

Storage Density and the Total Cost of Ownership

VIP® Plus Cabinet Design, Floor Space Efficiency and Load Optimization are Ideal for Biobanks, Biorepositories and High Volume Applications

Feature Note



Ideal for Biorepositories

Performance and reliability are the most important consideration when evaluating the total cost of ownership for an ultra-low temperature freezer. The Panasonic Healthcare model MDF-DU900VC-PA ultra-low temperature -86°C freezer is engineered from the inside out for performance, reliability and maximum storage within a compact footprint.



The freezer cabinet features the Panasonic Healthcare VIP Plus insulation profile, a thin-wall composite of vacuum insulated panels layered with high performance, CFC-free foam, creating maximum internal volume per sq.ft. ratios.

Capacity is 672 2" boxes or 448 3" boxes in a compact 10.79 sq.ft. footprint.

Exponential Increase in Biological Storage Demand

Recent market data shows an increased demand for long-term storage of biological samples due to the rising importance for clinical and pharmaceutical trials. Scientific studies are also increasing demand for more storage of patient specimens and samples.



One report estimates the number of samples stored within U.S. biobanking facilities is 300 million, increasing by 20 million samples each year.¹

Biobanks and Biorepositories

With the rising demand for additional -80°C storage, more preservation equipment within new and existing biorepository facilities will be required. When outfitting a facility, careful consideration of -80°C ultra-low temperature freezers, including the peripheral tools and maintenance should be considered.



Estimates have shown that the annual operating cost for each ULT freezer in a biorepository is approximately \$20, total cost, per square foot.²

1) "Biobanking Operations: Contingency Planning and Disaster Recovery of Research Samples" BioProcess Journal SPRING 2014 • Volume 13/ Issue 1 • ISSN 1538-8786

2) "Repository Planning, Design, and Engineering: Part II—Equipment and Costing", Phillip M. Baird and Elaine W. Gunter

Return on Investment by Comparison

The overview below illustrates the competitive advantages of the model MDF-DU900VC-PA for a Biobank/Biorepository, based on the recommendation of general storage capacity of 30,000 2" boxes in a 2,400 square feet space.

		Panasonic Healthcare*	Brand T	Brand T	Brand S	Brand T	Brand N	Brand H	Brand H	The Panasonic Healthcare Advantage
Freezer volume	cu.ft.	29.8	28.0	28.8	30.0	33.5	27.5	26.0	26.0	
Storage	2" boxes	672	600	600	560	700	480	480	528	
Freezer footprint	ft ²	10.79	12.77	11.39	15.00	12.92	12.08	11.44	11.44	Panasonic Healthcare has the smallest footprint
Boxes per ft ²	2" boxes	62.28	46.99	52.68	37.33	54.18	39.74	41.96	46.15	Panasonic Healthcare stores more 2" boxes per ft²
Floor cost per freezer (at \$20 per ft ² per year)	\$	215.80	255.40	227.80	300.00	258.40	241.60	228.80	228.80	Panasonic Healthcare has the lowest cost per ft² footprint
Floor cost per 2" box	\$	0.32	0.43	0.38	0.54	0.37	0.50	0.48	0.43	Panasonic Healthcare has the lowest cost per ft² for 2" box
Number of freezers required to store 30,000 2" boxes	freezers	45	50	50	54	43	63	63	57	Panasonic Healthcare only requires 45 ULT freezers to store 30,000 2" boxes **
Floor cost for the number of freezers required to store 30,000 2" boxes	\$	9,711.00	12,770.00	11,390.00	16,200.00	11,111.20	15,220.80	14,414.40	13,041.60	Panasonic Healthcare offers less total cost per ft² for the number of ULT freezers required when considering 29.0 cu. ft. or larger capacity ULT freezer
Total floor space required for 30,000 2" boxes	ft ²	485.55	638.50	569.50	810.00	555.56	761.04	720.72	652.08	Panasonic Healthcare requires less ft² to store 30,000 2" boxes
Floor space % required to store 30,000 2" boxes	%	20	27	24	34	23	32	30	27	Panasonic Healthcare provides an ideal efficient use of floor space

* Panasonic Healthcare Model MDF-DU900VC-PA

** Only the 33.5 cu. ft. freezer requires fewer freezers to achieve the storage capacity of 30,000 2" boxes. However, total cost per ft² floor space for the number of 33.5 cu. ft. freezers increases by a total of \$1,400.20.

Reliability and Performance

Panasonic Healthcare engineered refrigeration compressors are specifically designed for ultra-low temperature applications. The MDF-DU900VC-PA employs a time-proven refrigeration system which has demonstrated better than 99% uptime since introducing the VIP Series MDF-U76VC-PA.³⁾

Unique system cooling functions within the Panasonic Healthcare cascade refrigeration circuit essentially use the same energy twice, once to cool the preserved product and again to cool the compressors and lubricating oil essential for proper operation. This process minimizes compressor stress and extends the compressor life. All functions are strategically balanced by the microprocessor-based controller which responds according to heat load, door openings and ambient conditions.

Panasonic Healthcare has engineered the most robust refrigeration system for ultimate performance and reliability in our ultra-low temperature freezers.



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3) "This calculation is based on Panasonic Healthcare service data for the MDF-U76VC-PA ultra-low temperature freezer."