

A Guide to Purchasing Secondhand Environmental Test Chambers



Second-hand, second user, previously owned or previously new - call them what you will, used environmental test chambers can either be a great investment or, perhaps, a serious liability

This article takes you through the questions you need to ask to make the correct decision.

Engineers wanting new test equipment will usually, sensibly justify their purchase on several important criteria:

- does it meet my specification?
- is it well built and fit for purpose?
- will it continue to reliably meet my requirements?
- is it covered by a good warranty?
- if it needs repair, can it be done quickly and economically?
- is the delivery period acceptable?
- does it need additional services to be able to operate?
- and, of course, is the price right?

(Some) managers & accountants authorising expenditure may be otherwise motivated and have different priorities:

- is it the cheapest available option?
- can we have it tomorrow?
- can we delay/defer payment until the latest possible date?
- can we get a second-hand one even cheaper?

Well some take that view!

A second-hand solution, especially these days with regular factory clearance sales around, can appear attractive. However, a few things can make a bargain today an embarrassing liability tomorrow.

Think about the following:

1 *Is the original manufacturer still in business?*

If he isn't, you may be struggling to find relevant expert advice.

If he is, he will charge you at the going rate for his assistance.

2 *Does the chamber really do what you need?*

Does it reach the temperatures and/or humidity levels you need with your products inside.

Heat from your product, or its shape and weight can have a big impact on performance, particularly if the rate of change of temperature is an important consideration.



3 *Does the chamber have adequate airflow for the application?*

Insufficient airflow means hot or cold spots in the chamber. Your product could easily overheat - or be inadequately stressed without you ever realising. A little stirrer fan may be OK for an incubator but is no use at all for an environmental test chamber.

4 *Can you get a proper demonstration before buying?*

This is often difficult to arrange. If the chamber has been decommissioned, or perhaps is being bought at auction, you won't be popular with the seller for asking to see it operating.

5 *Is there any kind of warranty offered?*

If it fails to work for any reason, what comeback is there for the buyer?

6 *Does the mechanical refrigeration plant work properly?*

Refrigerants can sometimes slowly leak, bringing a gradual reduction in performance.

Like any machine, the plant needs regular maintenance. Can you be sure it has been well maintained? You may never know - until it starts to go wrong!

7 *Does the plant use modern CFC-free coolants?*

Apart from the risk of environmentally unfriendly gases leaking into the atmosphere, original replacement gases just may not be available. New "drop in" alternatives are sometimes viable, but will require specialist and possibly costly installation.

8 *What if the mechanical refrigeration system fails?*

You may need a new compressor, filter-drier or thermostatic expansion valve. These parts, or the specialist labour to fit them can be expensive, and the expense may simply not be justified for an old chamber. Remember, this work needs a skilled specialist engineer; it is not something that you, or your local air conditioning engineer, can do.

9 *If the chamber uses cryogenic cooling, is it safe in operation?*

Rather surprisingly, many chambers even when new, have no special safety features.

Look for a thermally interlocked door when cooling. Do you want the responsibility for a production operator or junior engineer suffering serious cryogenic burns or worse because they opened the door at the wrong time?

10 *Is the chamber insulation still efficient?*

If the internal chamber liner (usually stainless steel) was not originally seam-welded, moisture trapped in the chamber can permeate into the insulation space. Many chambers use mineral wool insulation (a bit like the stuff in your loft). If this gets wet, it cannot do its job properly. Unfortunately, it won't automatically dry out when the chamber is heated up. It can be difficult to check for damp insulation - it will be expensive to have to replace it!

Some chambers use foam insulation injected into the cavity. This may not directly absorb so much moisture but can, in time, separate from the inner surfaces of the cavity allowing moisture to accumulate. Replacing injected foam insulation is not usually practical.

11 *Has the mechanical structure of the chamber deteriorated?*

Externally it may look OK, but can you see if rust is causing problems inside? Be especially wary of humidity chambers where unpleasant deposits may have accumulated. Also beware as some older chambers may have a wooden inner frame. Once the frame gets damp it will be difficult to dry and will deteriorate rapidly. Misaligned doors or panels may suggest that all is not well structurally.

12 *Does the chamber temperature control system work OK?*

- (a) Does it work at all?
- (b) Is there a manual (and is it in a language you understand)?
- (c) Is the controller proprietary to the chamber manufacturer, or obsolete? If so, any spares will certainly be VERY expensive - or simply no longer available. Fitting a new control system is not a cheap exercise.

13 *Is the chamber noisy in operation?*

You will be surprised just how noisy some chambers are. Put one in a normally quiet engineering office and you will be a social outcast within an hour, and the chamber in the nearest skip soon after!

14 *Are you happy to put your latest new product in a chamber that could unintentionally destroy it?*

Are there product protection thermostats, sometimes called "policeman" alarms fitted?

If you are still happy with the risks, then by all means go ahead. If not, rethink and buy new, or, if available, consider a factory-reconditioned chamber and insist on a warranty before purchasing.

Whatever you do, please contact Sharetree first. We have many years experience of designing, building and maintaining chambers. We also offer factory-reconditioned chambers from our rental stock.

Why not use our experience to make the right choice?

Call Sharetree on (01453) 828642

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