Sustainable and Cost-Efficient Sample Storage

with SBS 2D tube racks

We make your freezer efficient!

The careful use of resources and the implementation of environmentally friendly practices are becoming increasingly important factors. The optimization of storage processes and the use of environmentally friendly technologies are not only essential to protect the environment, but also for the long-term integrity and availability of biological samples.

The storage tubes from LVL technologies can make a decisive contribution to achieving these aims. The switch from conventional cryoboxes to LVL SAFE® 2D tubes and racks not only makes the storage of samples in freezers much easier, efficient, and safer, but also makes storage significantly more sustainable.

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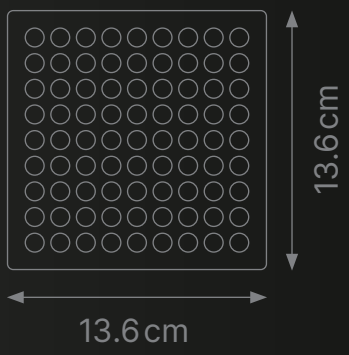
LVL technologies

Space-Saving Revolution

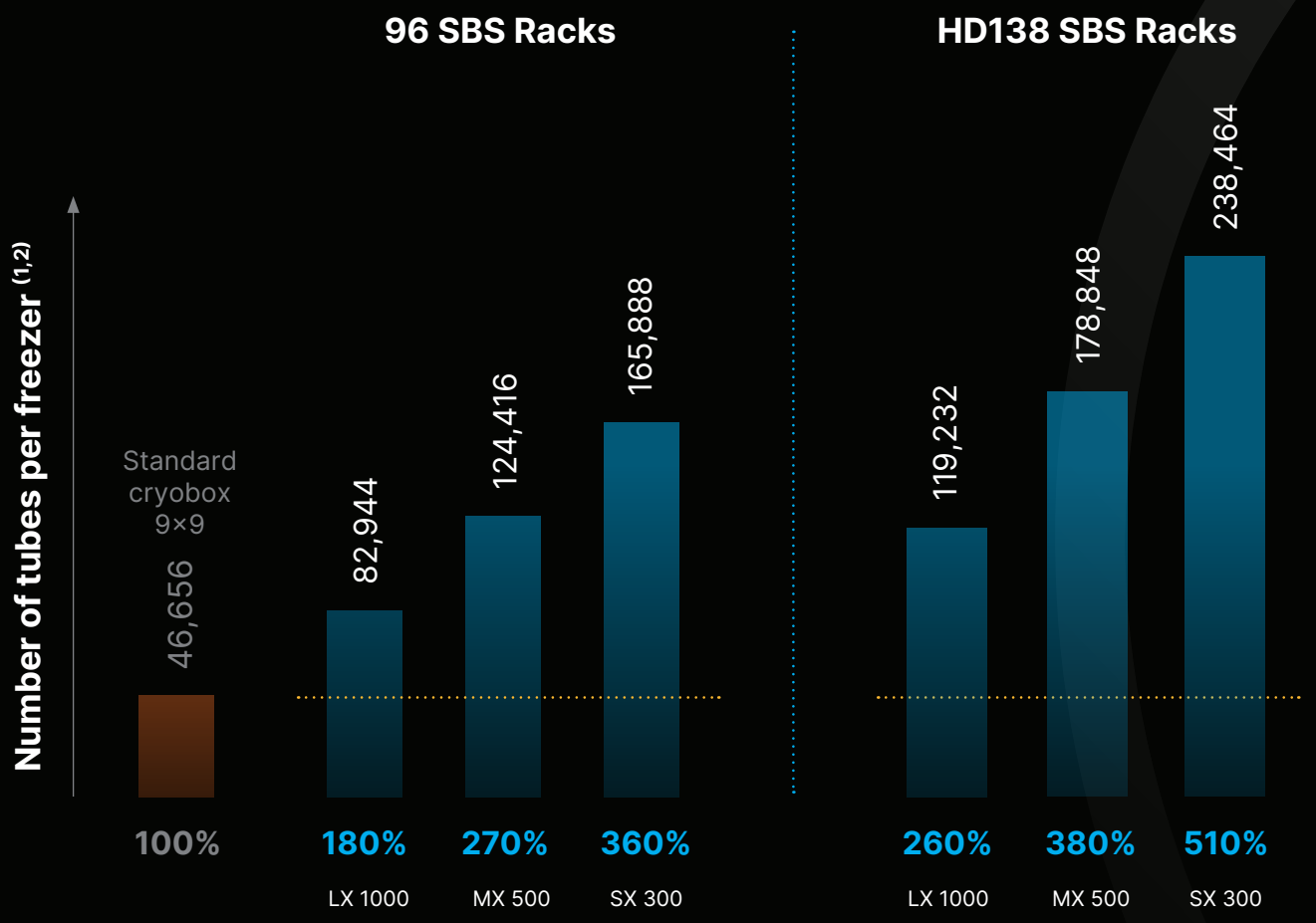
Convential cryoboxes are designed for volumes of at least 1–2 ml. In most cases, these volumes are not required, especially in the life science sector. For these applications, LVL technologies offers tubes with 500 µl or 300 µl sample volume. Even for a volume of 1000 µl, the space requirement is lower thanks to the sophisticated rack and tube design. Efficiency can also be significantly increased by using LVL SAFE® SBS High Density (HD) racks.

	Standard cryobox (9×9)	LVL 2D SAFE® SBS	
			
Footprint	 13.6 cm × 13.6 cm	96 SBS Rack: 12.8 cm × 8.5 cm HD138 SBS Rack: 12.8 cm × 8.5 cm	
Tube volume	1.5 to 2 ml	1000 µl: LX 1000 500 µl: MX 500 300 µl: SX 300	
Rack height	5.3 cm	5.3 cm	3.3 cm / 2.5 cm

44 – 80% less space required when using LVL SAFE® 2D tubes[1,2]

Benefits from Innovation

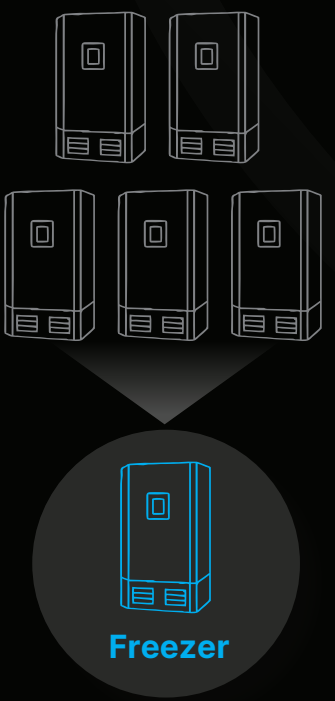
Streamlined freezing: save space, cut costs



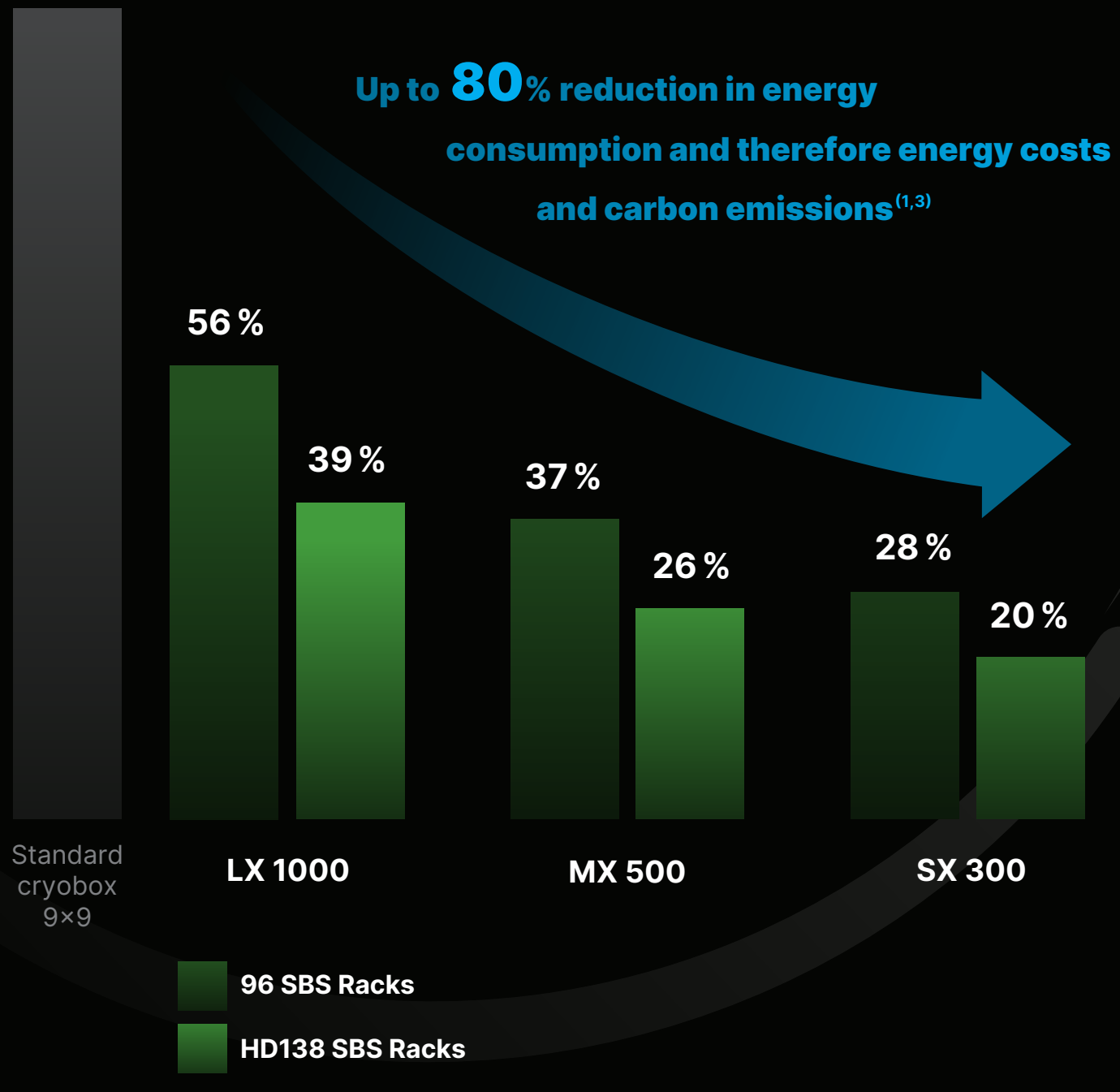
Use Case

Storage of 238,464 samples in LVL SAFE® HD138 SBS Racks using SX300 2D tubes.(1,2)

- **1 freezer** instead of **5 freezers** required
- **1 m²** instead of **5 m²** footprint for freezer
- Savings of approx. **45,000 €** for equipment investments



Effortless Energy Efficiency – Cost-Cutting Energy Innovations – Smaller Carbon Footprint



The lower number of freezers required by using LVL SAFE® 2D tubes significantly reduces electricity consumption, reffectively cutting the cost of energy. Additionally, we take pride in actively supporting the development of more sustainable practices within institutions by positively impacting resource consumption for energy generation and reducing carbon emissions.

Use Case

Resource and cost savings per year for 100,000 samples[1,3] LVL SAFE® HD138 SBS Racks using SX300 2D tubes.

6,922 kWh

2,077 €

1,564 kg CO_2

Contact

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We‘d be delighted to calculate your individual benefits and savings potential accurately using your own parameters. Please get in touch with us to find out more.

Insights

(1) Basic data used for calculations

Average values of frequently used freezers

- Capacity of standard cryoboxes per unit — 576
- Average energy consumption — 11 kWh/24h per unit
- Average freezer investment costs — 11,000 €

Basic values for energy and cost calculation

- Average electricity price in the EU: — 30 c/kWh
- Specific carbon intensity in the electricity sector of the EU27 in 2020: — 226 g CO_2 per kWh

Sources (As of December 2023)
https://www.weltenergierat.de/publikationen/energie-fuer-deutschland/energie-fuer-deutschland-2021/energie-in-der-europaeischen-union-zahlen-und-fakten/?cn-reloaded=1
https://strom-report.com/strompreise-europa

(2) Calculation of capacities

Rack	Number of boxes per drawer	Height of rack (cm)	Number of drawers per rack due to height	Boxes per freezer rack	Freezer racks per freezer	Racks per freezer	Number of tubes per rack	Number of tubes per freezer	Number of freezers in comparison when using cryoboxes	Space requirement freezer footprint (m2) when using cryoboxes instead of LVL SBS	Number of freezers required as a percentage	Percentage saving of freezer space in relation to number of tubes
Standard cryobox 9x9	4	5.3	6	24	24	576	81	46,656	1	0.91	100%	
LVL 96 SBS LX 1000 XT	6	5.3	6	36	24	864	96	82,944	1.8	1.62	56%	44%
LVL 96 SBS MX 500	6	3.3	9	54	24	1,296	96	124,416	2.7	2.43	38%	63%
LVL 96 SBS SX 300	6	2.5	12	72	24	1,728	96	165,888	3.6	3.24	28%	72%
LVL HD 138 for LX 1000	6	5.3	6	36	24	864	138	119,232	2.6	2.33	39%	61%
LVL HD 138 for MX 500	6	3.3	9	54	24	1,296	138	178,848	3.8	3.49	26%	74%
LVL HD 138 for SX 300	6	2.5	12	72	24	1,728	138	238,464	5.1	4.65	20%	80%

(3) Calculation of energy and environmental data

Rack	Number of tubes per freezer	Energy consumption per year/ 1,000 tubes (kWh)	Savings in energy consumption per year for 100,000 tubes (kWh)	Energy costs per year/ per 1,000 tubes (€)	Savings in energy costs per year for 100,000 tubes (€)	Total CO2 emissions per year/ per 1,000 tubes (kg CO2)	Savings in CO2 emissions per year/ per 100,000 tubes (kg CO2)	Respective percentage savings when using LVL tubes and racks
Standard cryobox 9x9	46,656	86.06		25.82		19.45		
LVL 96 SBS LX 1000 XT	82,944	48.41	3,764.92	14.52	1,129.48	10.94	850.87	44%
LVL 96 SBS MX 500	124,416	32.27	5,378.46	9.68	1,613.54	7.29	1,215.53	63%
LVL 96 SBS SX 300	165,888	24.20	6,185.23	7.26	1,855.57	5.47	1,397.86	72%
LVL HD 138 for LX 1000	119,232	33.67	5,238.15	10.10	1,571.45	7.61	1,183.82	61%
LVL HD 138 for MX 500	178,848	22.45	6,360.62	6.73	1,908.18	5.07	1,437.50	74%
LVL HD 138 for SX 300	238,464	16.84	6,921.85	5.05	2,076.55	3.81	1,564.34	80%

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