



LIFECYCLE PERSPECTIVE

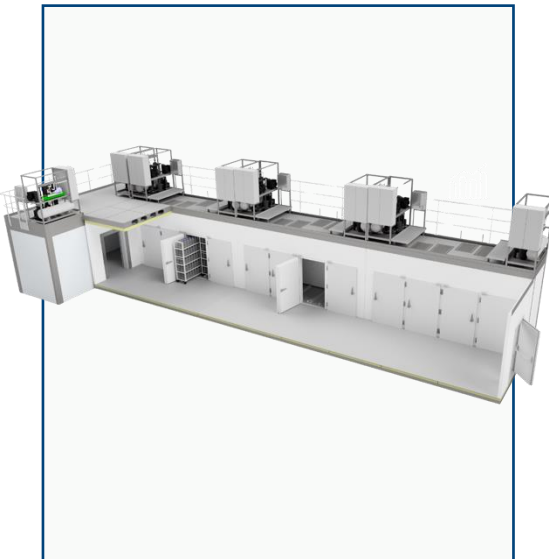
COLD STORAGE INFRASTRUCTURE
IN THE ERA OF PHARMA 4.0.

FINANCIAL LIFECYCLE IMPACT

Different cold-storage architectures create fundamentally different lifecycle cost structures



FREEZER FARM



**LARGE-SCALE
INTEGRATED**



GMP COLD ROOM



CONTEXT:

- -80°C setpoint
- 25.900 L storage volumen
- 10L bottles
- 25 years lifecycle

218 UPRIGHTS
VS
6 MODULAR UNITS

incl. corridor, ante-room
& dedicated tech-space

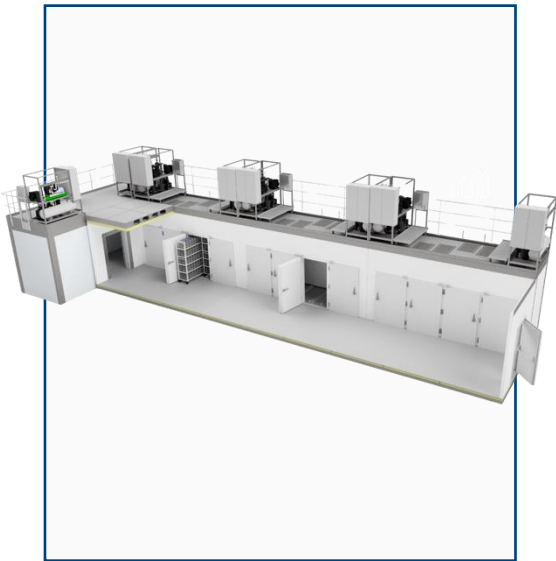
VS
1 COLD ROOM

incl. ante-room

THE TRUE COSTS OF COLD STORAGE



FREEZER FARM



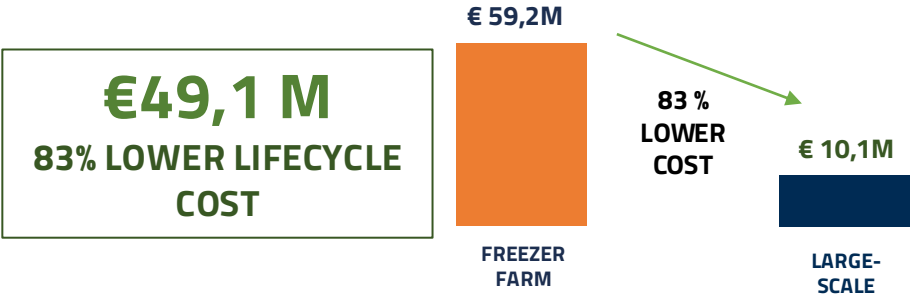
LARGE-SCALE INTEGRATED



GMP COLD ROOM

FINANCIAL COMPARISON

METRIC	FREEZER FARM*	LARGE -SCALE**	COLD ROOM***
Initial CAPEX	€10.1 M	€5.7 M	€5.7 M
Operating cost (25 years)	€39.5 M	€4.4 M	€7.1 M
Replacement Cost (25 years)	€9,6 M	€0 M	€0 M
TOTAL LIFECYCLE COST	€59.2 M	€10,1 M	€12,8 M



*Source, avg. of consolidated 18 different upright freezer brands on the market
** LOWENCO Large-Scale Storage Solution
*** LOWENCO GMP Cold Room

CAPEX:

INITIAL CAPEX INVESTMENT PRICING FOR PURCHASING

	FREEZER FARM*	LARGE-SCALE**	GMP COLD ROOM***
No. Units	218 units	6,0 units	1 cold room
Unit Price	22.210 €/unit	804.000 €/unit	4.000.000 €/unit
Total Price Units	4.841.000 €	4.824.000 €	4.000.000 €

*Source, avg. of consolidated 18 different upright freezer brands on the market

**LOWENCO Large-Scale Storage Solution

***LOWENCO GMP Cold Room

ADDITIONAL CAPEX INVESTMENT TO GET A SOLUTION UP RUNNING

PRICING OF BUILDING

	FREEZER FARM*	LARGE-SCALE**	GMP COLD ROOM***
Total footprint (m²)	530 m²	165 m²	391 m²
Total footprint (feet²)	5705 feet²	1771 feet²	4209 feet²
Building price pr feet²	400 €/feet²	400 €/feet²	400 €/feet²
Bulding price	2.282.102 €	708.402 €	1.683.474 €

HVAC PLANT

	FREEZER FARM*	LARGE-SCALE**	GMP COLD ROOM***
Total heat to release to ambient warehouse	7.625 Kw/day	115 Kw/day	153 Kw/day
Pricing HVAC plant	300 €/Kw	300 €/Kw	300 €/Kw
Total pricing HVAC plant	2.287.575 €	34.560 €	45.903 €

BMS CONNECTION NUMBERS OF UNITS:

	FREEZER FARM*	LARGE-SCALE**	GMP COLD ROOM***
Numbers of units	218 units	6 units	1 Cold Room
Pricing per BMS connection	1000 €	1000 €	1000 €
Total price for BMS connections	218.000 €	6000 €	1.000 €

ELECTRIC FEEDS

	FREEZER FARM*	LARGE-SCALE**	GMP COLD ROOM***
Numbers of units	218 units	6 units	1 Cold Room
Numbers og electrical feeds (incl. Redundancy)	218 feeds	42 feeds	15 feeds
Pricing per electrical feed	2.000 €	2.000 €	2.000 €
Total price for electrical feed	436.000 €	84.000 €	30.000 €

OPEX:

Annual Operating Costs (1 Year)

**PRICE
ELECTRICITY**
0,5 €/Kw

**1
YEAR**
365 days

PRICING FOR ELECTRIC CONSUMPTION OF FREEZERS:

	FREEZER FARM*	LARGE-SCALE**	GMP COLD ROOM***
No. units	218 units	6 units	1 units
Average compressor utilization	74%	74%	74%
Total power consumption	2.121 Kw/day	771 Kw/day	1.233 Kw/day
Total electric consumption price (freezers)	387.024 €/year	140.722 €/year	224.993 €/year

PRICING FOR ELECTRIC CONSUMPTION & HVAC PLAT:

	FREEZER FARM*	LARGE-SCALE**	GMP COLD ROOM***
Total heat release to ambient warehouse	7.625 Kw/day	115 Kw/day	153 Kw/day
Average compressor utilization	74%	74%	74%
Total power consumption HVAC	5.643 Kw/day	85 Kw/day	113 Kw/day
Total electric consumption price (HVAC)	1.029.790 €/year	15.558 €/year	20.664 €/year

VALIDATION OG BMS PROBES:

	FREEZER FARM*	LARGE-SCALE**	GMP COLD ROOM***
Number of units	218 units	6 units	1 Cold Room
Pricing per validation	500 €	500 €	500 €
Total price for validation	109.000 €	3.000 €	500 €

LEASING COST BUILDING:

	FREEZER FARM*	LARGE-SCALE**	GMP COLD ROOM***
Leasing cost pr m²	530 m²	165 m²	391 m²
Total footprint m²	100 €/m²/year	100 €/m²/year	100 €/m²/year
Total leasing cost	53.004 €	16.453 €	39.100 €

1 YEAR TOTAL COST OF OPERATION

	FREEZER FARM*	LARGE-SCALE**	GMP COLD ROOM***
	1.578.817 €	175.733 €	285.257 €

*Source, avg. of consolidated 18 different upright freezer brands on the market

** LOWENCO Large-Scale Storage Solution

*** LOWENCO GMP Cold Room

TOTAL COSTS OF OWNERSHIP 25 YEARS:

LIFECYCLE
UPRIGHTS
EXPECTANCY

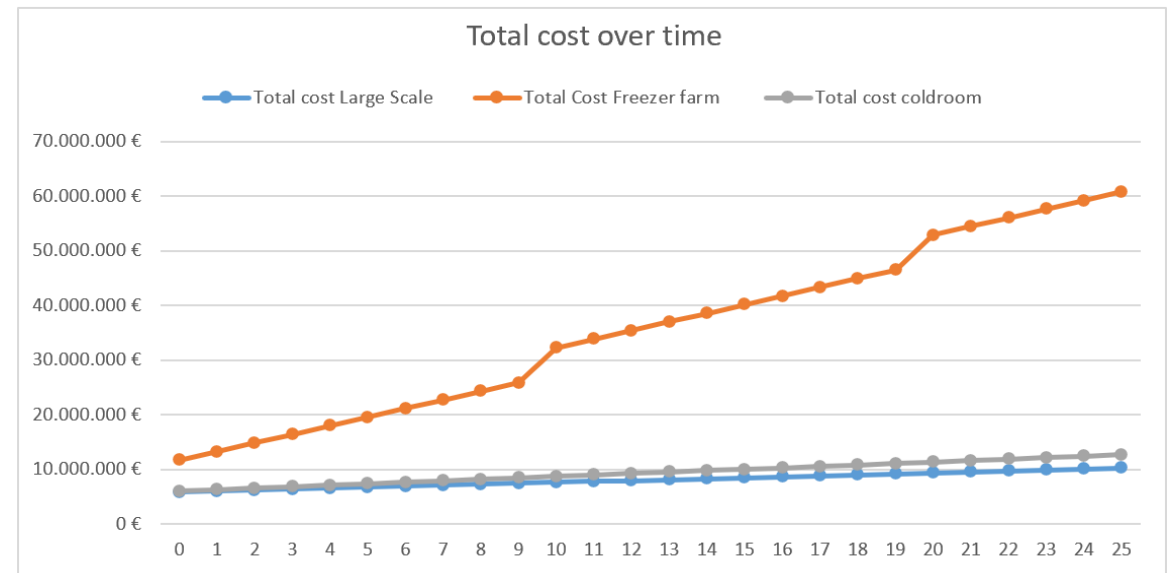
10
years

LIFECYCLE
LSSU
EXPECTANCY

25
years

LIFECYCLE
GMP COLD
ROOM
EXPECTANCY

25
years

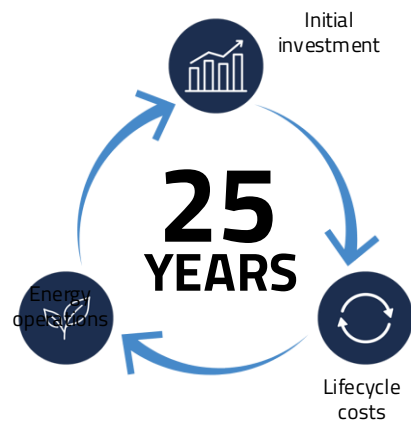


*Source, avg. of consolidated 18 different upright freezer brands on the market

**LOWENCO Large-Scale Storage Solution

***LOWENCO Cold Room

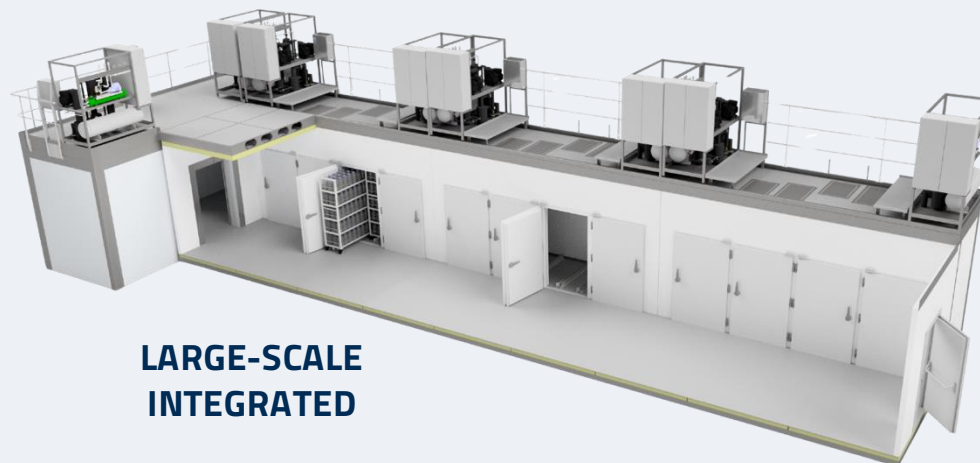
FINANCIAL VALUE



BALANCES LIFECYCLE ECONOMICS WITH PRODUCT PROTECTION



GMP COLD ROOM



**LARGE-SCALE
INTEGRATED**

RISK ASSESSMENT



**PRODUCT
PROTECTION**



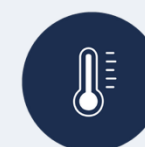
**LIFECYCLE
ECONOMICS**



**OPERATIONAL
FLEXIBILITY**



**REACH-IN
| PEOPLE
PROTECTION**



**±1°C PRODUCT-
TEMPERATURE
UNIFORMITY**



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