

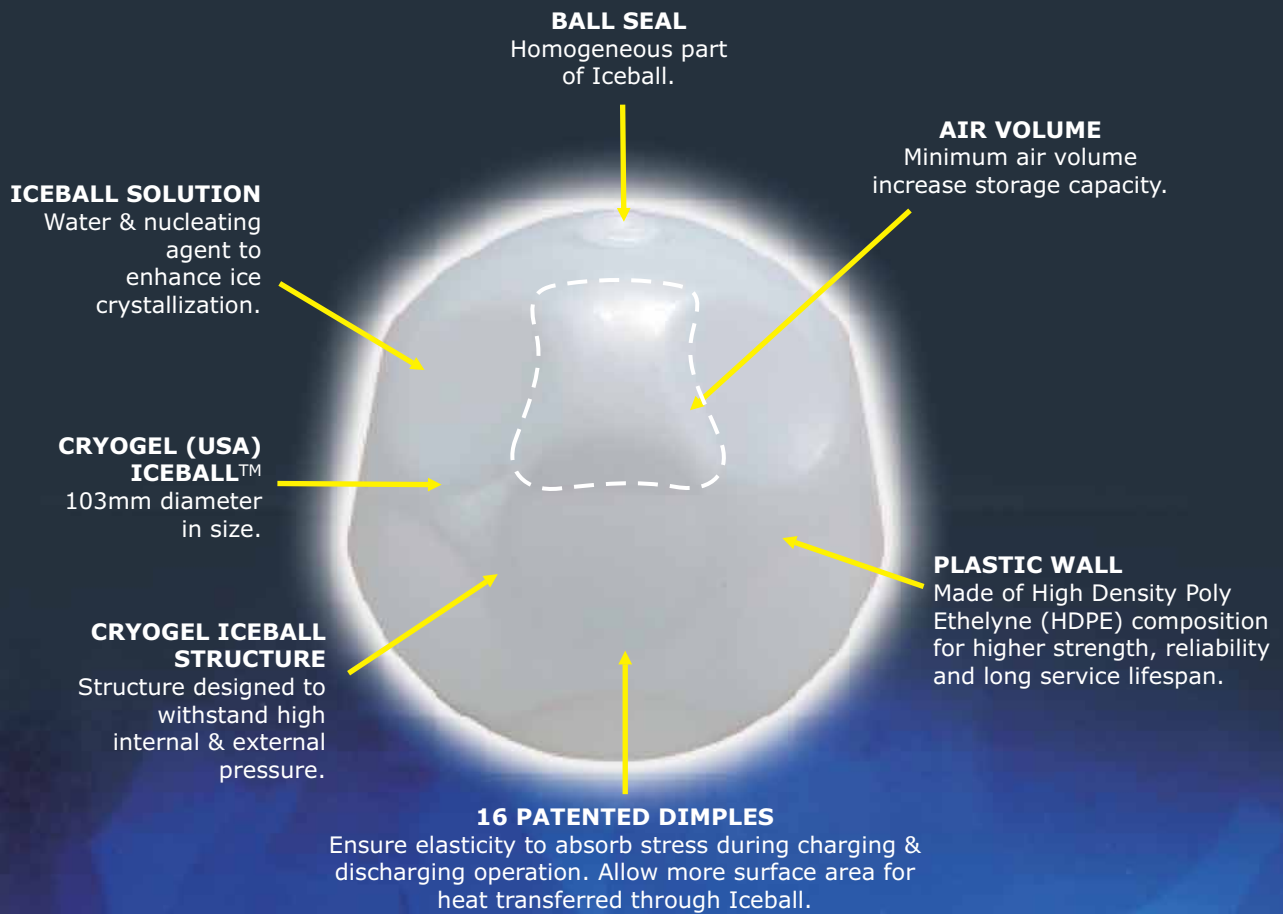
The background features a grid of hexagonal cells, some of which are filled with glowing blue spheres of varying sizes. The overall color palette is a gradient of light blue to white, with a subtle pattern of small, dark, feather-like shapes scattered throughout.

CRYOGEL **(USA*) Iceball™**

**Ice
Thermal
Storage
System**

*USA Technology

Ice Thermal Storage (ITS) System



HOW IT WORKS

Ice Thermal Storage (ITS) has the capability to shift and minimized peak energy demand at day time for Air-Conditioning system without affecting the comfort levels within building. It makes use of electricity rate structure to reduce of demand charges and systems running cost imposed by utilities company.

Cryogel Ice Balls are delivered to site, loaded into storage tank and are charged (frozen) and discharged (melted) by means of circulating a glycol based heat transfer fluid around the balls within the storage tank. Latent heat energy is stored in Ice balls during low energy demand hours (Off-Peak periods), and the energy is released for air conditioning usage during high energy demand hours (On-Peak periods). This method shifting of high electricity usage for air

conditioning systems from On peak to Off peak period and resulted reduction in overall air conditioning systems operating cost.

CRYOGEL ENCAPSULATED ICE BALLS

Cryogel Ice Balls (USA Technology) are four inches (103mm) in diameter and it made from high strength polymer plastic material. Iceball™ storage mediums have 16 patented symmetrical dimples ensure elasticity to absorb stress during charging & discharging operation and allow more surface area for heat transfer through Ice ball. Ice balls are factory-filled and sealed with water and a proprietary nucleating agent that enhance it's ice crystallization. Ice ball sealing process is special design to ensure it seal quality to form a homogeneous part of the ice ball, hence eliminated possibility of leakage around ball seal area.

Benefits of Cryogel Ice Ball Thermal Storage

INITIAL COST SAVING

- Smaller transformer, switchgear, cable sizes and main electrical equipment.
- Downsized of cooling plant equipment. i.e. chiller, pump, cooling tower & etc.
- Lower contribution sum and electrical deposit to utility company.
- Higher delta temperature design reduces pump & piping cost.

ENERGY COST SAVING

- Reduce peak demand and electrical charge.
- Paid lower tariff rate of electricity during off peak operation.

MORE EFFICIENT OPERATION

- Operation during off-peak hours increased system efficiency due to lower ambient condition.
- Equipment running at full load condition that increases its efficiency.

SERVICE AND MAINTENANCE COST SAVING

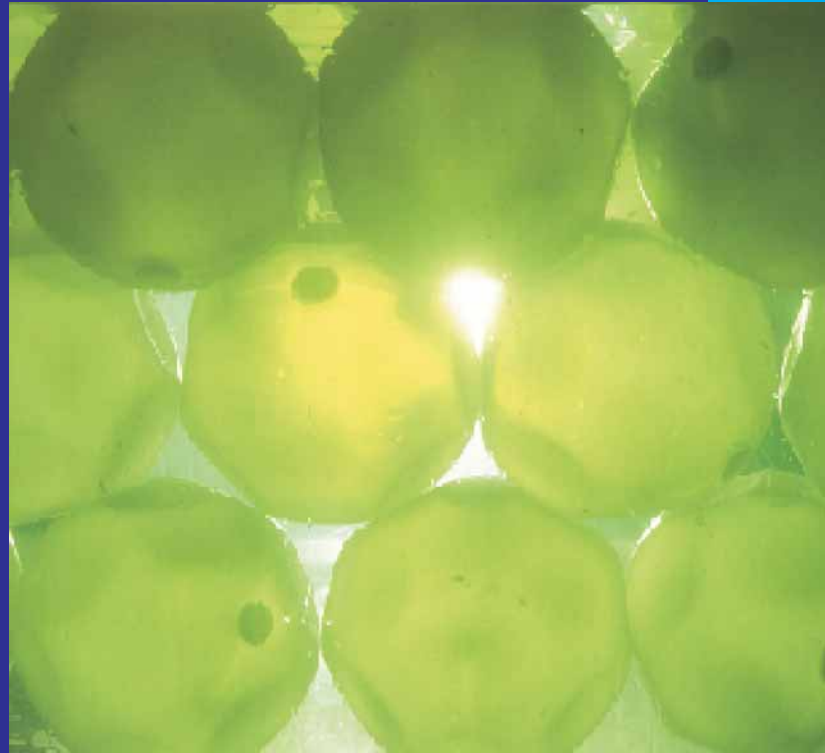
- Smaller and less quantity of cooling plant equipments reduce maintenance and spare part cost.
- Minimum maintenance or maintenance free Ice storage tank.
- Less wears & tears on chiller operation, reduce service maintenance requirement.

SYSTEM REDUNDANCY

- Ice thermal storage act as additional standby capacity during power failure.
- Smaller or less standby cooling equipment and electrical generator set required.

FLEXIBILITY & SIMPLICITY

- Flexibility that allows tank design to be as steel, concrete or fiberglass, atmospheric or pressurized; above ground or buried, cylindrical, rectangular, horizontal or vertical.



- One or fewer storage tank design makes Cryogel systems simple and simplicity in system control, balancing and operation.

RETROFIT APPLICATIONS WITH EXISTING TANKS

- Conversion of existing chilled water tanks or other tanks into ice storage tank is possible, which will increase tank capacity by a factor of 4 to 5.

OTHERS BENEFITS

- Special dimple design absorbs ice forming & melting stress that pro-long Cryogel Ice ball's life span.
- Low pressure drop of less than 5 psi, saved glycol pump and pump electricity cost.
- Less air volume inside Ice ball, reduce up-lift force and ice tank construction cost.
- No over-charging or under-discharging issue which will cause operational problems for some others ice storage system.
- Ice form inside Ice balls eliminates biological growth problems that occurred in other ice system which ice form within water tank.

Product Quality & Reliability

THIRD PARTY INDEPENDENT TESTING

Two Independent Laboratory Testing Facilities have proven the durability of the plastic ice balls, where after numerous of accelerated and destructive cycle testing, its structure characteristic is as strong as in new one. In addition, the same two Independent Facilities have verified the storage capacity and heat transfer rates of CRYOGEL system. Our system delivers the actual quality and quantity of storage energy as shown by our verified published Instantaneous Discharge Capacity Curve. This high level of independent testing is also in line with our commitment to developing U.S. Standards for certified durability and performance. The Cryogel Ice Ball is one of the most thoroughly tested thermal storage products on the market today. With numerous repeated customer and installation worldwide, Cryogel Ice Ball System proven to be one of the most reliable products in terms of its quality, performance and reliability.



dimples flex out due to the expansion of the nucleate water in the balls, whereas the dimples return to its original position when the nucleate water returns to its liquid state during discharging mode. This phenomenon of dimple's expansion and contraction will be eliminated and reduced stress / tension on the ball's plastic wall due to the unique patented dimple design.

UNIQUE DIMPLES DESIGN

The dimples in Cryogel Ice balls are designed to allow for expansion and contraction of the ball plastic walls during charging and discharging. During charging mode, the

ICE TANK SIZING TABLE

Below table* shows the typical tank estimated dimension for atmosphere and pressurized design with different nominal capacity.

NOMINAL CAPACITY	ATMOSPHERE TANK						CYLINDRICAL PRESSURIZED TANK			
	CYLINDRICAL		RECTANGULAR		SQUARE		STORAGE		INVENTORY	
	Dia x H (Ft)	Vol. (Ft ³)	L x W x H (Ft)	Vol. (Ft ³)	L x W x H (Ft)	Vol. (Ft ³)	Dia x L (Ft)	Vol. (Ft ³)	Dia x H (Ft)	Vol. (Ft ³)
1,000	12.0 x 22.0	2,450	30.0 x 12.0 x 9.0	3,190	14.0 x 14.0 x 14.0	2,690	12.0 x 20.0	2,000	2.0 x 3.7	140
2,000	12.0 x 41.0	4,000	41.0 x 12.0 x 12.0	5,860	17.5 x 17.5 x 17.0	5,240	12.0 x 37.8	4,000	2.0 x 7.5	280
3,000	12.0 x 60.0	8,750	60.0 x 13.0 x 12.0	9,190	20.0 x 20.0 x 19.5	7,790	12.0 x 55.7	6,000	2.5 x 7.1	420
4,000	14.0 x 59.0	9,050	60.0 x 14.0 x 14.0	11,800	22.0 x 22.0 x 21.5	10,370	13.0 x 63.0	8,000	2.5 x 9.5	560
5,000	15.5 x 60.0	11,330	60.0 x 15.5 x 15.5	14,420	23.5 x 23.5 x 23.5	12,850	15.0 x 59.7	10,000	3.0 x 8.3	700
6,000	17.0 x 60.0	13,680	60.0 x 16.5 x 17.5	17,110	25.0 x 25.0 x 25.0	15,470	16.0 x 62.9	12,000	3.5 x 7.3	840
7,000	18.5 x 59.5	15,980	60.0 x 18.0 x 18.0	19,630	26.0 x 26.0 x 26.5	17,810	18.0 x 58.6	14,000	3.5 x 8.5	980
8,000	20.0 x 58.5	18,290	60.0 x 19.0 x 19.5	22,200	27.5 x 27.5 x 27.0	20,410	19.0 x 60.0	16,000	4.0 x 7.4	1,120
9,000	21.0 x 60.0	20,780	60.0 x 20.5 x 20.5	25,340	28.5 x 28.5 x 28.5	23,180	20.0 x 61.1	18,000	4.0 x 8.4	1,260
10,000	22.2 x 60.0	23,100	60.0 x 21.5 x 21.5	27,760	29.5 x 29.5 x 29.5	25,590	21.0 x 61.9	20,000	4.5 x 7.4	1,400
11,000	23.2 x 60.0	25,390	60.0 x 22.5 x 22.5	30,180	31.0 x 30.0 x 30.0	28,010	22.0 x 62.1	22,000	4.5 x 8.1	1,540
12,000	24.3 x 60.0	27,710	60.0 x 23.5 x 23.0	32,600	31.0 x 31.0 x 31.5	30,280	23.0 x 62.1	24,000	4.5 x 8.8	1,680
13,000	25.3 x 60.0	30,280	60.0 x 24.5 x 24.5	35,760	32.0 x 32.0 x 32.5	33,230	24.0 x 61.9	26,000	4.5 x 9.5	1,820
14,000	26.3 x 60.0	32,620	60.0 x 25.0 x 25.5	38,040	33.0 x 33.0 x 33.0	35,760	25.0 x 61.6	28,000	5.0 x 8.3	1,960
15,000	27.3 x 60.0	34,970	60.0 x 26.0 x 26.0	40,490	33.0 x 34.0 x 34.0	38,000	26.0 x 61.3	30,000	5.0 x 8.9	2,100
16,000	28.2 x 60.7	37,300	60.0 x 26.0 x 27.5	42,600	34.0 x 34.5 x 34.5	40,400	27.0 x 60.8	32,000	5.0 x 9.5	2,240
17,000	29.0 x 60.0	39,610	60.0 x 27.0 x 27.5	45,050	35.0 x 35.0 x 35.0	42,810	28.0 x 60.5	34,000	5.0 x 10.1	2,380
18,000	30.0 x 59.5	41,990	60.0 x 28.0 x 28.5	47,500	36.0 x 35.5 x 35.5	45,220	29.0 x 59.7	36,000	5.0 x 10.7	2,520
19,000	31.0 x 59.5	44,740	60.0 x 28.5 x 29.5	50,630	36.5 x 36.5 x 36.5	50,640	29.0 x 62.9	38,000	5.0 x 11.3	2,660

*Remarks: All the above dimension & data shown is for estimation purposes only. Actual information's shall be obtain from the supplier. Tank configuration, shape, type and dimension might be varied / changed based on site condition and space limitation. Tank dimension for smaller or bigger nominal capacity than the above is available upon request.



**TNB Office Building,
Bangi**
Capacity: 1,000RTh,
Size: 12' Dia x 20' H



TNB R&D Centre, Bangi
Capacity: 3,300RTh,
Size: 20' Dia x 30' H

**Multimedia University,
Cyberjaya Phase 1**
Capacity: 11,000RTh,
Size: 29' Dia x 41' H



**University Telekom,
Melaka**
Capacity: 5,800RTh,
Size: 23' Dia x 32' H



**District Cooling Plant 2,
Cyberjaya Phase 1**
Capacity: 7,500RTh,
Size: 22' Dia x 49' H



**District Cooling Plant 2,
Cyberjaya Phase 2**
Capacity: 100,000RTh,
Size: 87' Dia x 49' H
(Ice tank only initial as
Chilled Water Storage)

**Hospital and College,
Sungai Buloh**
Capacity : 9,400RTh,
Size: 26' Dia x 43' H



**University Sarawak,
Kuching**
Capacity: 7,600RTh,
Size: 25' Dia x 38' H



**AIMST University,
Sungai Petani**
Capacity: 9,300RTh,
Size: 26' Dia x 43' H



**Multimedia University,
Cyberjaya Phase 2**
Capacity: 11,000RTh,
Size: 29' Dia x 41' H

**Kolej Uni. Islam Malaysia,
Nilai**
Capacity: 1,500RTh,
(Cryogel Ice balls)



Hospital UKM, Cheras
Capacity: 12,950RTh,
Size: 27' Dia x 56' H



Nusajaya DCS, Johor
Capacity: 35,000RTh,
Size: 44.5' Dia x 57' H



**District Cooling Plant 2,
Cyberjaya Phase 2**
Capacity: 31,200RTh,
Size: 87' Dia x 49' H
(Ice System Conversion)

PRODUCTS & SOLUTIONS

Anmas Corporation with its unique and state of the art thermal storage technology, will provide the full range of ITS systems solutions to meet building owners' and system designers' ITS system requirement.

The company provides the most reliable and efficient Thermal Storage equipment with most competitive price and to provide value-added services for the system design and analysis to our clients.

COMPANY INFORMATION

Anmas Corporation Sdn Bhd incorporated in 1996 with its first Ice Storage System installation in 1997. Up to date, we have been successfully supplied and installed more than 6.0 million of Cryogel Ice balls to ITS system installation for various type of building application within Malaysia. The ITS System installation include of office building, research centre, hospital, district cooling plant and universities.

Anmas Corporation Sdn Bhd is the sole distributor for Cryogel (USA) Ice ball Ice Thermal Storage (ITS) System in Asia Pacific Region since 1996 and with the recent business opportunities and development in Dubai, Abu Dhabi, and Bahrain, we had been expanded our technology coverage to Middle East region.



ANMAS CORPORATION SDN BHD

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Manufacturing Standard

Malaysia:



BS EN ISO 9001 : 2000 CERT : 15968

Laboratory Testing

Malaysia:



International:

