O-PSO input:

| | viaje | job | Obj00 | Obj10 | Obj20 | Obj01 | Obj11 | Obj21 | Obj02 | Obj12 | Obj22 | Obj03 | Obj13 | Obj23 | Obj04 | Obj14 | Obj24 | Obj05 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Expo | 0 | 96.33191 | -470 | 3.617021 | 105.0762 | -315 | 5.714286 | 102.4115 | -243 | 5.349794 | 112.6325 | -498 | 6.827309 | 100.8954 | -497 | 4.828974 | 108.8617 |
| 1 | Expo | 1 | 96.33191 | -470 | 3.617021 | 105.0762 | -315 | 5.714286 | 102.4115 | -243 | 5.349794 | 112.6325 | -498 | 6.827309 | 100.8954 | -497 | 4.828974 | 108.8617 |
| 2 | Expo | 2 | 96.33191 | -470 | 3.617021 | 105.0762 | -315 | 5.714286 | 102.4115 | -243 | 5.349794 | 112.6325 | -498 | 6.827309 | 100.8954 | -497 | 4.828974 | 108.8617 |
| 3 | Expo | 3 | 96.33191 | -470 | 3.617021 | 105.0762 | -315 | 5.714286 | 102.4115 | -243 | 5.349794 | 112.6325 | -498 | 6.827309 | 100.8954 | -497 | 4.828974 | 108.8617 |
| 4 | Expo | 4 | 96.33191 | -470 | 3.617021 | 105.0762 | -315 | 5.714286 | 102.4115 | -243 | 5.349794 | 112.6325 | -498 | 6.827309 | 100.8954 | -497 | 4.828974 | 108.8617 |
| 5 | Expo | 5 | 96.33191 | -470 | 3.617021 | 105.0762 | -315 | 5.714286 | 102.4115 | -243 | 5.349794 | 112.6325 | -498 | 6.827309 | 100.8954 | -497 | 4.828974 | 108.8617 |
| 6 | Expo | 6 | 96.33191 | -470 | 3.617021 | 105.0762 | -315 | 5.714286 | 102.4115 | -243 | 5.349794 | 112.6325 | -498 | 6.827309 | 100.8954 | -497 | 4.828974 | 108.8617 |
| 7 | Expo | 7 | 96.33191 | -470 | 3.617021 | 105.0762 | -315 | 5.714286 | 102.4115 | -243 | 5.349794 | 112.6325 | -498 | 6.827309 | 100.8954 | -497 | 4.828974 | 108.8617 |
| 8 | Expo | 8 | 96.33191 | -470 | 3.617021 | 105.0762 | -315 | 5.714286 | 102.4115 | -243 | 5.349794 | 112.6325 | -498 | 6.827309 | 100.8954 | -497 | 4.828974 | 108.8617 |
| 9 | Impo | 9 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 10 | Impo | 10 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 11 | Impo | 11 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 12 | Impo | 12 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 13 | Impo | 13 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 14 | Impo | 14 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 15 | Impo | 15 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 16 | Impo | 16 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 17 | Impo | 17 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 18 | Impo | 18 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 19 | Impo | 19 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 20 | Impo | 20 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 21 | Impo | 21 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 22 | Impo | 22 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 23 | Impo | 23 | 69.49686 | -477 | 7.337526 | 76.56369 | -314 | 5.414013 | 64.21839 | -261 | 6.896552 | 74.30474 | -548 | 7.481752 | 72.39894 | -564 | 6.560284 | 75.74609 |
| 24 | Loca | 24 | 24.49074 | -108 | 0 | 15.41176 | -68 | 0 | 28.01818 | -55 | 0 | 21.46893 | -177 | 0 | 14.83766 | -154 | 0 | 18.34419 |
| 25 | Loca | 25 | 24.49074 | -108 | 0 | 15.41176 | -68 | 0 | 28.01818 | -55 | 0 | 21.46893 | -177 | 0 | 14.83766 | -154 | 0 | 18.34419 |
| 26 | Loca | 26 | 24.49074 | -108 | 0 | 15.41176 | -68 | 0 | 28.01818 | -55 | 0 | 21.46893 | -177 | 0 | 14.83766 | -154 | 0 | 18.34419 |
| 27 | Loca | 27 | 24.49074 | -108 | 0 | 15.41176 | -68 | 0 | 28.01818 | -55 | 0 | 21.46893 | -177 | 0 | 14.83766 | -154 | 0 | 18.34419 |
| 28 | Loca | 28 | 24.49074 | -108 | 0 | 15.41176 | -68 | 0 | 28.01818 | -55 | 0 | 21.46893 | -177 | 0 | 14.83766 | -154 | 0 | 18.34419 |
| 29 | Loca | 29 | 24.49074 | -108 | 0 | 15.41176 | -68 | 0 | 28.01818 | -55 | 0 | 21.46893 | -177 | 0 | 14.83766 | -154 | 0 | 18.34419 |

The instances are in .csv format. The third column is called job and is the job index, the following columns are prefixed with Obj followed by the objective and machine index, e.g:

Obj00: Objective 0 (raw material cost) in machine 0
Obj10: Objective 1 (time cost) in machine 0

Machine and task indexes start at 0 for all instances.

The instances are separated by folder, each folder is named as follows:

100_5: these are the instances of 100 jobs and 5 machines.
100_10: these are the instances of 100 jobs and 10 machines.

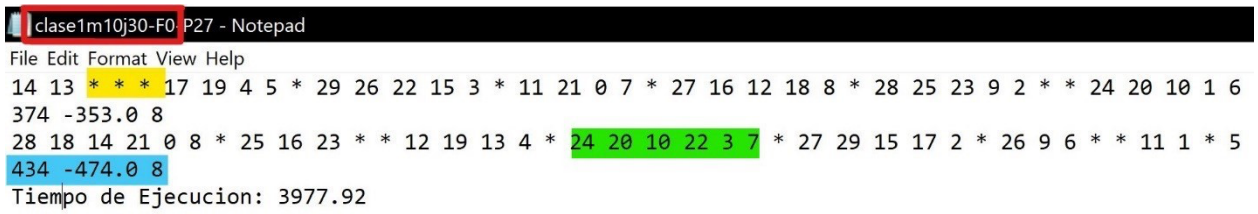
Up to 500_15 for instances of 500 jobs and 15 machines.

Finally, the name of each file is as follows:

i100-5-clase1.csv

Number of jobs – number of machines - class, in total there are 5 classes (EDPSO case).

O-PSO output:




Once the instance to be solved and the parameters are defined O-PSO can start the schedule optimization process. At the end of this activity is delivered a series of .txt files as in Figure 3 in paper, in relation to the number of fronts generated O-PSO. The files are identified as indicated in the section framed in red, starting with the name of the instance, then the number of machines and jobs, to finish with the corresponding front.

Each of the files contains the structure of the solutions as shown in Figure, where the symbols underlined in yellow serve to identify the machines and are arranged in ascending order, ie the first symbol that is in the schedule corresponds to the machine 0 and the las corresponds to the machine M −2, since for the machine M − 1 no identifer is needed. It is important to mention that, as shown in Figure 1, to access the information of the machines the identifiers are from 0 to M − 1.

That said, the green underline part Figure  are the indexes of the sequence of tasks assigned to machine four, it should be noted that the indexes after the last * in the schedule correspond to the sequence of tasks for machine M-1 and, as in the case of the yellow section, indicates that the machines one and two were not assigned task. Finally, the blue underlined part is the cost of each of the objectives in case of the implementing the probability of revision in the customs for the tasks of export and import.