



# Technical Catalog



## Some of Tar references from all over the world

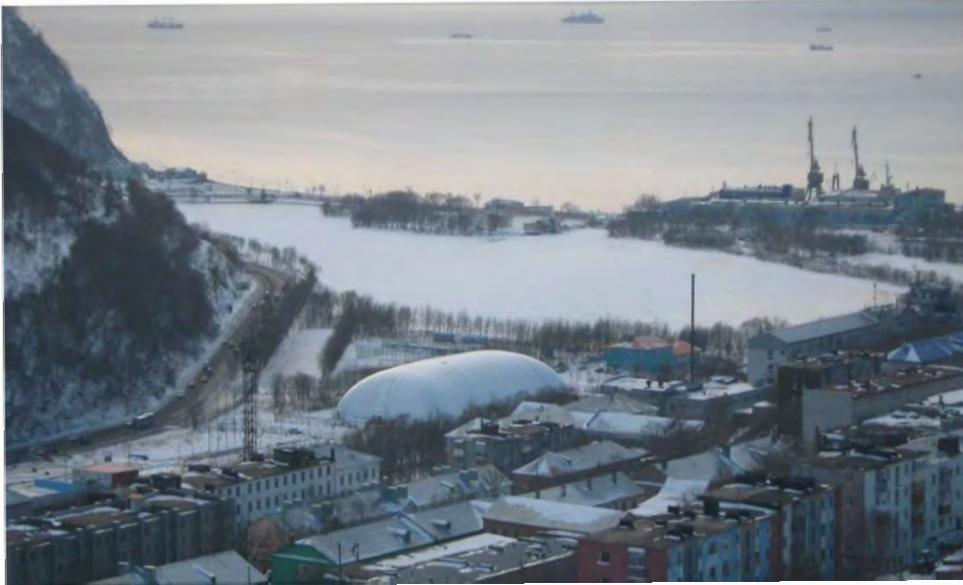


















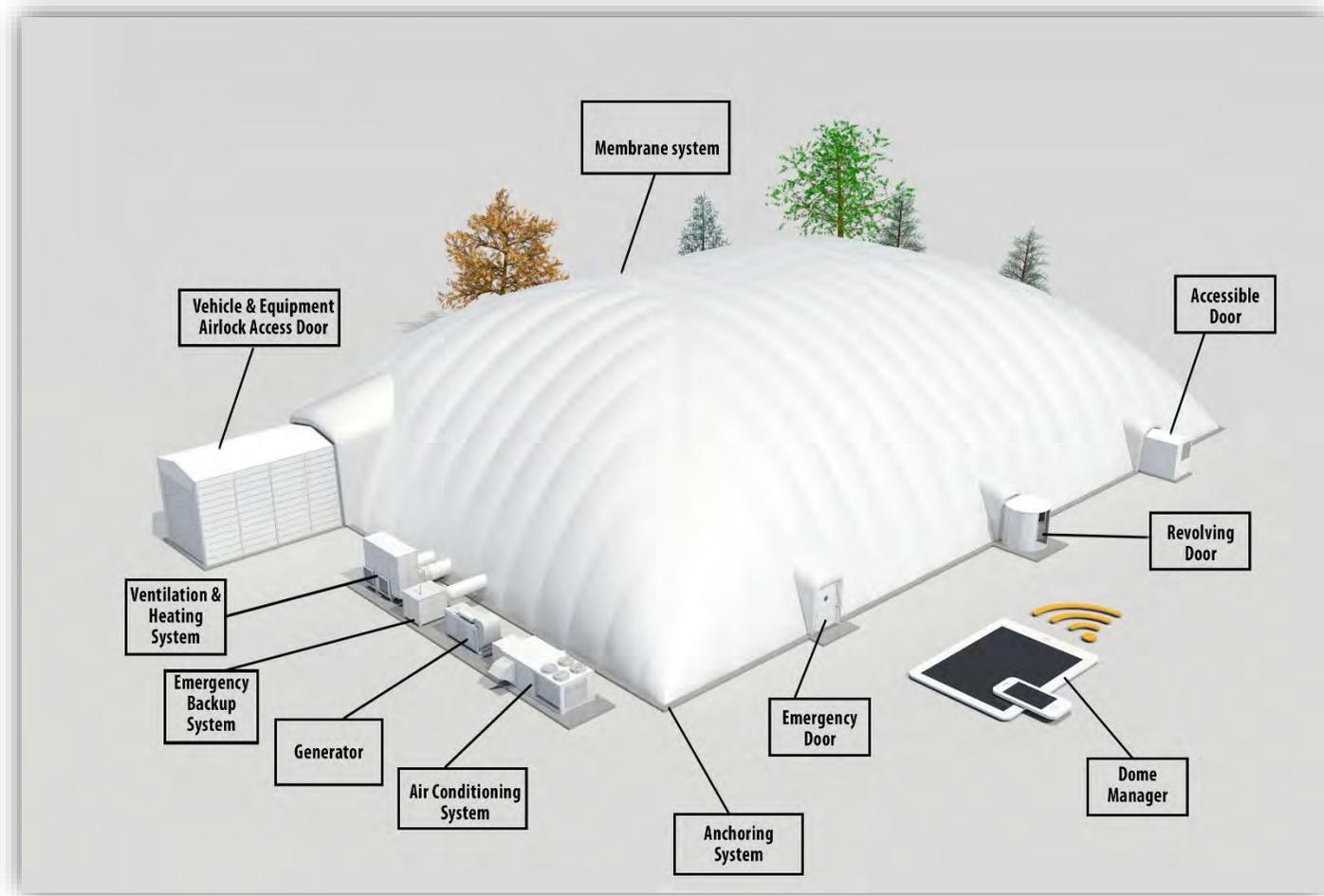
## Air Supported Structure

### General

Air supported structures (Air Domes) are designed for the temporary /permanent covering of any area, in any size and form.

### Standard elements of the dome

- Tar DMS™ Membrane system
- Anchoring system
- Revolving Door
- Emergency Door
- Lighting system
- Ventilation and heating system
- Emergency backup system
- Accessible door
- Vehicle & Equipment Airlock Access •
- Dome manager
- De-stratification system
- Air conditioning system



## Air dome operation principle

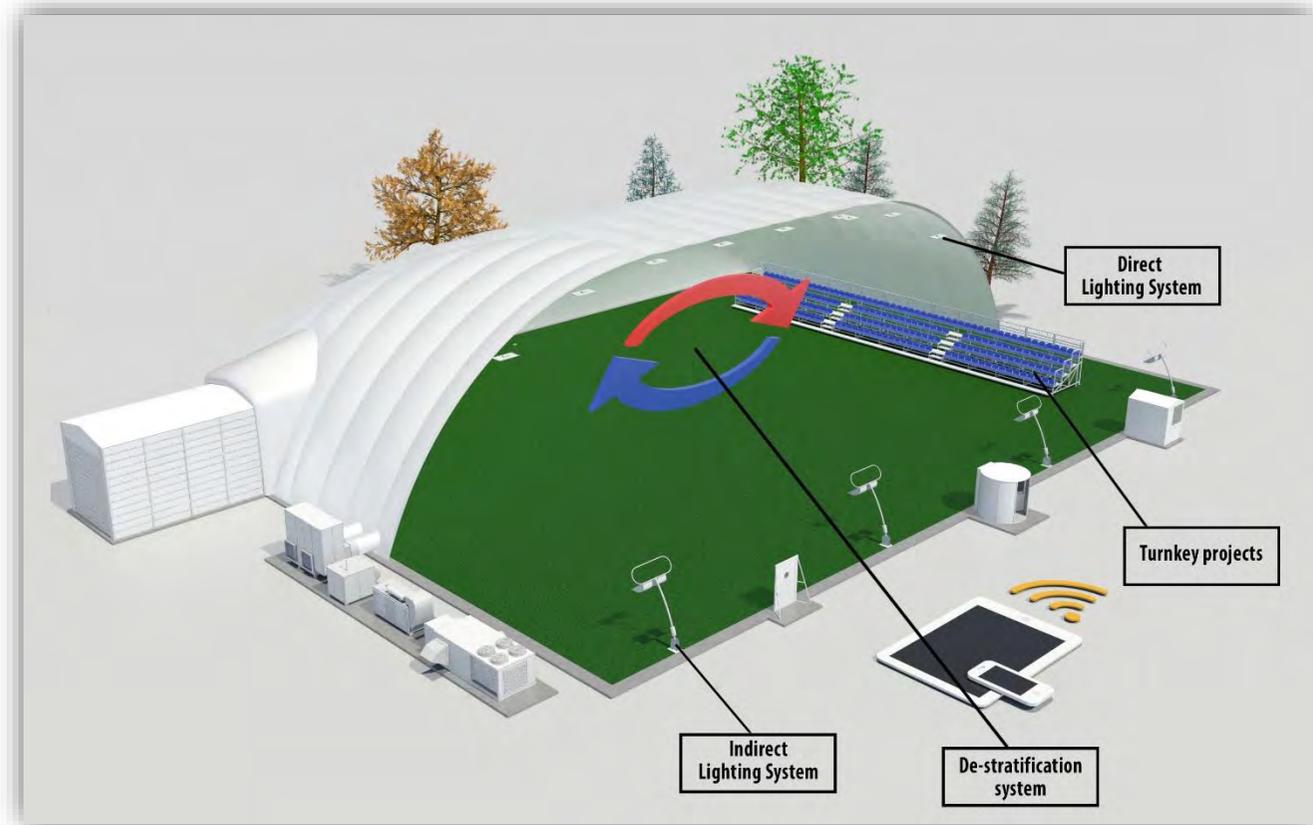
The air dome is a large clear span, covered with a special PVC coated fabric and anchored to the ground, under internal pressure and without any kind of construction; the pressurized air is the main construction element.

The ventilation system provides a slight overpressure inside the air dome to ensure the distinguished form of the dome, hence the stability of the structure under all climatic condition. The same inflating units can work as a heating unit, to heat up the entire space. The optimal pressure inside the dome is 200-300 Pascal under normal conditions, depends on the dome size and specifications.

The ventilation system ensures the fresh air circulation inside the dome to keep a healthy, fresh and cool environment for the visitors inside the dome.

The dome is suitable to cover any sports field, warehouses, industrial facilities, etc.

In the case of local electricity supply failure or pressure loss, the emergency backup unit intervenes immediately; the supply of electricity to all units can additionally be provided by the electrical generator.

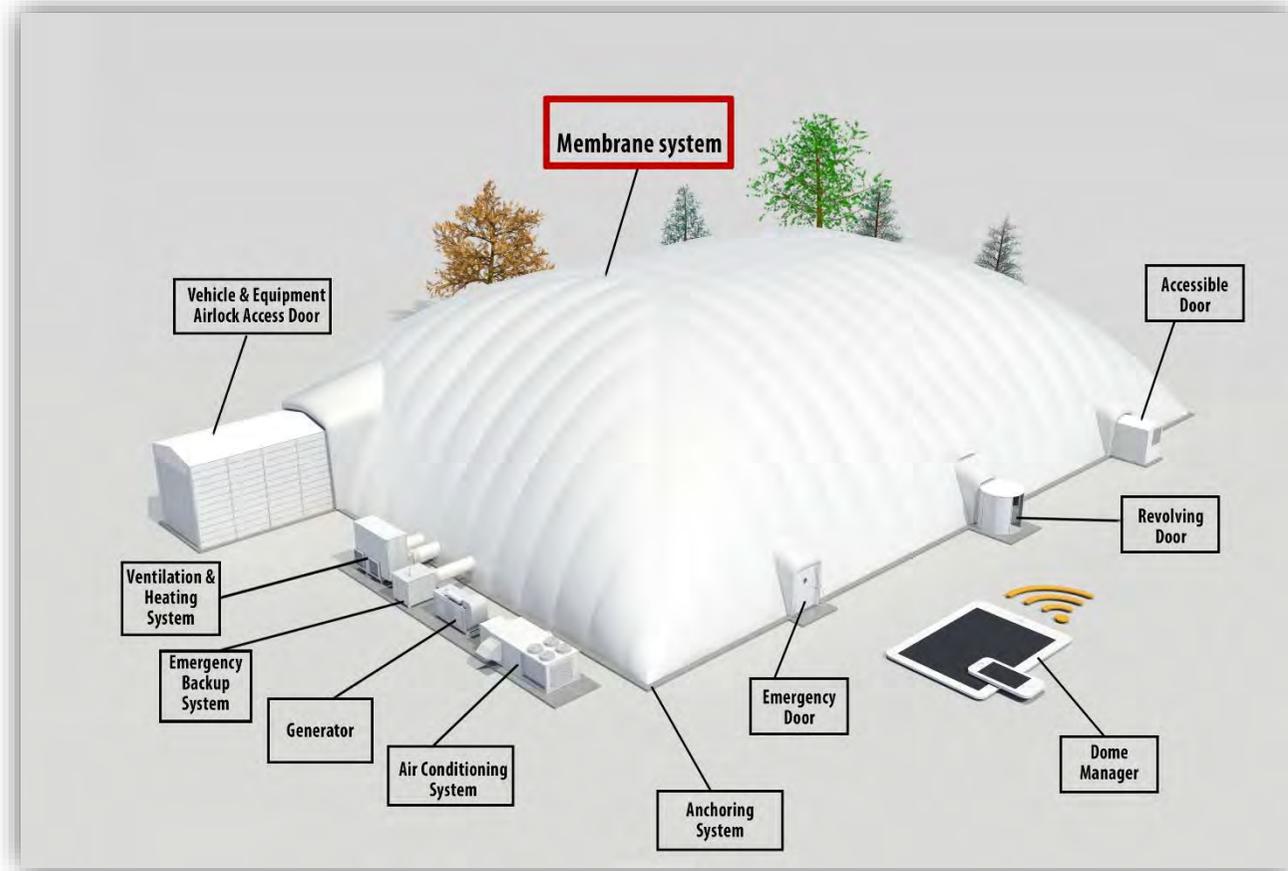


# Tar DMS™ Membranesystem

Tar double membrane system™ is made of two layers of the membrane. The membrane is made from polyester fabric, coated with PVC. The weight of the outer fabric, standard design, is 760 - 1500 g/m<sup>2</sup>. The weight of the inner fabric is in a range between 500 and 700 g/m<sup>2</sup>. Standard fabric is translucent and brings daylight inside the dome; it completely meets physical, technical and fire standards as well regulations.

Standard color is white and available in all other colors.

Every 2.5m there is HF welding, where four membranes are overlapping and are welded together, presenting the strong reinforcement in vertical and horizontal direction.



An air pocket between outer and inner fabric material provides to Tar air supported structures the ideal thermal insulation compared to the insulation of classically built objects.

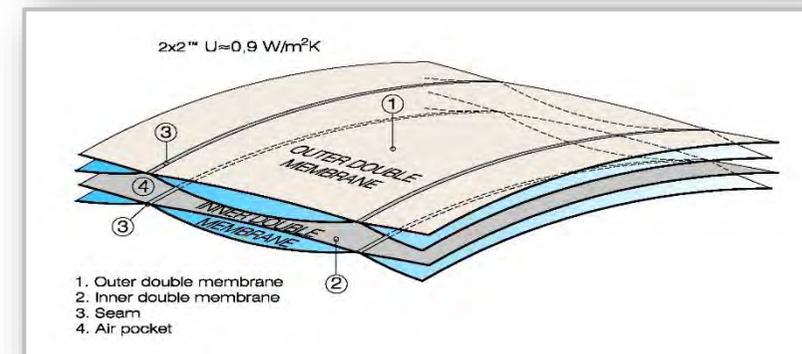
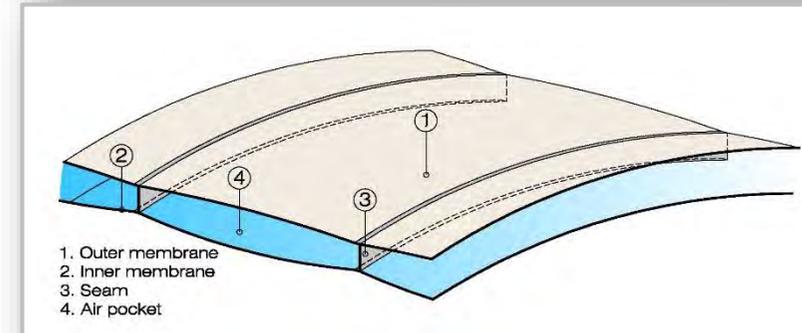
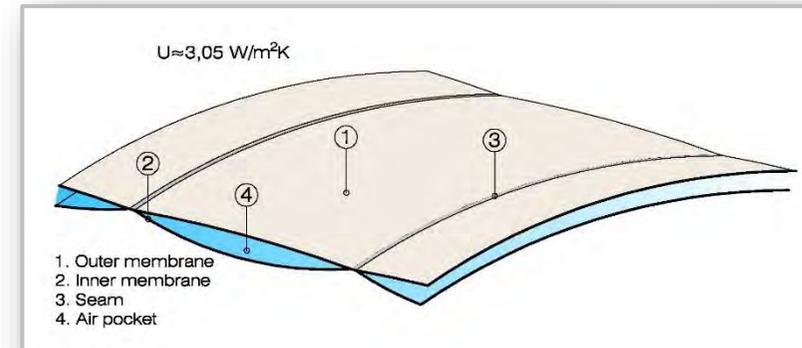
Standard membranes are UV resistant, but with the use of special lacquering finish like Polyvinylidene fluoride (PVDF II, PVDF III or PVDF FL) this resistance is even better, which increases materials quality and lifetime.

**Tar DMS Thermo™** New generation double membrane system (DMS) without thermal bridges, special welding system which reflects in high isolation quality with U value of 1.2 W/K per m<sup>2</sup> and lowest running costs possible.

**SpaceDome™** Advanced type of air-dome insulation system developed by Tar which efficiently reduces all three types of heat transfer: conduction, convection, radiation.

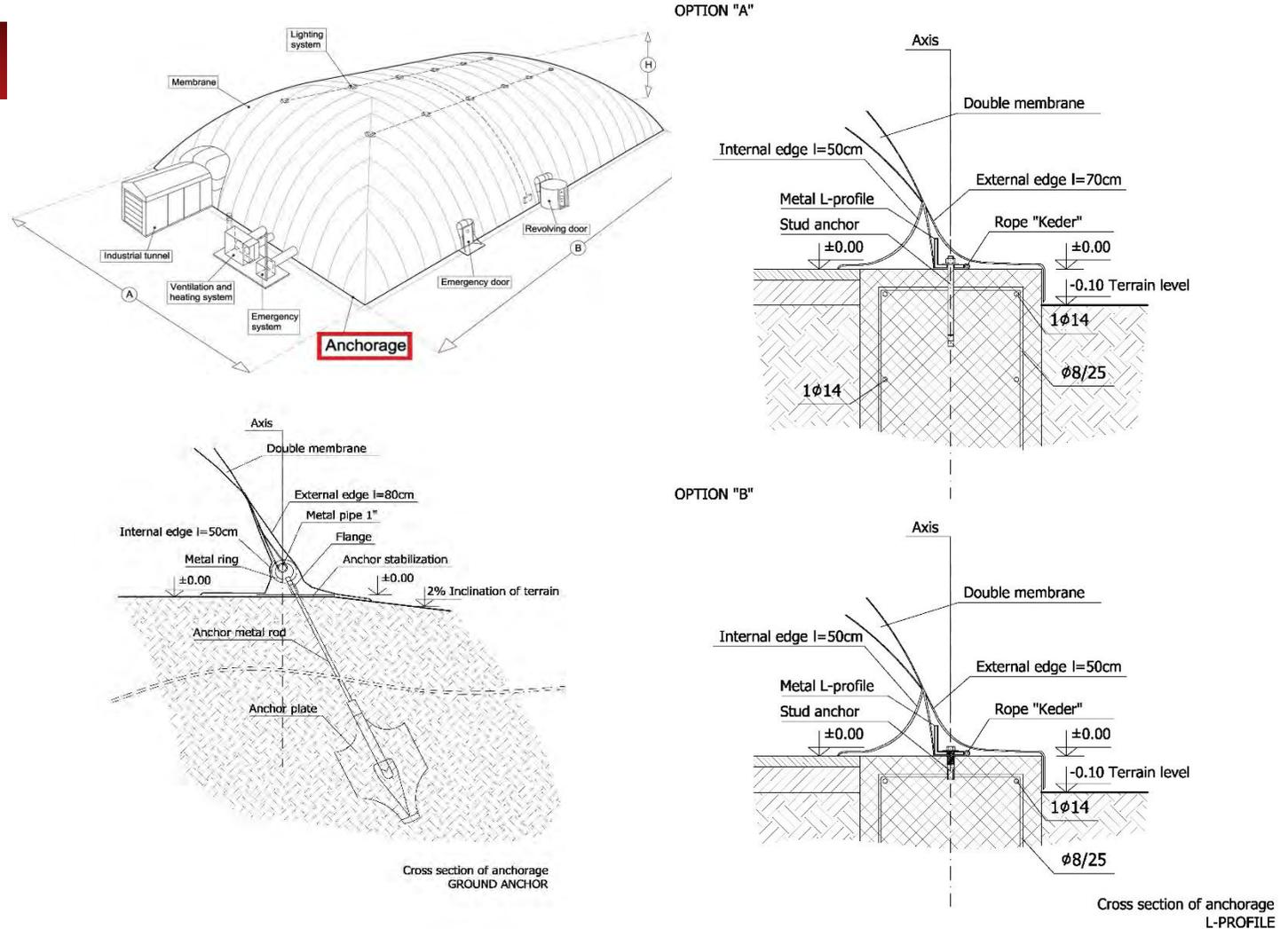
It is made from high-tech materials developed for space technology with the lowest thermal conductivity of any solid material.

**Tar DMS 2X2™** The latest technology from Tar, a new generation of membrane system with two parallel double membrane layers and in without any contact between each other. Thanks to this innovative design, thermal insulation is incredibly improved, reaching U value to 0.9 W/m<sup>2</sup>K.



# Anchoring System

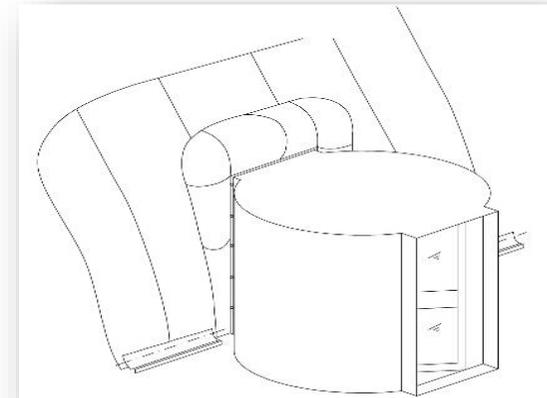
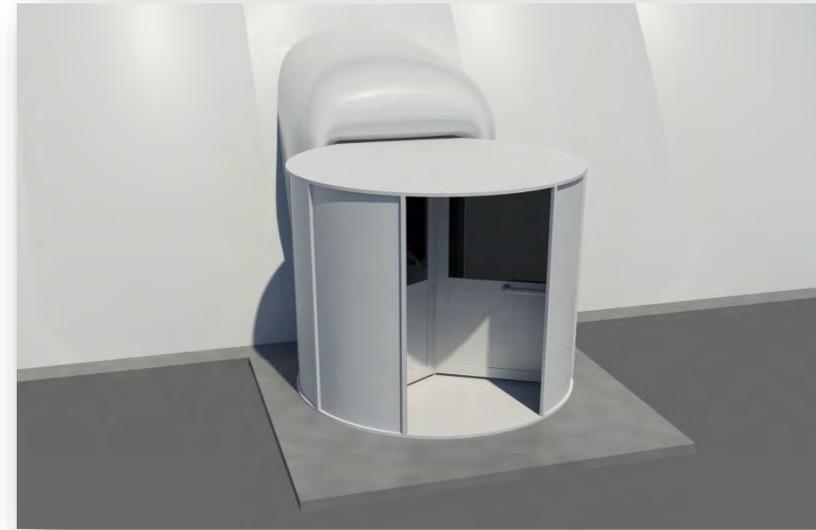
We have several options to connect the membrane to the concrete beam. The rings with peg crossed by metal pipes or grounding anchor with metal tube are used for temporary assembling and seasonal use of the dome. For permanent assembling, the anchoring is set by metal profiles. The anchors are mounted on the concrete beam in a distance of 1 m, around the perimeter. The anchoring in some situation could be done also by auger anchors, without any concrete foundation. Auger anchors are grounded directly to the ground in the depth of 2 m.



## Revolving Door

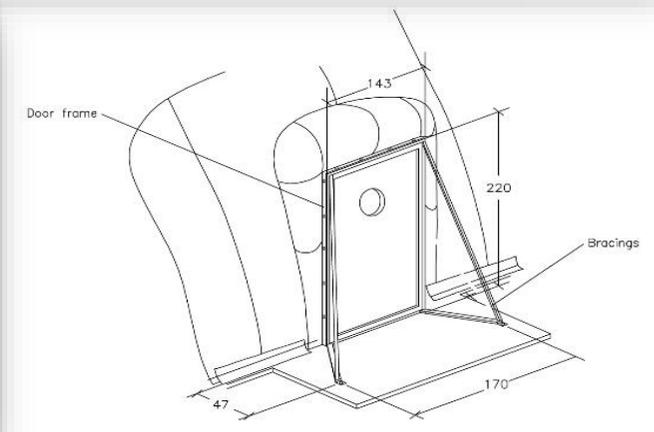
Revolving Doors must be specially designed for the continuous positive pressure environment.

Brushes seals and minimizes air losses while maintaining smooth operation. Three-leaf revolving doors in standard dimensions are  $\varnothing 180\text{cm}$  and  $\varnothing 240\text{cm}$ , as well as with the height 220cm are made from sheet metal construction.



## Emergency Door

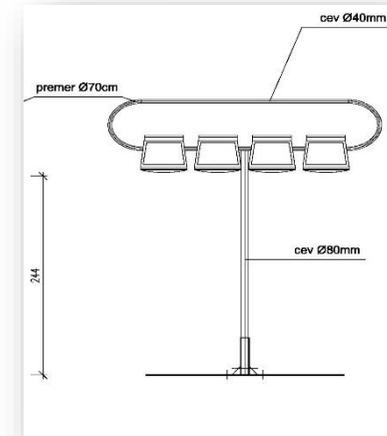
The purpose of these doors is to provide an emergency exit. Standard dimensions are 143cm x 220cm. The frame and the door leaf are made from galvanized metal construction. Doors have portholes, emergency exit signs, and lights and conform to fire and building standards.



## Lighting System

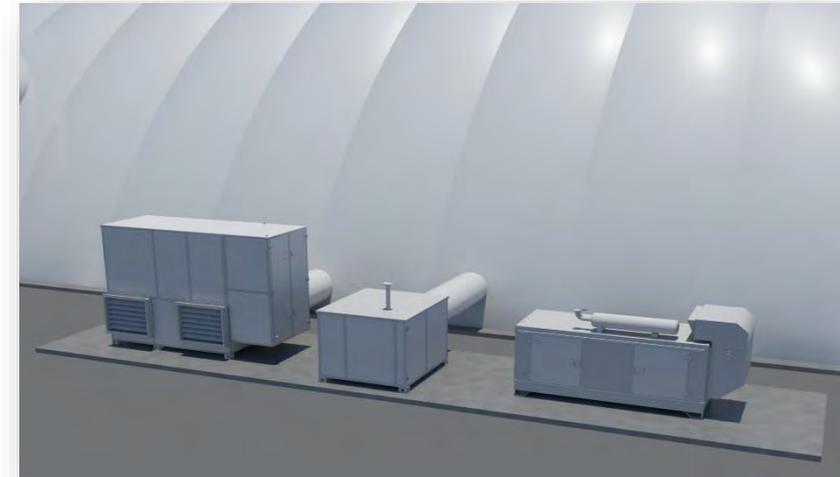
The inner ambient of the dome is lighted by the proper quantity of the halogen lamps in two different modes: directly or indirectly. At direct lighting, the lamps are mounted on the membrane to give light on the sports field directly, at indirect lighting the lamps are installed on the metal poles, directed upwards, where light reflected from the air dome surface. Illuminating power is calculated according to the dome function. Emergency lighting is positioned above the emergency exit doors to mark the rescue exit.

- Direct: Metal halide reflectors 400 W.
- Indirect: LaserLED PRO700, 670W, 97000lm
- Energy saving: Fluorescent or LED lights



# Ventilation and heating system

It comes with two functions; the constant air inflating guarantees the stability of the dome; furthermore, it provides the normal living/climate conditions inside the dome by the mounted heat exchanger. It heats the air before it is pumped inside the dome. Tar heating-ventilation system is completely automatically controlled.

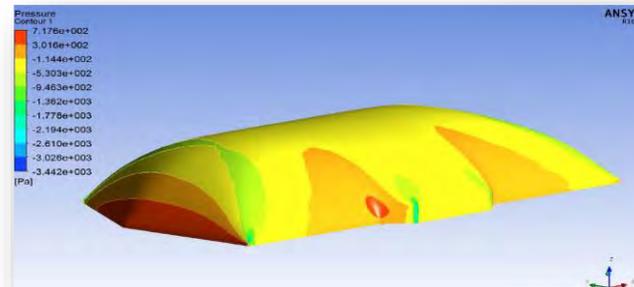


## VENTILATION SYSTEM

- Air capacity: 8200 - 120.000 m<sup>3</sup>/h.
- Power: 4 - 30 kW.

## HEATING SYSTEM

- 100 kW -1500 kW
- Energy: Natural gas, LPG, Oil, Hot water or Steam, Electricity, Heat pump, Biomass, Combined source.
- Pellet Burner: New, self-cleaning boiler with automatic pallet loader.



## Emergency Back-up System

Every air-supported structure is equipped with an emergency/backup system which ensures the stability of the structure in case of emergency situation, such as pressure loss or special weather conditions (extreme wind, snow). Backup unit automatically intervenes if the pressure inside the dome is lowered, in the case of high winds increases the pressure and heats the dome in case of snowfall.

The complete system can be backed up with electric generators, ensuring the continuous power supply. The operation is completely automatic

- Automatic control panel
- Wind sensor
- Snow sensor
- Auto start function, and automatically shut down when situation is stable
- Operating and start-up temperature is from -55°C to +70°C
- UPS
- Alarms – visual and siren

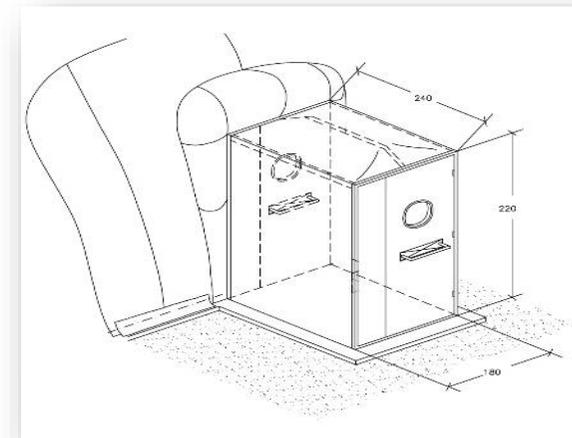


## Accessible Door

Pedestrian doors are used mainly for people with disabilities access. They are also useful for hand-truck deliveries.

Two doors are built in a frame with a short connecting tunnel creating an airlock system, thereby maintaining the building pressure and minimizing air loss.

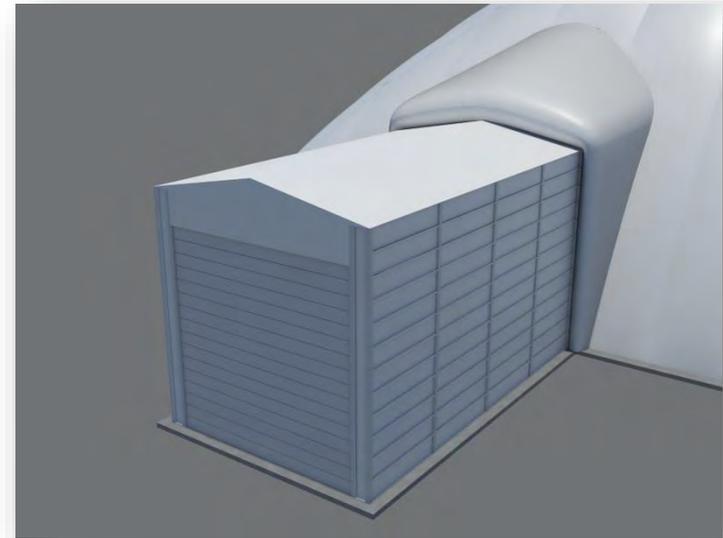
The frame and doors are built from galvanized steel for long life and include glass windows for safety. Standard dimensions are 140cm x 200cm x 220cm. The frame and the glass door leaf are made by metal construction, covered with a single or double membrane. The door is completely accessible.



## Vehicle & Equipment Airlock Access Door

There two types of Tar Vehicle & Equipment Airlock Access Door: T60 with standard dimensions of (600cm x 360cm x 330cm) and T80 with standard dimensions of (800cm x 460cm x 480cm). The roof of the metal construction is covered by a polyester fabric coated with PVC foil. Walls of the tunnel are closed by metal sheets.

The Vehicle & Equipment Airlock Access Door is meant to be an entrance for vehicles, a storage room of the equipment or an auxiliary space of the object. The doors standard dimensions are 300cm x 250cm and 400cm x 400cm. A frame is made by metal construction; doors are made from metal panels and they are equipped by a manual or electrical lifting device.

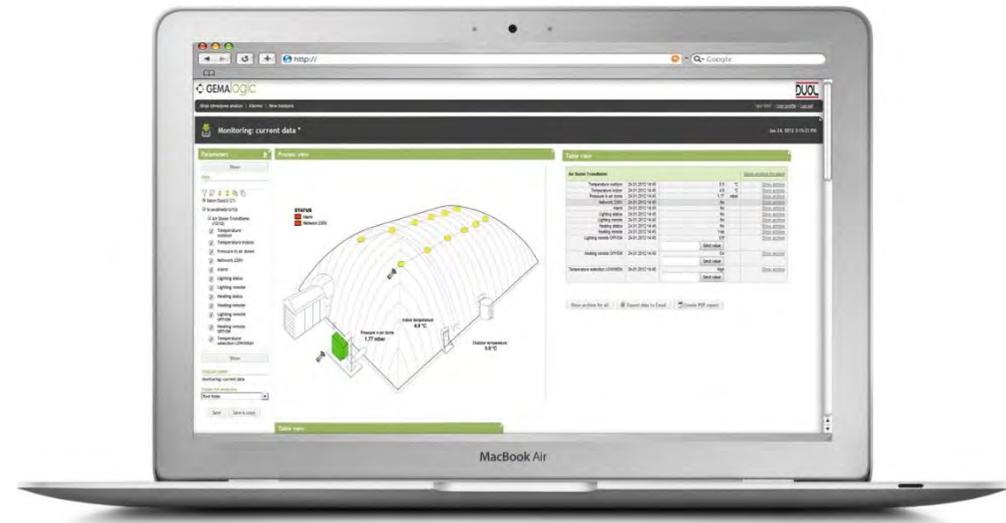
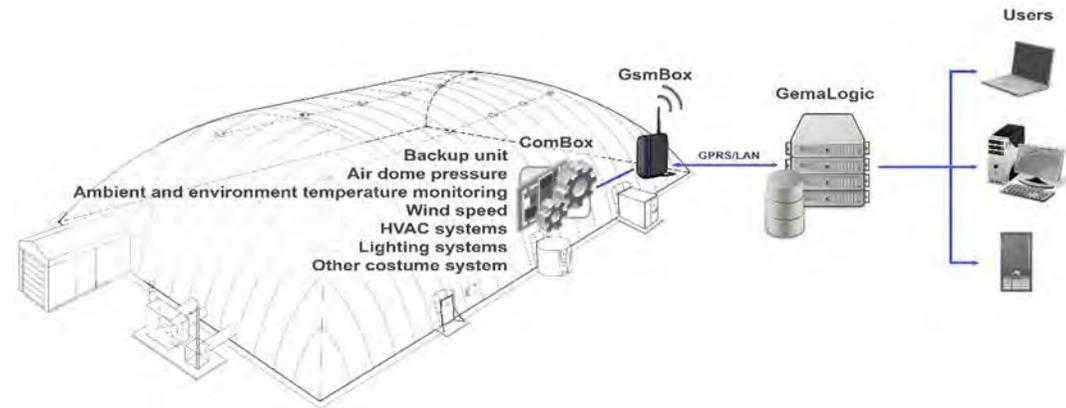


# Dome Manager

Tar Dome Manager is an innovative solution for supervision and automation of air domes. The installed programmable logic controller (ComBox.M) interacts with different air dome systems and is used for supervision, automation and control solution. Once connected the users have easy access via web and smartphones.

## Connectivity and Flexibility

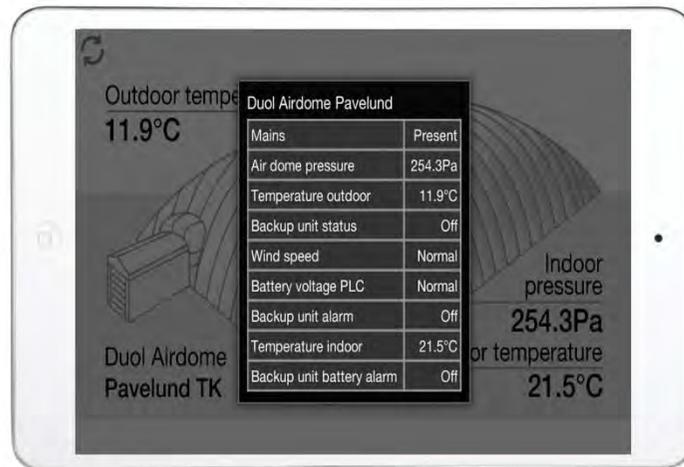
Various communication technologies and software support are available to collect, store and transmit data from various air dome systems. Unlimited flexibility is provided by the built-in Ethernet IEEE 802.3i interface, a number of serial interfaces (RS-232, RS-485) as well as GPRS and wireless communication, all these providing the functionality required by the user application. Integrated programmable logic controller (PLC) allows air dome monitoring in small systems as well as air dome management in bigger, complex systems.



## Tar DomeManager - System Management

Integrated programmable logic controller (PLC) can be used for air dome systems automation that enables customers to remotely configure HVAC systems, lighting system and other custom air dome systems that are installed.

- Backup unit
- Air dome pressure
- Ambient and environment temperature monitoring
- Wind speed
- HVAC systems
- Lighting systems
- Other customized systems



## De-stratification system

The De-stratification system function is to push the warm air from the dome ceiling, to create a regular heat distribution inside the air dome. It is mounted on the top of the air dome and it plays a key role when it comes to energy saving.



## AC system

The roof-top unit replaces the standard heating unit, by providing the refrigerated air to the structure. Standard units have 100 kW, 150 kW and 250 kW of cooling capacity. It can be specially designed for gulf countries to withstand the extreme heat in the region.

The dimensions of the unit are similar to the standard heating/ventilation unit, the orientation of the unit is horizontal.



## Panoramic window

Dimensions are upon the request. A frame of the window is made by metal construction. Optional glass: thermal pane glass or polycarbonate translucent panels. A complete construction is connected to the concrete foundation.



## Transparent membrane

Playing indoor while having a 360 degrees' panorama view – with new transparent membrane from Tar new architectural sports halls concept is possible. Recently developed transparent membrane offers, best on the market, 64% lights transmittance.



# Certificates



ISO 9001:2008



Creditworthiness Rating



Entrepreneur of the year

## Field Hospital, Bangladesh



Tar SWIFT 6x8 Tents in Red Cross emergency field hospital (ERU).

The field hospital opened in October 2017 and the **Tar** tents have been deployed for over one year and used as Operating Theatre and Wards.



## Base Camp, Nigeria



Tar SWIFT 6x8 Tents used as Office and Accommodation units in IHP Base Camp.

The base camp, located in Maiduguri, providing tented accommodation for 100 humanitarian workers from the UN and NGOs and other basic amenities to ensure a productive living and working environment.

Deployed in December 2016 .



## Base Camp, Nepal



Tar SWIFT 6x8 Tents used as Office and Accommodation units in IHP Base Camp during the response and recovery work for the earthquake in Nepal 2015.



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# Command Post, Norway



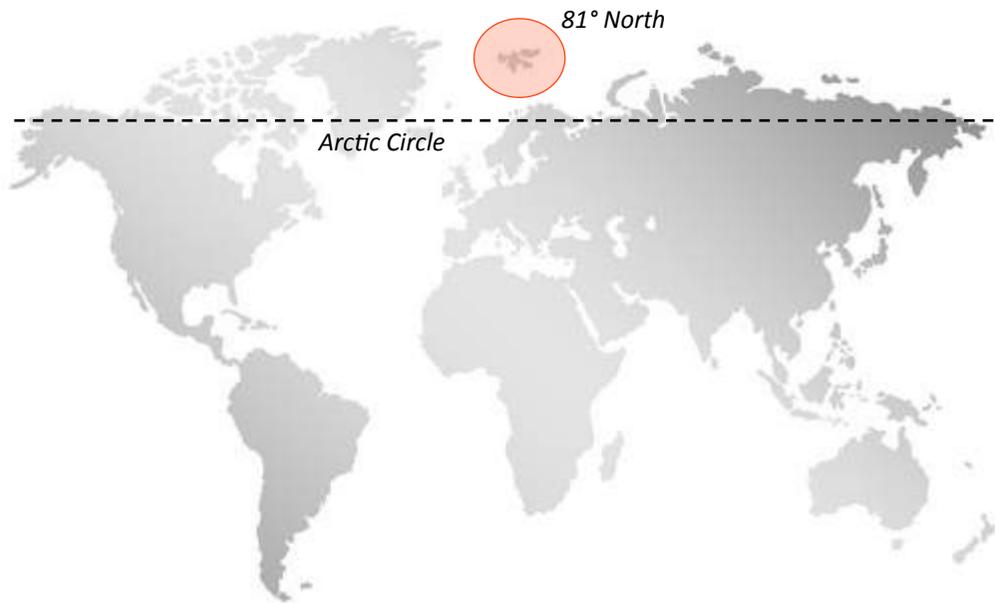
Tar SWIFT 5x6 & 5x5 4-way connector Tents used as command post by civil defence in Norway.



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# Base Camp, Svalbard



Tar SWIFT 5x6 & 5x8 Tents used as Base Camp at Svalbard, located in the Arctic Ocean above the Arctic Circle.

# Field Hospital, Singapore



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# Field Hospital, Chile



Tar SWIFT 5x8 Tents used as Field Hospital in Chile by the Chilean Armed Forces.





## Accommodation Camp, Denmark



Tar SWIFT 5x6 Tents used for accommodation of migrants in Denmark during a one year period, 2015 to 2016.



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# Field Hospital, Norway



Tar SWIFT Tents are continuously in use by the Norwegian Armed Forces since 2007 on training and missions inside Norway and abroad.

# Dinning Hall and Field Kitchen, Norway



# Field Hospital, Macedonia



# NATO Accommodation Camp, Norway



# SWIFT TENT SYSTEM



The Tar SWIFT Tents is a rapid and modular system designed to meet the tough demands of high mobility and comfort in all type of climates. Developed in close cooperation with military and emergency organisation and is in daily use in numerous of operations worldwide.

The SWIFT Tents are a complete One-Piece solution with no loose parts, integrated floor and complete High-Pressure Inflatable Air Beam Structure - working pressure 6-8 bar.

All SWIFT Tents is delivered as a standard with integrated floor, 3-layer windows, attachment/hanging points for lighting and cable distribution, connections for HVAC Systems.

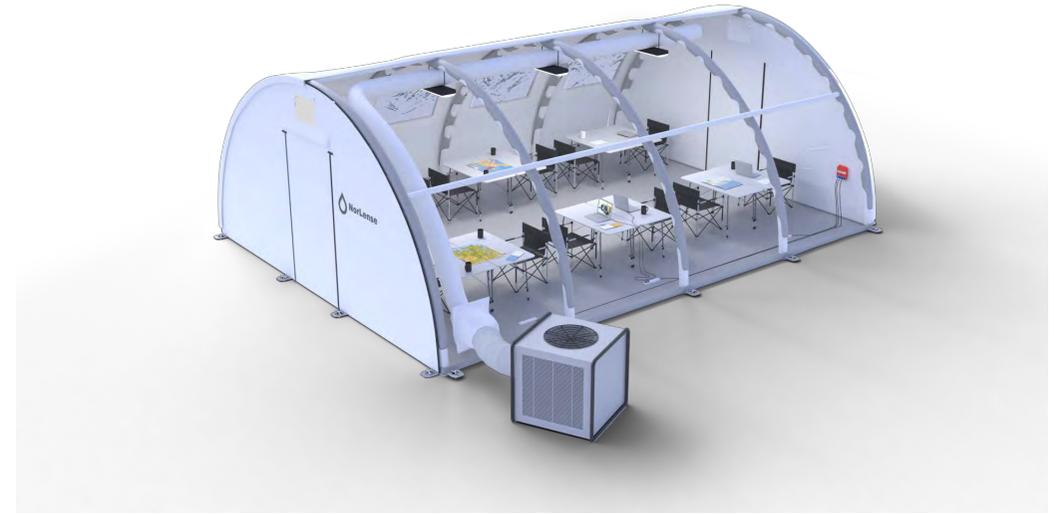
High-Pressure inflatable structure contributes to rapid and easy set-up/take down for the users in the field and decreasing the risk of operations errors with missing or broken parts.

## HIGH MODULARITY & FLEXIBILITY

The SWIFT Tent Units can be interconnected in a various of configurations to create a complete infrastructure. Allows for connections in all directions of the tent (end & long side), container & vehicle connections.

## EXTREME VERSATILITY

The SWIFT Tents are made of waterproof, fire & UV resistance material that can operate in temperatures from -45°C to +70C. The High-Pressure structure is not affected by temperature changes and can handle heavy wind and snow load.



## KEY FEATURES

- Rapid Deployment & Easy operation
- Minimum number of mancraft
- Deployment on any surface
- One-piece solution (no loose parts)
- 100% Mobile
- Modular & Multifunctional
- No need for constant air supply
- Low weight & low transport volume
- For all weather climates and hash conditions
- Not affected by temperature changes
- Minimum maintenance and service
- Low life cycle cost and long service time in use



Tent Model	Area	Width	Lenght	Height	Weight*
SWIFT 3X2.5	7.5 sqm	3 m	2.5 m	2.1 m	46 kg
SWIFT 4X4	16 sqm	4 m	4 m	2.4 m	70 kg
SWIFT 5X4	20 sqm	5 m	4 m	2.5 m	95 kg
SWIFT 5X6	30 sqm		6 m	2.5 m	135 kg
SWIFT 5X8	40 sqm		8 m	2.5 m	180 kg
SWIFT 5x10	50 sqm		10 m	2.5 m	214 kg
SWIFT 6X6	36 sqm	6 m	6 m	3 m	170 kg
SWIFT 6X8	48 sqm		8 m	3 m	228 kg
SWIFT 6x10	60 sqm		10 m	3 m	285 kg
SWIFT 5x5 Connector Tent	25 sqm	5 m	5 m	2.5 m	145 kg
SWIFT 6x6 Connector Tent	36 sqm	6 m	6 m	3 m	165 kg
Tent mateial and floor fabric:	Double sided PVC Coated Polyester fabric , Waterproof, UV-Resistant and Fire retardant Weight of fabric: 535g/m <sup>2</sup> to 800g/m <sup>2</sup> Optional: IR & Blockout membrance. Standard Tent colors: White, Nato Green, Sand/Tan. <i>Other tent colors upon request.</i>				
Standrad Configuration:	Removable gable-walls**, Integrated PVC-Flooring, 3-layer windows, attachment/hanging points for lighting and cable distribution, ventilation openings and HVAC ducts. Optional: Number of doors, windows & HVAC ducts				

\*Approx. Tent weight. +/- depending of weight of fabric and configuration of tent.

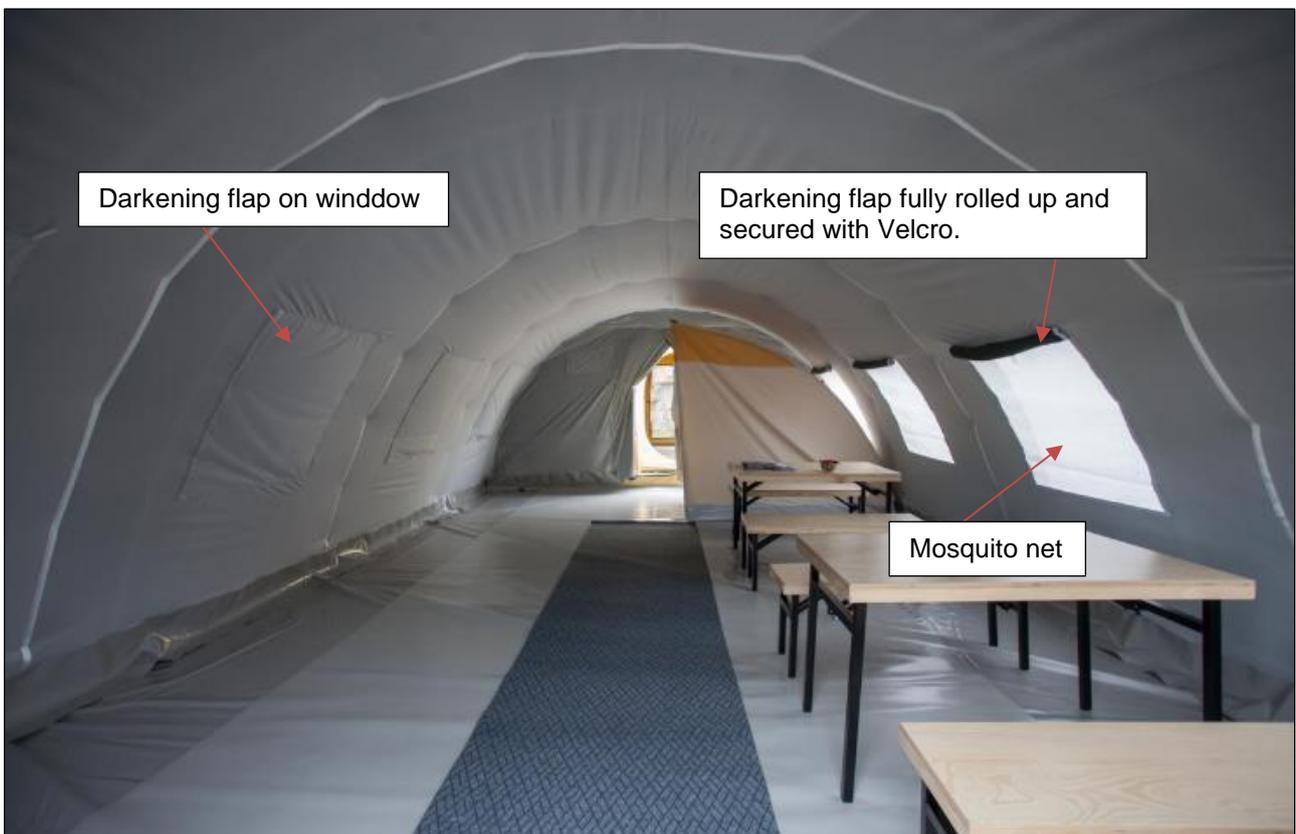
\*\* Removable gable-walls not available for SWIFT 3X2.5 & SWIFT 4X4



<b>Vedlegg:</b>	<b>Annex E-1-1-2 F1</b>
<b>Beskrivelse:</b>	<b>Inner tent</b>
<b>Antall sider:</b>	<b>2</b>

The Inner tent used in Tar SWIFT tents are made by a lightweight fire retardant elastic material with blackout function, providing an energy-efficient isolation in both hot and cold climates.

- The Inner tent is designed after each Tar SWIFT tent with the same number of doors, windows, ventilation openings and ventilation ducts for heating/cooling supply hoses.
- Two-layer windows and ventilations with mosquito net.
- Easy manually set up and take down with polyester straps and fixing hooks, no need of tools.



<b>Technical:</b>	
Quality:	TECHMAFLEX FR (T047)
Weight:	170 GR/M <sup>2</sup>
Composition:	45% PE - 55 % PU
Waterproofness:	> 3000 mm
Fire Standard:	EN 14116
Cleaning:	

100745 –High pressure air beam tents

## Inner tent parts

Tar Inner tent consists of 3 parts.

1 part – roof/wall

2 parts – gable walls

The gable walls are connected to the roof/wall through zippers.

The 3-parts system on the Inner tent allows for a fully open space when identical tents are connected through “wall-to-wall connection”, gable walls on tents fully removed.

The gable walls on the Inner tent can also be used as dividing walls when identical tents are connected through “wall-to-wall connection, gable walls on tents fully removed.



*Inner tent gable wall part connected with roof/wall part through zipper.*

*Door on the inner-tent with zippers, door can be rolled up and have in open fix position when tents are connected together.*



*Inner tent gable wall part removed.*

100745 –High pressure air beam tents

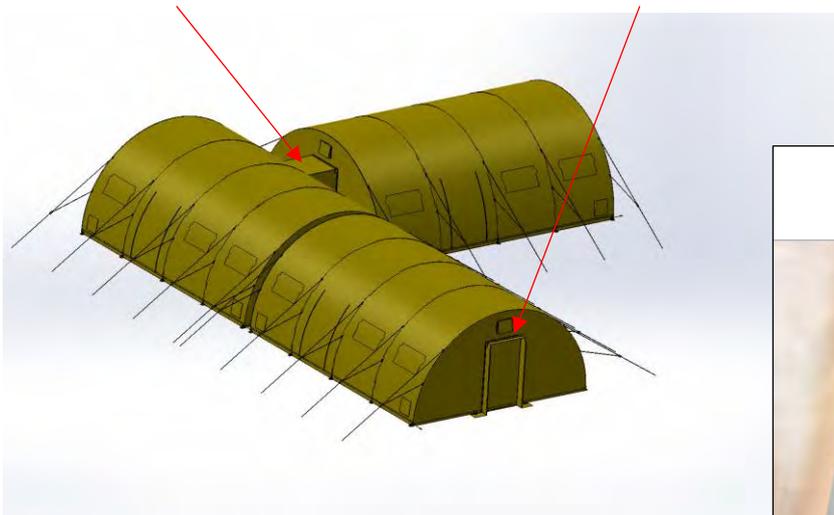
## SWIFT Tent Interconnect Ability

CONNECTION CONFIGURATIONS		
No.	Configuration	Type of connection
01.	Gable wall – Gable wall	Door connection
02.	Gable wall – Gable wall	Gable connection
03.	Gable wall – Length side wall	Door connection



**Door to door connection  
Length side to end side**

**Door connection  
End side to end side**



*Quick and easy manually interconnections of tent units through connectors equipped with waterproof Velcro and zipper connections.*

## Electric compressor 5/22 S

Compressor to inflate **Tar** High Pressure inflatable tents.

- Oil-free air compressor
- High air capacity
- Long service interval and double air outlets.
- Automatic pressure control
- Delivered with air filling hose and relevant connections



Cylinder capacity	350 l/min
Effective capacity	260 l/min
Air Pressure	Up to 10 bar / 145 psi
Weight	27 kg
Dimensions	590 x 340 x 380 mm
Tank volume	5 liters
Effekt	2.0 Hk
Standard Voltage	230 V

## Flysheet

The Tar Flysheet is an energy-efficient product, reducing the power consumption for the users. The Sunsheet is designed to cover Tar tents, providing a buffer from the sun to mitigate the effects of extreme heat.

The Tar Flysheet are designed with high pressure air tubes in the structure for easy set up and packing, single point inflation. The air tubes create an air gap between the tent roof and the Sunscreen to allow air to circulate freely.



Technical	
Structure	Ø75 mm High pressure air tubes
Type of coating	PVC Scean fabric
Weight of fabric	290g/m <sup>2</sup>
Openness factor	35 %
Air permeability	7520 l/m <sup>2</sup> *sec – DIN EN ISO 2076
Fire Resistance	B-s2-d0 - EN 13501-1
UV/Light fastness	>6 – EN ISO 105 B02
Cold resistance	-20 °C
Heat resistance	+70 °C

## Floor Protection Sheet

For extra floor protection and isolation inside the SWIFT Tents **Tar** can provide a protection sheet. Made of PVC-Fabric with non-slip surface.

The protection sheet is rolled out inside the tent and secured with carabiner to attachment points on each air beam.

