Abstract:
This work treats the feasibility study for a hydropower project in the Tajo-Segura channel which is located in the rapid of Belmontejo Municipality in the province Cuenca. It is a feasibility study that will be used to compare various design options and select the most interesting one. The possibilities to build a hydropower plant in this area are examined regarding the topography of the area, the flow characteristics of the river, the types of turbines and the costs-benefits ratio. With reference to these fields, the most optimal solution in this case is found.

Location:
the the rapid of Belmontejo of the Tajo-Segura channel is located in the river basin district Júcar in the east of Spain. More specifically the channel is located in the south of the province Cuenca and in the north of the reservoir Alarcón.

Flow:
The used flow is 15m³/s. The marginal profit does increase a lot until this point.

Solutions:

Solution 1:
- Working 24 hours a day
- 2 rapids with a head of 15 and 30m
- Flow of 15m³/s

Solution 2:
- Working 24 hours a day
- 1 rapid with a head of 50m
- Flow of 15m³/s

Solution 3:
- Working 6 or 8 hours a day
- 1 rapid with a head of 50m
- Flow of 60 or 45 m³/s

Conclusion:
Because of its high one-time initial costs, and its little benefits a year, the first solution can be seen as the least advantageous solution of the three. Whereas the second solution has less construction costs, one can say that the second solution is more interesting than the third one. Thus the second solution can be seen as the most advantageous in this situation.