



GS AIR DOME²

GS ECO-FRIENDLY AIR DOMES MANUAL



GS AIR DOME

CONTENTS

PRODUCT ADVANTAGES	01-02
WORKING PRINCIPLE AND SYSTEM COMPOSITION OF AIR DOMES	03-04
INTEGRATION WITH OTHER SYSTEMS	05-06
AIR DOME CONSTRUCTION PROCESS	07-08
CASE STUDIES	09-10

ECO-FRIENDLY AIR DOME ADVANTAGES



Eco-friendly air domes stand out in environmental performance, cost efficiency, functionality, appearance, safety and adaptability. They are especially ideal for projects requiring large spans, temporary use or mobility.

ADVANTAGES

01 ENVIRONMENTAL PERFORMANCE

Recyclable materials:

We adopt high-strength eco-friendly membrane materials that can be recycled, cutting down construction waste.

Energy-saving design:

The membrane features good light transmittance, enabling full use of natural daylight and lowering lighting consumption. Its excellent thermal insulation also reduces the demand for air conditioning and heating.

Low construction impact:

Easy installation generates little noise and dust, resulting in minimal impact on the surrounding environment.

02 COST EFFICIENCY

Lower costs:

Material and construction expenses are lower than those of traditional buildings, especially for large-span structures.

Short construction period:

Factory prefabrication and on-site installation greatly shorten the project timeline.

Easy maintenance:

The durable membrane keeps long-term maintenance costs low.

03 FUNCTIONALITY

Large-span column-free space:

It creates a spacious interior, well-suited for stadiums, warehouses and other facilities.

Flexible and relocatable:

The structure is detachable and movable, perfect for temporary or short-term applications.

Intelligent control:

Equipped with smart systems to monitor air pressure, temperature and other data in real time, ensuring safety and comfort.

04 AESTHETICS

Diversified shapes:

The flexible membrane allows various design forms to meet different requirements.

Attractive lighting effect:

It enjoys natural daylight in the daytime and presents unique visual effects with lights at night

05 SAFETY

Wind and earthquake resistance:

The lightweight structure delivers excellent performance against strong winds and earthquakes.

Fire retardancy:

Fire-resistant membrane materials are adopted to ensure superior fire safety.

06 ADAPTABILITY

Wide environmental adaptability:

It is applicable to extreme weather conditions such as high temperature, strong winds and heavy rain.



WORKING PRINCIPLE AND SYSTEM COMPOSITION OF AIR DOME



01 Main Air Dome Body

Adopting high-strength PVDF architectural outer membrane, the main body boasts elegant look, high integration and easy field installation.

Its membrane tensile strength is 6000–10000N, with outstanding anti-aging performance and a service life of over 20 years.

The entire product is fully prefabricated in factory.



02 Mechanical Constant Pressure System

This system keeps the air dome's internal pressure stable. Equipped with main and standby centrifugal fans linked to an intelligent control system, it supports frequency conversion, automatic fan switching and pressure regulation for lower energy consumption.



03 Intelligent Control System

It displays real-time data of the air dome's internal pressure, temperature, humidity and fan status, and monitors external wind speed, dust, PM2.5 and CO₂. Alarms sound when readings exceed preset limits.



04 Access Door System

Pedestrian main entrance uses revolving or double swing doors for high traffic efficiency and good airtightness. Vehicular access with vestibule is fitted with alternating high-speed rolling doors for engineering vehicle passage.



05 Standby Power Generation System

Equipped with standby generator set integrated with ATS, it can start automatically upon mains power failure, ensuring the fan system operates steadily without interruption.

Air-supported membrane structure is a specialized industrial building form. Using high-performance fiber membrane as enclosure and intelligent electromechanical devices, it relies on internal-external air pressure difference for support. Widely adopted as an innovative building solution, the membrane boasts long service life and good self-cleaning property. Foundation pit air dome comprises main membrane, constant pressure system, intelligent control system, access doors and standby power system

COMBINATION OF AIR DOME AND OTHER SYSTEMS



COMBINED SPRAY DUST REMOVAL

Eco-friendly air domes work seamlessly with spray dust removal systems to resolve dust pollution. Widely used in high-dust industries such as earthwork, ore processing and coal storage, their fully enclosed design stops dust spreading.

Built-in spray nozzles trap airborne dust via water mist to cut indoor dust levels fast. With intelligent linked control, the system runs automatically based on real-time dust data, delivering efficient, water and energy-saving dust removal



FIRE PROTECTION SYSTEM INTEGRATION

Eco-friendly air domes come with full fire protection systems to meet safety standards, ideal for combustible material yards and large workshops.

Built-in fire sprinklers operate automatically or manually to contain fires. High-sensitivity smoke detectors provide real-time monitoring, early alerts and interlock with firefighting gear.

Automatic/manual smoke vents expel smoke and hot gas for safe evacuation. The membrane uses high-grade flame-retardant material. Combined with emergency exits and portable fire extinguishers, the dome delivers full fire safety coverage including warning, fire suppression, smoke ventilation and evacuation.

OPERATION AND DISMANTLING OF AIR DOME

Need the Full Documentation?

Please share your project requirements with our team to request the full version.

project@gsdomes.com

PLEASE INCLUDE

Project Location · Dimensions (L × W × H) · Intended Application

精益求精抓质量 安全环保不可忘