

Workshop Reports

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Workshop « Nexorades with Composites Materials »

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Master's degree «Architecture and building up material design»
 | April 2011 | ENSA Grenoble - GAIA | FRANCE

1. INTRODUCTION

This workshop was held at the « Grands Ateliers de l'Isle d'Abeau » with students of the school Architecture of Grenoble [France]. This workshop lasted one week in april 2011.

The objective of the workshop was to create nexorades with sandwich panels. The starting point of this short research was the work done by Hannah Logan from the School Architecture of Versailles [tutor: M. Brocato] (Fig. 1) the nexorades was made with plates and slots were cut in order to creates the connections.

2. STUDENT WORK

THE DESIGN CRITERIA for the workshop were:

- + simple and lowtech design connections
- + minimise the number of different type of plates

During the workshop the students added other criteria:

- + enable an inside natural lighting
- + assembly without notch

The resulting proposition is shown in (Fig. 2)

THE MATERIAL used to create the sandwich panels was GFRP [Glass Fiber Reinforced Polymer] for the skins and an alveolar thermoplastic for the core. The panels were created on mould (3) and the GFRP was placed with a hand layup technic.

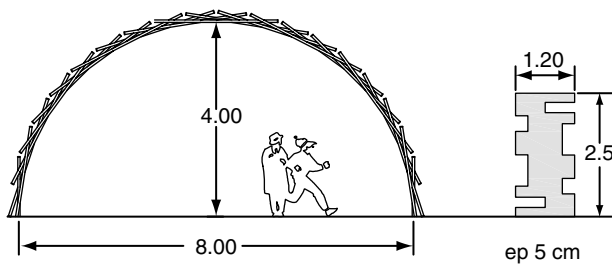


Figure 1. View of Hannah Logan's structure.

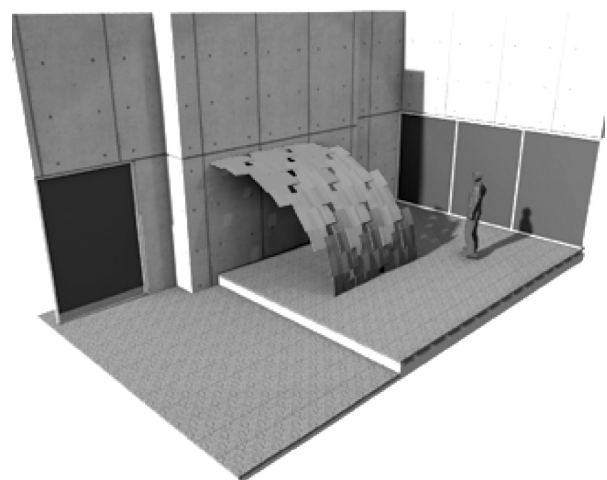
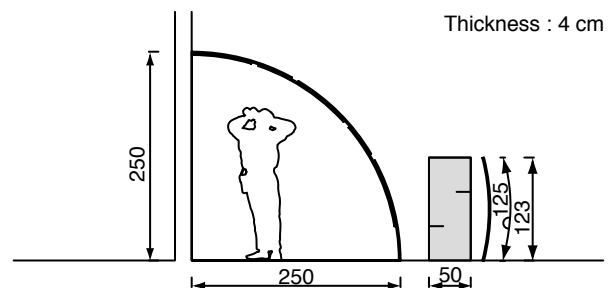


Figure 2. View of student proposition.

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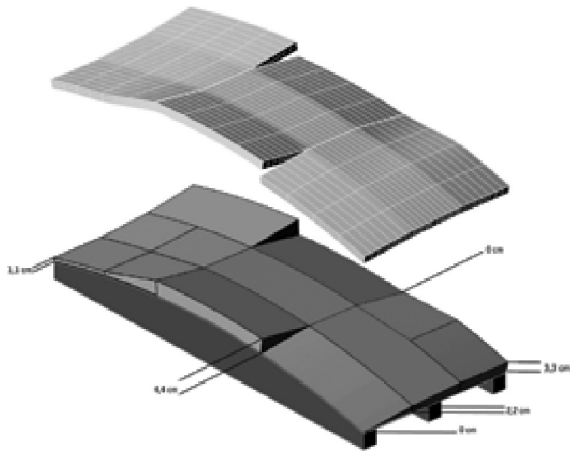


Figure 3. Mould and panel.

A Vacuum bag was tried for the mould but this technic was difficult to set up properly because of the lack of tools available.

The figure (Fig. 4) shows a plan view of the designed nexorade. The panels are all indendical but one can see that one the edge of the structure, several panels had to be cut.

THE STEPS OF THE CONSTRUCTION of a panel are shown from figure (Fig. 5) to figure (Fig. 10)

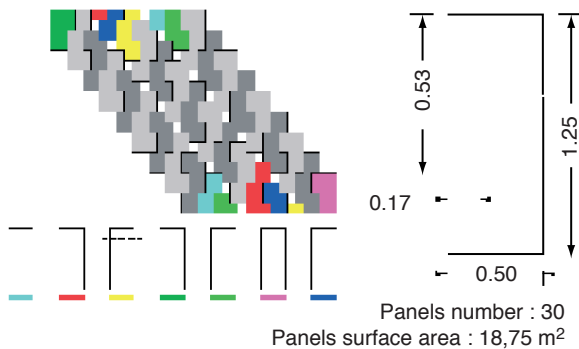


Figure 4. The whole development.



The alveolar core is setup on the mould



The glass fiber is cut



The epoxy thermosetting resin is layed up



The mould is placed into an oven



The protection sheets are removed



The panel is sanded to get a better aspect

Figure of the BUILT STRUCTURE are shown from figure (Fig. 11) to (Fig. 16)

