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DRAGONFLY-INSPIRED SHELTER DESIGN

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Abstract

This concept of design consists of these Special feature :

The aim of this article is to design a shelter for the times after naturel disasters or emergency events. The architects around the world think about the design and implementation of temporary shelters for asylum-seekers and using light structures As a main feature, the shelter is movable and able to be ejected by relief helicopters or airplanes.to provide this feature, the main inspiration comes from the dragonfly wings.The structural system is based on the dragonfly wing pattern which is kind of optimum natural construction and developed through evolution.The material can be injected into structure, then becoming harden.

Key words: dragonfly, wing pattern, shelter design, Kevlar,

1. Introduction

A dragonfly is an insect belonging to the order Odonata, suborder Anisoptera and Adult dragonflies are characterized by large multifaceted eyes, two pairs of strong transparent wings, sometimes with coloured patches and an elongated body.

Dragonflies are predators, both in their aquatic larval stage, when they are known as nymphs or naiads, and as adults. Several years of their lives are spent as nymphs living in fresh water

The wings are long, veined, and membranous, narrower at the tip and wider at the base. The hindwings are broader than the forewings and the venation is different at the base. [1]

The veins carry haemolymph which is pumped in at the time of emergence from the nymphal stage to expand the wings. The leading edge of each wing has a node where other veins join the marginal vein, and the wing is able to flex at this point. [2]