

FIGHTER PLANE SHELTERS TRANSFORMED INTO ECO- HOUSING IN HAUTE-PYRÉNÉES, FRANCE



An entrepreneur in Haute-Pyrénées, France has developed a process for constructing individual eco-houses, sunk into the earth and built with recycled materials. And you only need sixty days to build one.

Blended into the natural landscape, with practically zero net energy consumption, and for a construction cost of less than 1,200 Euros per square meter, NaturaDome is an inhabitable arch imagined and brought into existence by Benoît Darré, Director of Pomès-Darré SAS establishments, a family enterprise in the Hautes-Pyrénées territories.

To obtain these results, the young entrepreneur came up with an original engineering and construction process, patented a self-supporting form of concrete, and called upon the resources of the local circular economy.

Recycling Former Fighter Plane Shelters

NaturaDome is made up of a steel arch (recycled airplane shelters from the air force's fighter planes) covered in 40 cm of "self-reinforcing concrete," followed by 60 cm of wood shavings taken from industrial waste and protected by a geomembrane. Finally, a layer of soil collected from the excavation of the foundation covers the top, and is planted with rustic vegetation.



The enterprise bought an area of land from a community in the Hautes-Pyrénées territories.

The land was covered in 360 m of dismantable, galvanized steel tunnels, recuperated from a former military base. This stock of materials should make it possible for them to construct thirty of these eco-houses and give them time to explore other possible investments in former air force bases.

The creation of the concrete arch does not require any of the traditional framework normally required for such a structure. It uses a concrete technique developed by the ready-mix concrete work of the Pomès-Darré group; which makes it possible to install the concrete by pumping on a vibrating, steeply-sloped (up to 70°) support, rather than using a projection technique. This conventional-resistance concrete (C25/30 XF2) is laid down solely by pumping and does not require a large workforce to install, thanks to the lack of particular need for surface treatment.

Few Implementation Materials

“Apart from the lowered cost associated with re-used materials, the extremely-low construction cost of these homes comes from having a very simple fabrication process that does not require soil and waste removal, or any special materials— not even a crane,” explains Benoît Darré.



What this means is that the earthwork for the houses' primary support platform, the necessary soil movement, the raising of the metallic framework and reinforcement, the addition of wood chips and a water-sealing system, the vegetation on the roof, and the general manual labor involved in building these homes requires only one machine: a 25-ton excavator. The reinforcement for the concrete arch is fashioned entirely in the factory and is easy to put into place thanks to a special, infinitely reproducible fiber that corresponds to a 60cm-wide space or wavelength.

Source: <http://www.globalsiteplans.com/environmental-design/fighter-plane-shelters-transformed-into-eco-housing-in-haute-pyrenees-france/>