



Energy and cost second part Compare lighting technologies

Your job is to explain the advantages and disadvantages of the most used lighting technologies.

Hence you will:

- Perform some web search and computation to fill the following table.
- Explain your preferred solution from an economical or ecological (or both) point of view
- Build a spreadsheet for an automatic computation of this table

10 000 hours table

	technology	Power (Watt)	Luminous flux or luminous power (lumen)	Luminous efficiency (lm/W)	Life duration (hours)	Price (€)	Number of lamps for about 680 lm	Price of lamps for 10000 h	Price of energy for 10000 h	Total cost
	Incandescent	60W	690 lm	11,5	1000	1	1			
	Low voltage hallogen	35W	676 lm		2000	5,4	1			
	luminescent									
	LED						2 ?			

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Here is an example from bulbs that are actually sold on the web.

technology	Power	Luminous flux or luminous power	Luminous efficiency	Life duration	Price	Number of lamps for about 680 lm	Price of lamps for 10000 h	Price of energy for 10000 h	Total cost
unit	Watt (W)	Lumen (lm)	(lm/W)	hours	(€)				
incandescent	60	690	11,5	1000	1	1	10,0	60	70,0
Low voltage hallogen	35	676	19,3	2000	5,4	1	27,0	35	62,0
luminescent	12	620	51,7	6000	7,2	1	12,0	12	24,0
LED	3,5	350	100,0	50000	5,12	2	2,0	7	9,0

1 What is the best lamp from an ecological point of view? (please explain why)

2 What is the best lamp from an economical point of view? (please explain)

3 The two best solutions seem to be LED and Luminescent technologies,

3.1 Give a disadvantage of the LED solution

3.2 Give two disadvantages of the luminescent (or fluorescent) solution

4 Why is the price of bulbs 12€ for the luminescent solution? (explain and compute)

5 Why is the price of lamps (2€) lower than the price of one lamp (5,12€) for the LED solution (explain and compute)