



PARTNERS

SUSTAINABLE INNOVATION

**Deployable camp solutions to maximise
troop deployment efficiency**

COMBAT ENGINEER CONFERENCE 2024

Warsaw, 14 March 2024

DEFSHELL & RESCUE



DEFHELL & RESCUE

G&G PARTNERS *business unit*

A REVOLUTION IN DEPLOYABLE SHELTER

THE COMPANY



G&G Partners is a modern and structured company, established by competent managers in defense and rescue sector, creating a line of high-quality products called **DEFShell**.

G&G Partners has a modern production facility of 12,000 sq.m. located in Montichiari (BS) and a prepared and experienced human capital.

G&G partners counts on 80 employees and a Turnover of 40 Mln. (70% in DEFENCE market) per year.



COVER UP



**TECHNICAL GEOMEMBRANES FOR
THE ENVIRONMENT**

COVER POOL



SWIMMING POOL COVERS

DEPARTMENTS



• EASY JOINT



VENTILATION DUCTS FOR TUNNELS

• SPECIAL COVER



**TARPAULINS FOR AGRICULTURE,
CONSTRUCTION AND MULTIPURPOSE**



A COMPLETE RANGE OF DEPLOYABLE STRUCTURES

- > Field Tents
- > Medium Tents
- > Hangar
- > Field Systems
- > Field Hospitals
- > Light Buiding
- > Integrated Accessories



DEFENCE AND RESCUE TENTS

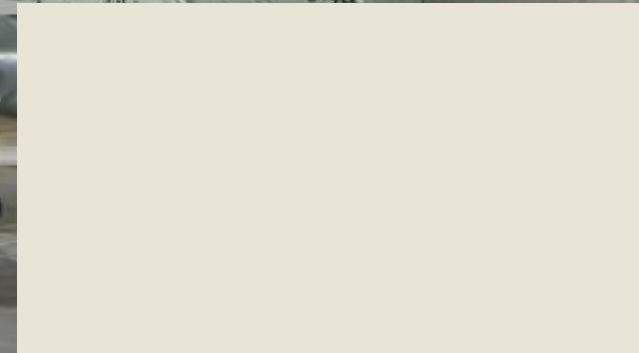
**A COMPLETE RANGE
OF DEPLOYABLE STRUCTURE**



**A REVOLUTION IN
DEPLOYABLE STRUCTURES**



DEFSHELL'S
MOVIE





RECCOMANDATIONAL INPUTS BY **NATO** REGARDING THE PEACEKEEPING MISSIONS

- **According to NATO RESEARCH, in the the last 25 years, 75% of the transported weight to accomplish these missions is composed by fuel;**
- **Transport and management caused the death of more than 3000 people.**

NATO itself recommends the development of advanced solutions to reduce fuel consumption in operational theatres.

See:

https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2017_08/20170808_Smart-Energy-Ex-Capable-Logisti.pdf

SMART ENERGY SYSTEM

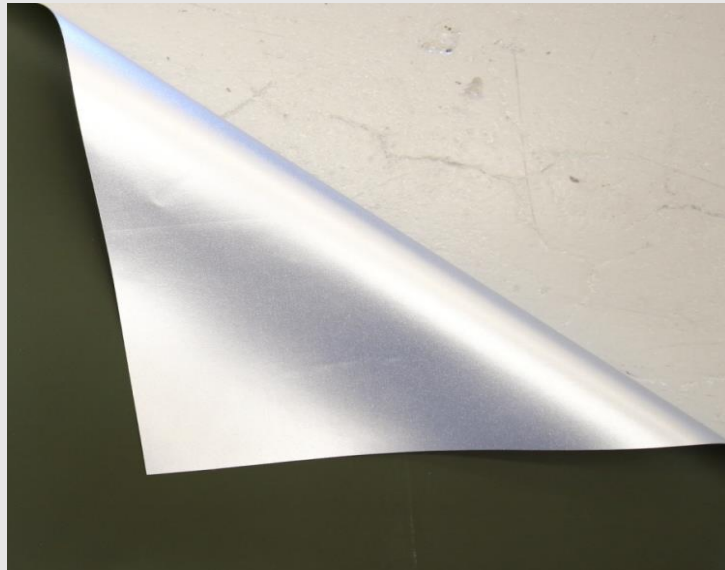
LIVING AND LIGHT CONCEPT

Our mission is to create technologically advanced products using high-performance materials aimed to:

- **Increase of habitability and living**
- **Lower energy consumption and cost saving**
- **Reduce of weights and packaging**
- **Lower environmental impact**

The target is the creation of field systems with efficient and comfortable shelter for people and equipment.

SMART ENERGY SYSTEM



THERMOCANVAS INNOVATIVE FABRIC MEMBRANE FOR REDUCTION OF ENERGY CONSUMPTION

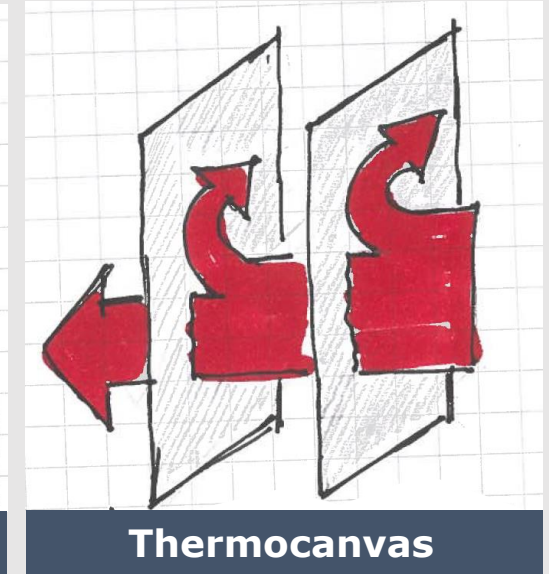
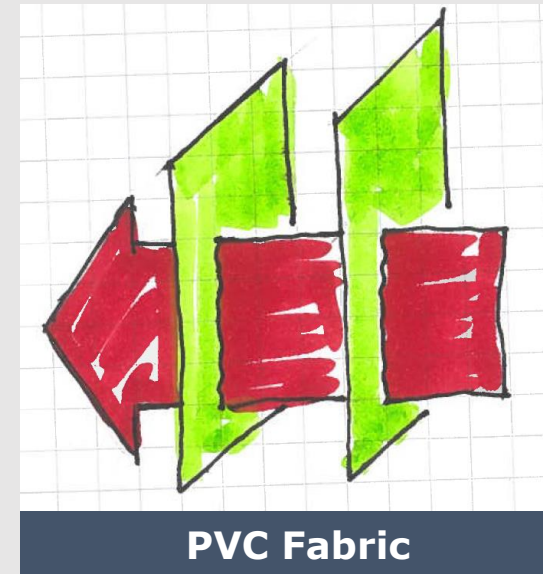
Low emissivity Polyester PVC coated fabric

An efficient thermal barrier guaranteed by low emissivity capability and reduced solar factor (intrinsically insulated without other complementary or other elements) allowing a field maintenance and long lasting use.

100% impermeable and Fire Resistant

SMART ENERGY: WHAT IS A THERMOCANVAS FABRIC?

- Thermocanvas fabric is a special surface treatment that acts on radiation heat transfer mechanisms, reducing it.
- In this way, the insulating power of the tent fabric is significantly increased, without losing on field the advantages guaranteed by PVC-coated fabrics.
- The result is a reduction in energy consumption for heating or cooling of the tents with better comfort living when air conditioning is not used.



SMART ENERGY: WHY USE THERMOCANVAS?

The Thermocanvas ensures a high insulation value while maintaining the following functional advantages:

✓ Washable

✓ Repairable on field

✓ Fire resistant

✓ Decay resistant

✓ Mould resistant

✓ Bacterial resistant

✓ Easily deployable

✓ Reusable

REDUCTION OF ENERGY CONSUMPTION

Thermocanvas thermal transmission (U)* is lower than traditional PVC tents/hangars, up to:

49% in cold conditions (Winter)

56% in warm conditions (Summer)

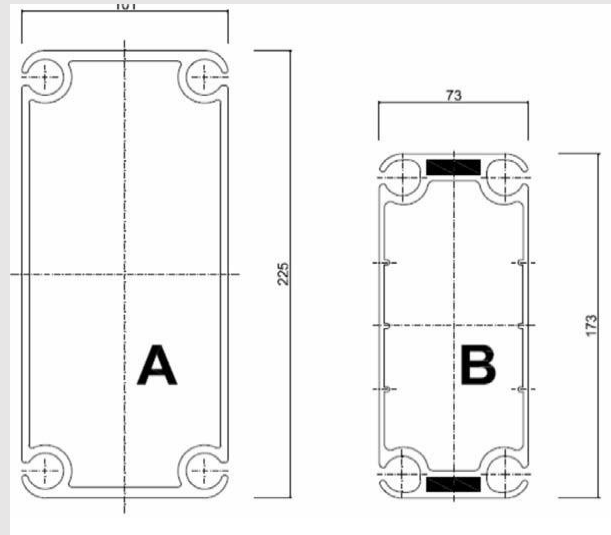
Official customer tests have detected, with an external temperature of 36 c°, an internal tent temperature of only 28 c° (With air conditioning OFF).

That means that the Defshell Thermocanvas **allow to reduce total fuel's consumption** for air conditioning/heater: 49% in the winter, 56% in the summer.

REDUCTION OF WEIGHTS AND PACKAGING



ALUMINIUM VS. FIBER REINFORCED



Comparing the **DEFShell fiber-reinforced** profile to a normal aluminum profile with the same mechanical resistance we have:

- **weight reduction up to 35%**
- **volume reduction up to 50%**
- **Easier setup**

REDUCTION OF WEIGHTS AND PACKAGING



PACKAGING EXAMPLES

In 2 Iso'20 container:

- **1 MMTS Hangar 25x42**



In special cage fit:

- **4 tents 6x6 on a 463L pallet**
- **10 tents 6x6 in Iso'20 container**

WE REDUCE TRANSPORT COSTS

SMART ENERGY: DEPLOYABLE PHOTOVOLTAIC SYSTEM



FEATURES

PV Panel dimensions 700x1400 mm

PV peak power 150 Watts/panel

On a field tent 6x6m roof can be installed
32 panels for a power 4,8 kWp

On a field hangar MMTS roof can be
installed 360 panels for a power 54 kWp

Ultra lightweight photovoltaic panels

field tent 6x6m

SMART ENERGY: POWER BOX FOR PHOTOVOLTAIC PANELS

Power Box L



Power Box S



Power Box with wind energy system



- Power Box S can manage 1 6x6 tent (5kWp)
- Power Box L can manage several type of tents up to 32 kWp
- Connectable to the camp energy network for hybrid use of traditional power generator

**Solar energy transformation,
storage and management units
for field use**

SMART ENERGY:CAPABLE LOGISTICIAN 2019

We have been invited and we proudly participate to capable logistician 2019 organized by NATO in Poland

CL19 SMART ENERGY

SETAC

Smart Energy Training and Assessment Camp

Led by NATO/ESCD

with contributions from CAN, FRA, ITA, LTU and USA



The CL 19 Smart Energy Headquarters have been hosted in our 6x6 Smart Energy solution

SMART ENERGY: NATO EXERCISE CL19 in POLAND – June 2019



CL 19 Smart Energy Headquarters have been hosted in G&G Partners 6x6 Smart Energy solution

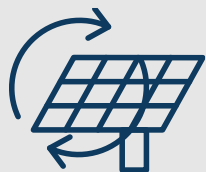
INNOVATION - SMART ENERGY



CL 19 Smart Energy Headquarters have been hosted in G&G Partners 6x6 Smart Energy solution



SMART ENERGY: NATO EXERCISE CL19 in POLAND – June 2019



SMART ENERGY

During 10 days of deployment our PV system feeds the energy loads of HVAC, PC, lights of the 6 tents with generator help only for 10%

90% FUEL SAVING



NATO AWARD G&G PARTNERS

The innovations:

SMART ENERGY and LIGHT CONCEPT

made by G&G Partners in the field of construction of hangar tents for field systems have been honoured by NATO with an award.



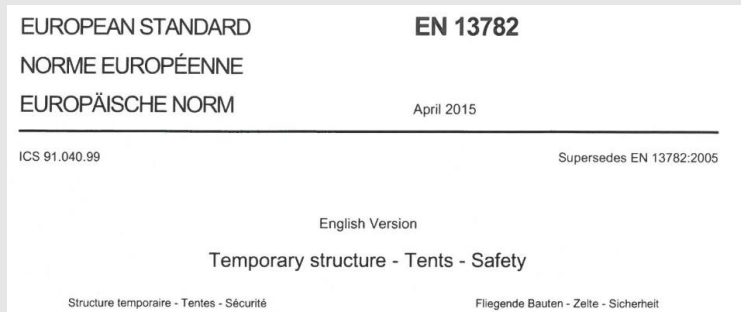
Ambassador SORIN DUCARU - NATO Assistant to the Secretary General for Emerging Security Challenges



FRAME TENT REGULATIONS

European Standard EN 13782

The tents has been designed in compliance with the **EuropeStandard EN 13782** (“Temporary structure – Tents – Safety”)



FIELD TENTS



FIELD TENTS - DEFSHELL STRUCTURES



PNEUMATIC TENT

Models:

- 3 Arches: 5.40 x 5.70 x h. 2.80 m. - Surface 30 sqm.
- 4 Arches: 5.40 x 8.50 x h. 2.80 m. - Surface 45 sqm.
- 5 Arches: 5.40 x 11.10 x h. 2.80 m. - Surface 60 sqm

SET UP: 5 minutes

SUITABLE: rapid deployment



ENDOSKELETON MODULAR TENT

Models:

- 6.00 x 6.00 x h. 3.36 m. - Surface 36 sqm.
- 6.00 X 9.00 x h. 3.36 m. - Surface 42 sqm
- 6.00 x 12.00 x h. 3.36 m. - Surface 72 sqm.

SET UP: 50 minutes

SUITABLE: long permanent period

FIELD TENTS - DEFSHELL STRUCTURES



EXOSKELETON MODULAR TENT

Models:

- 6.00 x 6.00 x h. 3.20 m. - Surface 36 sqm.
- Internal width: 5.79 m.
- Internal length: 5.75 m.
- Internal side height: 1.90 m.

SET UP: 15-20 minutes

**SUITABLE: rapid deployment
and long permanent period**

EASY FIX MODULAR TENT – 6 m. Width

ENDOSKELETON MODEL



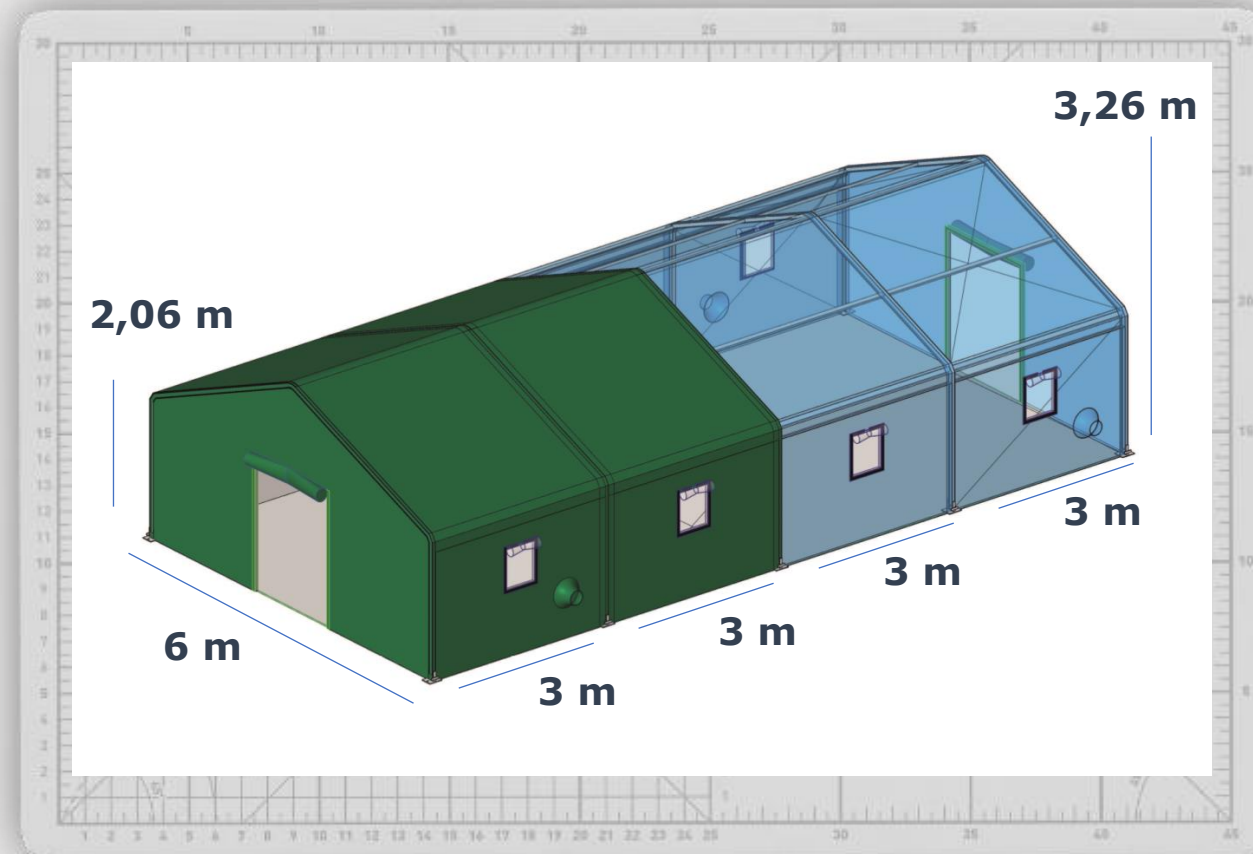
“SUITABLE FOR LONG TERM PERIODS”

EASY FIX MODULAR TENT – 6 m. Width

The tent has no external tie rods

MODELS DIMENSIONS

- 6.00 x 6.00 - Surface 36 sqm.
- 6.00 X 9.00 - Surface 54 sqm.
- 6.00 x 12.00 - Surface 72 sqm.
- 6.00 x 15.00 - Surface 90 sqm.
- 6.00 X 18.00 - Surface 108 sqm.
- 6.00 x 21.00 - Surface 126 sqm.



EASY FIX MODULAR TENT – 6 m. Width

FEATURES

One arch already assembled deployable **without screws and bolts**, easy to set up, **not risk to lose pieces** (easy fix)

Modular: module's dimension 6X3m

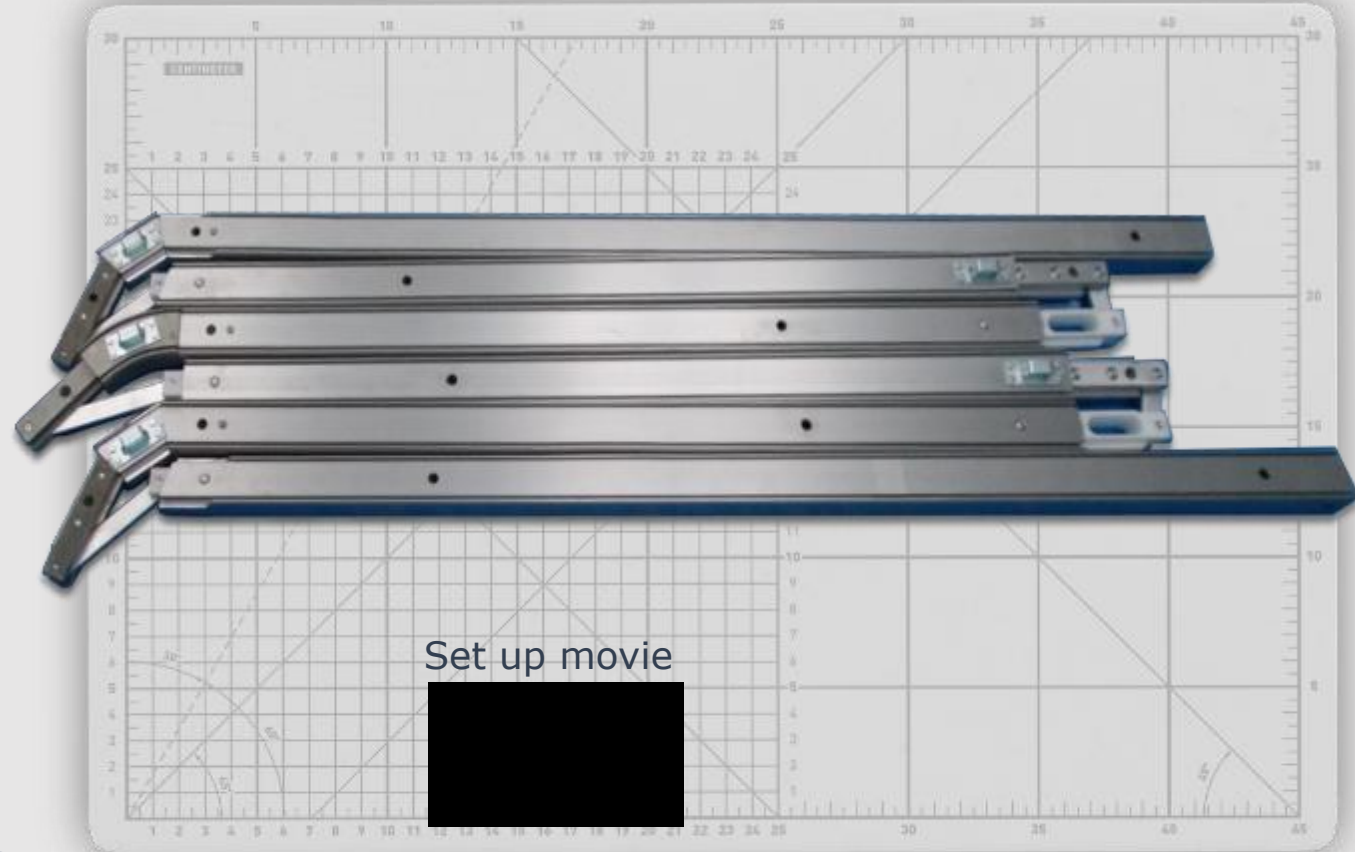
Light: weight of a single arch is less than 50 Kg (+/-5%)

PERFORMANCE

Snow load 60 daN/m²

Wind resistance 28 m/s (101 km/h)

Temperature operative range: -30°C +65°C



EASY FIX MODULAR TENT – 6 m. Width





MATERIALS – OUR PROPOSAL FOR THE COVER: THE THERMOCANVAS

- The tent cover consists of a double layer.

The fabric:

- polyester low emissivity fabric coated on both sides with synthetic resins (P.V.C.).
- the inner side is metallised (without additional glued sheets or sheets) to guarantee an efficient thermal barrier
- 100% impermeable;
- Fire resistance: Class 2 self-extinguishing;
- Washable;
- Durable and resistant to continuous bending.

Available in different exterior colors:

-  Nato green
-  white
-  gray
-  sand



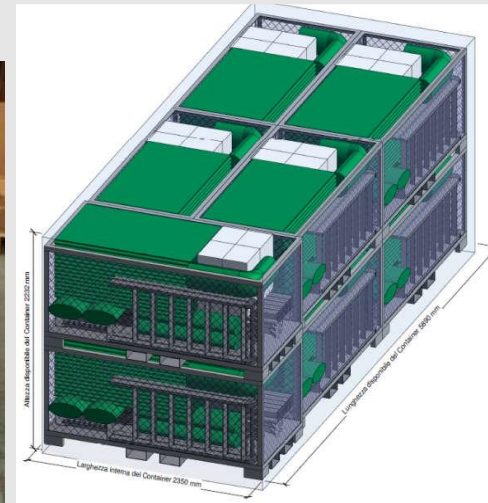
In Thermocanvas tents, the thermal transmission (U)* is reduced by 56% in summer and 49% in winter, compared with the traditional PVC tents.

EASY FIX MODULAR TENT – 6 m. Width

PACKAGING AND TRANSPORTATION



1 box = 1 tent



10 tents = 1 ISO 20' container

EASY FIX TENT & QUICKLY TENT

EASY FIX tent can be transformed in **QUICKLY** tent through a special kit: the result is a tent more rapid to deploy, maintaining the same operative loads.



REVERSABLE PROCESS

EASY FIX
Endoskeleton



QUICKLY
Exoskeleton

QUICKLY TENT – Exoskeleton tent



- **Much stronger than an exoskeleton, much faster than an endoskeleton: QUICKLY TENT**
- **The tent has no external tie rods.**
- **Assembly time from 15 to 20 minutes with a team of 4 workers**
- **THERMOCANVAS cover with double layer made with high thermal performance**
- **The shading sheet can be fixed directly to the profiles.**

FIELD HOSPITAL – ROLE 1



FIELD HOSPITAL – ROLE 1

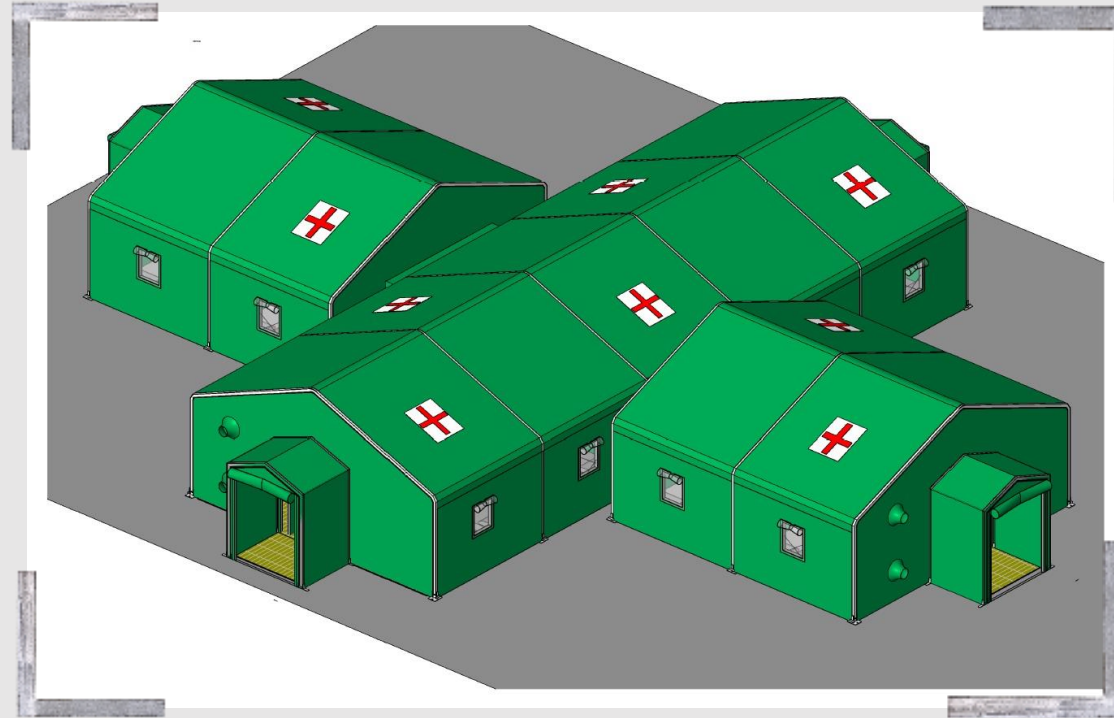
Composed by
- nr. 4 EASYFIX Tents and
nr. 1 Cross Connection

Accessories

- Lighting and Wiring
- Power generator
- HVAC
- Flooring
- Internal partitions
- Furnitures

Technical features

- ✓ Snow Load QSNOW = 60 daN/m²
- ✓ Wind Load Vref=28 m/s (101 km/h)
- ✓ Fire resistant and 100% waterproof



FIELD HOSPITAL – ROLE 1

DEFShell ROLE1 made of **EASY FIX** tents, guarantees:

- Excellent living
- High thermal insulation
- Great comfort for hospitalized and healthcare operators
- Modularity (possibility to expand the asset)
- Easy to transport (air-sea-land)

FIELD HOSPITAL – ROLE 1



> Colors available:



FIELD HOSPITAL – ROLE 1



FIELD HOSPITAL – ROLE 1

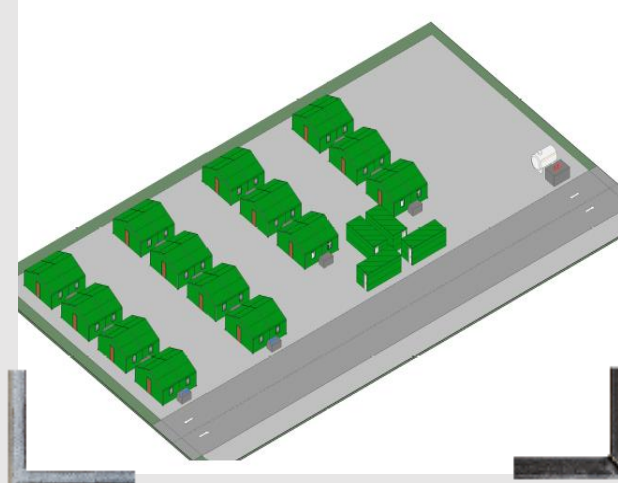


96 PAX CAMP

COMPLETE WITH
BATHROOM AND
SHOWER SYSTEM

96 PAX FIELD CAMP Composition

- > 12 Tents 6x6 for housing 8 people each
- > 1 Tent 6x6 as command center
- > 1 Tent 6x6 as Briefing Room
- > 1 Hygienic field system (5 toilets and 5 showers)
- > 1 Electric Generator and wiring
- > Cages for easy transport with ISO 20 container



Easy fix tent can made complete field camps that we can supply with all accessories

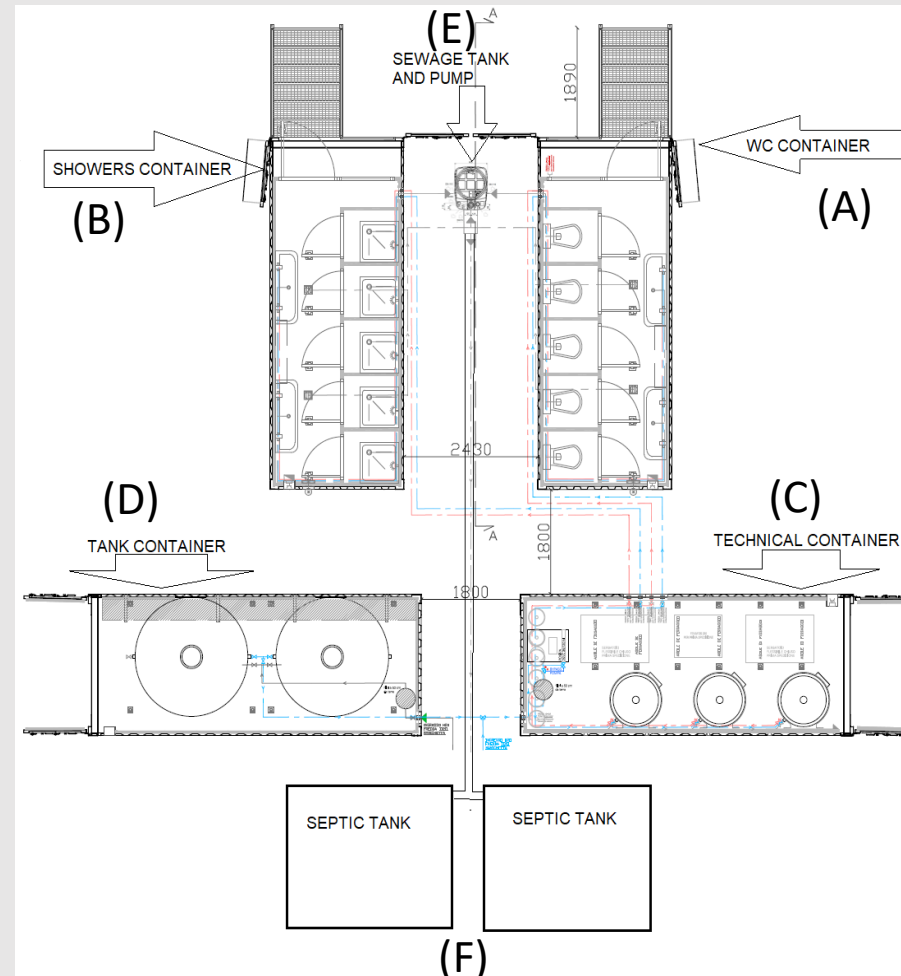
96 PAX CAMP

COMPLETE WITH
BATHROOM AND
SHOWER SYSTEM

TACTICAL FIELD CAMP HYGIENIC SYSTEM

A Complete Hygienic System ISO
20' containerized

- ✓ 1 container with 5 WC with 2 double sink (A)
- ✓ 1 container with 5 SHOWERS with 2 double sink (B)
- ✓ 1 container technical with 3 boiler for warm water, pumps, filters (C)
- ✓ 1 Supply container with 2 water tank (D)
- ✓ 1 sewage tank with pump (E)
- ✓ 2 Septic tanks (F)



96 PAX CAMP

**COMPLETE WITH
BATHROOM AND
SHOWER SYSTEM**



96 PAX CAMP

CARACTERISTICS OF THE T. F. CAMP HYGIENIC SYSTEM

Number of ISO 20' container	4
Possibility of transportation	Naval or trucks
Number of WC	5
Number of showers	5
Number of sinks	8
Water tanks	2x5.500 liters each
Electrical Boilers	3x1.000 liters eachx10 kW

Total water capacity	14.000 liters
Number of clean water pumps	2
Number of sewage pumps	2
Capacity of the 2 septic tanks	10.000 liters each

All 4 container are insulated
All outside water pipes are insulated and heated to avoid ice formation



CRI ITALIAN RED CROSS - Emergency Rapid Unit



Composition

8 tents 6x6 for office and bathrooms

8 tents 6x9 for accommodation

Connection moduls

Accessories

Cages for ISO 20 container

Features

Covered surface 840 squared meters all connected

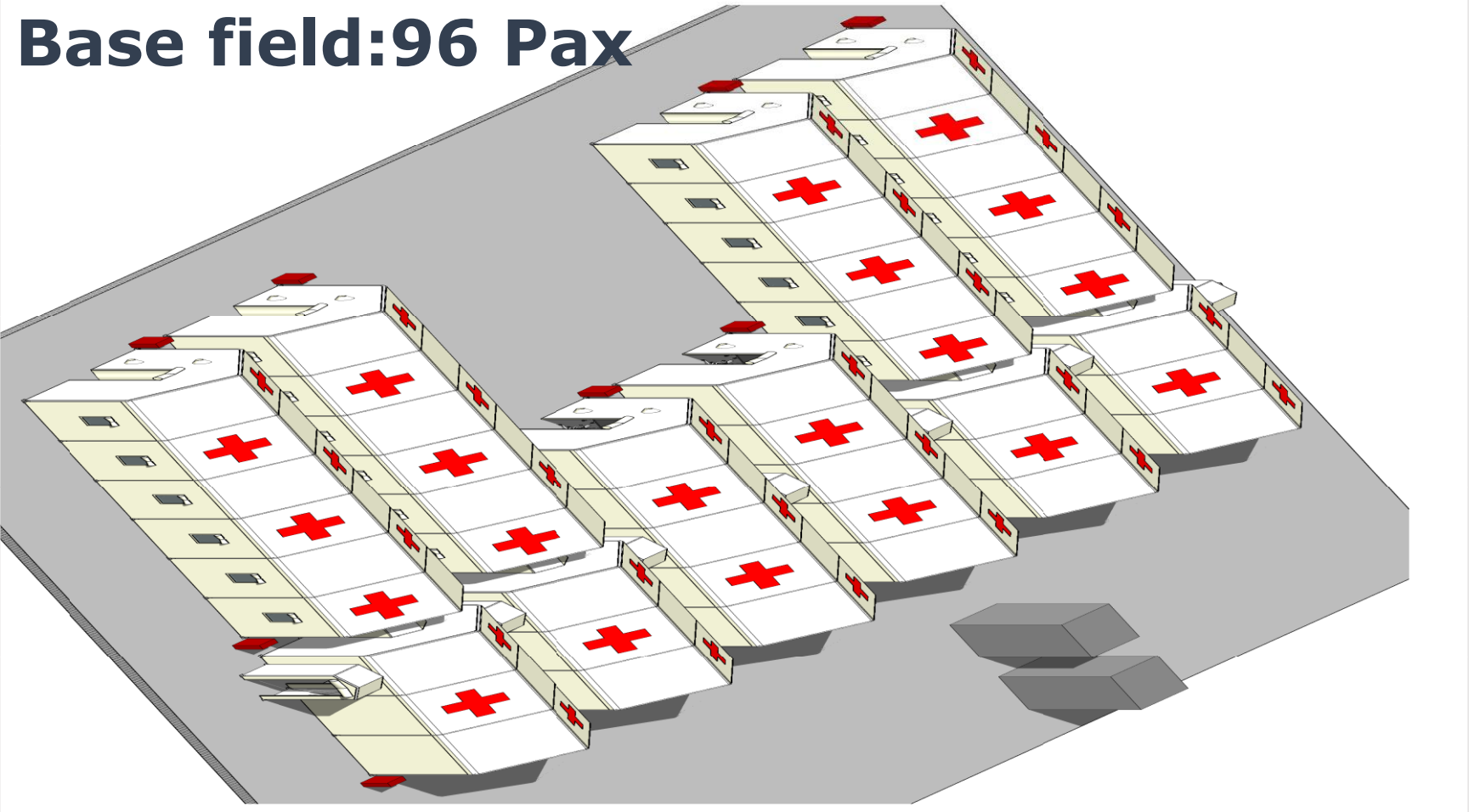
Hosting capability 96 pax extendable at 192 pax

Office for 24 desk

16 showers – 16 WC

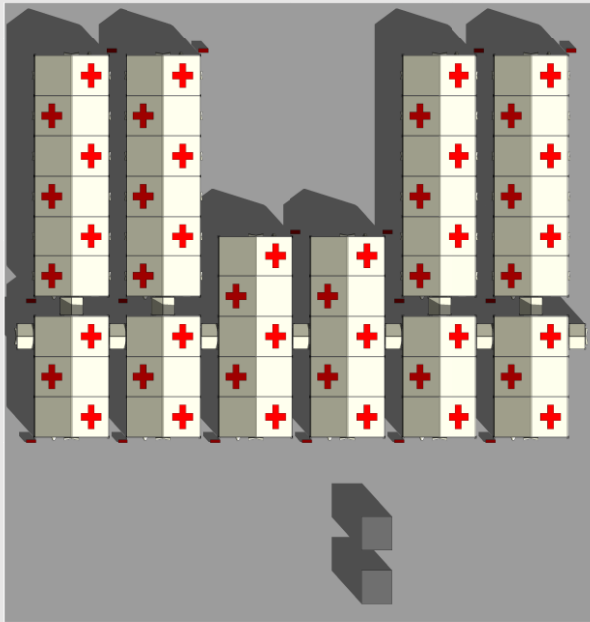
CRI ITALIAN RED CROSS - Emergency Rapid Unit

Base field:96 Pax

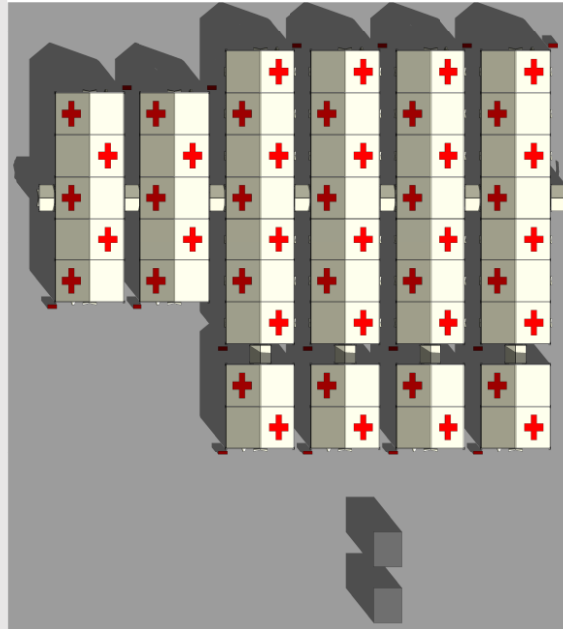


CRI ITALIAN RED CROSS - Emergency Rapid Unit

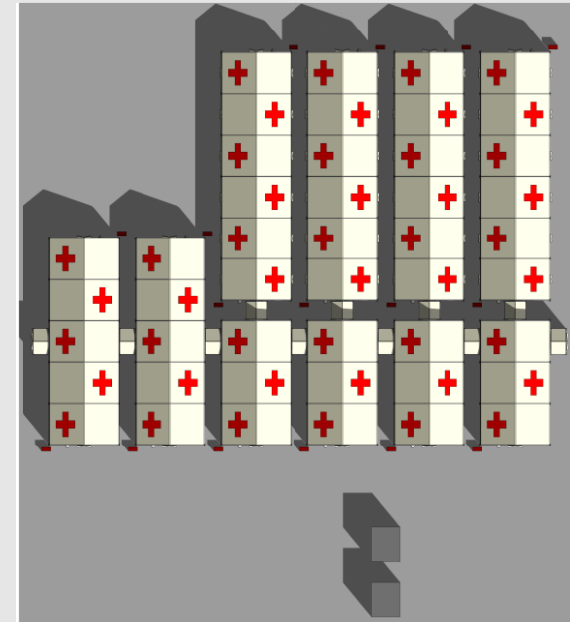
**Italian Red Cross:
1 CAMP, 3 DIFFERENT CONFIGURATIONS**



BASE FIELD



LAYOUT 2



LAYOUT 3

CRI ITALIAN RED CROSS - Emergency Rapid Unit



CRI «ERU» Smart Energy solution



Supplied Items:

- nr. 320 solar panels for over than 48 kWp
- nr. 2 eolic generators for 2kW each
- nr. 2 Power Boxes to manage all the system
- energy storage capacity 45+45 kWh
- expandable 320 solar panels more deployable on the roof nets
- all tents are energy saving with Thermocanvas technology

VVFF Fire Brigades Rapid deployment Camp – «Quickly» Tents

Supplied Items:

- nr. 1 Quickly tent 5,5 x 10 m
- nr. 4 Quickly tents 5.5 x 7.5 m
- nr. 4 Quickly entry modules 5.5 x 2.5 m
- nr. 3 Quickly connection modules
- nr. 1 Quickly container connection module
- **330** smq covered surface, all connected



VVFF Fire Brigades Rapid deployment Camp – «Quickly» Tents



Performance

Snow load 60daN/sqm
Wind load 28 m/sec

Lifting system of the tent "Easy Pull" patented with linear connection, alluminum carabiners, inox bits.

PNEUTECH TENT



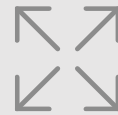
**A NEW GENERATION OF PNEUMATIC TENTS:
"SUITABLE FOR RAPID DEPLOYMENTS"**

PNEUTECH TENT



PNEUTECH TENT

INNOVATIONS & ADVANTAGES



INCREASED HABITABILITY AND LIVING

- Walls more vertical
- More height at the slope change's arch
- Greater height at the ridge
- Increased space between arches to improve accommodation
- Greater frontal/lateral doors' height
- Increased brightness due to new bigger window' dimensions



ENERGY SAVING

- Reduction of the Thermal trasmittance
- Real Consumption's reduction of fuel for Air conditioning/Heater



MODULARITY

- By corridor door to door
- By connection flap door to door
- By connection flap front to front



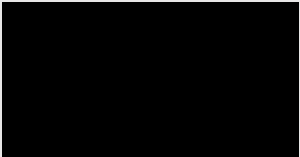
EASY TRANSPORT



EASY AND QUICK TO SET UP

PNEUTECH TENT

**A NEW
GENERATION
of
PNEUMATIC
TENTS**



HANGAR MMTS - Multifunctional Medium Tent Structure

**MMTS HANGAR
SUITABLE FOR
HELICOPTERS, AIRCRAFTS,
DRONES AND VEHICLES**



- ✓ Modular and deployable
- ✓ Low energy consumption and money saving
- ✓ Light, easy to carry and to assemble
- ✓ Robust and easily to maintain

HANGAR MMTS - Multifunctional Medium Tent Structure

DIMENSIONS

Launch Hangar: 25m x 20m
Multifunctional Hangar 25m x 42m
Extendable with module 25X5m
Total Height 10,3m – Lateral Height 4,5m

PERFORMANCE

Snow Load 75 kg/m²/Wind Load 101 Km/h
Snow Load 20 kg/m²/Wind Load 112 Km/h

TRANSPORTABILITY

1 MMTS within 2 containers Iso 20' C1 or by
airplane with pallets 463L

AVAILABLE VERSIONS CURRENTLY IN USE

“Launch Hangar” without doors
“Multifunctional Hangar” with 1 or 2 electrical
clamshell doors
“Multifunctional Hangar” with 1 or 2 vertical doors

APPLICATIONS

Recovery/Maintenance for helicopter, airplane, drone
and wheeled or trucked assets

HANGAR SET UP

5 days with a trained Team

HANGAR MMTS - Multifunctional Medium Tent Structure

EASY TO TRANSPORT - Examples



A complete Multifunctional Hangar 25m x 42m
can be shipped in only 2 and ½ Iso'20 Containers

HANGAR MMTS - Multifunctional Medium Tent Structure



«HANGAR MMTS» WORKSHOP - WAREHOUSE



Supplied Items:

- nr. 6 hangars MMTS 25 x 57 m with 2 automatic clamshell doors each
- nr. 1 mobile crane having 1.600kg lifting capacity
- electrical and lighting system
- cooling system and heating system
- covered surface **7.500** sqm

HANGAR MMTS - Multifunctional Medium Tent Structure

MMTS VERTICAL DOOR



HANGAR MMTS - Multifunctional Medium Tent Structure

MOBILE WORKSHOP HANGAR WITH MOBILE CRANE



FEATURES

Maximum clear width 19,00 m

Maximum height of use 7,50 m

Lifting capacity

Trasportable

Manovrability

16.000 N

nx 20' ISO container

Remote control Four (4) 90° steering wheels

HANGAR MMTS - Multifunctional Medium Tent Structure

REFERENCE for MULTIFUNCTIONAL HANGAR

Defshell Multifunctional Hangar

Main P/N DFS2520-45/HM NSN 8340-150135193

Door P/N DFS/2520-CLD/01 NSN 8340-152073001

✓ 2013 - 2022

SUPPLY OF MORE 70 MULTIFUNCTIONAL HANGAR



✓ **LOT OF HANGARS DEPLOYED IN KUWAIT AND AFGHANISTAN**

«CPMVC» Combat Vehicle Maintenance Complex

Features:

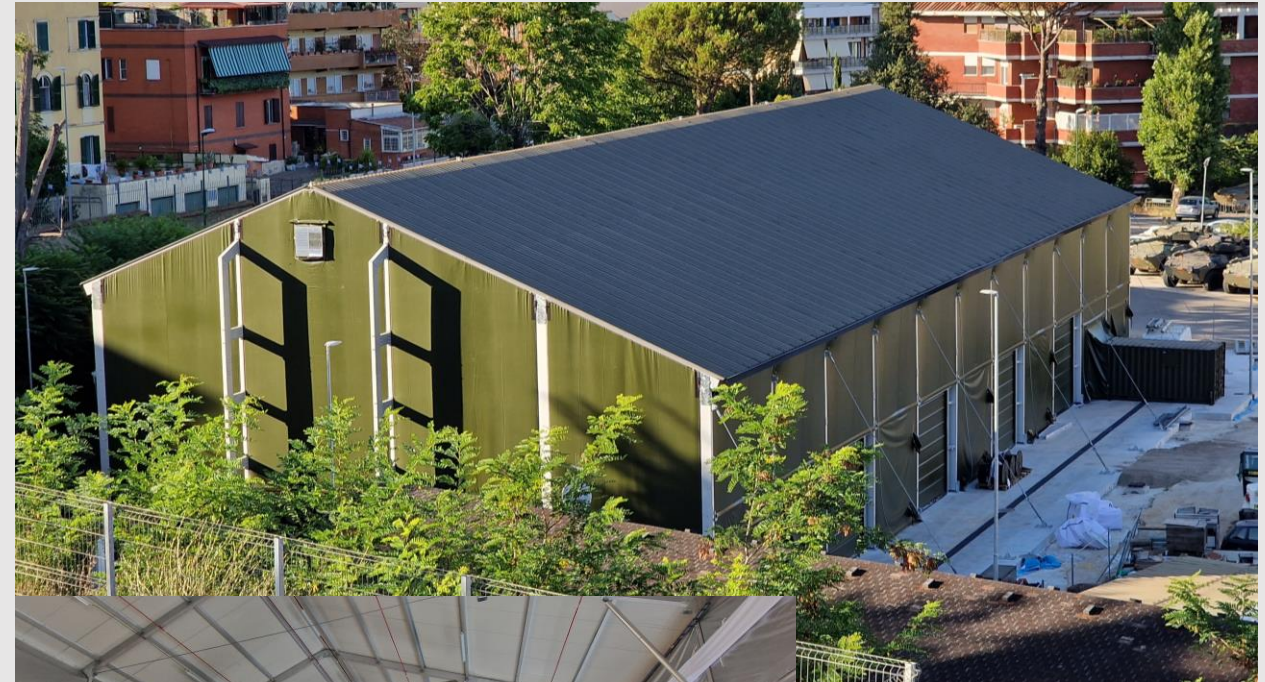
- Modular width 15 - 20 - 25m
- Length (40m to 60m) modularity 5m
- Side height 8m if 25m wide
- Lateral height centre section 10m (if 15m wide)
- Working loads: snow 150 kg/sqm, wind 31 m/s
- 4x4 full opening motorised vehicle gates
- THERMOCANVAS fabric with up to 50% energy saving
- Rigid panel roof
- 14 containerised units connected to the structure (workshop, bathrooms, office, changing rooms etc.)

Accessories

- Containerizable overhead crane ISO 40' capacity 10 ton
- Air conditioning/electricity/lighting/smoke detection
- Driveway flooring/compressed air

Application:

- Combat vehicle workshop



PRODUCTS RANGE

DEFShell ACCESSORIES





For any additional info/questions and documentation

You are Welcome

to visit our stand in Exhibition's Area

G&G Partners S.r.l. – Italyweb: www.defshell.it



Thank you for whatching!

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