

Process	t reaction (h)	Energy Consumptions			Heater / t (h)	Energy Consumptions		TOTAL (Wh)
		Lamp (Wh)	Stirrer (Wh)	Sensors (Wh)		Heater (Wh)	Centrifuge (Wh)	
ADPA Halogen Lamp	0,31	15,50	1,55	2,48	0	0,00	84,00	103,53
ADPA sunlight June	0,31		1,55	2,48	0,002	2,12	84,00	90,15
ADPA sunlight September	0,31		1,55	2,48	0	0,00	84,00	88,03
ADPA sunlight December	0,31		1,55	2,48	0,002	2,12	84,00	90,15
DICLOFENAC Halogen Lamp	2,93	146,50	14,65	23,44	0	0,00	84,00	268,59
DICLOFENAC sunlight June	2,93		14,65	23,44	0,006	6,36	84,00	128,45
DICLOFENAC sunlight September	2,93		14,65	23,44	0,0011	1,17	84,00	123,26
DICLOFENAC sunlight December	2,93		14,65	23,44	0,0052	5,51	84,00	127,60
Furoic Acid Halogen Lamp	7	350,00	35,00	56,00	0	0,00	84,00	525,00
Furoic Acid sunlight June	7		35,00	56,00	0,015	15,90	84,00	190,90
Furoic Acid sunlight September	7		35,00	56,00	0,008	8,48	84,00	183,48
Furoic Acid sunlight December	7		35,00	56,00	0,013	13,78	84,00	188,78

Power of systems and processes	
Halogen Lamp	50 W
Stirrier	5 W
Sensors (T and irradiation)	8 W
Heater and water circulation	1060 W
Centrifuge (time 12 min)	420 W

Process	Energy consumption (kWh/m3) (reactor 500 mL)	Reactor scale-up 1 m3. Energy consump. (kWh)		Reactor scale-up 100 m3. Energy consump. (kWh)		Reactor scale-up 1 Hm3. Energy consump. (kWh)	
		Aspen	6 tenths	Aspen	6 tenths	Aspen	6 tenths
Diclofenac Lamp	0,269		25,69		407,11		25686,67
Diclofenac Sunlight	0,126		12,09		191,64		12091,74
Furoic Acid Lamp	0,525		50,21		795,75		50208,51
Furoic Acid Sunlight	0,188		17,95		284,53		17952,65
Energy Consumption (kWh/m3)							
Diclofenac Lamp	537,18	24,38	25,69	4,12	4,07	0,27	0,26
Diclofenac Sunlight	252,87	12,48	12,09	2,01	1,92	0,12	0,12
Furoic Acid Lamp	1050,00	48,36	50,21	7,85	7,96	0,48	0,50
Furoic Acid Sunlight	375,44	18,05	17,95	2,92	2,85	0,17	0,18

SIX TENTHS RULE

$$C_2 = C_1 \left(\frac{S_2}{S_1} \right)^n$$

Where:

C2: Estimated cost or OPEX in the new size (S2)

C1: Known cost or OPEX at a reference size (S1)

S2: New size or capacity

S1: Reference size or capacity

n: Cost scaling factor (commonly taken as 0.6, hence the name is "six-tenths rule")