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ICP-MS ARGON COSTS

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How much does ICP-MS cost to run? What does Argon gas cost?

The main consumable cost of ICP-MS analyses is the argon gas used to fuel the plasma. The total argon running costs of a typical ICP-MS system, which includes both traditional single quadrupole (ICP-MS) and tandem ICP MS/MS (TripleQuad) systems, is about 22 L/min, whilst the typical consumption of the PlasmaQuant MS from Analytik Jena (PQMS) is 11.5 L/min.

Argon is supplied in pressurized cylinder form, which is suitable for low and infrequent ICP-MS users, or in liquid form where a cryo-tank is refilled from a tanker (for example every 3 weeks). Liquid argon is best suited to high and regular usage, as the unit cost is less. If the ICP-MS is not used, however, the liquid tanks lose argon through venting (1-2 bar loss per day).

A standard 147L compressed gas argon cylinder contains 11,320 L of argon gas, that provides only 8 ½ hours of operation on a standard system at 22 L/min, but about 17 hours of operation using the PQMS at 11 L/min. The cost of a cylinder varies with the gas supplier but is approx. £100 per cylinder, so that's £12.50 per hour for a standard ICP-MS compared to £6.25 per hour for PQMS.

A 230L liquid argon tank holds 163,000 L of argon gas, the cost of refill every 3 weeks plus the tank rental charge is about £600. For a typical ICP-MS that is 120 hours of operation, against 240 hours of operation for PQMS. That is £5.00 per hour for a typical ICP-MS vs. £2.50 per hour PQMS. In the table below, these costs are calculated per day, per week, and per year based on operating a single ICP-MS instrument for 14 hours per day.

Summary cost comparison for Typical ICP-MS vs PQMS using argon cylinder

		usage
Cost per day ICP-MS	£	163.25
Cost per day PQ ICP-MS	£	81.63
Cost per week ICP-MS	£	816
Cost per week PQ ICP-MS	£	408
Cost per year ICP-MS	£	40813
Cost per year PQ ICP-MS	£	20406

How much electricity does ICP-MS use?

Recent increases in the cost of energy have highlighted the need to consider energy consumption in total running costs.

For the usage described above, the energy costs of PQMS are approx. £4000 per year and are equivalent to other systems.

How much is an ICP-MS service contract?

A service contract is a substantial and integral cost of ICP-MS analysis. Whilst reliable, ICP-MS are relatively complex instruments that require regular (yearly) servicing to maintain their peak performance and extend operational life.

Without a service contract repairs due to breakdowns can become expensive. Contact SciMed for current service contract costs.



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