Machine Hour Rate (Cost of Running a Machine per Hour)

Cost per running hour of a machine from depreciation, interest, maintenance, power, operator wages and overheads, for costing and quoting.

Method: Machine hour rate costing

Input parameters

Unit system: SI

Parameter	Value	Unit
Purchase price	2,500,000	
Salvage value	250,000	
Life (years)	10.000	
Interest rate on the average investment	10.000	%
Maintenance per year as a share of price	5.0000	%
Connected power	15.000	kW
Average load factor	60.000	%
Electricity price per kWh	8.0000	
Operator cost per hour	250.00	
Overheads per year (space, insurance, supervision)	120,000	
Running hours per year	3,000.0	

Calculated results

Parameter	Value	Unit
Depreciation per hour	75.000	
Interest per hour	45.833	
Maintenance per hour	41.667	
Power per hour	72.000	
Overheads per hour	40.000	
Machine hour rate including the operator	524.50	

Notes for this case

• The machine hour rate spreads the yearly fixed costs (straight-line depreciation, interest on the average investment (P + S)/2, maintenance and overheads) over the running hours, and adds the costs that come with each hour (power at the average load, the operator). Fewer running hours raise the rate sharply, which is why idle machines are expensive.

Formula and method

$$MHR = \frac{(P - S)/n + i(P + S)/2 + mP + O}{H} + P_e f_l c_e + w$$

Variables

P	Purchase price	-
S	Salvage value	-
n	Life (years)	-
i	Interest rate on the average investment	-
m	Maintenance per year as a share of price	-
P_e	Connected power	W

f_l	Average load factor	-
c_e	Electricity price per kWh	-
w	Operator cost per hour	-
O	Overheads per year (space, insurance, supervision)	-
H	Running hours per year	-
D/H	Depreciation per hour	-
I/H	Interest per hour	-
M/H	Maintenance per hour	-
E	Power per hour	-
O/H	Overheads per hour	-
MHR	Machine hour rate including the operator	-

Method and standards

Machine hour rate.

Assumptions and limits

- Straight-line depreciation; average investment for interest.

References

Machine hour rate costing

Report details

Report reference	FCC-6FMJ-J9K1 (the same inputs always give the same reference)
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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/general/economics/machine-hour-rate

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.