**Calibration of Iterated Local search for Large Instances**

|  |  |
| --- | --- |
| Parameter |  |
| Fine Local search : FLS | Yes-No |
| Perturbation length PerLen | 1-2-3 |
| Perturbed solutions: PerSol | 1-10-30-50 |
| Loop Size: VNS Loop | 100-200-300 |
| Temperature factor : Temp | 1-3-5-7 |

We have 288 combinations \* 5 replications for each instance \*144 Instances

**Analysis of Variance**

**Analysis of**

**Variance for RDI -**

**Type III Sums of**

**Squares**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Source* | *Sum of Squares* | *Df* | *Mean Square* | *F-Ratio* | *P-Value* |
| MAIN EFFECTS |  |  |  |  |  |
| A:2LS | 34339.8 | 1 | 34339.8 | 98.90 | 0.0000 |
| B:PerLen | 1.46283E6 | 2 | 731416. | 2106.46 | 0.0000 |
| C:PerSol | 1.31287E6 | 3 | 437623. | 1260.34 | 0.0000 |
| D:VNS | 309436. | 2 | 154718. | 445.58 | 0.0000 |
| E:Temp | 14.009 | 3 | 4.66967 | 0.01 | 0.9979 |
| INTERACTIONS |  |  |  |  |  |
| AB | 23849.1 | 2 | 11924.6 | 34.34 | 0.0000 |
| AC | 9217.26 | 3 | 3072.42 | 8.85 | 0.0000 |
| AD | 70837.6 | 2 | 35418.8 | 102.01 | 0.0000 |
| AE | 6.61064 | 3 | 2.20355 | 0.01 | 0.9993 |
| BC | 4.90197E6 | 6 | 816994. | 2352.92 | 0.0000 |
| BD | 55883.2 | 4 | 13970.8 | 40.24 | 0.0000 |
| BE | 178.145 | 6 | 29.6908 | 0.09 | 0.9977 |
| CD | 61914.7 | 6 | 10319.1 | 29.72 | 0.0000 |
| CE | 57.0443 | 9 | 6.33826 | 0.02 | 1.0000 |
| DE | 84.5008 | 6 | 14.0835 | 0.04 | 0.9997 |
| RESIDUAL | 7.19801E7 | 207301 | 347.225 |  |  |
| TOTAL (CORRECTED) | 8.02236E7 | 207359 |  |  |  |

All F-ratios are

based on the

residual mean

square error.

1. **PerLen**

****

PerLen equal 2 is the best parameter

1. **PerSol**

****

Remove 1 from the PerSol values and repeat

1. Analyse of variance

**Analysis of**

**Variance for RDI -**

**Type III Sums of**

**Squares**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Source* | *Sum of Squares* | *Df* | *Mean Square* | *F-Ratio* | *P-Value* |
| MAIN EFFECTS |  |  |  |  |  |
| A:2LS | 29796.2 | 1 | 29796.2 | 87.20 | 0.0000 |
| B:PerLen | 3.75616E6 | 2 | 1.87808E6 | 5495.99 | 0.0000 |
| C:PerSol | 201961. | 2 | 100980. | 295.51 | 0.0000 |
| D:VNS | 132991. | 2 | 66495.7 | 194.59 | 0.0000 |
| E:Temp | 21.5211 | 3 | 7.17369 | 0.02 | 0.9959 |
| INTERACTIONS |  |  |  |  |  |
| AB | 51937.3 | 2 | 25968.7 | 75.99 | 0.0000 |
| AC | 8628.46 | 2 | 4314.23 | 12.63 | 0.0000 |
| AD | 39341.3 | 2 | 19670.6 | 57.56 | 0.0000 |
| AE | 19.3432 | 3 | 6.44772 | 0.02 | 0.9965 |
| BC | 1.18982E6 | 4 | 297456. | 870.47 | 0.0000 |
| BD | 38021.4 | 4 | 9505.35 | 27.82 | 0.0000 |
| BE | 155.931 | 6 | 25.9884 | 0.08 | 0.9983 |
| CD | 5172.39 | 4 | 1293.1 | 3.78 | 0.0044 |
| CE | 32.2011 | 6 | 5.36684 | 0.02 | 1.0000 |
| DE | 33.2195 | 6 | 5.53659 | 0.02 | 1.0000 |
| RESIDUAL | 5.3127E7 | 155470 | 341.719 |  |  |
| TOTAL (CORRECTED) | 5.85811E7 | 155519 |  |  |  |

All F-ratios are

based on the

residual mean

square error.

1. PerLen

****

There is no a big difference but 2 seems better

1. PerSol



It is clear that we should set it 10

1. **VNS \_Loop**

****

it is better to choose 300

1. **2LS**



Second local local search should be considered

1. **Temperature**



TempFactor is not significant, we put is 7.

2LS :1

Per\_Len 2

Per\_Sol 10

VNSloop 300

Tempfactor 7