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Kuleformete isolerte og armerte betongskall til bruk som siloer, bygg, bassengdeksel, planetarium m.m.

Disse kuleformede skallene i armert betong har vært bygget siden 1985, og er benyttet til en rekke skallformede konstruksjoner, ut over det å fungere som siloer og oppbevaringshaller .

Det er satt opp siloer og haller med diametre fra 6 meter til 85 meter, nødvendige materialer fraktes enkelt til byggeplass, ingen innvendige stillaser og byggetiden er kort . (Silo med kapasitet for lagring av 15.000 tonn korn var klar på 4 uker.)

Noen hovedformer domene kan bygges i



Byggemåte

En ytre membran med ønsket fasong og farge blåses opp (Kan også utstyres med logo).

Det stive og bærende skallet blåses/sprøytes på fra innsiden i flere lag;

Først et stivt, isolerende lag med tetthet 55kg/m³ og minst 50mm tykkelse.

Deretter armert betong med høy tetthet, Ca. 400 til 450 kg/m³

Innerst kan man legge på en innerliner for kjemisk beskyttelse av betongen .

Noen fordeler

God termisk isolasjon – betongen kan herdes under ideelle betingelser, og det er enkelt å unngå kondens inne når domene tas i bruk.

Tetthet – den opprinnelige membranen blir sittende.

Både tetthet utenfra, men også tett mot gasser som skal holdes inne i domene.

Tåler høye vindlaster.

Enkelt vedlikehold;

Ingen rustproblemer – glatt ytterflate er lett å holde ren.

Estetisk – kuleformen oppfattes vanligvis som pene.

Flerbruksmuligheter – store porter og åpninger kan tas ut.

STRENGTH

For centuries the sphere has been considered as the toughest volume : egg shell, igloo, high pressure reservoirs. This shape is very adapted for earthquake regions and high wind areas. This feature lies in the very basic properties of the dome whereby the force applied on one point of the dome is evenly distributed to the whole of the structure itself. Our dome is basically a double arch. It's properties allow it to withstand very high compressive strengths and vertical loads. The quantities of concrete and steel to be applied are calculated using finite element analysis and are designed on a case by case basis.

The maximum permissible loads to be applied on the roof of the dome are quite substantial (in the range of 70 tons) and depend on the geometry and usage of the dome. One of our recent projects was specially designed to allow over 400 tons of vertical load to be placed on the roof of the dome.

Domes that are built in regions of high winds or abundant snowfall are designed accordingly.

Typically, these factors do not influence very much the required design strengths but must nonetheless be considered.

Our shotcrete formulation based on a dosage of CEM-1-42,5, app. 400 kg cement per m³, shows excellent properties. The conditions of high relative humidity in the dome are ideal for obtaining the required design strength of 35 Mpa and the necessary adhesiveness between layers.

Noen prosjekter

NIBULON – GRAIN STORAGE – UKRAINE

This grain terminal was built in the port of Nikolaev in Ukraine between July and December 2003.

It is made of 2 Agridôme® storages of 50,000 t each.

Each dome has a diameter of 64.50 m and a height of 32.25 m.

Total capacity 100,000 tons calculated for wheat.



KLASCO – FERTILIZER AND GRAIN STORAGE – LITHUANIA

At the end of 2002, Klaipeda Stevedoring Company commissioned this terminal of 3 domes.

These buildings were designed to receive whether fertilizers or wheat.

Their dimensions diameter 45.74 m and height 25.87 m give a total capacity of 102,000 tons calculated for fertilizers.



ST-LAWRENCE STEVEDORING - ALUMINA STORAGE - CANADA

This is the first alumina dome storage ever built. This perfect half sphere of 60.4 meters diameter is able to store up to 59,000 tons of alumina.

This dome was designed to store the alumina at an average temperature of 90 degrees Celsius and to support important loads on top. The area is seismic.

Construction of the dome lasted 12 weeks from August to October 2000.



BALTYCKA BAZA MASOWA - FERTILIZER STORAGE – POLAND

This 4 dome complex comprises 2 domes with geometry 42 m x 25 m and 2 smaller domes with geometry 32 m x 20 m. They were designed to store 60,000 tons of fertilizers. The fertilizers stored in the domes are corrosive so a special anti-acid treatment was given to the concrete in order to avoid possible corrosion to the steel.

This turnkey project was finished by the end of 1999.



IANSA - SUGAR STORAGE - CHILLAN - CHILE

This project consisted in building the world's biggest dome destined for refined sugar with a capacity of 60,000 metric tons. This perfect sphere of diameter 60 meters has a vertical wall of 7 meters. The interior of the dome was trowel finished and a special food approved epoxy paint was applied to the interior surface of the walls.

Over the years, PIRS has truly developed a specialty for sugar dome storages with over 400,000 tons of storage built for the refined sugar industry.

Construction of the dome lasted 12 weeks.



Noen andre bruksområder for betongdomene

FUTURESCOPE Amusement Park - Poitiers - France – 1989

Imax 360° cinema



BROKER FM - LEISURE PARK- POLAND

This project is truly an architectural dream which brought to reality futuristic ideas. It is composed of 13 domes of all shapes and sizes that are all inter-related by connecting tunnels.

The domes vary from segments spheres with diameters 13,6 m to 50 m to geodes with equatorial diameters of 13,6 m.

Construction began in July 2000 and was finished by November of the same year.



SETOMIP, RECREATIONAL SPACE CENTER – FRANCE

This geode demonstrates again the various architectural possibilities that can be attained with our domes. The geode has a diameter of 21 meters and a height of 17 m.

A study was conducted at the initial stages of the project development to determine the feasibility of providing the airform with this special 'ocean blue' colour. The steel sheets representing the continents were assembled and fixed to the dome after the dome was completely solid.



This dome was completed in 4 weeks.

GROUPE DURAND ALIZE - PUBLIC AQUARIUM – FRANCE

This project was undoubtedly one of our most challenging. With a length of 72 meters, a maximum height of 12 meters and a maximum width of 30 meters, this structure was designed to take the shape of a fish.

We had to adapt our Dome technology to consider the array of moments that such a structure generated. It is definitely one of the most unique buildings built to date using this technology and demonstrates again the various forms that can be developed with our inflatable structures.

Construction of the dome lasted 10 weeks.



For silo-og lagringsanlegg kan produsenten også bistå med planlegging av inn-og utlasting, og vi har gode leverandører av innkapslete, støv-og fuktette transportbelter.

Vi oversender gjerne mer detaljerte informasjoner.

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