CAMOUFLAGE

4. LONAS DE OCULTACION PARA DEFENSA T.C.T.

Todos nuestros fabricados para uso militar van con las especificaciones más exigentes y tienen las siguientes capacidades:

VISUAL

Lona mimetizada según las necesidades donde se van a efectuar las operaciones. En climas tropicales como subtropical con lona color caqui, en zonas desérticas el color amarillento desierto, en zonas frías y polares el color es el blanco.

OPACIDAD

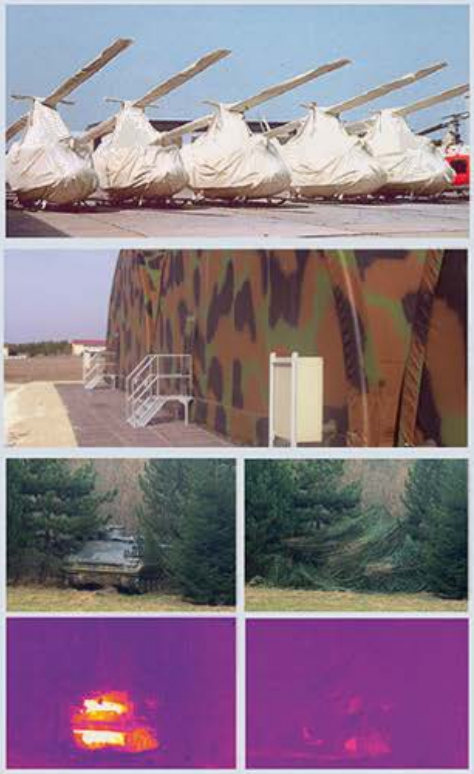
La ocultación visual natural es del 100% , estando en el interior de los hangares trabajando con máxima iluminación.

TERMICA

Ocultación para observación nocturna, por el efecto del rastro que deja el calor, en el lugar donde se esta trabajando, la presencia humana o de vehículos el espectro de calor se puede detectar con visión infrarroja.

RADAR: redes multiespectrales

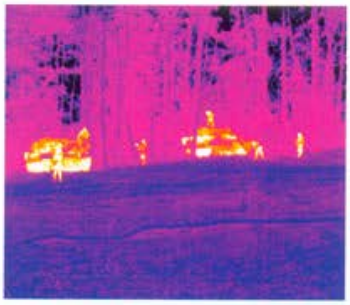
Conseguimos además de la mimetización y del tratamiento infrarrojo la ocultación a los radares. Se consigue con la red multiespectral la mayor ocultación con la posibilidad de su colocación sobre vehículos aeronaves, tiendas hangares, etc.



WELCOME TO SSZ'S CAMOUFLAGE DIVISION. OUR HIGHEST GOAL IS THE PROTECTION OF HUMAN LIFE AND EQUIPMENT IN THE MILITARY BATTLEFIELD. OUR CAMOUFLAGE PRODUCTS ARE DESIGNED TO COUNTER SURVEILLANCE BY ALL MODERN SENSOR TYPES OPERATING IN ALL RELEVANT SPECTRAL RANGES. ALL PRODUCTS ARE PRODUCED SPECIFICALLY TO CUSTOMER NEEDS AND ADAPTED TO LOCAL BACKGROUNDS.

is a Swiss company located in the heart of Switzerland. The company designs, develops and manufactures static and mobile camouflage systems. Since more than one decade we provide our customer with technical services, defining their needs for protection of equipment and personnel from the threats of the modern battlefield.

SIGNATURE

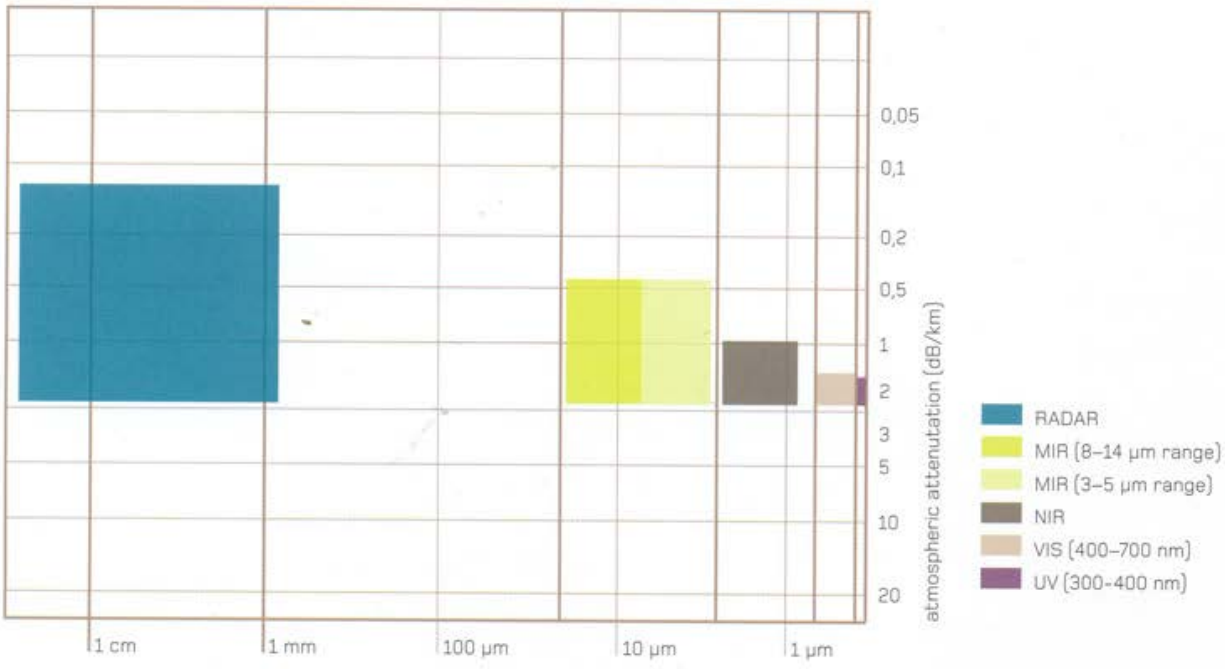


Efficient camouflage means blurring the characteristic contours of an object so that the object as such can no longer be perceived against its background. Nowadays, this principle can be implemented in all relevant spectral ranges (VIS, NIR, MIR and RADAR).

Generally, an object's characteristic signature is understood as a set of data that enables a definite recognition and/or identification of the object. In the four spectral ranges the characteristic signature consists of different measured variables:

- in the visual range, the colours and shape of the object
- in near infrared, the spectral reflectivity and shape
- in the thermal infrared, the characteristic shape and arrangement of warm or hot parts of the object
- in the radar range, the characteristic spatial or angular distribution of the reflected radar signal

Nowadays, any spectral range for which the earth's atmosphere is in any way transparent is used. These transparent ranges or "atmospheric windows" include visual (VIS) and near infrared (NIR) ranges, thermal infrared ranges from 3-5 µm and 8-14 µm wavelength (MIR) and microwaves and radar (RADAR) ranges. Electromagnetic radiation that does not fit any of these ranges is absorbed by air molecules, i.e. in those intermediate ranges the atmosphere is opaque. Of the types of radiation mentioned, only radiation in the visual range is perceived by the human eye. All other types of radiation are invisible.



MULTISPECTRAL

Multispectral camouflage net (MSCN)
The multispectral camouflage nets are based on a multilayer coated textile fabric whereby each coating layer is dedicated to counter the reconnaissance sensors in a specific wavelength range. The textile characteristics of the coated fabric like temperature stability, adhesion of the coating, water repellence and water uptake can be rated as very good. Flame retardant and biocide agents are implemented in the coating as well. The flame retardants used are in accordance with the recommendations by the WHO.

Camouflage effectiveness in the visual range is accomplished by the choice of colours and pattern. Both parameters are usually specified by the customer. The colour deviations from the customer's specifications can be neglected. The front- and the backside may be coloured differently making it possible to use the same net for different time of the year or climatic regions. By having a special texture the shine of the net is much reduced for all angles of incidence and reflections angles (BRDF).

NET

3-dimensional camouflage net
This fabric is incised with a customer specific pattern and attached onto a carrier net. The carrier net only has structural (non-snagging) but no camouflaging function. Camouflage effectiveness is based on the combined characteristics of the fabric and the incision geometry only.

Visual camouflage effectiveness is achieved by the 3-dimensional appearance of the net. The 3-dimensional leaf-structure of the net is of the same order of size and appearance as a natural vegetation background.

Camouflage effectiveness in the thermal infrared is achieved by heat exchange with the air through convection and diffuse reflection of the local background and the sky in the net. The spectral curve is well defined and patented. The reflection characteristics in the thermal infrared together with the 3-dimensional incision pattern will disrupt the infrared signature of camouflaged target. Hot spots can be efficiently covered; there is no need for additional thermal blankets.

Camouflage in the radar range (2 – 100 GHz) is based on the diffuse reflection of the incoming waves (be it emitted radiation from a transceiver or the background radiation from sky) on the metallic sub-layer of the camouflage leafs. SSZ provides a series of well documented solutions for the customer.

2-dimensional camouflage net (pat. pend.)
In addition to the 3 dimensional camouflage net SSZ offers a net made out of one layer. This so called 2-D net is applicable where low weight and very low packing volume is required.

While being light it still ensures high infrared transmission attenuation of up to 85%. Infrared transmission attenuation is achieved by the construction of the fabric and using ultra-low weight coating. Due to its low weight, the camouflage net does not show tendencies for solar loading.

RADAR waves are partially absorbed and scattered on the geometric structure of the net using latest technology coatings.

COVER

Multispectral mobile camouflage cover MMCC
SSZ has an innovative mobile camouflage solution for high value targets in addition to static multispectral camouflage nets.

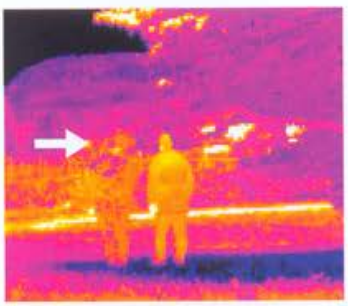
Camouflage effectiveness in all relevant spectral ranges is required whereby special attention is paid to effectiveness in the thermal infrared and wide band radar range (2–100 GHz). Application of a thermal camouflage cover reduces the required power of air conditioning under different speed conditions by a factor 4 to 10 for desert environment (NATO classification A1).

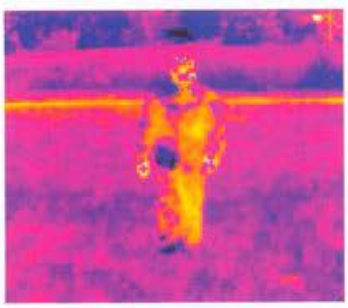
At the same time using RADAR absorbing material as insulating material, the tank can be effectively protected against intelligent ammunition with mmW-seeker head. Furthermore special attention is paid to usage and durability. The camouflage does not hinder the manoeuvrability, use of the weapons and access to the accessories, handles, etc.

MEMBRANE

Membrane construction for erection and support of camouflage nets MCS
An inflatable membrane construction is designed to erect camouflage covers for large vehicles, helicopters and combat vehicles within minutes. The materials used are the same used to build inflatable command tents, whereby the feet of the construction are additionally reinforced.

SUIT





Thermal infrared suit IRBD (pat. pend.)
Thermal imagers, specifically such with un-cooled sensor have become cheaper and are therefore becoming increasingly more widespread. They are also becoming downsized to fit on personal weapons. On the other hand, multispectral camouflage of vehicles and systems has reached a level such that an important part of the residual thermal signature is by the signature of the soldiers. Therefore camouflage for soldier can no longer be restricted to visual and near infrared but must include thermal infrared.

SSZ has developed a lightweight suit which visual appearance is indistinguishable from a standard battle dress, but by its special coating and construction reduces the thermal signature of a soldier. The suit is based on a lightweight cotton-polyester fabric which is comfortable to wear. The new infrared battle suit allows evaporation of sweat and does not hinder the soldier in physical activity. It is also meant for combat in urban environment.

The IR camouflage suit is fully compliant to a standard battle dress. All functionalities und pouches are comprised in the design. The camouflage effectiveness is based on low emissivity surface. The apparent temperature contrast is reduced to 2°C to local background. To further reduce the signature especially for static observation missions a personal camouflage net can be offered.