

BUSINESS CASE THERMAL DISINFECTION

Explanation: Pls fill in blue cells only.

COST COOLANT LUBRICANT

	machines	liter/machine	liter total		
liter coolant lubricant	10	1.000	10.000		
	€/l undiluted	dilution	€/l diluted	€	
procurement cost	5 €	95%	0,25 €	€	2.500
		€/m ³	m ³	€	
cost disposal coolant lubricant		100 €	10,00	€	1.000
gives: Cost of coolant lubricant per filling				€	3.500

for all machines

change of coolant lubricant	without disinfection	months	6	i.e. 2 times per year
every x months	with disinfection	months	9	i.e. 1,3 times per year
costs for coolant	without disinfection		€ 7.000	per year
lubricant	with disinfection		€ 4.667	per year
Savings coolant fluid			€ 2.333	per year

COST MACHINE DOWN TIME WHEN CHANGING COOLANT

Number of machines		10	machines
Costs down time per machine per hour		€ 100	per hour
Hours down time when changing coolant		8	hours/machine
Cost machine down time	without disinfection	€ 16.000	2 replacement(s) per year
	with disinfection	€ 10.667	1,33 replacement(s) per year
Savings down time		€ 5.333	per year

SAVINGS BIOZIDES from cell Q26 **€ 1.913 per year**

AMORTISATION

Purchasing cost ph-cleantec	€ 4.430	ThermoDes
Annual savings - coolant lubricant	€ 2.333	
Annual savings - machine down time	€ 5.333	
Annual savings - biocides	€ 1.913	
Minus: Additional energy cost	-€ 600	from cell S38
Savings	€ 8.979	per year
Amortisation after	5,92	months
		= 0,5 years

- FURTHER ADVANTAGES**
- Lower maintenance costs of tooling machines
 - Longer life span of tooling machines
 - No chemistry or biocides
 - No health hazard for employees and environment

BUSINESS CASE DISINFECTION - COMPARISON BIOCIDES

Explanation: Pls fill in blue cells only.

COST DISINFECTION USING BIOCIDES

Cost biocides

	machines	liter/machine	liter total		
liter coolant lubricant (CL)	10	1.000	10.000		
	I BioA/100 I CL	liter CL	liter BA		
liter biocide additive (BioA) / 100 liter CL	0,15	10.000	15,00		
	€/liter/BioA	liter/filling	fillings p.a.		
procurements cost biocides	€ 15	15,00	4	€ 900	per year
disposal costs biocides	€ -	(biologically degradable)		€ -	per year
	visits p.a.	cost/visit			
cost fluid manager re-fills, laboratory	4	€ 200		€ 800	per year
gives: Cost for biocides				€ 1.700	per year

Cost sick days

	full costs/h (cell MC, G18)	h/day	full costs/day		
cost of one sick day	€ 26,59	8	€ 213		
sick days because of biocides	1		€ 213	€ 213	per year
gives: Cost of sick days				€ 213	per year
gives: Total costs of <u>biocides</u>				€ 1.913	per year

COSTS FOR THERMAL DISINFECTION

	procurement cost	write-off years		
depreciation ThermDes	€ 4.430 (2022)	5	€ 886	per year
	liter cooling lubricant	number of re-circulations (suggested: 3)	disinfections per year	operating hours at 4.5liters / h
operating hours per year	10.000	3	12	1.333
	kWh/h	cts/kWh	operating hours	
power consumption	2	10	1.333	€ 267 per year
	visits p.a.	cost/visit		
costs fluid manager laboratory	4	€ 150		€ 600 per year
gives: Total costs of <u>thermal disinfection</u>				€ 1.753 per year

ANNUAL SAVINGS

total costs with biocides	€ 1.913	per year
total costs with thermal disinfection	€ 1.753	per year
Savings versus biocides	€ 160	per year
ph-cleantec more economic than biocides after	332	months
		= 27,7 years

Marginal cost saving versus disinfection with biocides. BUT:

- Much longer life span of coolant lubricants
- No chemistry and no biocides
- No health hazard for employees and environment