Metal-Asia

Commercial Proposal for Supply

Air-Supported Structures for Industrial Applications — Turnkey Solutions

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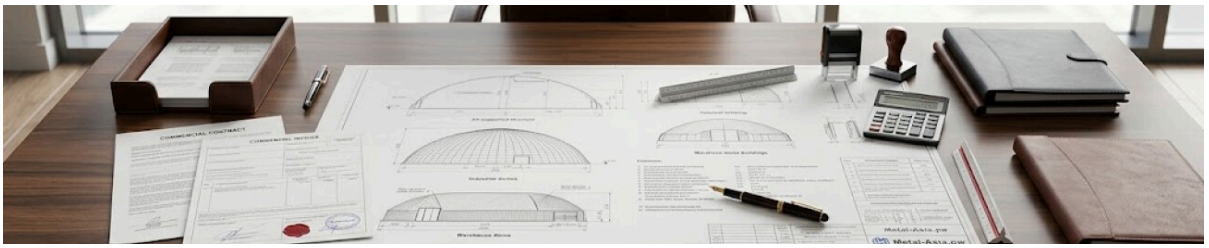
Executive Summary

Air-Supported Structures (ASS) represent a cutting-edge solution for industrial warehousing, manufacturing facilities, and logistics terminals. The system comprises a high-strength PVC-coated polyester membrane shell maintained in structural form by continuous internal overpressure of 150–500 Pa. The absence of internal columns ensures unrestricted movement of heavy machinery, while construction costs remain 60–70% lower than conventional steel-framed structures of equivalent footprint. Metal-Asia.pw delivers complete turnkey procurement from certified Chinese manufacturers with full supply chain compliance, quality assurance, and global logistics coordination.



Air-supported dome structure for industrial bulk material storage and processing

Market Challenges in Direct China Procurement

International buyers face systemic risks when sourcing industrial membrane structures directly from Chinese manufacturers without established procurement infrastructure:

- Material non-conformity: Supplied membrane density below specified 900–1500 g/m², compromising structural integrity and service life
- Missing compliance documentation: Absence of fire safety certifications (Class B1/M2 self-extinguishing), structural load testing reports, and ISO 9001 manufacturing audits
- Hidden logistics costs: Unforeseen customs duties, demurrage charges, and port handling fees eroding projected margins
- Technical documentation gaps: Chinese-language manuals without CE marking, EN standards conformity, or English-language operation protocols
- Quality control failures: No third-party inspection (DNT, UT) at manufacturing stage, leading to defective membrane welds and hardware tolerances
- Incomplete system configuration: Missing redundant ventilation systems, emergency diesel generators, or automated pressure monitoring — creating operational single points of failure
- Post-installation support void: No warranty service network, spare parts inventory, or technical hotline for international clients
- Project timeline overruns: 4–6 month delivery cycles extending to 8–10 months due to documentation delays and customs complications

Our Solution: Turnkey Global Procurement with Supply Chain Compliance

Metal-Asia.pw operates as your integrated procurement partner for industrial equipment from China, providing end-to-end supply chain compliance, third-party quality assurance (DNT, UT), chemical composition verification against EN/ASTM standards, and customs clearance coordination. We support international tender submissions, distributor onboarding, and large-scale B2B/B2C supply programs with full transparency and direct manufacturer access.

Technical Specifications — Air-Supported Structures

Parameter	Specification
Membrane material	High-strength PVC-coated polyester fabric with PVDF/TiO2 protective layers
Fabric density	900–1500 g/m² (load-dependent configuration)
Fire safety classification	Class B1/M2 — self-extinguishing, non-flame propagating
Operational temperature range	-50 °C to +70 °C (standard); -70 °C to +110 °C (specialized compounds)
Internal overpressure	150–500 Pa (imperceptible to personnel, equivalent to elevator descent sensation)
Wind load capacity	Up to 45 m/s (non-cabled); >45 m/s (cable-reinforced systems)
Snow load	Calculated per regional building codes (IBC, Eurocode, local standards)
Anchor line uplift force	200–500 kg/m (size, region, and application dependent)
Membrane service life	15–20 years (PVC); up to 40 years (PTFE-coated)
Cable net service life	>30 years (galvanized steel, 9 mm diameter)
Air exchange rate	3 ACH (Air Changes per Hour) per industrial ventilation standards

Structural Configuration Types

Configuration	Description	Span	Primary Application
Single-layer membrane	Budget configuration, single PVC-coated fabric shell, perimeter anchoring	Up to 30–40 m	Temporary shelters, seasonal storage, construction site coverage
Double-layer membrane	Two shells with 50–80 cm air gap; natural thermal insulation, condensation prevention	20–100 m	Permanent warehouses, manufacturing halls, logistics terminals
Triple-layer membrane (ENERGY P)	Third insulation layer eliminating thermal bridging at seams and anchor points	20–100 m	Arctic regions, extreme cold climates, energy-critical operations

Configuration	Description	Span	Primary Application
Cable-reinforced (tensile)	High-strength galvanized steel cable net (9 mm diameter) over membrane; cables absorb wind and snow loads	100–150+ m	Coal terminals, ore stockpiles, mega-span industrial facilities
Translucent membrane	Semi-transparent or transparent PVC with up to 95% light transmission	15–80 m	Daylight-operated warehouses, exhibition pavilions, agricultural complexes
Mobile / temporary	Screw-pile or ballasted foundation (water/sand cylinders); rapid deployment and relocation	10–50 m	Temporary storage, construction sites, emergency shelters, event structures

Standard Supply Package

Item	Description	Qty	Notes
1	Outer membrane shell	1 set	PVC-coated fabric, density per structural calculation
2	Inner membrane shell	1 set	For double and triple-layer configurations
3	Third insulation layer	1 set	For ENERGY P triple-layer systems
4	Cable reinforcement net	1 set	Galvanized steel cables, 9 mm diameter
5	Anchor system and perimeter hardware	1 set	Steel angle sections, anchor bolts, embedded plates
6	Primary air handling unit	1 pc	Supply-exhaust with heat exchanger, 3 ACH capacity
7	Redundant air handling unit	1 pc	Identical to primary, automatic failover activation
8	Heating generator / air heater	Per calculation	Gas, diesel, fuel oil, electric, or district heating
9	Emergency diesel generator set (EDG)	1 pc	Autonomous startup on grid failure, 12–48+ hours runtime
10	Equipment enclosure (insulated container)	1 pc	Insulated doors, automatic lighting, electric heater
11	Pedestrian airlock (revolving door)	1–4 pcs	Three-wing revolving door, transparent panels, minimal pressure loss
12	Emergency exit doors	Per code	1.35×2.0 m, panic hardware, autonomous emergency lighting

Item	Description	Qty	Notes
13	Vehicle airlock (cargo doors)	Per calculation	Sectional overhead doors for trucks and heavy equipment
14	LED lighting system	Per calculation	Direct and indirect/reflected LED floodlight arrays
15	Automation and sensor package	1 set	PLC cabinet, pressure/wind/snow/gas sensors, fire alarm
16	Technical documentation package	1 set	Operation manual, electrical schematics, conformity certificates (English/Chinese)

HS Codes for Customs Classification

Item	HS Code	Duty Range	VAT
PVC membrane (reinforced fabric)	3921.90.90	0–10%	Per jurisdiction
Steel cable reinforcement net	7312.10	5–10%	Per jurisdiction
Anchor bolts and fasteners	7318.15	5–10%	Per jurisdiction
Steel angle sections	7308.90	5–10%	Per jurisdiction
Air handling units (fans)	8414.59	0–5%	Per jurisdiction
Heating generators / air heaters	8415.81 / 8416.20	0–5%	Per jurisdiction
Emergency diesel generator	8502.11	0–5%	Per jurisdiction
Automation cabinets and PLC	8537.10	0–5%	Per jurisdiction
Pressure/wind/gas sensors	9026	0–5%	Per jurisdiction
LED lighting fixtures	9405.10	5–10%	Per jurisdiction
Airlock door systems	7308.30	5–10%	Per jurisdiction
Equipment enclosure (container)	9406.00	5–10%	Per jurisdiction

Delivery Timeline and Project Phases

Phase	Duration	Description
Technical audit and specification alignment	1–2 weeks	Engineering audit for complex orders
Structural engineering and drawing preparation	2–3 weeks	Integrated procurement and sourcing
Manufacturing and quality inspection	6–10 weeks	Third-party DNT/UT inspection at factory; chemical composition verification
Shipping and global logistics	3–5 weeks	Customs clearance and international logistics

Phase	Duration	Description
Customs clearance and duty optimization	1–2 weeks	Full documentation package, HS code pre-classification
Installation supervision and commissioning	3–5 weeks	From foundation to operational handover
Total project cycle	**3–4 months**	Contract signature to operational startup

Compliance and Certification Requirements

Document	Requirement	Lead Time
CE conformity assessment / Declaration of Conformity	Mandatory	7–21 days
ISO 9001 manufacturing audit report	Per contract	14–30 days
Fire safety classification test report (B1/M2)	Mandatory	7–14 days
Structural load test report (wind/snow)	Per jurisdiction	14–30 days
Material safety data sheet (MSDS) for sealants	For chemical products	3–5 days
Certificate of origin (Form A / EUR.1)	Per request	1–3 days
Third-party inspection report (DNT, UT)	Mandatory	Concurrent with manufacturing

Why Metal-Asia.pw — Direct Access, Transparency, Compliance

- **Direct manufacturer contracts** — No intermediary markups; factory-floor access for client representatives
- **Dedicated quality control division** — Third-party DNT, UT inspection, chemical composition verification against EN/ASTM standards at manufacturing stage
- **Full supply chain compliance** — CE marking, ISO 9001 audits, fire safety certifications prepared before shipment
- **Integrated logistics and customs** — HS code pre-classification, duty optimization, consolidated shipping programs
- **Installation supervision and commissioning** — Certified supervisors, operator training, commissioning protocols
- **Warranty and post-warranty service** — Spare parts inventory, technical hotline, remote diagnostics capability
- **Tender support** — International bid preparation, technical documentation for public/private procurement frameworks
- **Transparent pricing** — Itemized quotations, no hidden fees, locked exchange rate options

Contact Information

For detailed service specifications and portfolio references, visit Metal-Asia.pw.

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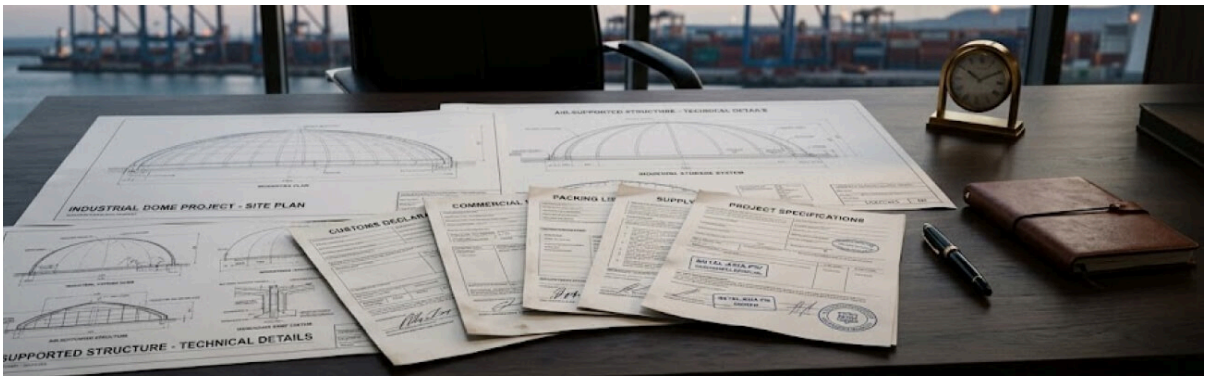

Request a customized ASS quotation for your facility — email zakaz@metal-asia.pw with project parameters