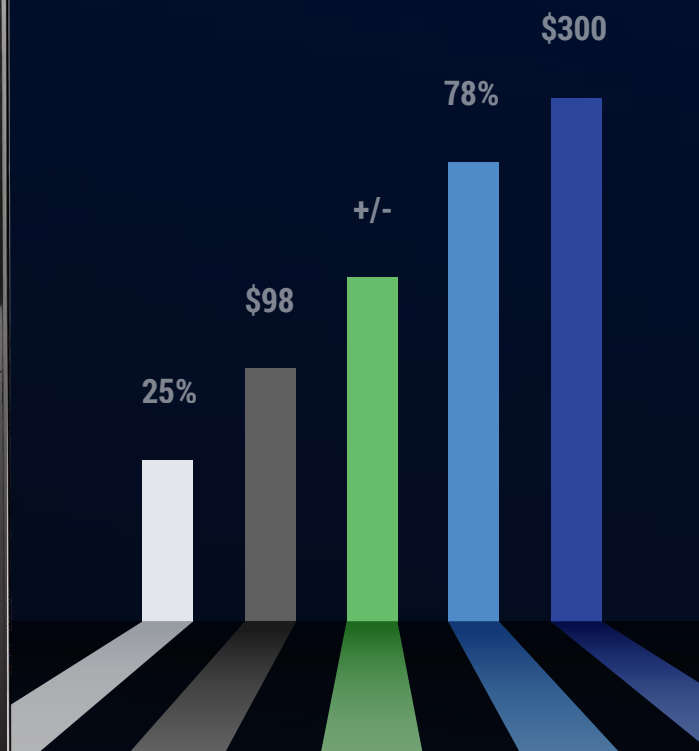


# What is the Total Cost of Owning An Autoclave?





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# How Much Does Your Sterilizer Really Cost Your Facility?



When purchasing a piece of capital equipment, such as an autoclave, it's important to assess the total cost of ownership (TCO) because there can be many costs hidden in the ongoing service and maintenance of the machine. This ebook will help buyers, users, and owners determine the direct and indirect costs of procuring and operating a laboratory autoclave.

There are two primary categories of costs for your steam sterilizer:  
**upfront costs** and **operating costs.**

Read on to learn how these costs factor into your sterilizer TCO assessment.

# Upfront Costs


The upfront costs associated with procuring an autoclave include:




Equipment



Space Modification



Shipping



Installation



Validation



## Equipment:

The equipment cost is the price of the autoclave itself and accounts for a sizeable portion of the TCO. When determining your equipment cost, make sure to include the sterilizer features and options required for your application. Ensure that you have an onsite consultation with your [local sterilizer representative](#) so they can recommend a best fit sterilizer build and help control your equipment cost.



## Space Modification:

Space is at a premium at most facilities. Your facility might have space constraints that require the autoclave to be customized to fit. If you are replacing a sterilizer, there may be costs associated with modifying the service areas and wall opening used by the existing sterilizer. To minimize your space modification costs, see if your sterilizer manufacturer can [customize the footprint](#) and accessibility of sterilizer.



## Shipping:

Lab autoclaves can weigh thousands of pounds, so shipping is not an insignificant expense. If you are located in the United States one way to save money on exorbitant international shipping and handling costs is to invest in a sterilizer manufactured in the United States.



## Installation:

Installation costs can include receiving the sterilizer, uncrating, setting in place, leveling, final assembly, connecting utilities, performing start-up, and user training. Make sure your manufacturer provides [turnkey installation](#) from a local factory-trained service technician.



## Validation:

Some facilities require autoclave validation to verify that it can achieve sterilization to the degree the manufacturer claims. If these services are needed, look for a manufacturer that can offer complete [validation services](#) like IQ, OQ, and PQ.

# Operating Costs

Operating costs are ongoing and accrue after the sterilizer is commissioned for use.

Operating costs are a significant contributor to TCO and are often overlooked at point of purchase. Here are some operating costs that should be carefully considered when selecting a sterilizer:



Energy



Water



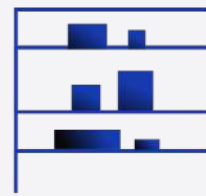
HVAC



Operating Labor



Service



Consumables

# Operating Costs



## Energy:

Steam sterilizers use energy to heat water and create steam; this electricity can come from fossil fuels like gas or coal. Laboratory sterilizers can use anywhere from 5,000 kWh per year to 50,000 kWh per year. When evaluating energy costs, find out what the local kWh cost is for electricity at your facility and ask your sterilizer manufacturer whether they offer energy-saving features. Check to see if your manufacturer has energy savings features like auto idle shut off and on/off calendars to save on energy costs.



## Water:

Steam sterilizers require water for steam generation, effluent (wastewater) cooling, and vacuum creation. Depending on usage and configuration, a steam sterilizer can use millions of gallons of water over the course of its life. When evaluating water costs, find out the local cost of water and sewage and have your sterilizer manufacturer assist you with [calculating your water consumption](#). Check to see if your manufacturer has green savings [technologies for saving water](#).



## HVAC:

Steam sterilizers give off a lot of heat – up to 20,000 BTU/hr. This heat load to the room makes it challenging to maintain a target ambient temperature and can result in a significant impact on electricity costs due to excessive use of air conditioning. Check to see whether your manufacturer has [Smart Controls](#) that can communicate with the HVAC system and/or the local overhead hood to reduce HVAC costs.



## Operating Labor:

To get an accurate idea of your operational labor costs, ask yourself whether your facility requires a dedicated autoclave technician to manage your sterilization processes. If they answer is “yes,” ensure that that technician’s hours are accounted for in your TCO calculation.



# Operating Costs



## Service:

Every steam sterilizer will require service overtime. Service costs could be a significant hidden TCO with some manufacturers. The costs associated with service include: emergency (i.e. unscheduled) service visits, scheduled [preventative maintenance visits](#), and spare parts.

*When analyzing **service costs**, ask the following:*

- What is the recommended frequency of service visits?  
(Be wary of arbitrary recommendations, such as "once per quarter," and look for more usage-based estimates, such as "once every 300 cycles.")
- What is the cost of a preventative maintenance agreement?
- What is the cost for each preventative maintenance service visit including parts and labor?
- What is the hourly or daily service rate for emergency service calls?  
(Watch out for service companies that charge a minimum labor fee and charge for travel time.)
- Does your sterilizer company allow for competitive independent service groups, or do they require use of their own exclusive service teams?
- Is there a cost for phone-based technical support?

*When evaluating the cost of **parts**, ask the following:*

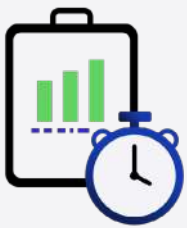
- Are the parts non-proprietary?
- How much does it cost for a door gasket? For a steam trap? For a basic valve rebuild kit?
- How often does the manufacturer recommend changing out parts?
- How much is a complete annual preventative maintenance parts kit?

## Consumables:

These costs may include paper for printouts, biological and chemical indicators, Bowie Dick test packs, sterilizer load containers or bins, chamber cleaning solutions, and filters for water and steam. Consumable and supply costs are dependent on use and application, but should be included in your TCO calculation.



# Additional Costs



## Training:

In some labs – for example, at universities – there is yearly turnover of staff and students who use the autoclave. New researchers and end users will require training. Training costs are lower if your sterilizer is easy to use and intuitive. Ask the manufacturer to allow you to “test drive” the autoclave user interface to make sure it is simple to use and seamless for day-to-day operation. Does your manufacturer offer easy to use features like favorite cycle short cuts or password protection?



## Downtime:

Autoclaves are often mission-critical tools; and any downtime can bring an operation grinding to a halt. The quality of the sterilizer and a simple, reliable manufacturing philosophy are key components to reducing downtime. A proactive PM plan by a local service team can help quickly address this challenge, as well.

# TCO Calculator

There are a few different ways to calculate your TCO using the costs. TCO can be analyzed as an annual cost or a total lifetime cost.



Use this as a worksheet to calculate your TCO.

## Total Cost of Ownership

<b>Upfront Costs</b>	Equipment	
	Space Modification	
	Shipping	
	Installation	
	Validation	
<b>Annual Operating Costs</b>	Energy	
	Water	
	HVAC	
	Operating Labor	
	Service	
	Consumables	
	Training	
	Downtime	
	<b>TOTAL:</b>	



Please **contact us** to provide a complete total cost of ownership assessment.

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