

Flash Freeze

SAMPLE SPECIFICATIONS AND DATA

Biggest Benefits of 3D Freezers

Decrease in Drip Loss

Reduce the drip loss in your product to store products longer!

Reduction of Running Cost

Reduce running and operational costs and make your business more efficient!

Increase in Frozen Product Quality

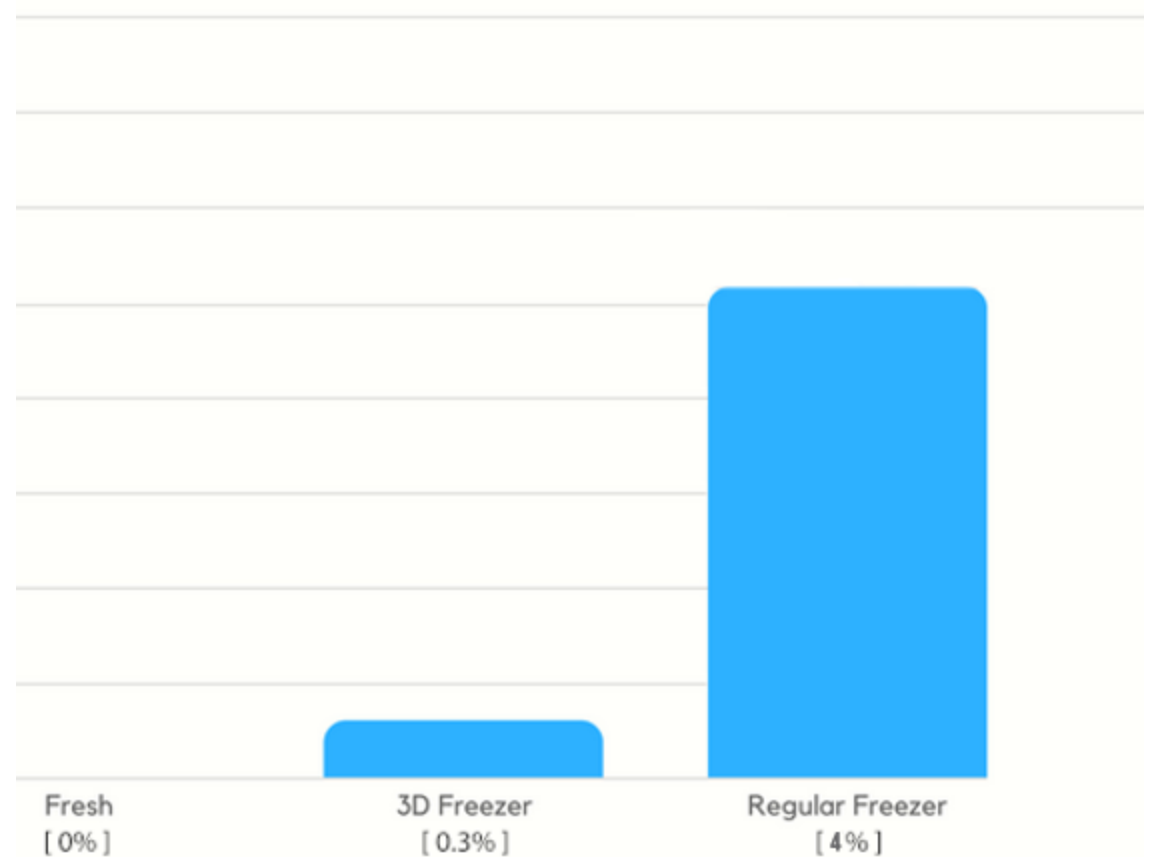
Maintain high product quality despite long storage times!

Drip Loss Percentage

- ▶ Includes drip loss percentages of food when compared to:
 - ▶ Fresh Unprocessed State
 - ▶ After using a 3D Freezer
 - ▶ Using a Regular Freezer

Drip Loss Percentage

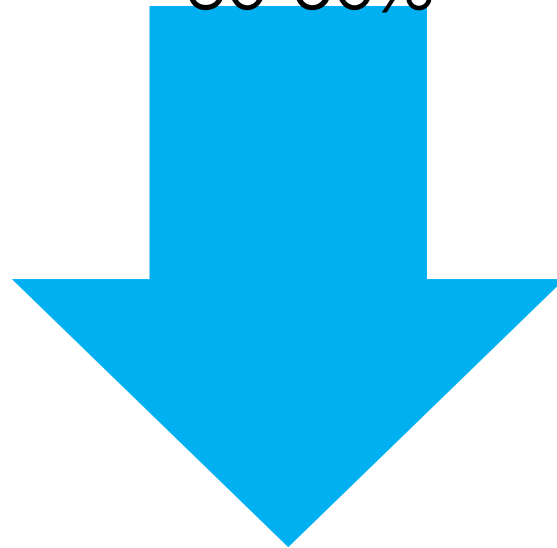
PERCENTAGE ANALYSIS RATIO





Regular Blast Freezers have Higher Electrical Operational Expenses VS our 3D Freezer.

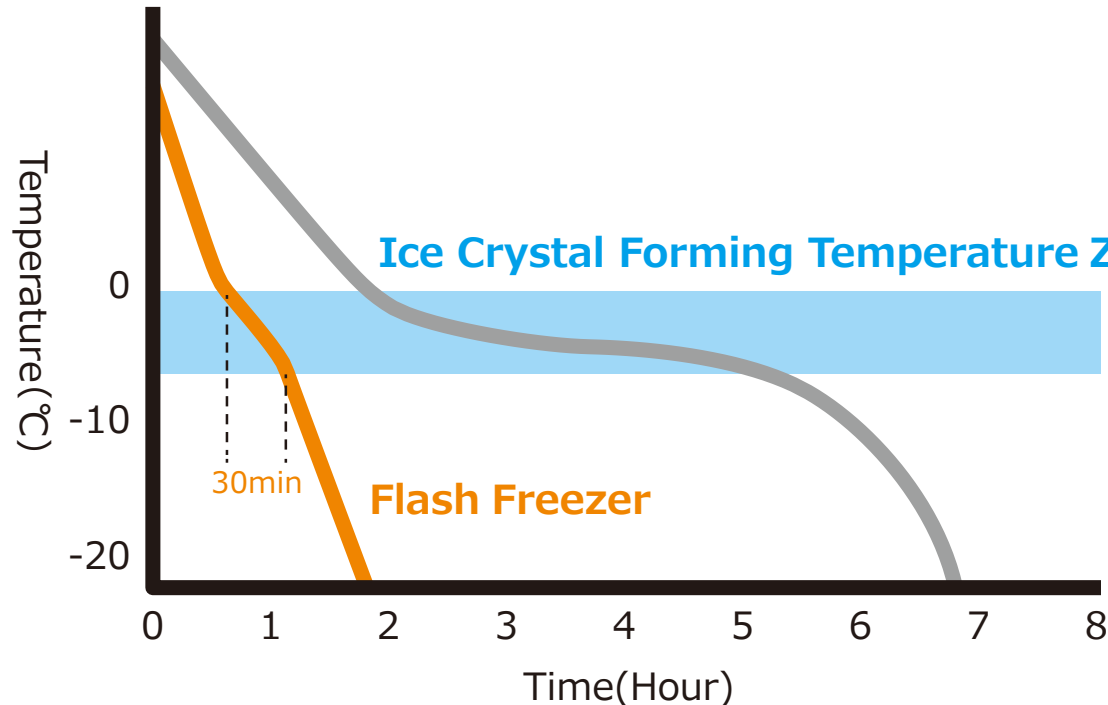
30-50%



Our 3D Tunnel and Spiral Freezers Lower Electrical Costs and Operational Expenses by almost 30-50%

High Speed Efficiency While Ensuring Quality

- ▶ By letting food pass through the ice crystal forming temperature zone (Between -1 and -5°C) within 30 min, ice crystals do not damage the food cells, and it prevents food from losing its taste and flavor



The longer it takes before the food passes through this temperature zone, the more damaged food gets.

Cellular Structure and Wall Preservation

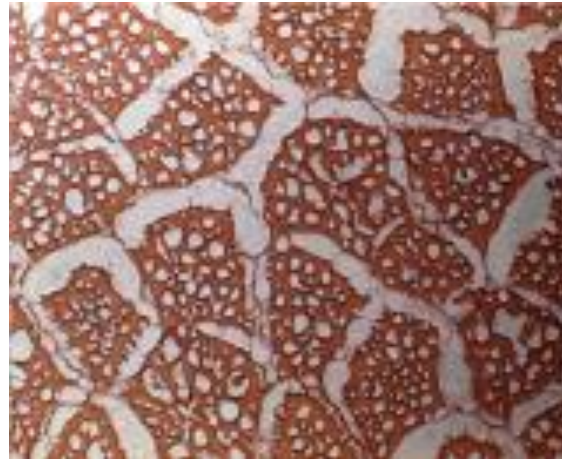
Food cells before Freezing



Food cells look untouched and healthy

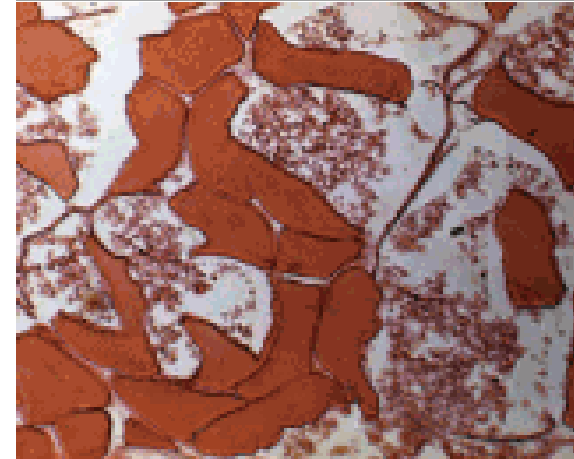


Food cells after Fast Freezing



Small ice crystals were formed and they hardly damaged the cellular structure

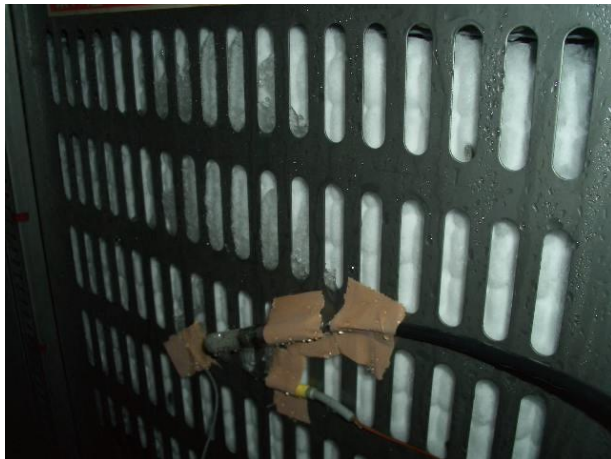
Food cells after Regular Freezing



Huge ice crystals were formed and they damaged the cellular structure

No Internal Frost Production

By generating steam inside the freezer, we observed the amount of frost in both. You can see that frost in a conventional freezer is clogging. In contrast to that, in a 3D freezer there is no clogging.



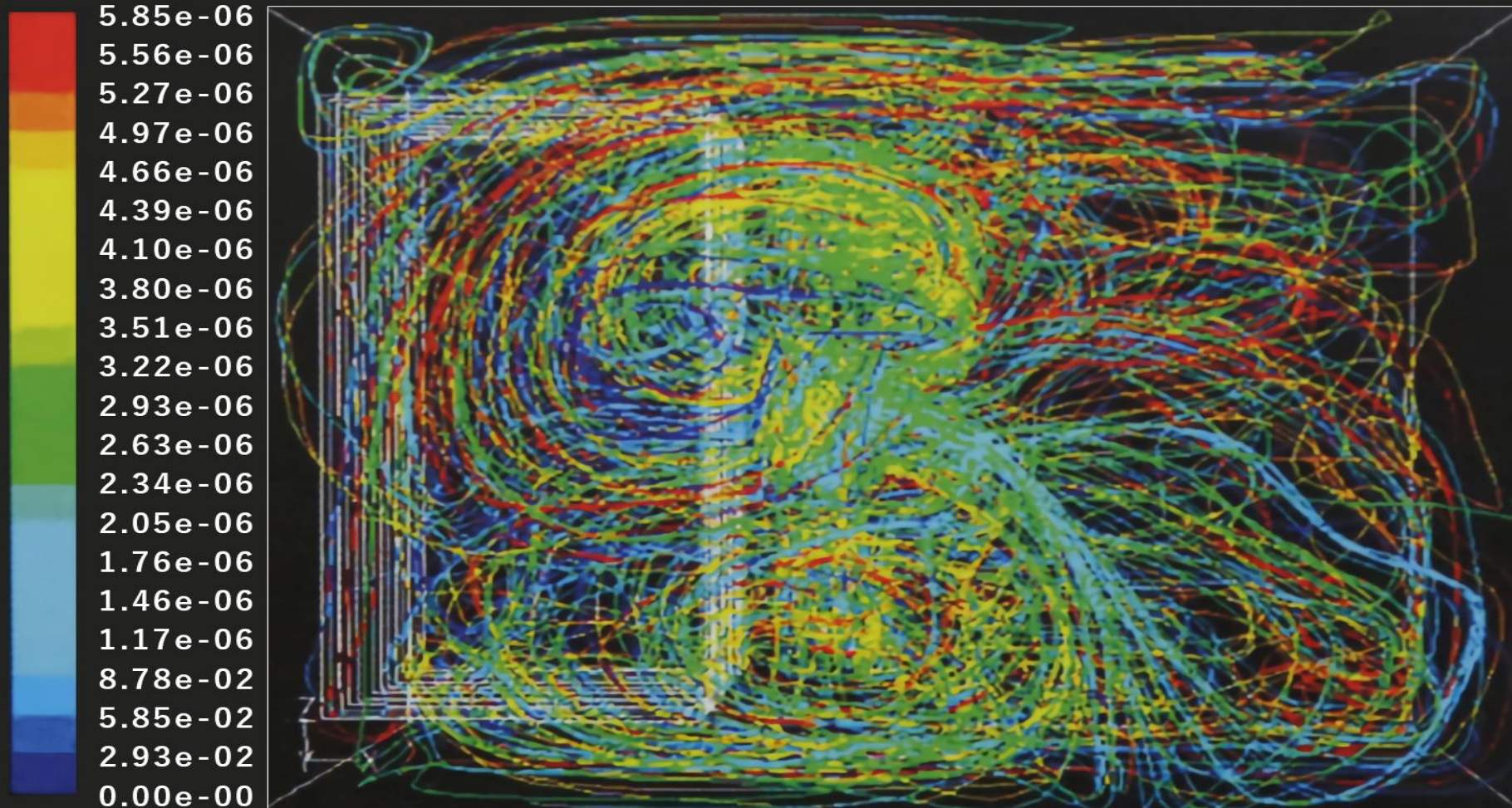
Conventional Freezer



3D Freezer



360° 3D FREEZING TECHNOLOGY



WITH THE 3D FREEZER'S ADVANCED ACVCS TECHNOLOGY, PRODUCT QUALITY REMAINS UNCHANGED AND PRODUCTS RETAIN THEIR OVERALL TEXTURE AND FLAVOR

Freezing Test Results

A LOOK AT PRODUCTS FROZEN USING THE 3D FREEZER

Frozen To Defrost : Sushi



Fresh Vs Frozen : Shrimp



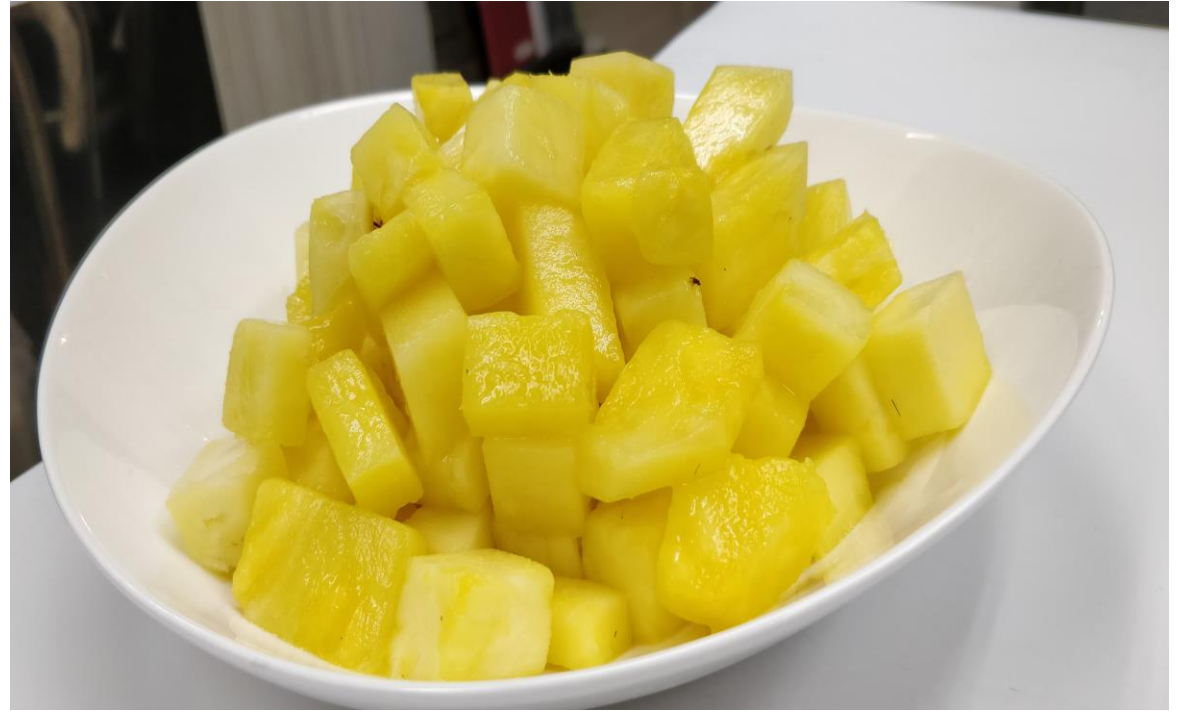
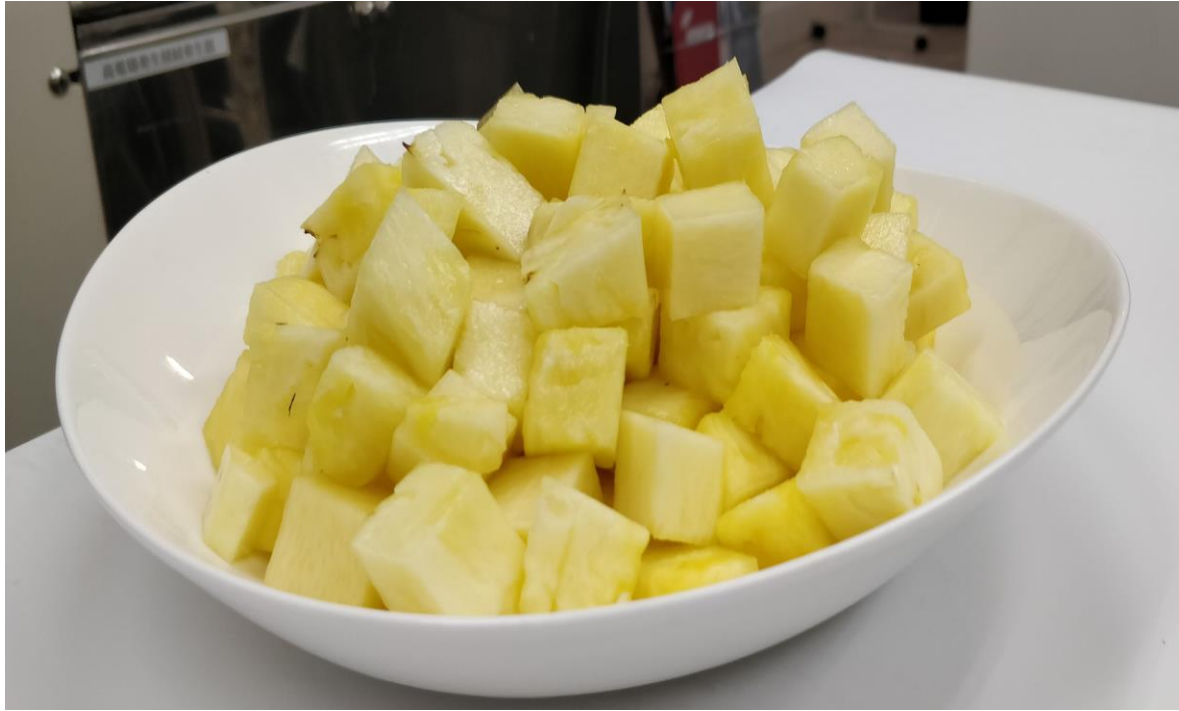
Frozen To Defrost : Sushi



Frozen To Defrost : Salmon



Frozen to Defrost : Pineapple



Frozen to Defrost : Mango



Frozen to Defrost : Cake



Kogasun x Daybreak

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Flash Freeze急速冷凍機

冷凍實例及數據資料

3D急速冷凍機的三大優點

節省運轉成本

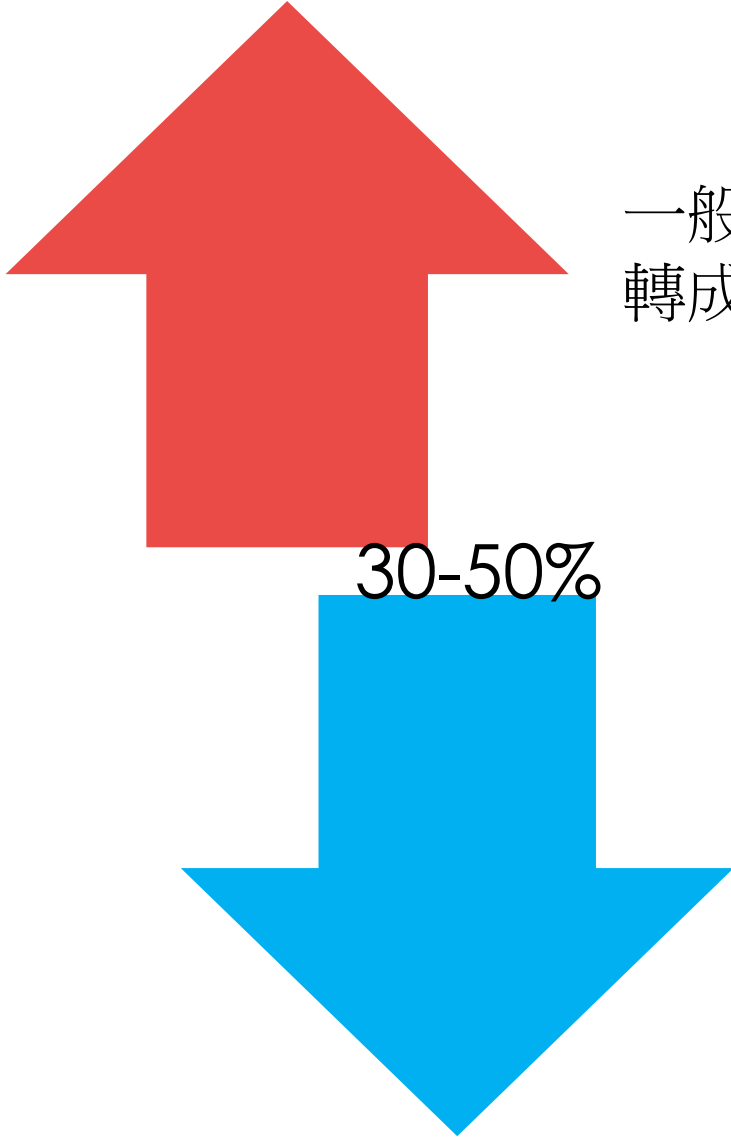
減少運轉以及操作成本，有利企業長期經營

減少滴液流失

抑制食材冷凍後出水的狀況，達成長期保鮮

提升冷凍食材品質

維持高品質的同時，有效延長保存期限



一般的空氣型急速冷凍庫的運轉成本較3D急速冷凍庫高昂

30-50%

3D隧道型和螺旋形急速冷凍機，比市面上一般機型節約30-50%左右費用

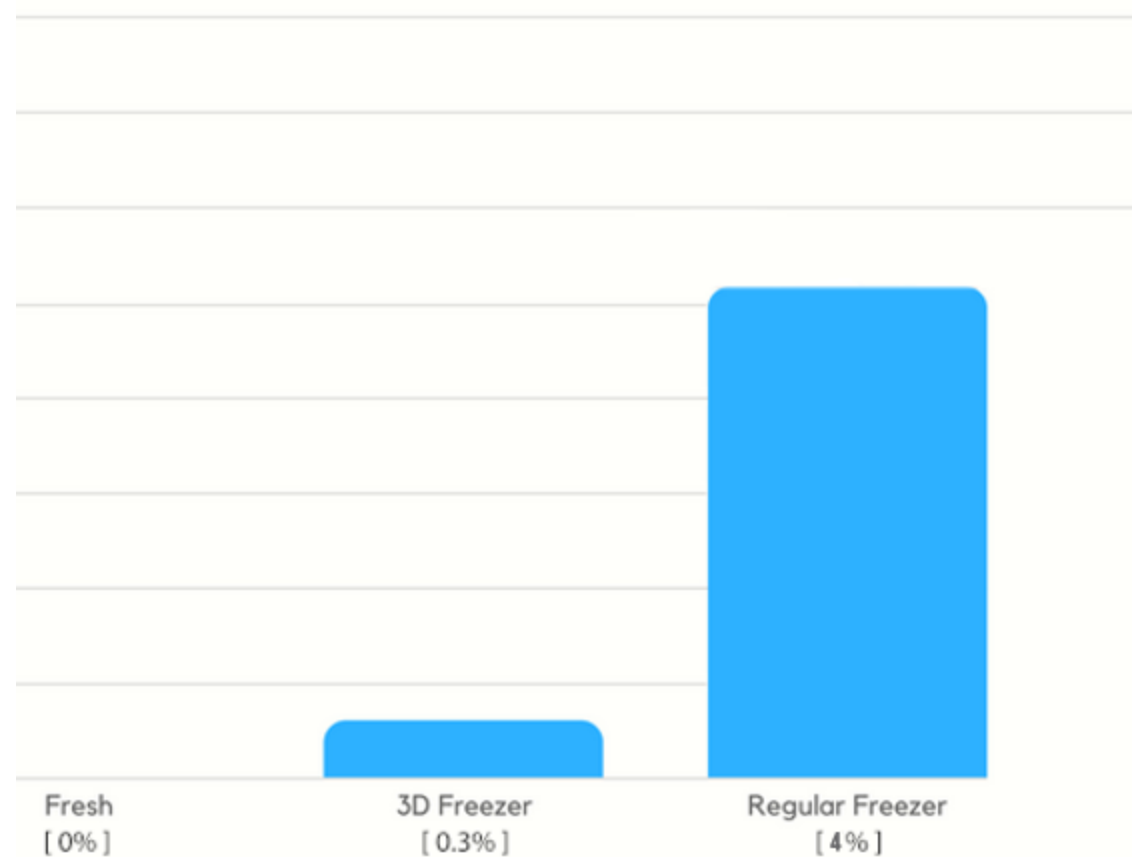
滴液流失百分比

此表包含三種情況下的滴液流失率：

- ▶ 新鮮未加工的狀態
- ▶ 使用3D急速冷凍機之後
- ▶ 使用一般的冷凍庫

Drip Loss Percentage

PERCENTAGE ANALYSIS RATIO



出水導致之成本差異		
鯉魚價格 (日圓/公斤)		
1,400		
冷凍量 (公斤/小時)	冷凍量 (公斤/天)	運轉時間 (小時)
500	5,000	10
3D 急速冷凍機出水率	一般冷凍庫出水率	兩者差異
0.30%	4.00%	3.70%
出水量差異 (公斤/天)	出水量差異 (公斤/月)	出水量差異 (公斤/年)
185	5,735	67,525
成本損失 (日圓/年)	此為一般冷凍庫導致的成本損失	
94,535,000		

出水導致的 成本損失 [實例]

食材滴液流失[實例]



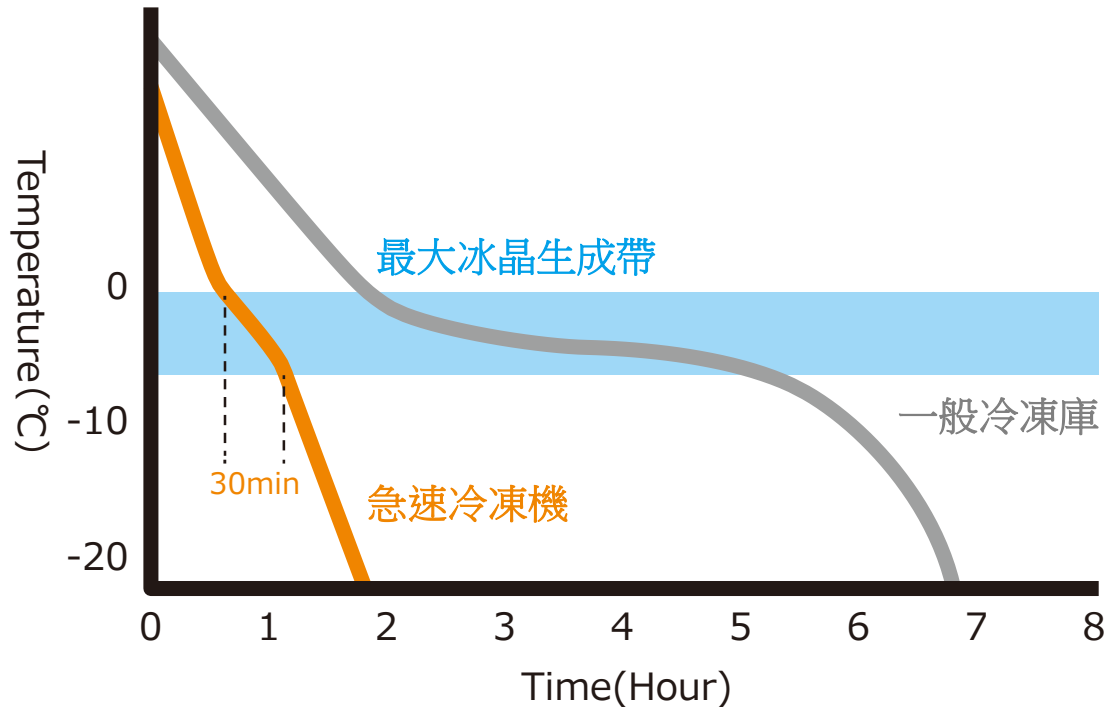
增加收益

引進客製化的3D隧道式或螺旋式機種，除了能夠維持冷凍食材的品質與保存期限外，長期使用下來得以帶來利潤與節省大量經費。

- ▶ 引進3D急速冷凍機，能夠從2方面改善公司整體的經營狀況：
 1. 抑制滴液流失
- ▶ 減少出水的狀況，能夠延長產品的保存期限，可以經年保存、節約投資成本
 2. 低運轉成本
- ▶ 3D急速冷凍機主打能比一般冷凍機節約30-50%運轉費用

高效率急速冷凍的同時維持品質

- ▶ 透過急速降溫的技術，得以在**30分鐘**內快速通過最大冰晶生成帶(-1至-5°C)，抑制冰結晶大小及數量使其不傷害食材組織，防止冷凍後食材口感或味道改變



通過此時間帶所花的時間越長，食材的細胞組織越有可能被冰晶撐大撐壞。

保護食材細胞結構

冷凍前的食材細胞



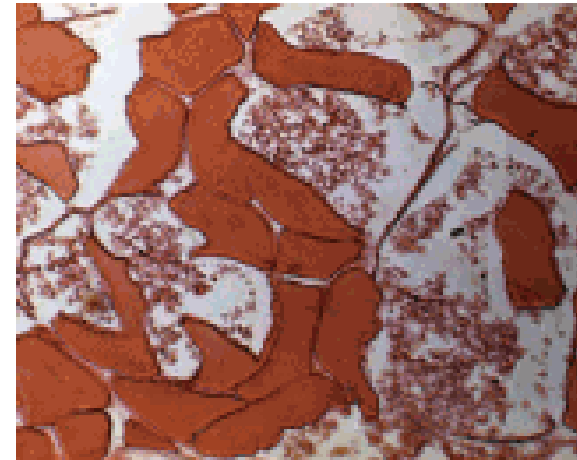
食材細胞看起來新鮮且未遭破壞

3D急速冷凍後的食材細胞



食材內部結成不會傷害細胞組織的微小冰晶。

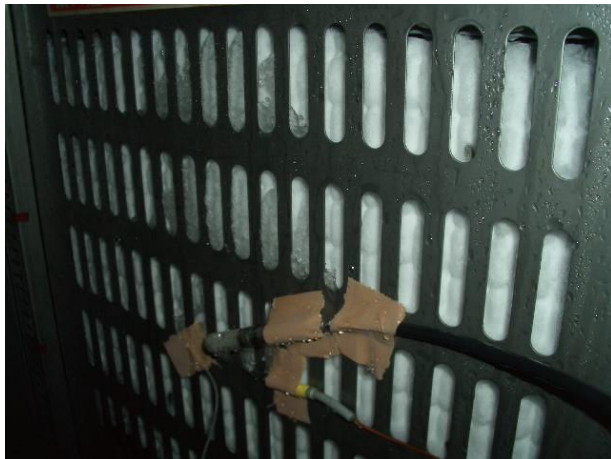
一般冷凍後的食材細胞



形成的巨大冰晶會撐破食材組織、造成細胞內液流出

機體內部不會結霜的構造

為比較一般急速冷凍機和3D急速冷凍機，我們在兩種庫內製造了等量的蒸氣。一般冷凍機的結霜狀況十分嚴重，幾乎無法正常運轉。然而3D急速冷凍機庫內則僅有少量結霜。



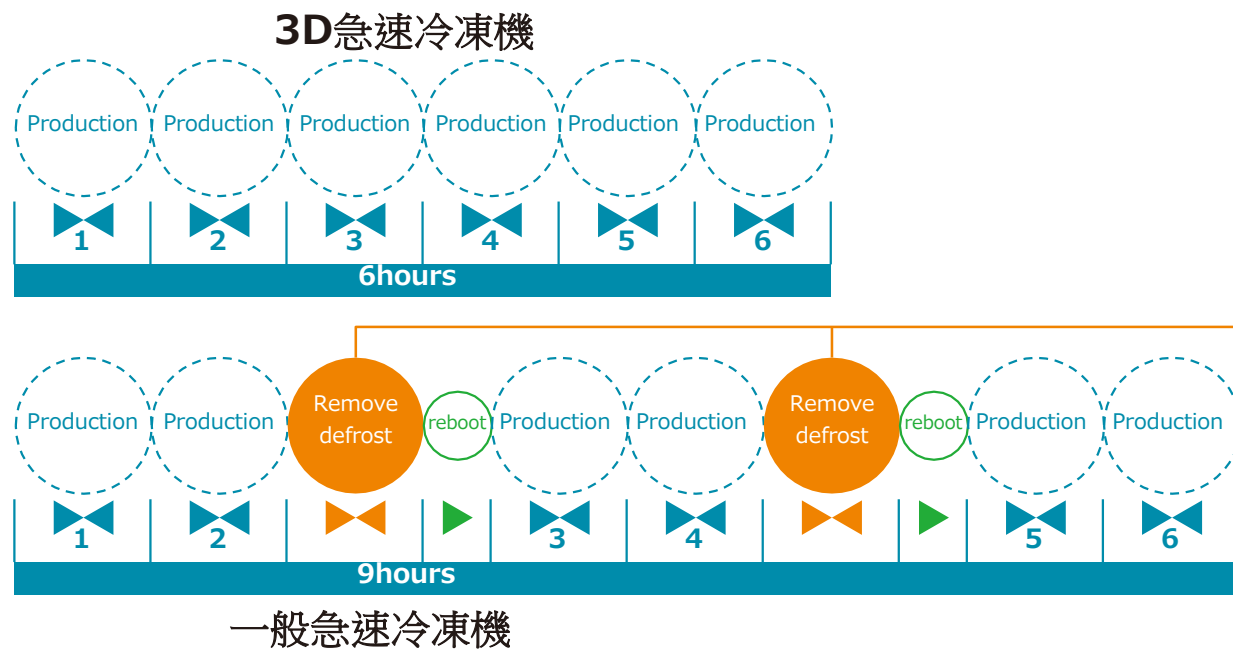
一般急速冷凍機的結霜狀況



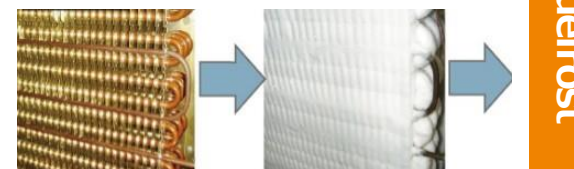
使用3D急速冷凍機



生產效率提升



翅片管裝置



結霜會導致庫內溫度上升。這會加重壓縮機的運轉負擔。3D急速冷凍機將不會有大量結霜的情形出現。

運轉成本及生產效率[實例]

	Power consumption (when working)	Power consumption (when removing frost)	Removing frost	Hours of operation	Production number (per hour)	Production number (per day)	Power consumption (per day)	Electrical fee (per day)
3D freezer	22.8kw/h	7.2kw/h	0	15 hour	1,600	24,000	342.0kw/h	0.29yen
Conventional Air Blast Freezer	24.2kw/h	19.9kw/h	4	11 hour	1,600	17,600	19.9kw/h	0.39yen

Weight of product (food)

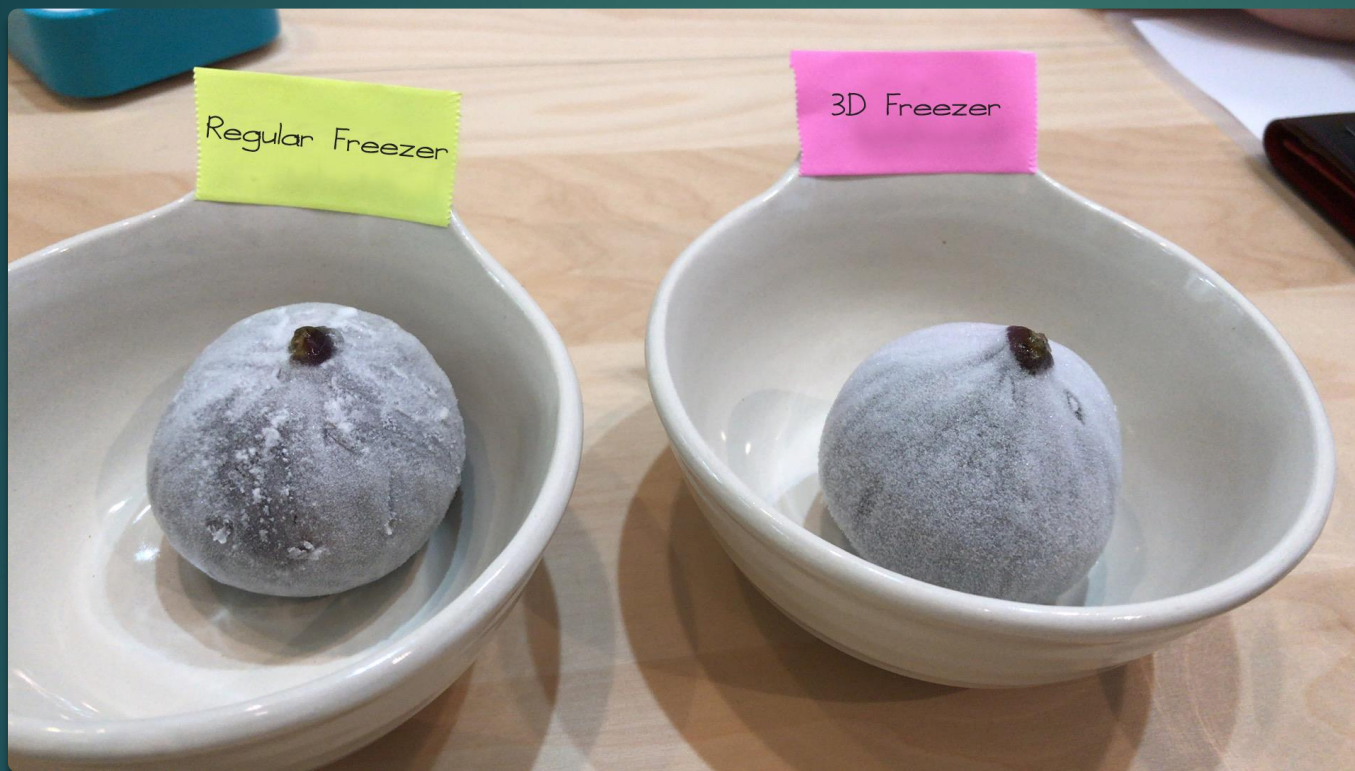
	Grilled rice ball		
	Before freezing	After freezing	After defrosting
3D freezer	100g	96g	99g
Conventional Air Blast Freezer	100g	92g	95g

生產效率提升
36%

每冷凍一個食材
可以節省 0.1日
圓(26%)

產量提升
4%

3D急速冷凍機可以防止食物乾燥脫水，
能夠有效提升產量



冷凍測試 結果

3D急速冷凍機食材測試報告

解凍前後：壽司



解凍前後：壽司



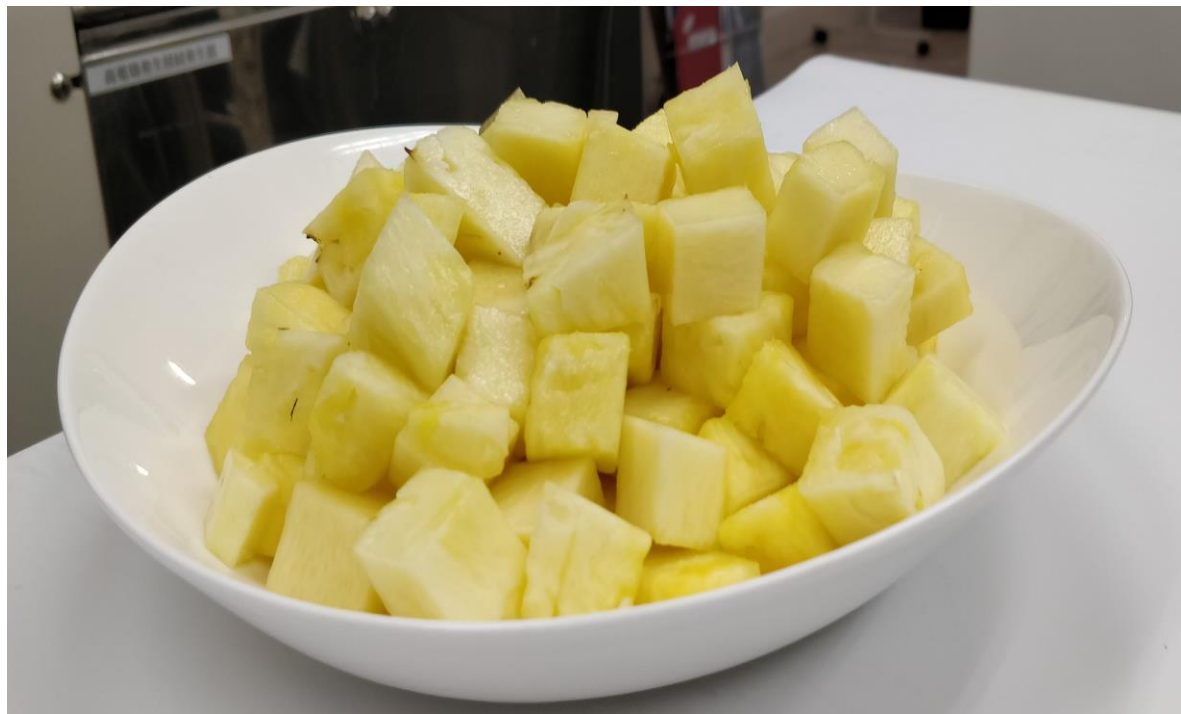
解凍前後：蝦



解凍前後：鮭魚



解凍前後：鳳梨



解凍前後：芒果



解凍前後：和菓子



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聯絡方式:

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