

Flatbed or Rotating Drum

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Which is the better method for Xenon Arc devices?

There are two different concepts for specimen mounting in the xenon arc testers, one is where the specimens lay on a table facing up towards the light source, and the other is where the specimens are mounted vertically on the inside of a “drum” which rotates around the light source. Traditionally, the flatbed tray has been used for smaller chambers, and the rotating drum in the larger chambers. This differentiation has more to do with engineering restrictions than anything else, one because it is difficult put the rotation mechanism in the smaller devices, and two is because more specimens can be exposed to a single lamp if the specimens rotate around it.

So it is the medium sized chambers where the choice of flatbed or rotating drum overlaps. Both designs have their supporters and detractors, starting of course with the different manufacturers. The flatbed is promoted by Q-Lab and the rotating drum is promoted by Atlas. I would say that for medium sized chambers, the flatbed tray has so many advantages over the rotating drum. The one advantage promoted by the rotating drum supporters is not enough to overcome the disadvantages, in my opinion.

The rotating drum people claim the uniformity in their equipment means the user does not have to reposition the specimens. If this were true, I would probably be more likely to side with their POV. It’s not true though, since the user must still reposition the specimens on a regular basis. If the specimens must be repositioned in all devices, then I favor the repositioning method for the flatbed devices. The moving of specimens is much easier on a flat try, and can be done in seconds if using the mini-trays. Repositioning on a rotating drum can take several minutes or more. As long as we must reposition then I choose the easier method.

I grant the uniformity of flatbed trays is not as good as the rotating drum, but the difference can be mitigated very easily. Frequent repositioning is good for the test, and I would argue that the more frequent repositioning in the flatbed devices actually improves their overall repeatability. The argument that specimens don’t need repositioning on the rotating drum can lead to complacency, and an assumption that the conditions are the same on all parts of the exposure area.

Then we have all the other advantages of a flat tray tester. You can expose bigger specimens since the restriction caused by the circular frame is not in play. Try putting a 12” x 12” panel on a drum. You can expose 3-dimensional parts on the flat try too, something that is impossible on the rotating drum. The specimen wetting is better, more realistic, and lasts longer on the flat tray making this more realistic compared to outdoor exposures. Maintenance is easier, access is easier, all around I would recommend the flatbed tester.

And that’s the honest truth!