



Datasheet

Large-Scale Blast Unit (LSBU)

MARCH_2026



Description

Large-Scale Blast Unit (LSBU)

Large-Scale Blast Unit (LSBU) is purpose-built for biotech and pharmaceutical applications. It uses a powerful forced-air system to ensure rapid and uniform temperature control and delivers fast pull-down for secure freezing and controlled thawing to maintain product quality across every batch.

Designed for high-throughput environments, the LSBU can blast freeze up to 2,400 kg of liquid product (bottles, bags, CryVault containers and pallets) from +25°C to -60°C in less than 21 hours, with operational capability down to -80°C.

Its advanced airflow design ensure consistently freezing across the entire load, eliminating thermal gradients and minimizing product stress.

The system is available in multiple configurations with modular inventory systems and scalable capacities, allowing precise adaptation to specific process requirements and facility layouts.



HIGHLIGHTS:

Chamber volumen

10.4 m³ (367 ft³)

Storage capacity

2.400 L per unit

Temperature range

-20°C to -80°C

Interior design

Tailored design with the use of racks, pallets or trolley

Curious what large-scale blast could do for your facility



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GENERAL	
Chamber volume	10,4 m ³ (367 ft ³)
Storage capacity (mass)	2.400 L
Total footprint including loading area	16,4 M ₂

DIMENSIONS & WEIGHT	
Interior dimensions	3,050 mm (W) × 1,600 mm (D) × 2,200 mm (H)
Exterior dimensions w. compressor units	3,400 mm (W) × 2,000 mm(D) × 5,800 mm (H)
Unit weight empty freezer shell	Approx, 3,0 tons
Unit weight freezer shell w. compressor units	Approx, 4,7 tons
Unit weight fully loaded freezer	Approx, 7,1 tons

PERFORMANCE	
Temperature range	-20°C to -80°C
Uniformity	±1.0°C on products
Temperature control	Adjustable 0,1°C increments via HMI
Ambient operating temperature	10°C - 25°C
Energy consumption at -80°C	Depending on batch size

REFRIGERATION SYSTEM	
Refrigeration system	No Redundancy - single unit
Condenser / Heat rejection cycle	Chilled water - Tower water - Drycooler
System type	Cascade system - single unit system
Refrigerants (More options on request)	HT - R744 - GWP 3 LT - R508B - GWP 13400

CONTROLS & INTERFACES	
Human Machine Interface (HMI)	IPC 677E with Siemens Unified 20 SCADA application
PLC	Siemens ET200SP 1510 1PN
External communications ethernet protocols	Modbus TCP/IP Siemens S7 online OPC UA
Hardwired external connections FMS/BMS	Urgent alarm Non urgent alarm 1 pcs. Thermowell
Alarms up to 80 pr. LSSU	Status High/low temp Door open Power failure System failure

MODULARITY	
Project configurable Interior	Racks / pallets / trolleys
Temperature	Easy converting to another temperature setpoint
Expansion	Adding of minimum 2 LSSU each time to existing installation

OPERATIONAL	
Optional services	Service Level Agreements Mapping on request Technical / Operational training of personnel Extended Warranty
Life cycle of freezer shell	25 years in US, EU and Asia

Certifications

Large-Scale Storage Unit (LSBU)



Corporate Social Responsibility



LOWENCO has completed the EcoVadis Scorecard, and has been awarded a Gold Medal.