0.01146756919079276 0.011585797898550921 0.009760752898986686
0.010020625110217346 0.012416143062510324 0.00974515193125341 0.008344568849770095
0.008100278309894472 0.00962942351141677 0.013004373991686878 0.008324740587703862
0.011190255164664778 0.011672063361805351 0.011144428458612429 0.011536059458555388
0.009965249565428826 0.01078178291442505 0.012739681975206711 0.009817501590827843
0.010548736223600318 0.009335323720640618 0.011459570176432494 0.012402419969723601
0.009804564237159 0.00903680575651372 0.010084916527047568 0.011624361340042686

0.008184547941724643 0.012551789954907022 0.009806257795574884 0.009975780923568047
0.007995094890300569 0.009394682332208734 0.010283675970223605 0.01031233525433059
0.010384339909558005 0.011647460723802466 0.008048057189864587 0.008390757464585159
0.009196906232268638 0.008780774064162418 0.010574250387255518 0.009432382575476121
0.009894791134314553 0.00925903225619009 0.009474028377407538 0.011407092837671145
0.010780138776111198 0.01046318510146868 0.00858465357656592 0.010219177673923524
0.009069733393756944 0.009753932066975383 0.008559746846526117 0.010338186277959738
0.010318757642257597 0.012426043043134076 0.008215970199834556 0.009831394653356397
0.011142436435924658 0.007203498265028045 0.011168690637034562 0.009316280107493597
0.011856448309172974 0.010824686990723092 0.00951089492244482 0.009297172266270175
0.009002858540167297 0.007124399975384259 0.009801733270345461 0.008167526129247506
0.01120758951288194 0.009107060593287196 0.008423205122198801 0.01047938734800331
0.00995332119044936 0.009903899953880595 0.009979937501888603 0.01079641762263684
0.008474984913703534 0.00987530588986073 0.009922735878124625 0.009958994588969263
0.00966130419568441 0.009311265173758425 0.009763541039964907 0.008411776938533871
0.008862324574556062 0.010488348842745457 0.00895407824246835 0.011076249047656143
0.008859466624760852 0.010600048501175173 0.011840094631977783 0.010972312902305036
0.009834911592004805 0.009538378105827132 0.008862477895693704

f obiettivo: 512.75, Time: 0.739882230758667, Status: optimal, Best bound: 512.75; f obiettivo: 512.750000, Time:
0.04107522964477539, Status: /, Best Bound: /

Istanza 3

100; 3; 0.950000; [6.16, 2.24, 6.4, 9.68, 6.11, 1.15, 2.71, 5.29, 6.18, 9.11, 4.96, 8.3, 9.32, 1.94, 8.08, 5.35, 7.95, 8.75,
9.7, 6.03, 1.64, 6.72, 8.21, 6.64, 6.35, 5.36, 3.94, 1.27, 7.73, 5.15, 2.26, 6.26, 1.02, 7.81, 5.03, 8.59, 3.8, 6.25, 8.78,
9.16, 3.85, 8.38, 8.42, 9.23, 6.47, 6.05, 7.04, 2.6, 7.43, 4.43, 5.11, 8.89, 8.32, 1.08, 3.55, 6.82, 8.46, 2.2, 7.83, 4.54,
4.39, 1.46, 1.19, 8.32, 5.58, 8.47, 6.7, 3.99, 8.44, 7.67, 1.11, 8.95, 7.7, 6.87, 1.69, 6.89, 1.28, 1.95, 7.13, 6.2, 3.69, 1.58,
2.87, 3.44, 8.11, 7.04, 2.22, 4.44, 4.12, 3.09, 1.84, 1.71, 3.28, 1.67, 9.21, 9.07, 4.96, 9.89, 8.3, 5.42];
0.007880843757775891 0.009998736140861426 0.012610259598494244 0.011088848074814498
0.011280639274254425 0.01038125187944975 0.008868551848487293 0.008278502034043097
0.008799354549835119 0.009961624740311321 0.011095455595241135 0.009480138010709818
0.008400770736933214 0.010186221729434466 0.008627448474466094 0.010366300601727592
0.009972981044321268 0.009415215076389653 0.008176486232258313 0.009041394098537851
0.010846799819162046 0.008124336921910696 0.009593886168371084 0.011591550762626373
0.010981575841488159 0.010793968717981106 0.01010884618279745 0.009713195868330375
0.009886651159786675 0.011417280269412298 0.008336215937554087 0.01064686626512271
0.010448154567468672 0.010074143680695464 0.009224966660551804 0.008621249613430906
0.009479715874725665 0.009523864062698844 0.009420055409822301 0.007639222159006364
0.01042143361503077 0.009919049813007372 0.012224962592028763 0.0108503713447916
0.011123866946911688 0.012044349891833034 0.011348715254248699 0.011457976803423439
0.0092929559379282 0.011660236563160398 0.010042025854998181 0.008425922696402839
0.010498915989687068 0.011129941967861543 0.009704414447441703 0.010565576677983048
0.01125995965839886 0.009753021901232967 0.010070572115259172 0.011897333367596593
0.011315245091525582 0.008581842668067842 0.009922471702351767 0.00822867267723674
0.010775084720412175 0.01105714214347412 0.010047615887413966 0.008120351532712308
0.011466174995415792 0.007955180287827384 0.009698169531187174 0.010057159511066092
0.01081348633184969 0.010447114112394741 0.010772087834696801 0.009610436023766093
0.009811160957836455 0.012367434689491983 0.01048600208810516 0.008849757608891548
0.011682480864795536 0.009583601039359657 0.01159088350900126 0.009030019924444499
0.01132662721049125 0.008974891176340774 0.009340884520513428 0.009290596222882443
0.012824371025814157 0.007908925828925217 0.010206280068667412 0.01084657761711222
0.00874680268326098 0.008071769725483176 0.010338176551994534 0.008240424640156455
0.008489324025893752 0.009271131022845614 0.00885589265925364 0.010922576406524819

f obiettivo: 504.55, Time: 0.7439813613891602, Status: optimal, Best bound: 504.55; f obiettivo: 512.870000, Time: 0.036507606506347656, Status: /, Best Bound: /

Istanza 4

100; 3; 0.950000; [6.29, 6.18, 5.86, 9.48, 2.14, 2.9, 7.73, 9.88, 5.46, 7.33, 6.53, 7.36, 3.46, 4.43, 5.52, 4.76, 9.64, 8.26, 2.8, 5.18, 8.7, 9.9, 9.16, 7.82, 9.44, 6.04, 9.19, 3.88, 5.34, 4.2, 6.11, 4.14, 9.83, 9.61, 9.7, 7.39, 8.51, 8.39, 3.06, 6.19, 9.83, 3.45, 1.88, 1.86, 7.31, 8.71, 8.67, 5.26, 4.04, 7.37, 9.3, 9.82, 8.18, 7.14, 6.29, 9.94, 8.32, 2.91, 9.62, 9.94, 2.59, 7.69, 6.51, 2.32, 2.94, 1.43, 8.44, 1.89, 4.22, 3.98, 4.33, 6.68, 3.83, 1.73, 9.15, 2.62, 9.5, 8.7, 5.58, 7.34, 8.33, 3.16, 8.98, 4.82, 9.94, 6.46, 6.07, 9.97, 8.82, 5.89, 4.29, 3.95, 4.95, 5.03, 3.63, 5.28, 1.48, 2.32, 9.41, 4.19];
0.009636227649434143 0.012159344806576445 0.011185709032914794 0.009021026631587792
0.009704848117618266 0.01275835334704989 0.00857795582884621 0.01038913699038265
0.011010580707011669 0.008430852541207364 0.009635499734320045 0.011643329300035228
0.011094731601680624 0.012253791014594801 0.007426489322341529 0.011035946625131266
0.0117447451942796 0.00945889214054259 0.010773567249860248 0.007463460678615642
0.010770068355950443 0.011163177429531056 0.009699105419393166 0.00864023641005897
0.012133443687056421 0.008390571476583123 0.009102848484556579 0.008035139541168386
0.009751288994996356 0.011663568002226014 0.008883474448310186 0.009410646296086383
0.009773979073316872 0.009182343067561362 0.012280077679380995 0.009230861071122498
0.009114191194990996 0.008694854248060713 0.009436303189759025 0.007969482815625355
0.010960033529269945 0.008849435296689086 0.009406836948932542 0.009020012418057699
0.0087527500035835 0.0111638994424564 0.011065509732088518 0.00950591172779399 0.008036888757898238
0.0090114291799741 0.008792954761428844 0.01021733306022816 0.010580043633664257
0.010685108744599983 0.01087650749443639 0.011001318275675584 0.010064224332978282
0.009902229820653136 0.008688762219471707 0.008517397661470593 0.00977035389346555
0.010482072595566517 0.010859412446214883 0.009223983569421786 0.009989593350687049
0.011645367593909118 0.008663053727843388 0.009942384522793578 0.009806961445775328
0.008802654566353298 0.008982707627596207 0.010108921456335549 0.011828830021519975
0.008886473049994249 0.012725846719817163 0.009632812447024004 0.011286965510313267
0.011593110826330645 0.011092375321776567 0.008390621667263098 0.008680183792657092
0.010918034981811674 0.009683940313768154 0.012565761048200515 0.009185595440439103
0.00905653095339696 0.01262442172463127 0.009846553994445839 0.009822159388054003
0.009574426534501872 0.01144771999141182 0.012025076444067523 0.011838047281477956
0.01031987739308816 0.010413930033950686 0.008941490563330419 0.00797319708114941
0.006303779296332246 0.0126792077428036 0.008556827199363733

f obiettivo: 576.38, Time: 1.241792917251587, Status: optimal, Best bound: 576.35; f obiettivo: 577.790000, Time: 0.03922152519226074, Status: /, Best Bound: /

COSTI RANDOM, PESI NOISE, $\Delta = 5$, $n=100$, $q=0.95$

Istanza 5

100; 5; 0.950000; [6.45, 2.73, 2.44, 3.27, 5.41, 7.93, 7.96, 9.62, 1.76, 4.91, 7.06, 7.41, 4.17, 2.94, 4.43, 1.71, 4.8, 2.94, 9.87, 1.32, 9.51, 1.05, 9.77, 3.77, 3.31, 6.83, 6.04, 8.95, 2.95, 5.32, 4.11, 3.32, 6.75, 9.55, 9.14, 6.2, 2.04, 6.32, 7.45, 2.54, 7.02, 7.18, 6.27, 4.04, 1.95, 5.22, 8.83, 7.41, 2.27, 6.28, 8.9, 1.63, 5.06, 4.47, 8.83, 9.1, 2.3, 1.0, 8.62, 9.14, 2.83, 8.87, 6.1, 3.9, 4.15, 9.05, 9.35, 6.18, 4.35, 2.58, 7.26, 5.57, 6.74, 6.66, 4.24, 6.53, 6.46, 8.08, 5.73, 6.31, 4.21, 8.95, 4.48, 1.27, 5.77, 8.81, 3.7, 9.5, 8.51, 4.78, 8.87, 5.98, 4.45, 6.39, 7.08, 8.54, 7.32, 8.84, 5.22, 6.48];
0.009529382839961445 0.009763700466153514 0.00939085227778443
0.0078575280042127 0.00838662592992343 0.009365987993624739 0.009495849651456636
0.009388673071435946 0.011858351135515494 0.009632637601543391 0.008457301310310134
0.008409062556461164 0.009328819501611168 0.008318769400142433 0.009264120600471805
0.01134861309779535 0.010085226001456681 0.008856959395215658 0.010100376614054971
0.008685155598993749 0.008441294640220767 0.010524274291038862 0.009395418254549249

0.009877120922763546 0.011193951224435741 0.010867747141991766 0.011712936693673138
0.008639893997474167 0.011012852596773206 0.010865318755166508 0.011644937474169026
0.009709203759840504 0.009814433150850982 0.010428522488143212 0.010389961314404915
0.010409065678535478 0.009269234334247006 0.011633513497073108 0.010393139396405798
0.01221009849958462 0.008386278182796546 0.011877155887326307 0.009600154975636519
0.010427072034323604 0.009353696065110589 0.008484965394703768 0.00934152344631265
0.008444009705028068 0.009776596000744042 0.010558361078934196 0.00925647764825893
0.008895260224748834 0.010860865911554956 0.010139516884061112 0.009200149195078552
0.009719480719788724 0.010145913461458817 0.009810727250733346 0.010532638792354002
0.010160475971667261 0.012305976030658458 0.00959778069750537 0.00899776472834639
0.010827056197953173 0.008518454945304413 0.008570613010635364 0.010331054170125469
0.00994621618812872 0.01138149840825427 0.008616943908618396 0.010840711513214503
0.009292044202850468 0.008917200072184326 0.010731539729442038 0.010082988585010937
0.009947769657626147 0.010262188954926331 0.009816324113057027 0.011009057651628112
0.013423881947442285 0.00981049833047643 0.010022116007760063 0.01037004777164433
0.0084630146409126 0.00918041555554813 0.00892859740947534 0.011604922050972044
0.010761887620472792 0.010798784217415034 0.010180538495791107 0.010211544613542614
0.01079505068988052 0.010515921958849716 0.0098755617934241 0.010759334621586895
0.011711940140884315 0.009541019100973467 0.01090344198621141 0.01019130097936592
0.011028767311813863

f obiettivo: 531.3400000000001, Time: 1.1308512687683105, Status: optimal, Best bound: 531.34; f
obiettivo: 532.760000, Time: 0.01664590835571289, Status: /, Best Bound: /

Istanza 6

100; 5; 0.950000; [1.82, 2.97, 7.05, 9.68, 3.57, 5.51, 5.0, 8.69, 1.67, 2.97, 8.21, 2.97, 1.24, 7.88, 2.24, 3.78,
9.53, 9.16, 1.75, 2.86, 1.35, 1.96, 8.08, 6.87, 2.13, 8.62, 9.03, 3.2, 3.6, 4.73, 6.24, 3.67, 8.73, 8.16, 7.54, 9.97,
7.12, 8.73, 8.71, 2.81, 7.07, 3.34, 8.2, 6.77, 6.23, 3.3, 4.37, 2.81, 3.98, 8.82, 3.29, 6.4, 2.74, 9.92, 8.43, 9.59,
5.39, 3.59, 1.39, 4.15, 7.98, 9.69, 2.89, 2.6, 8.93, 9.43, 8.86, 5.23, 2.25, 8.65, 7.53, 8.95, 8.66, 6.74, 1.22,
9.19, 2.57, 9.36, 8.35, 4.88, 1.98, 7.74, 6.41, 7.31, 4.87, 9.0, 2.91, 1.43, 3.36, 3.33, 3.88, 9.14, 8.41, 4.83,
8.45, 1.0, 4.15, 6.07, 1.33, 5.14]; 0.010018802072112776 0.010159232678503957 0.00810801111286238
0.009146709649352927 0.011071014812183687 0.011982665099811602 0.00937913489083285
0.00971674550001205 0.010227436523782671 0.009913020867627168 0.012288188366795573
0.010743918534333633 0.009691956660209186 0.009887895442628376 0.009867735406229589
0.009552678857596699 0.009403306299216738 0.008073807564196664 0.011113656434842509
0.010687250967459832 0.008980867032763922 0.009506266010158915 0.009688150883662823
0.010796393067637772 0.010271912845393843 0.007376303868918628 0.009318718400186957
0.007607413657472432 0.009505544542528914 0.00904231257660797 0.010122002991981459
0.010169446462638504 0.00901069827644244 0.011399902316436025 0.008137304437325082
0.011258129469432202 0.008026255208623252 0.012525450168770682 0.009687105894461511
0.012445767488809474 0.008360813808072522 0.010554591233962185 0.0066549963150950835
0.010938888014292944 0.00990071144767628 0.009983437652313534 0.009099086021499076
0.012751982919834235 0.008588222100744038 0.011842770012288006 0.009380294776406747
0.011816343400082002 0.00842081745637744 0.01129196119951974 0.012188781646938067
0.00857393448079076 0.011228748732114414 0.011546444933177673 0.009546985013435996
0.010925998077495553 0.009518988276711797 0.010234604612660616 0.0103579337926785
0.010639325029022309 0.011465649894453072 0.009032543147849664 0.008744042176333181
0.009847068912743466 0.00935166538693837 0.010802642152506066 0.010287433142710136
0.01131817559903591 0.008521235903034718 0.010213164715728487 0.010828262878661427

0.012165198211246769 0.011493162522441506 0.010417984021493566 0.009802943933000664
0.008367107959108479 0.010900205443008737 0.008816620110076884 0.010302907798592635
0.011757290629180924 0.008717039498165461 0.010098663780449404 0.0074311805944106924
0.0116072339658284 0.008779430803506598 0.00999359793364123 0.008974093701660323
0.010243923524438769 0.009221011375841713 0.010159510453173188 0.008306008941778575
0.01086895866755283 0.011295093085675082 0.010666537566354878 0.008852159649396741
0.010094477625948237

f obiettivo: 509.49999999999994, Time: 0.9577353000640869, Status: optimal, Best bound:
509.49999999999994; f obiettivo: 509.600000, Time: 0.020750999450683594, Status: /, Best Bound: /

Istanza 7

100; 5; 0.950000; [2.63, 6.18, 3.46, 4.73, 6.63, 2.32, 4.55, 1.18, 9.38, 6.55, 9.31, 8.27, 2.74, 7.02, 8.45, 2.56,
9.62, 2.89, 6.23, 5.42, 4.96, 6.78, 5.98, 1.86, 1.33, 4.97, 6.56, 6.55, 7.39, 1.71, 8.06, 2.9, 9.07, 7.48, 8.35, 5.3,
3.44, 8.0, 7.06, 1.32, 4.1, 3.51, 8.47, 6.05, 3.47, 2.73, 1.02, 2.74, 1.74, 7.15, 1.71, 8.32, 5.59, 1.67, 6.18, 2.85,
7.49, 7.32, 2.41, 1.65, 1.96, 9.46, 6.72, 2.94, 8.92, 2.67, 1.62, 7.35, 4.26, 3.28, 6.86, 7.47, 8.84, 8.32, 1.55,
9.38, 6.09, 4.04, 7.82, 3.18, 7.16, 9.0, 3.42, 8.7, 5.74, 4.47, 5.75, 8.21, 6.14, 5.19, 9.24, 2.2, 3.77, 7.26, 3.68,
1.31, 9.39, 8.46, 3.1, 2.68]; 0.010486229708904945 0.011280673774580282 0.010243142414872248
0.009897631289265936 0.011235137674480998 0.008416369930788653 0.007740034535629086
0.010999512566815679 0.010368769964792825 0.010457281217196813 0.010914042998691786
0.008783015502399625 0.01087336950724917 0.009356054978196702 0.010998755514940494
0.00969060588356881 0.009377304181233184 0.009512809739077257 0.008985915643465186
0.01128709630482081 0.011268603760320578 0.009416828077838455 0.010405788294668128
0.01077579524701932 0.01118376921913814 0.007840201685813102 0.011426953780073867
0.01199794399837462 0.010152933731697681 0.009560539685592905 0.008911229500732226
0.008418338520340714 0.010240970489525417 0.009104294748792473 0.011737805620290037
0.008530144433201636 0.008964415296946306 0.010066067073476107 0.011951073218396011
0.012792898852942743 0.010537856796919506 0.010986544413878365 0.009690682666256657
0.009516032447001794 0.010686580433224353 0.00998339409867122 0.00854699810865571
0.011503508063157567 0.010706065883634324 0.010218716109273005 0.008750109433558119
0.007847324848300394 0.010112406886583488 0.008819263929335845 0.0114119289891376
0.008930322157929558 0.009353665374049152 0.009680255522097208 0.008967718905195864
0.010281213242306643 0.006570072556659584 0.010038496970342604 0.010307982311359508
0.009406106700896977 0.012676362324882694 0.010421523614561017 0.00792956323746487
0.010219555182510541 0.010450700559303349 0.010018987668219966 0.010217521922175711
0.008342778274813578 0.009215491950110488 0.008706090723274397 0.008281446451379113
0.00921823838898034 0.011465134639368388 0.007660307653455323 0.010078390981550311
0.011655987335866168 0.011419261753664442 0.011370205517373643 0.009238314152200507
0.007794327166122545 0.010098785715363658 0.01315677660486673 0.012285709111996768
0.006177531127663099 0.011134414737229384 0.009567532180428122 0.010080989662345892
0.009958397330784711 0.01222337359118261 0.009337791824799846 0.010097467678585261
0.009911512203719127 0.011108103316195552 0.009137561524380418 0.010111887076939453
0.010728381401665819

f obiettivo: 479.89, Time: 0.8545529842376709, Status: optimal, Best bound: 479.89; f obiettivo:
479.890000, Time: 0.0168304443359375, Status: /, Best Bound: /

Istanza 8

100; 5; 0.950000; [9.12, 5.03, 9.03, 5.46, 4.59, 8.67, 8.87, 5.14, 8.75, 8.49, 1.96, 2.84, 7.2, 1.34, 3.69, 7.38,
5.11, 6.21, 4.26, 3.22, 6.17, 5.13, 1.83, 5.77, 1.0, 2.98, 1.54, 9.78, 6.52, 6.99, 8.77, 6.17, 9.32, 4.77, 2.38,

5.04, 8.12, 7.69, 9.66, 5.9, 5.24, 3.69, 8.25, 4.41, 9.92, 9.22, 8.95, 6.12, 4.09, 8.3, 7.56, 6.67, 5.81, 9.13, 3.95, 9.56, 9.48, 4.99, 1.56, 1.43, 5.67, 1.3, 6.51, 2.53, 8.11, 9.63, 7.9, 2.53, 3.78, 5.2, 7.26, 3.76, 2.34, 5.15, 8.48, 1.03, 5.75, 8.7, 5.19, 8.02, 7.78, 8.25, 2.95, 1.9, 4.6, 8.59, 1.08, 2.15, 8.53, 5.46, 5.38, 2.2, 8.75, 7.4, 3.81, 4.78, 8.49, 2.96, 7.89, 6.04]; 0.010259076293023328 0.01175646608411128 0.00981241605467319 0.00886411255733511 0.01118358128968828 0.01014660096892162 0.009683705989993045 0.012836194448690543 0.009814893219279851 0.00889626068981107 0.010035810479617168 0.01187891540526756 0.009198914318506468 0.009376062477872258 0.010124317396498293 0.010238273548149157 0.008143151781837138 0.009635056163267226 0.00941041884412369 0.009398150198285913 0.009275891074336668 0.012133546195885574 0.010179951539877196 0.011174722969415192 0.012176035826094918 0.009666823299126373 0.009783508358345879 0.010348695392228947 0.011166352257536191 0.010223225744584397 0.009407894969451496 0.00961596366558902 0.010306401426783952 0.012526197142729024 0.00932731284488617 0.009620986629767092 0.007558198368297415 0.011923168326563573 0.010712345218273304 0.010153648481121408 0.010980422185601205 0.010281025560230217 0.010838662280098098 0.00973357047199656 0.010226855136128931 0.00770946503546982 0.009917020444458701 0.010322129430219713 0.010246048452430956 0.013231693768435294 0.010205884621988572 0.009489299155503336 0.010541044589142116 0.011520306152175138 0.010584439496026651 0.011826995938615338 0.009726741953442366 0.009970034973002926 0.009815781574753464 0.012039799515596276 0.008917733752287113 0.008040623048444571 0.00795376159748472 0.01007848912252137 0.008941105666612307 0.00853773962647166 0.008580829497102128 0.01181607209702042 0.011022625732392282 0.010029602193552442 0.010482420691917125 0.010890321687682775 0.009864239614663472 0.0095939372279172 0.009583371522052497 0.008954618590799768 0.011731022748858932 0.00964720454965415 0.012384763632378927 0.0074146918734603025 0.008519760153225168 0.009653103358873096 0.010441222512516474 0.010710434426795307 0.01128470068131577 0.009086964161107753 0.009042467159362293 0.007691484855905 0.009175210622998916 0.006032488195674646 0.009092238229635126 0.010513917609178825 0.00930738757299206 0.009921991949631628 0.01145509022590321 0.010924467804565059 0.00932908828194443 0.008929609355589882 0.008462287778056559 0.008780441916292882

f obiettivo: 525.09, Time: 1.0153741836547852, Status: optimal, Best bound: 525.09; f obiettivo: 533.580000, Time: 0.01683521270751953, Status: /, Best Bound: /

COSTI RANDOM, PESI NOISE, $\Delta = 10$, $n=100$, $q=0.95$

Istanza 9

100; 10; 0.950000; [9.52, 1.62, 3.1, 6.88, 6.82, 7.72, 1.13, 9.05, 4.34, 6.11, 7.2, 8.17, 6.27, 8.52, 3.4, 1.69, 2.91, 3.46, 2.24, 7.52, 9.25, 5.89, 1.46, 7.78, 5.74, 7.04, 9.87, 3.57, 1.85, 4.1, 3.23, 4.59, 1.88, 9.28, 5.97, 4.84, 2.36, 4.26, 8.74, 2.2, 9.82, 1.92, 2.2, 5.52, 2.1, 1.99, 6.65, 6.1, 9.54, 1.07, 6.19, 5.24, 7.79, 6.53, 6.93, 3.85, 8.8, 8.32, 7.79, 9.9, 9.0, 3.69, 8.16, 9.26, 3.23, 5.06, 6.87, 5.77, 4.44, 4.52, 7.71, 4.85, 8.06, 7.53, 1.19, 3.13, 4.81, 6.94, 6.16, 9.37, 6.76, 4.16, 3.14, 5.34, 5.01, 3.72, 7.16, 4.72, 7.08, 9.88, 1.55, 6.94, 2.68, 9.26, 1.9, 4.57, 8.07, 7.06, 2.5, 9.84]; 0.010124691658417223 0.010496791677567325 0.009704076633946996 0.010033548148960807 0.00721491738161463 0.012128224749830054 0.008228979347300526 0.0074193960659531075 0.008307020713670487 0.010123739527740355 0.011210286139901745 0.009940435886628048 0.008943097484802329 0.008497433000213923 0.010838611306123585 0.011556453903665097 0.009457579177344983 0.008735076648155671 0.011808308734663589 0.012378450470947457 0.010334047512451764 0.0084152442387081 0.007418737246471042 0.009559596379523656 0.0086570288187068 0.008345953659093462 0.010501245483212763 0.011338565260369292 0.012658199602933054 0.006282781969576728 0.010005739245899599 0.010184729455056869 0.010983267040353215 0.011223038834444048 0.00947970058688075

0.009334505481421422 0.010742852433230818 0.009272290815339935 0.008562026438945429
0.009571933270400929 0.010838932710482285 0.010800014576507252 0.009009466718264072
0.008584495233428888 0.011127255609055555 0.010558812060078127 0.010850159527158005
0.01176587962506039 0.008643793877555123 0.012518755788812326 0.009768437398117055
0.010690555583946795 0.009741721592312323 0.00890266582097967 0.011223785521314231
0.008911550031871359 0.007577797030085972 0.011576760949007071 0.009222793693979329
0.01067164980918981 0.01033064596933244 0.009815423851937215 0.01200687177560557
0.007617160721748758 0.009304625212631059 0.009921613508236476 0.007851857175060345
0.009150859948793244 0.01122091456241862 0.00898743615089852 0.010793106592707774
0.011095012944758993 0.011637466833775142 0.012654497745649246 0.008460848013874717
0.01033436210560378 0.009732367851594446 0.010382686820804553 0.011007823072315813
0.010084470309953828 0.009945034446829943 0.009668569207395715 0.008626919662783108
0.010175108559723983 0.011193151449210353 0.011251452745172145 0.011300329416508258
0.01050078494442478 0.011291683525878574 0.010758319170658243 0.011437567664249781
0.009140545728395526 0.010232288347848152 0.010324243629185338 0.01020325361006555
0.008937503706469938 0.00910026431551814 0.010664020502547032 0.012152230225625352
0.007702792386136506

f obiettivo: 504.52, Time: 0.8551814556121826, Status: optimal, Best bound: 504.52; f obiettivo:
505.680000, Time: 0.014831781387329102, Status: /, Best Bound: /

Istanza 10

100; 10; 0.950000; [6.78, 6.13, 5.58, 8.01, 9.7, 9.2, 1.38, 8.74, 6.0, 1.16, 6.51, 1.98, 3.21, 5.86, 1.65, 6.54,
2.84, 3.97, 6.46, 2.94, 4.61, 9.09, 8.57, 2.61, 2.78, 3.94, 8.08, 9.24, 1.77, 2.4, 9.88, 4.48, 6.98, 8.33, 4.99,
6.45, 1.45, 7.9, 3.61, 8.88, 3.58, 5.37, 6.05, 2.15, 1.91, 6.82, 5.97, 6.37, 6.47, 2.38, 4.95, 2.9, 5.91, 8.45, 5.46,
7.48, 4.31, 1.36, 7.79, 3.52, 4.9, 1.75, 5.82, 4.28, 2.77, 1.26, 6.29, 9.33, 3.03, 5.21, 4.74, 1.6, 1.3, 5.04, 2.99,
8.0, 7.82, 6.2, 8.27, 4.74, 1.52, 8.77, 2.08, 9.47, 8.11, 1.59, 4.5, 9.34, 3.05, 4.62, 2.9, 3.03, 9.91, 1.52, 8.64,
7.42, 6.25, 7.94, 8.95, 1.75]; 0.0114495327036618 0.0118662194549914 0.007856070507612183
0.008251539750521389 0.009350946451854114 0.010649242169762348 0.010550428456372963
0.0098080388187235 0.008817481611738108 0.011653737446505821 0.012192553878675447
0.009244630229727518 0.010883148126935792 0.0106391977060793 0.008037643326309556
0.009661802140237513 0.014089943086796083 0.009384254283392549 0.009834777931338875
0.008577295740942419 0.009486020974766324 0.011602045064786548 0.008820883272427778
0.008885068223955505 0.007580907640784151 0.009731785463845469 0.009102568563432827
0.009084661892604259 0.009414122094008628 0.00997357789879005 0.011671120539715769
0.008101416277100856 0.006951995288420614 0.010942533423558777 0.010703559687983075
0.009810420563725088 0.009730484897674046 0.007739021863051006 0.010027267499076387
0.010973868844718338 0.009910097261823396 0.00900905130930699 0.011974654829597529
0.010602362600236993 0.0105468329741468 0.0086835102772395 0.009855041849154148
0.009841780098141477 0.009501886481854394 0.010009525868024673 0.012953350227216633
0.008346182446472158 0.0114497242267055 0.008786693496892017 0.010126685992130884
0.011176153508367427 0.010360716104108674 0.010764430796193183 0.007355084599880733
0.00870918775658618 0.008603294838848315 0.00857328627257995 0.009115543244387209
0.011711490457050808 0.009127250217256716 0.008297361576773306 0.01176846788074351
0.010835364966992772 0.010814031257918359 0.01127356881541116 0.011682261108153558
0.010316670608748399 0.0097167484229308 0.010649009834299417 0.009533729867103123
0.009321927143625437 0.010830754575233493 0.010112273397153884 0.009018645221342481
0.009802514611001567 0.012066086958510054 0.008175363151563482 0.00944449497965049
0.009396508423765595 0.011229307259424953 0.010060802248920477 0.011333543611156769

0.01230510826475129 0.012822803571168053 0.00998938504392565 0.010308286095214177
0.007945914153299379 0.00815165999724223 0.00978017091252922 0.012852793785199962
0.009429368620786905 0.009341123246772356 0.010491307716739132 0.01029427733857852
0.010382733802563398

f obiettivo: 473.27, Time: 0.8216991424560547, Status: optimal, Best bound: 473.27; f obiettivo:
473.270000, Time: 0.015197515487670898, Status: /, Best Bound: /

Istanza 11

100; 10; 0.950000; [8.12, 8.48, 3.56, 7.9, 2.72, 9.16, 5.85, 8.36, 4.63, 5.27, 7.17, 8.22, 6.78, 4.88, 8.41, 2.77,
9.23, 4.63, 8.69, 7.96, 3.17, 7.53, 5.21, 9.36, 8.22, 2.85, 9.73, 7.88, 7.63, 2.87, 2.07, 6.73, 1.33, 9.28, 2.42,
8.66, 5.72, 3.09, 7.49, 5.76, 8.61, 6.98, 9.47, 2.59, 7.88, 4.14, 3.74, 3.32, 3.65, 6.64, 9.7, 9.78, 3.97, 2.49,
8.73, 2.55, 2.18, 3.02, 8.71, 2.51, 7.84, 2.93, 6.13, 2.37, 7.91, 7.46, 2.46, 2.15, 7.91, 7.31, 8.62, 4.44, 7.34,
3.53, 1.79, 1.93, 9.12, 8.95, 4.83, 4.1, 8.09, 3.26, 9.46, 2.19, 6.76, 7.93, 1.58, 4.87, 3.57, 9.69, 6.59, 1.68,
6.68, 3.19, 8.35, 2.2, 9.26, 6.16, 5.81, 3.24]; 0.011038746809317223 0.007896076872539067
0.008105266870947852 0.010385268157136824 0.00956306635296893 0.00896462861605123
0.011351724784526611 0.008374754021654393 0.009264945904476952 0.010061135183294193
0.008801436738540492 0.009105609645534517 0.010144305585619438 0.007664287586193339
0.012200613995804457 0.01166919488078892 0.010214303420055911 0.009073422643506432
0.010601403704599726 0.009299174123473735 0.010953845223604378 0.01100141280636876
0.009890431466752845 0.010263892050811674 0.009887859389587686 0.011836340405430525
0.008270557360550792 0.010343419007697087 0.009470600323575152 0.011018789069670834
0.00941320431021895 0.009747652409168781 0.010240049135487837 0.011835280726072085
0.010106502360132578 0.00769121418441686 0.008506940325799944 0.00835452126770013
0.010222991435955595 0.010176083803707865 0.009775805369763182 0.008714648012211402
0.010284264139182347 0.009515672768302945 0.00776099903642047 0.009891801979787139
0.009314518869228013 0.01153002064357555 0.010811376846546577 0.010215110402066813
0.008173860296785173 0.01217010123751893 0.010089971220779806 0.010656273663544859
0.010186798343813796 0.00981142524977884 0.00987021662964262 0.009018947981172124
0.008949649466251527 0.00900288323955851 0.010122734404292635 0.007163172985880959
0.009139499706947192 0.010761147243711569 0.010638060810296434 0.013965792404862115
0.011115404094539292 0.011068297654961295 0.009834291379190042 0.01032533747672287
0.007990260894811493 0.00937036351638826 0.008630865977948836 0.009544578774688199
0.010334303470339729 0.007733742558680702 0.011142274295967975 0.011601070257573924
0.009408768606580218 0.011653015191988794 0.009681017470471742 0.009662901551076058
0.009224178932795438 0.009076823327725678 0.01030524559669141 0.013936217846918224
0.01248084962334168 0.009810310824202945 0.011033318821949968 0.009496394321047909
0.010767783268701167 0.009764369305784603 0.009763385599402265 0.010395109029677737
0.01317331305073614 0.012463771186569883 0.010460733407256805 0.009633245691012763
0.009866053379005152 0.008706697703588388

f obiettivo: 525.25, Time: 0.8696396350860596, Status: optimal, Best bound: 525.21; f obiettivo:
525.480000, Time: 0.016399860382080078, Status: /, Best Bound: /

Istanza 12

100; 10; 0.950000; [5.85, 6.82, 4.81, 6.7, 9.7, 2.37, 7.58, 4.8, 4.69, 2.55, 6.88, 5.88, 4.88, 7.58, 8.57, 4.13,
4.86, 3.22, 1.8, 4.26, 8.64, 7.89, 5.61, 1.92, 5.22, 5.4, 9.01, 2.3, 4.39, 2.46, 3.5, 3.33, 9.05, 7.24, 9.87, 8.54,
7.58, 6.1, 6.91, 7.09, 2.42, 3.54, 4.21, 8.52, 5.21, 3.59, 2.21, 9.73, 9.42, 5.29, 4.81, 3.4, 1.75, 5.64, 8.28, 2.19,
9.38, 4.3, 4.33, 6.15, 1.31, 8.1, 3.7, 4.2, 7.11, 9.92, 1.01, 9.91, 5.13, 2.05, 8.93, 8.45, 9.8, 4.76, 7.9, 5.7, 5.43,
3.46, 1.55, 5.16, 9.3, 6.41, 7.28, 7.34, 8.8, 7.81, 7.32, 3.78, 3.71, 8.48, 8.42, 4.14, 4.4, 9.57, 2.86, 8.49, 9.73,

9.98, 1.43, 8.22]; 0.009967744207908429 0.009591364010236365 0.00786066234282697
0.010461405070555515 0.009566752724177365 0.00913906790165214 0.010135046210524686
0.011943165556724908 0.009635149360913971 0.009892184619311385 0.008832531705907712
0.008679500461773609 0.00886239467862154 0.009724136044729052 0.012052441053419167
0.009869875580289088 0.011066618422126915 0.010658882685205108 0.011675613312452987
0.01073284375984689 0.009948374479299105 0.009886179505600182 0.00943060766276642
0.00968575025298552 0.010753363297995193 0.0104759489230346 0.010603564649763262
0.01052890684484115 0.006873505467296072 0.010857380602591143 0.009901679506227985
0.008549413208026524 0.011355578478628179 0.010278459033734418 0.010568109930850994
0.00853235465975713 0.010487499889879051 0.010866121933011072 0.010689835941990005
0.011592319578313533 0.009300927371472187 0.010279059435370733 0.010335666231073853
0.011548476620369098 0.008663899407409597 0.010607699221662957 0.010475076120304318
0.009545012048424664 0.011298274321730145 0.011315449373107318 0.009156611979366522
0.007079704752889224 0.007162340799797428 0.010151027157357967 0.01077795434763208
0.008235398203957115 0.010765560171261568 0.010811597692508487 0.01091213180394722
0.012865435992178905 0.011061579323115696 0.009644766582254176 0.00892775114789073
0.010022802943672918 0.0097888802259746 0.009524384891011178 0.009141995688673
0.009047137991612454 0.010763940850557902 0.009513806272236854 0.008939718263549083
0.011208947087680101 0.009480918836077948 0.007811241524227789 0.00884210653264646
0.010087872646307108 0.012208015911791763 0.009083180672688625 0.009306419291047096
0.01023789019915082 0.010984466883324755 0.009559508163523075 0.010092916861732146
0.01249150740722493 0.010089317482046768 0.008769522542052438 0.011126300463530898
0.008043949062407938 0.012828044402897393 0.012304578326395959 0.010280055993931928
0.009691979531091646 0.008848191936412392 0.010921456444434244 0.009730615091345303
0.009945345629508382 0.00868169937958993 0.009310712243362801 0.009210839397475985
0.008945999267928113

f obiettivo: 535.92, Time: 0.8615248203277588, Status: optimal, Best bound: 535.92; f obiettivo:
536.060000, Time: 0.017711400985717773, Status: /, Best Bound: /

COSTI RANDOM, PESI NOISE, $\Delta = 3$, $n=200$, $q=0.95$

Istanza 13

200; 3; 0.950000; [5.91, 7.94, 4.95, 3.79, 3.12, 1.32, 4.22, 6.6, 5.11, 5.85, 6.57, 3.61, 6.98, 2.19, 8.98, 1.61,
7.91, 3.93, 2.67, 4.15, 7.46, 8.14, 7.27, 1.55, 2.35, 9.01, 7.28, 3.6, 8.49, 7.31, 2.15, 2.97, 1.85, 7.53, 8.13,
5.47, 8.78, 7.34, 4.55, 3.19, 6.95, 8.04, 8.17, 2.45, 2.19, 1.58, 5.07, 8.63, 6.85, 8.19, 3.49, 7.93, 9.13, 7.78,
8.45, 2.91, 7.84, 3.86, 8.95, 5.11, 9.72, 6.54, 4.45, 9.37, 7.3, 3.3, 7.95, 7.36, 9.44, 2.8, 6.59, 3.14, 4.82, 4.58,
6.06, 3.29, 9.94, 6.4, 7.42, 1.03, 8.13, 6.1, 2.08, 9.19, 8.98, 2.84, 2.65, 3.1, 7.57, 2.5, 3.26, 6.49, 4.68, 2.83,
5.71, 9.54, 9.33, 9.63, 5.91, 8.54, 2.15, 1.42, 2.78, 1.95, 2.54, 3.06, 5.16, 9.85, 8.43, 7.3, 8.82, 4.87, 9.82,
6.26, 1.79, 4.15, 4.78, 7.6, 1.71, 2.23, 4.37, 7.74, 7.29, 5.21, 8.85, 4.2, 9.5, 1.43, 8.56, 2.95, 4.19, 6.81, 6.56,
7.72, 5.06, 7.91, 1.39, 5.86, 9.16, 1.24, 8.99, 6.34, 6.46, 7.46, 2.31, 9.93, 5.29, 9.51, 2.88, 4.51, 9.78, 3.73,
8.92, 2.42, 5.31, 2.8, 5.59, 3.7, 6.32, 5.84, 9.13, 7.94, 3.59, 8.92, 6.79, 7.29, 6.69, 7.28, 4.72, 6.33, 1.85, 7.23,
1.42, 2.02, 1.85, 7.36, 9.9, 7.68, 3.95, 7.98, 1.28, 3.84, 7.61, 9.48, 9.68, 4.84, 5.25, 8.88, 8.06, 8.87, 6.02,
6.67, 9.01, 7.31, 3.61, 6.99, 5.77, 7.82, 8.66, 4.23]; 0.005505649176960478 0.004220627577019055
0.005248134448348878 0.005723550644046271 0.004977520775781045 0.005083061471517889
0.004689147368544334 0.004263075360901047 0.0053901764610236914 0.004541831766817932
0.004329921432125384 0.005643316657002698 0.005231825452580394 0.0054795008879278935
0.004496225819761982 0.005421752863324188 0.0055711132472489 0.005098544146764396
0.005545674098789685 0.005305977007587648 0.0040403527202093545 0.005900203104536042
0.005314725329228082 0.005627279537180415 0.004574336769824662 0.005031860296109749

0.006797894024371531 0.0052827318532211705 0.005222272354163121 0.003694078172472459
0.0049724214042763636 0.004583647311607871 0.0048977338911581954 0.005767542388937034
0.0045908455944150845 0.005107894470382894 0.004784230532400128 0.005072490637966188
0.0047971827829515045 0.004380450919739651 0.006131907742351384 0.006167595498478833
0.003990303842819478 0.004559189361561331 0.00558453813314123 0.005726107306949676
0.005082458010221626 0.004505740669207147 0.005652027593700612 0.004793782319311105
0.005501025639868542 0.005052973077423435 0.005172957520139246 0.005056449177021149
0.005044015991810535 0.0039590912972171126 0.004735655303944211 0.004657956547150711
0.004727026706851215 0.004208649066350743 0.004531285241303336 0.004526025050226389
0.004938057023086091 0.005283882653191286 0.004784174616763982 0.006151135209970225
0.00494856533837742 0.005652875667141488 0.004329817474026886 0.004946775733635385
0.005947605098508407 0.004243866710172531 0.005535750484241371 0.004742846606482613
0.0045396259216943695 0.004038039357649733 0.005637949610698773 0.0056459376430621575
0.005313996179932577 0.004991118090357904 0.0057449973147741355 0.005118679032359412
0.004916300925883337 0.0050856191418252325 0.006005870368926696 0.005216117599273283
0.003985211904246023 0.004683994764595911 0.004540343353129665 0.004817426893214443
0.004678011583566404 0.0046576732518559365 0.004120444191572583 0.00554350642661098
0.0056480667097287916 0.004841912450162649 0.006382264710127898 0.0046109409488052176
0.004918840078170565 0.00529362925053694 0.004952193033123138 0.0052843311290059715
0.005388498276958283 0.004802623890773726 0.0047110903939764715 0.0041320223647727215
0.004628454325870955 0.005350302877310041 0.004211536221012649 0.00543895073586062
0.004851238204313001 0.005554768089782082 0.005487976689887887 0.003547275385562917
0.004632807891390013 0.004676400364809076 0.005009487742431777 0.004905431378324098
0.005175960361268397 0.004765493376229898 0.004596530748711492 0.0044663774671176775
0.005049508522529829 0.00523495582190905 0.005238267691577263 0.004429850517325265
0.005451742442899963 0.004722979414938929 0.004141110100459353 0.005404066817662659
0.004719377442919732 0.005104314443740698 0.005666018124759412 0.0037842947290719826
0.005151488743997777 0.0051068909329242415 0.004846179407931276 0.0054567734758947046
0.004250916758971417 0.005323595727657731 0.005086333872440003 0.0050358436169050365
0.004831564061584935 0.005290694242434948 0.004144405688208442 0.0044836019910079235
0.005086190976233313 0.00666832947447043 0.006366459371654215 0.005248140323337225
0.00479126060459248 0.0053161886494038696 0.005002328398921173 0.004989283007128935
0.004132717882682061 0.0038089846013795435 0.004911169074659075 0.005805560896817523
0.004816618205536156 0.004281138634945956 0.005200717798779485 0.005201992104887878
0.006077528314326471 0.005227064667474258 0.005826602461052832 0.005417120347830227
0.0053761730909656245 0.005104371254656116 0.005607152420430968 0.004902005688777948
0.003976185587621532 0.0060327670807395605 0.004547338333709857 0.005946878328400194
0.005111151766502959 0.0035405813102869824 0.004956673440607375 0.005246125266770971
0.004323985505009257 0.005007812278218389 0.004600179169246315 0.0048275686818109315
0.004168109331269413 0.004138324987665099 0.003977978388676621 0.005107217875519044
0.005811009773264244 0.004428953134908511 0.00475641878985718 0.0048391692530057855
0.0054839593080261645 0.004975023482425087 0.00472345958640807 0.005066732617530867
0.005481229444298613 0.004573012517579913 0.00554704663106468 0.00628092605673538
0.004719713280229505 0.004059412828788951

f obiettivo: 1053.24, Time: 6.535243034362793, Status: optimal, Best bound: 1053.2; f obiettivo:
1059.610000, Time: 0.1945514678955078, Status: /, Best Bound: /

200; 3; 0.950000; [2.09, 8.17, 7.98, 9.58, 9.63, 4.69, 3.92, 8.84, 4.25, 5.8, 6.65, 5.93, 1.63, 3.21, 1.14, 3.88, 4.6, 1.37, 2.25, 1.11, 4.18, 2.53, 8.67, 3.76, 1.86, 9.48, 2.99, 2.98, 7.86, 6.26, 1.39, 3.01, 6.88, 4.98, 9.67, 5.81, 8.68, 6.19, 6.29, 8.24, 4.6, 4.04, 7.65, 7.55, 2.43, 5.44, 9.38, 7.9, 4.84, 7.13, 3.65, 6.63, 5.75, 9.53, 6.17, 2.46, 2.86, 1.28, 2.45, 5.72, 6.91, 7.21, 2.12, 6.72, 5.82, 8.06, 9.54, 3.21, 1.89, 7.44, 7.45, 7.94, 2.06, 7.3, 6.44, 7.65, 8.0, 7.27, 2.47, 1.61, 2.87, 8.33, 2.95, 3.35, 6.8, 8.43, 3.14, 8.38, 4.07, 1.18, 9.98, 2.11, 8.54, 3.4, 9.33, 5.99, 5.37, 4.67, 9.76, 5.31, 9.57, 7.08, 8.33, 9.96, 1.22, 4.51, 1.34, 2.73, 5.64, 8.56, 1.6, 9.36, 4.93, 1.79, 9.3, 9.25, 5.75, 2.46, 9.29, 5.11, 3.07, 8.54, 5.22, 3.3, 6.67, 1.6, 1.22, 9.38, 2.65, 8.79, 8.73, 1.95, 4.14, 3.33, 9.4, 6.67, 3.45, 4.0, 5.66, 9.06, 9.39, 5.88, 9.96, 2.92, 1.27, 4.79, 1.98, 2.52, 5.55, 4.48, 8.54, 4.33, 7.85, 1.22, 1.84, 7.26, 8.65, 5.55, 4.97, 4.79, 8.66, 4.37, 5.08, 8.63, 7.66, 9.11, 1.93, 8.37, 4.08, 3.5, 4.28, 2.17, 3.74, 9.98, 5.99, 2.41, 9.31, 2.45, 2.95, 7.11, 7.81, 4.91, 8.97, 5.76, 5.74, 8.77, 8.31, 3.13, 4.97, 6.05, 2.3, 5.17, 8.75, 8.1, 8.5, 5.73, 7.2, 2.52, 5.13, 2.04]; 0.0051717234881067725 0.0060270210460190085 0.005948367627689619 0.00664774210897077 0.0049458485330552285 0.00617673569129495 0.004827709337077716 0.0040249251726032645 0.0055845182053577275 0.005911748552128208 0.004824475295522502 0.005405937721687036 0.004602991255723526 0.005200272912199449 0.004935866626216185 0.00570566393840929 0.005549463593739039 0.005867315974570514 0.0040139103624927215 0.005250851951333639 0.004512248866123567 0.005216328886950497 0.005671597975085733 0.00558365017271651 0.005314024360904644 0.005499454577148926 0.0049127310077074025 0.005300974782259382 0.005827118413791854 0.005617818550763834 0.005444791344706437 0.004790570161202464 0.005231537058887919 0.004083514716864719 0.0044485609838280996 0.0046883548924069865 0.005021516724677133 0.004698564039275681 0.004859359180944355 0.0060840348417614135 0.005614674599633299 0.004871069527448042 0.004084276627881599 0.004551857560235697 0.004753511945648509 0.004346297019323402 0.004555112898713445 0.005112077227598684 0.005103061985957578 0.005897519400571969 0.005340748073069039 0.004471356699688223 0.005266602443570875 0.005137746227082782 0.005345498200144714 0.004751230320277381 0.005138800294339363 0.004858066682361768 0.003830189848840622 0.004570570244010799 0.005035007672030494 0.005031491758419292 0.005909875539436544 0.003791610691832572 0.004929987240650091 0.005643362101708396 0.005985479219508081 0.004776628562565244 0.0038487137426269705 0.004996014477205298 0.005129903259257199 0.006558878041774279 0.004057254486401956 0.00410648134565069 0.003617592578066065 0.004941710117251491 0.004495328764798972 0.006506129883517376 0.0056280163809821985 0.005227237389823022 0.004285099608608839 0.0037562717730951624 0.005187642692463459 0.005009754944307851 0.005537063215227184 0.003130342614525707 0.00491871847098092 0.004777493279244865 0.004230167255631221 0.004829253640709448 0.005308375505200444 0.004816639561092916 0.004961627531129763 0.004704298026319392 0.004161743130814208 0.004852676891660511 0.004726876794088961 0.005013407542221228 0.00502688496555813 0.005953655998486627 0.00491611622132378 0.0035239156888072316 0.005503049675153625 0.004826636097341947 0.0046833898080255515 0.005236846718106012 0.003928798801713057 0.005619394912419669 0.004547481529174284 0.004673501591880093 0.004009195726387775 0.005473810508412834 0.0063608412240456725 0.0045164054534154105 0.005569221907758252 0.004984817682004761 0.0047570023653637555 0.005880809498794141 0.004804141227471387 0.0058857778059703 0.0028210345395242543 0.004525190894146915 0.003968123555058802 0.005122682534160762 0.004815175780314174 0.006271699850889361 0.005529371624119678 0.0043851221577427355 0.005918560464822169 0.005818247065570771 0.005321651735736382 0.00619114395239756 0.004259660032776887 0.005416245119873281 0.004614736736333451 0.005171744854995398 0.004310227829390768 0.0047279343479315 0.004156211574316704 0.005933650577919484 0.004695813971718376 0.004737596129014164 0.005076275538398765 0.0032906794775532586 0.004320316602854846 0.0045300249887954835 0.0037505388899420873 0.004896377757658351 0.003770691360195712 0.005277687737869775 0.004832446118044444 0.005834175383203665 0.004519817499510303 0.0049751893835017266

0.005763064496557687 0.005243870063369331 0.005521887282534609 0.004573305696241185
0.005784107754787841 0.004367977897195418 0.004633722143358096 0.005435220738206237
0.0061646328388391515 0.005265134635524044 0.00495849418731302 0.004901893719819689
0.005026709234888229 0.004783335280064275 0.004358141765370273 0.005526169831978684
0.004800722125266779 0.005074898677790036 0.0051151862855698515 0.00603415733208758
0.0042751908658371935 0.004590758676398349 0.005607725784005068 0.006081185144482767
0.004713990426867921 0.005481862550401256 0.004077720687537544 0.004723109421711508
0.004947452778546675 0.004226689025667611 0.004594899181563134 0.004436884745345357
0.00495003141317252 0.005335715370716222 0.0056473891742586406 0.005437787226280367
0.005163278268900949 0.005617881130253088 0.005384831998712951 0.004803327002440145
0.006032241839749581 0.004763672722363647 0.004693824011411848 0.004064588606026864
0.005737388821930295 0.005355935175329151

f obiettivo: 1000.57, Time: 6.439051151275635, Status: optimal, Best bound: 1000.47; f obiettivo:
1007.760000, Time: 0.17456650733947754, Status: /, Best Bound: /

Istanza 15

200; 3; 0.950000; [5.13, 9.51, 6.36, 5.57, 5.93, 1.08, 2.94, 4.57, 2.93, 7.67, 1.42, 3.08, 6.3, 1.01, 7.6, 1.12,
6.92, 6.93, 2.78, 9.25, 6.98, 6.44, 9.43, 6.06, 1.88, 5.03, 4.72, 6.65, 8.43, 1.29, 2.77, 7.01, 5.62, 5.33, 2.3,
8.98, 6.44, 3.94, 5.67, 6.67, 4.75, 5.04, 2.98, 2.11, 7.02, 1.41, 6.77, 2.6, 1.28, 8.33, 2.87, 9.14, 2.02, 7.28,
2.96, 2.81, 1.35, 2.69, 6.12, 9.22, 8.49, 7.4, 2.66, 7.05, 8.28, 1.96, 9.72, 5.56, 8.38, 4.65, 5.96, 7.75, 2.28, 6.1,
1.84, 4.26, 5.06, 8.45, 1.45, 8.49, 5.27, 4.67, 4.5, 1.06, 6.08, 4.68, 2.72, 3.93, 6.6, 5.07, 6.88, 8.74, 4.35, 5.11,
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Istanza 16

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Istanza 17

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Istanza 18

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997.01999999999998; f obiettivo: 1002.220000, Time: 0.1256425380706787, Status: /, Best Bound: /

Istanza 19

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Istanza 20

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0.004966355197895171 0.005203261987626913 0.004189583735966589 0.0050237952266434845
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0.0043403984590183005 0.005556004201286794 0.004828318487373901 0.005430980751608569
0.005337375261687001 0.004718616426378892 0.005428532100172506 0.005412338856524172
0.0050716440800541805 0.004610198193264123 0.005318617299782714 0.004970017610497371
0.005329054258512777 0.004453866610045441 0.004672170423577633 0.004875232161497039
0.004279237699062253 0.0051443855208472035 0.005007307057801276 0.005682433087224535
0.005060964805703991 0.0048702456464504084 0.004731937228830799 0.004906212730838503
0.004274449144074078 0.0033029460664320766

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obiettivo: 1037.190000, Time: 0.14535164833068848, Status: /, Best Bound: /

COSTI RANDOM, PESI NOISE, $\Delta = 10$, $n=200$, $q=0.95$

Istanza 21

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0.005587424710997378 0.004817502447475252 0.005668567106442744 0.00578038517959881
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0.005153724735855269 0.006369428709607412 0.0056071353930012054 0.0055437215777460365
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0.0052887332524014135 0.00545574012188785 0.005484930895839597 0.004406613754140381
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0.005487136161886486 0.004389692463480574 0.004989589904847718 0.00368959537718906
0.0053800487152023966 0.005907607842149574 0.004278080855847213 0.005196582022056774
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Istanza 22

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4.03, 1.16, 6.06, 9.74, 8.35, 8.06, 2.27, 3.62, 3.79, 6.52, 2.38, 4.03, 4.13, 2.91, 3.45, 5.16, 5.56, 8.48, 8.19,
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0.005960271721858638 0.004796996896910529 0.0041794604388659465 0.0036413920214604925
0.005646411469087627 0.003157594341915365 0.004685275967723851 0.005850589426549794
0.005493198803066313 0.005179860521093878 0.0046962856332820775 0.004908818684809286
0.004713840743808572 0.007060562381254156 0.005182377036696041 0.004548556927194872
0.004810868190505218 0.00500527077927298 0.004753783998295512 0.003463949551950171
0.004852603004456575 0.005135521269478999 0.005134496575344989 0.006085604611358651
0.0048761561399349555 0.004802793256285553 0.0045489499289852586 0.005059394456739023
0.006866667205479934 0.0058690428685280694 0.005586442335422051 0.005587782055322129
0.004562054535367744 0.004696699613434993 0.0036747022307429393 0.005200149158473076

0.004295357162952823 0.005061009424116182 0.004633678847034108 0.005354638158044465
0.004280191579727929 0.005164287147314594 0.003617222158160899

f obiettivo: 920.8400000000001, Time: 6.9186484813690186, Status: optimal, Best bound:
920.8400000000001; f obiettivo: 928.060000, Time: 0.1098487377166748, Status: /, Best Bound: /

Istanza 23

200; 10; 0.950000; [1.22, 2.22, 7.8, 9.02, 7.97, 4.5, 3.1, 4.34, 1.97, 1.21, 7.24, 3.51, 2.74, 9.08, 2.49, 8.41,
3.72, 5.4, 2.44, 2.94, 9.12, 8.78, 9.58, 6.89, 7.27, 2.87, 4.16, 1.35, 4.15, 3.07, 5.86, 1.03, 6.85, 4.25, 7.81,
4.72, 4.91, 9.45, 2.36, 2.29, 1.66, 8.52, 1.61, 8.72, 6.24, 3.46, 9.17, 8.9, 9.14, 2.52, 5.2, 1.41, 9.83, 6.55, 2.34,
4.31, 6.93, 6.47, 6.99, 4.61, 4.16, 4.92, 6.46, 1.8, 8.23, 5.22, 9.42, 3.82, 9.05, 7.23, 9.03, 8.96, 1.59, 6.16,
9.43, 6.08, 5.56, 1.5, 3.72, 2.41, 1.23, 1.5, 3.41, 8.66, 1.69, 7.58, 4.29, 1.43, 5.68, 7.17, 8.37, 1.02, 4.41, 6.16,
4.52, 3.23, 1.59, 7.93, 7.6, 3.63, 3.53, 2.89, 8.06, 6.63, 9.42, 4.26, 2.9, 4.35, 4.97, 5.69, 2.4, 9.11, 4.24, 8.34,
2.47, 7.44, 2.58, 3.85, 1.42, 7.72, 7.84, 4.08, 6.46, 2.82, 3.49, 6.76, 5.99, 4.53, 4.22, 8.67, 1.45, 7.6, 6.56,
4.57, 6.16, 5.47, 5.96, 5.14, 7.68, 9.17, 5.97, 6.38, 1.77, 4.77, 6.49, 2.33, 7.81, 7.77, 6.9, 7.67, 9.27, 1.08,
9.37, 6.77, 1.54, 1.8, 8.85, 4.92, 2.87, 9.41, 1.97, 8.76, 2.7, 3.29, 7.2, 9.53, 5.93, 3.76, 2.11, 6.43, 1.39, 3.86,
7.3, 6.49, 7.42, 8.09, 5.17, 3.48, 2.5, 4.43, 5.5, 3.94, 2.82, 7.42, 3.13, 2.85, 6.07, 8.46, 2.18, 3.95, 5.71, 4.63,
7.16, 9.48, 8.15, 1.8, 7.18, 8.37, 5.66, 9.32]; 0.004174748323538755 0.004649862690612603
0.005558656580022944 0.005901829409330228 0.005503734724984524 0.005211481455590092
0.00459988500483147 0.00435678192052487 0.004773657088537488 0.005169148238179089
0.004711414368634834 0.005758564065345658 0.004805583547199447 0.005573782964993504
0.005187247015107193 0.00538720555479361 0.003375146506811541 0.0051656683843032
0.004429668259178333 0.006065788816254428 0.00532456176630699 0.006760552534534878
0.0039076889606453466 0.004185916030101014 0.005365309134106548 0.005108792978109079
0.0046499514919227 0.004521097225451513 0.005395967095146522 0.004495420456891926
0.005103636992523241 0.005371921614701694 0.004777235092912863 0.006557998140719053
0.005242751672046066 0.004238845538813383 0.005516433512200102 0.00581641076380587
0.004350180190267989 0.004458954230135872 0.00468234018110747 0.005444937987150951
0.004415172161189089 0.0055647513719591655 0.003494679381683077 0.005414522365839063
0.004910376385158699 0.004554540777442153 0.005226628007532752 0.00447451659284506
0.00475232957369723 0.004750999574927033 0.0055395696636489355 0.005040088598394533
0.004599911961557166 0.005082228199644102 0.00466560014415417 0.004444969289730568
0.0059092184101886104 0.004168821631402987 0.005126929761088103 0.00466044441523821
0.004587162375116957 0.005436165616010767 0.005040672638237683 0.004786375579992535
0.004341927626107707 0.005771771675035261 0.004933449368747133 0.004924512813489579
0.005215538455252152 0.005258899895728281 0.0058737434484240165 0.005191451222733891
0.004671631635368107 0.003663419945773529 0.004532354557835873 0.00435070545792176
0.005268656729817664 0.004982715697642414 0.005257879640812693 0.005137303796595925
0.005357658160754945 0.006382553785547261 0.004660574136863335 0.0053879884678969744
0.00546183307215112 0.005763579107625437 0.004483028415685769 0.0045339561584720614
0.004379180180170348 0.004662511854007363 0.00533965976074156 0.004474346027818891
0.005001283984994356 0.004780954815381766 0.005198490763752869 0.00509544830737535
0.004653881640006456 0.0052311859588591945 0.0042674731830752875 0.005786071909455824
0.005681204605473061 0.003805110513736542 0.004899723284831988 0.004369349365405486
0.004590374445927612 0.004355401546888884 0.004567143353792036 0.0052988670698740185
0.0037105173413266484 0.004325536244062545 0.004666305682031952 0.004809422549161198
0.0053453803125091725 0.006013213499885067 0.004313761686321415 0.0062167217937377055
0.006011740507425171 0.005571979260559582 0.0046799974956132535 0.005322069249723498
0.00541429400132857 0.005368658327740168 0.004355181964489418 0.0038076163706230923

0.006510231083903451 0.0057655651940580485 0.005127527382286537 0.0052076694692936255
0.005190502621465306 0.0054117930306060375 0.005755488818494518 0.0042486734738473786
0.004561427838906846 0.005436265265933393 0.00546108871626846 0.004645544696024246
0.005753456087477989 0.00511431262751475 0.004221663452453168 0.005207391147769343
0.005152179751055555 0.00410666999403357 0.003831305170368197 0.004844019835777565
0.005619704269629785 0.004877148284802879 0.004387203818106104 0.004553982924006655
0.005393204219175451 0.005752952694418593 0.005846013174159293 0.005531397507060014
0.004079397086179674 0.006265921520938776 0.0050988562069505215 0.004846999358222205
0.004906465897196184 0.005198963827768547 0.004660864831443018 0.004078293073398863
0.004703985553520923 0.00566404136083207 0.005274978104184085 0.004615714740579681
0.004317429012925748 0.0054314748801314655 0.004643480428140598 0.004629095513896968
0.0047840269882894184 0.004543833988060825 0.005555062819583876 0.006054044786134244
0.0047337958871499445 0.005024353928017888 0.00555556885370388 0.0059158594815037985
0.005870661187625077 0.0063674571132665905 0.004622556623477619 0.004880843743908674
0.004172783349304264 0.004558433096382208 0.0036028425781725773 0.004924361979379036
0.005316486293132916 0.004294828021918073 0.005174882330986839 0.005237202482908965
0.0057349548049144775 0.00579648076822517 0.005425837209125239 0.0064316952677893864
0.0059657823630078445 0.005263653439249924 0.004017056323814472 0.004681436188450378
0.003463833576230195 0.0040384154656363

f obiettivo: 962.27, Time: 7.165014982223511, Status: optimal, Best bound: 962.19; f obiettivo:
964.440000, Time: 0.11525535583496094, Status: /, Best Bound: /

Istanza 24

200; 10; 0.950000; [9.57, 2.95, 3.55, 6.97, 8.71, 3.88, 6.62, 4.39, 7.85, 6.82, 3.68, 1.5, 9.7, 1.7, 3.37, 6.21,
9.18, 6.7, 5.47, 5.14, 2.92, 8.44, 5.01, 1.75, 2.46, 4.18, 8.11, 4.02, 9.21, 7.68, 2.18, 6.27, 5.19, 9.51, 5.28,
4.18, 8.02, 4.42, 9.25, 9.8, 1.9, 8.36, 7.51, 1.52, 3.35, 7.2, 5.25, 9.56, 7.82, 8.22, 2.98, 1.06, 6.37, 2.88, 2.73,
1.57, 6.61, 9.53, 4.48, 6.72, 1.97, 4.2, 1.35, 5.82, 2.26, 1.26, 9.48, 7.41, 5.65, 9.2, 5.11, 1.31, 3.18, 1.98, 1.66,
8.22, 5.52, 5.45, 7.88, 1.78, 8.5, 1.77, 6.24, 8.33, 7.12, 7.64, 9.48, 1.92, 4.51, 3.37, 9.77, 3.84, 7.62, 7.76,
2.55, 5.0, 1.45, 2.69, 1.88, 5.64, 5.29, 8.48, 3.62, 1.67, 7.84, 5.72, 2.66, 9.55, 3.16, 8.19, 4.1, 8.81, 9.67, 7.67,
6.35, 9.98, 3.52, 5.98, 8.67, 5.63, 3.56, 4.53, 5.73, 9.86, 6.74, 1.98, 9.05, 1.7, 8.55, 2.39, 5.97, 5.65, 5.82, 3.1,
7.06, 5.18, 8.42, 1.81, 7.13, 5.1, 7.04, 1.26, 9.96, 8.44, 5.38, 2.57, 9.27, 4.07, 4.27, 5.96, 8.76, 1.83, 4.56,
5.14, 1.77, 9.62, 9.04, 8.64, 6.78, 9.99, 2.96, 3.07, 5.79, 5.97, 6.67, 6.18, 2.97, 3.43, 8.02, 2.03, 5.97, 3.08,
7.05, 5.86, 1.06, 1.02, 5.72, 4.18, 1.77, 1.3, 8.1, 7.71, 2.17, 8.94, 8.7, 3.29, 9.27, 4.92, 3.53, 7.68, 8.29, 1.35,
9.55, 1.3, 7.79, 1.5, 2.27, 9.82, 4.31, 8.86]; 0.00475192905839503 0.004414710550413292
0.005153232899841492 0.005308114254554436 0.00483996883366512 0.0052725512079555325
0.004521750395015536 0.0057832546463459835 0.003429439524008327 0.005786637559481342
0.004955064642901775 0.004495763973038446 0.004318010588331199 0.005638481092704541
0.004500606432924524 0.004332796365078811 0.00491397066088668 0.005484468389226984
0.005259007460163096 0.005399332458950009 0.004905270941767007 0.0054312337854864855
0.005653340801998247 0.006152702253783787 0.005145919441065426 0.005928340256470286
0.005505004733752922 0.005016696988667753 0.00497750619910172 0.0040014535075658135
0.004777265578445306 0.005037108384747803 0.004412494808360462 0.005332284689772256
0.004774154916693403 0.005127759330357386 0.004167002532092908 0.005404768624809914
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0.0036181718791058245 0.004662604652420214 0.00538414233984023 0.004918802785259553
0.004866712211988811 0.005592932000926201 0.00492994147288615 0.00469679361893666
0.005416667966798447 0.004897022367419409 0.00469830966086328 0.004047944618960942
0.0051110183018243 0.00593418287743902 0.004294139396559144 0.005998181678264371

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0.004533389219267517 0.004164912734253092 0.005421399612718123 0.006402029072805579
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0.004910070144855273 0.004487563852156705 0.005686858078520376 0.004390453726570321
0.006111715114380494 0.004924736069670169 0.0038610756035891178 0.0052152799486895945
0.004215415957268814 0.006735273421761714 0.005920813448800896 0.005511676701973347
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0.005715561386257383 0.005222620972126351 0.004739512815030908 0.00526042719229493
0.005275182692890179 0.004716272493122654 0.005278402093777971 0.004699244228142318
0.004660808860113972 0.005210630413752409 0.004730112188206674 0.005249956189704697
0.005127496332216972 0.0054795198095974 0.004920255744471704 0.0049618079501569925
0.005292352167794502 0.005978441225489781 0.00539846042534664 0.004614513262485806
0.005847920627027288 0.005220552501475891 0.004324320971114489 0.004371475216189073
0.004762306552582804 0.004809845358137437 0.005267576331704032 0.005550999519217213
0.0037960533960823793 0.005250021941042279 0.004882879195861584 0.004741410618130555
0.0046219362848230975 0.005222103112383338 0.0041643711813790715 0.005442778132832695
0.005951809944892306 0.0044815564330250544 0.004433845088695844 0.00404093201929344
0.005119625711398929 0.004982738662666827 0.004535287914040338 0.005038892858939173
0.006193738588095547 0.0057920058960059554 0.004696284710478348 0.004657994420777784
0.006294860666130128 0.005497857522978395 0.005517578765400566 0.0052250607681035895
0.004650160499481677 0.005096548067730805 0.005866432956878232 0.004865306179602103
0.004756543700024023 0.005377840390286946 0.005028867328310166 0.004292475405701515
0.005285470928779632 0.006315073957216199 0.005184232745777799 0.0047032372375719325
0.005044598359374462 0.005882036802213042 0.004652630551439003 0.005334058780685615
0.004052649721477265 0.005653864254528668 0.005800424080221636 0.006058517330902871
0.005059460271441278 0.004637314243310075 0.004156662221958691 0.004761626868004799
0.00479272319893859 0.004171046450412594 0.003804451308730678 0.004304646960990376
0.005128263065856827 0.004730038102542741 0.003774610054067575 0.005185925876347627
0.00511551175302649 0.004717637094970383

f obiettivo: 990.46, Time: 6.9691901206970215, Status: optimal, Best bound: 990.45999999999997; f
obiettivo: 992.430000, Time: 0.1082158088684082, Status: /, Best Bound: /

COSTI RANDOM, PESI NOISE, $\Delta = 3$, $n=400$, $q=0.95$

Istanza 25

400; 3; 0.950000; [9.91, 7.27, 4.82, 1.31, 6.93, 1.44, 5.32, 6.73, 2.64, 4.97, 6.19, 7.53, 7.06, 1.58, 1.32, 6.46,
6.51, 7.41, 7.29, 9.68, 5.24, 8.51, 9.17, 4.19, 1.9, 3.9, 4.27, 9.57, 8.71, 8.73, 4.55, 6.99, 7.28, 6.47, 1.74, 6.94,
4.97, 5.44, 5.94, 8.96, 3.86, 5.96, 4.74, 5.24, 6.05, 1.27, 7.23, 2.62, 1.31, 7.19, 5.08, 2.82, 3.94, 8.31, 7.13,
2.24, 7.94, 8.35, 7.47, 8.82, 6.4, 8.9, 3.98, 1.64, 8.31, 2.69, 8.64, 3.47, 7.68, 3.29, 3.89, 6.12, 3.68, 3.94, 6.13,
1.79, 4.27, 9.63, 1.25, 3.97, 8.79, 1.46, 6.27, 4.44, 6.92, 8.16, 9.93, 9.75, 1.22, 1.1, 7.37, 9.22, 5.98, 1.6, 2.31,
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Istanza 28

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COSTI RANDOM, PESI NOISE, $\Delta = 5$, $n=400$, $q=0.95$

Istanza 29

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Istanza 31

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Istanza 32

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Istanza 33

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