
*- Alveolar Structure -
Towards ordering of pieces*

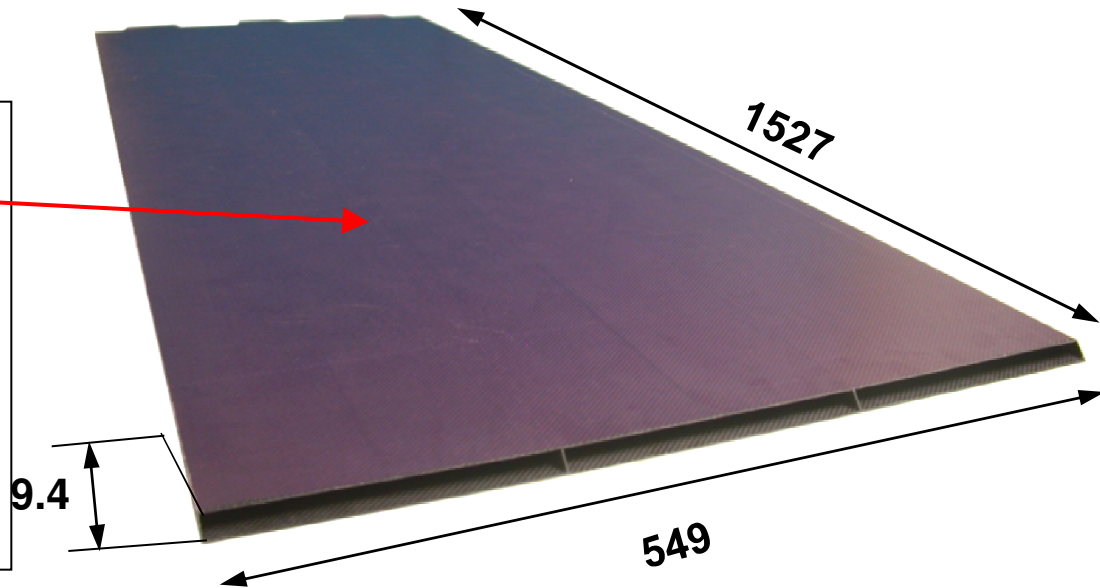


EUDET structure

- New built layer for the EUDET Module
- Width is based on 182.1 mm

First EUDET layer alveolar structure

- the assembly consisted of
 - 15 alveolar layers + 14 Tungsten layers
 - 3 columns of cells : representative cells in the middle of the structure
- Width of cells : 182.1 mm
- 2 Thickness cells (7.3 mm and 9.4 mm)
- Identical global length : 1.495m
- Fastening system ECAL/HCAL
- Total weight : ~ 800 Kg

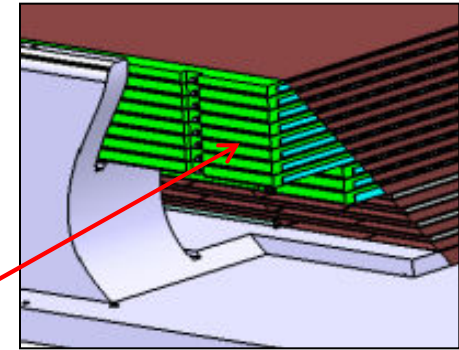


EUDET Assembly Mould

Now, here is the EUDET assembly mould :

ALUMINUM CORES
(45 cores, 3 references)

STOP PARTS
(30 Parts 15 references)



Autoclave pressure
(1 to 7 bars)

Composite plate (15mm)

Adhesive film :
(Structil 1035)

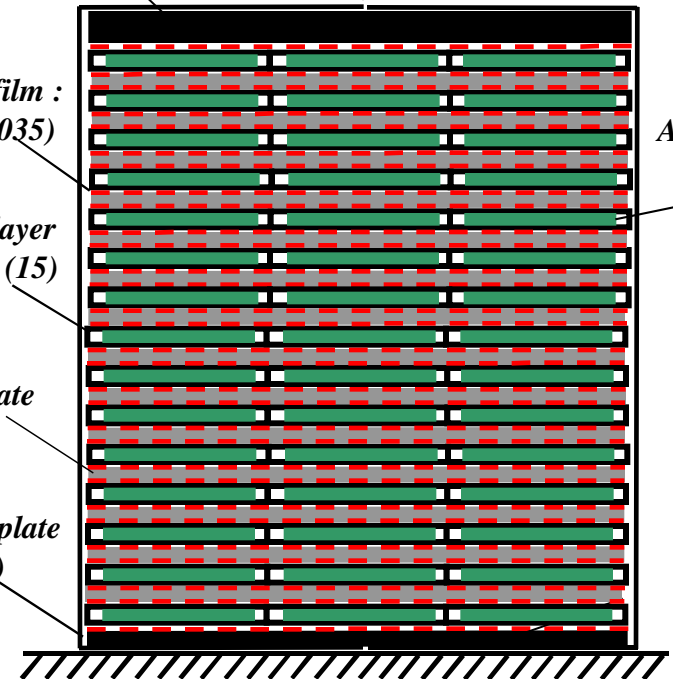
Alveolar layer
structure (15)

W plate

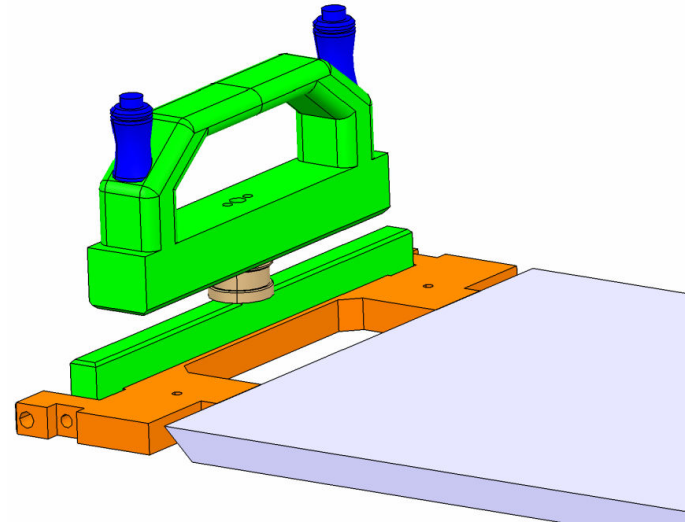
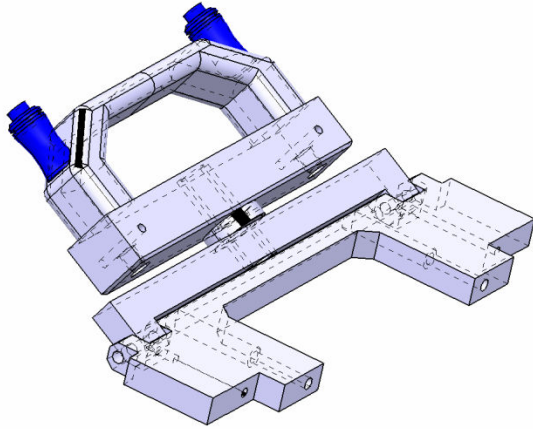
Composite plate
(2mm)

Adjusted
cores

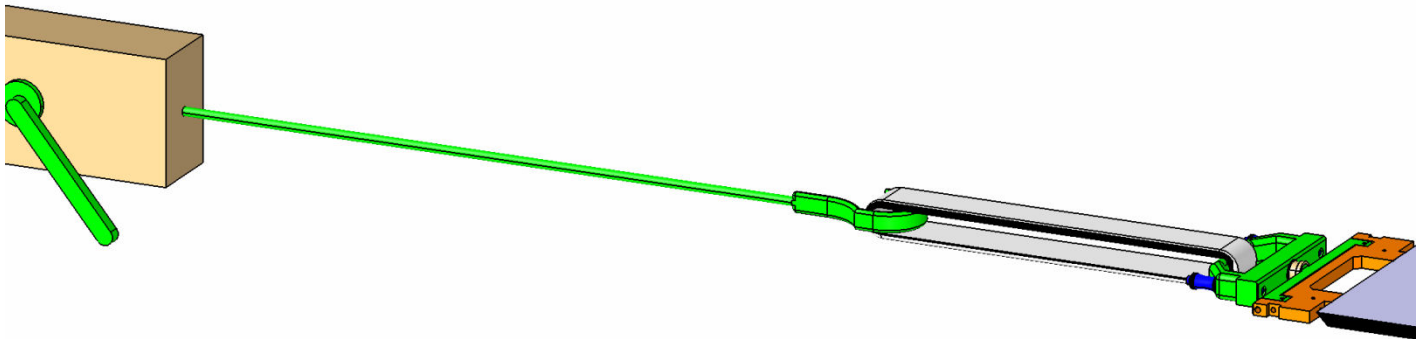
- ⇒ Global design : **OK**
- ⇒ W and Carbon Needs : **OK**
- ⇒ Detailed design description : **on going**
- ⇒ Technical drawing : **Oct 2009**
- ⇒ Ordered : **Nov 2009**



- EUDET handle core
 - Safety Transport
 - Facilitate the wrapping core



- Winch extraction core
 - Control the traction force (max 6000 N) and the speed extraction (0,5 m/min)



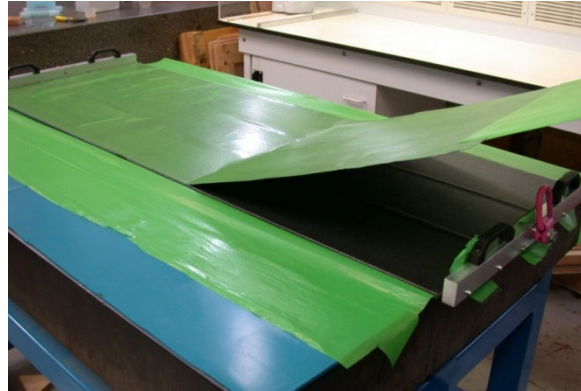
EUDET □ First layer (1/2)

Main process steps :

1 - mould release preparation



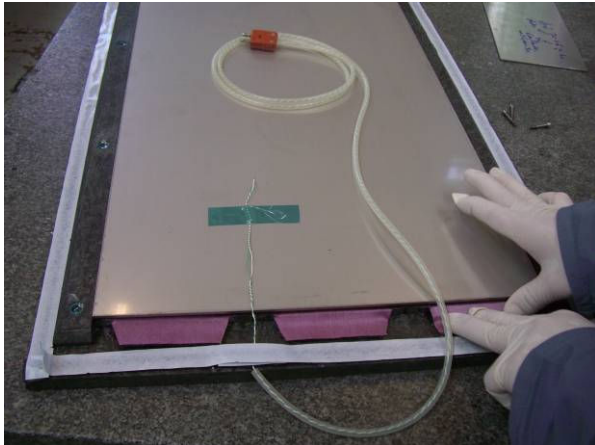
2 - Cores wrapped with prepreg



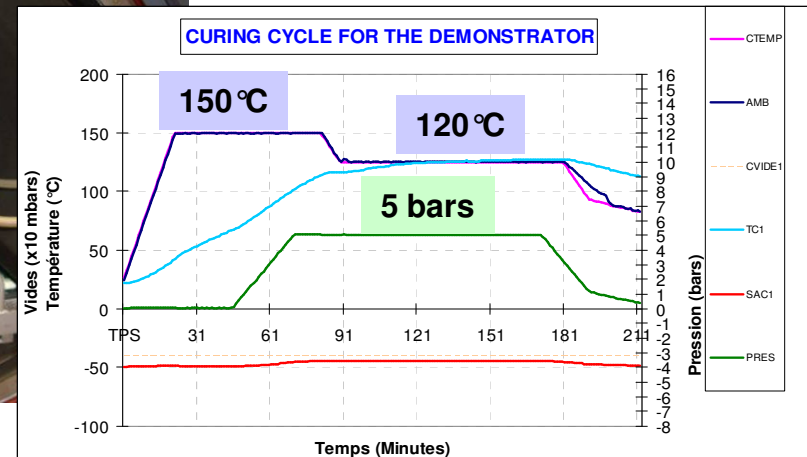
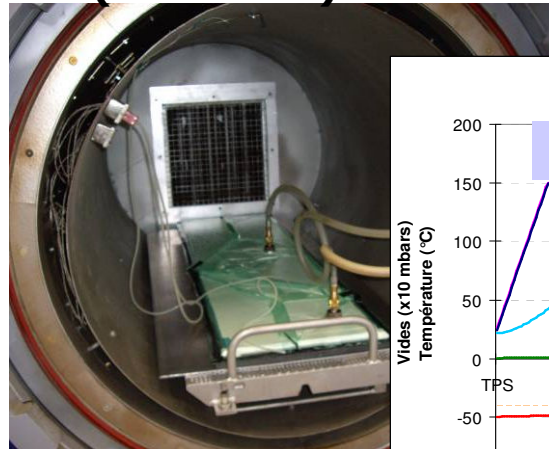
3 - Compression step



4 - Thermal sensor equipment



5 - Curing operation (autoclave)

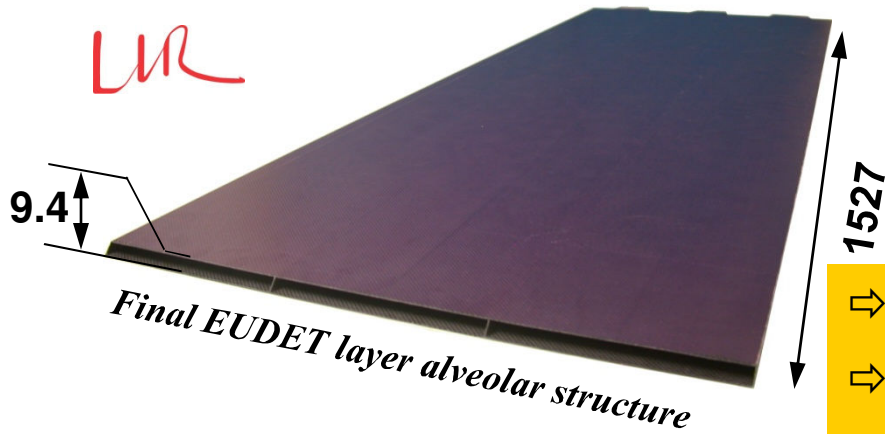
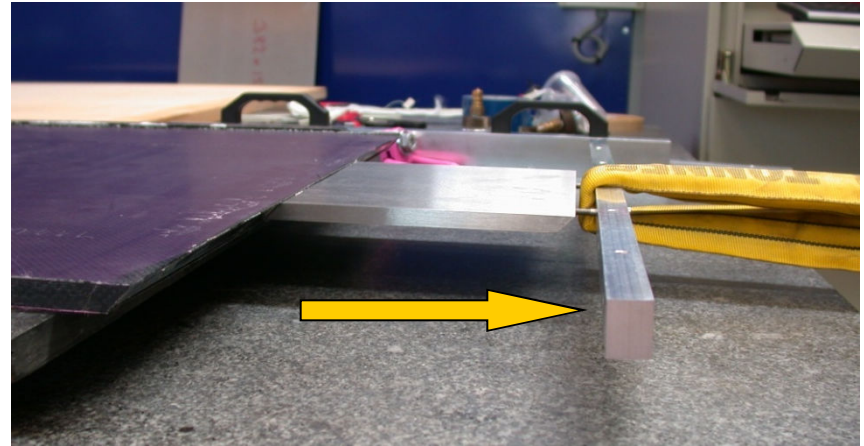


EUDET □ First layer (2/2)

6 – After curing step



7 – Main issue : 3000 Newtons for cores traction



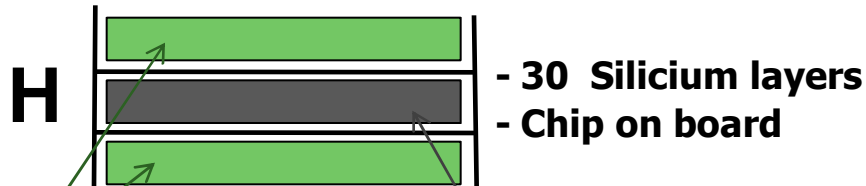
- ⇒ Global design : **OK**
- ⇒ 1/15 "Alveolar EUDET layer" structure : **OK**
- ⇒ Cutting Layer operation: **OK**
- ⇒ The supplier for cutting layer (15) : **on going**

EUDET H or U SLAB

Study of one mould for whole slab structures:

- All slabs are made by several short but **precise plates**, assembled in 2 layers, in order to control the thickness and the flatness

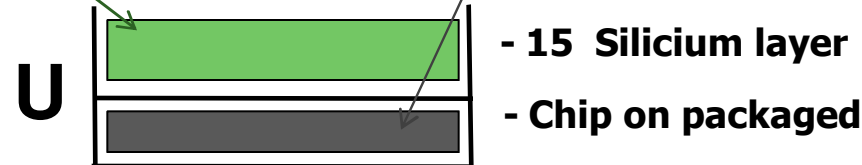
If FEV 8 is operational



precise plates

W plates

If FEV 8 is not operational



Building an other
MOULD

- 2 months
- 3 k€

- ⇒ Design and Machining: **OK**
- ⇒ first H structure (1300×124): **OK**
- ⇒ EUDET short and long H SLAB: **Dec 09**
- ⇒ EUDET short and long U SLAB: **Fev 10**

Conclusion : schedule

■ For Eudet module :

- Composite reception **have realized** **April (2008)**
- "Alveolar layer" mould reception **have realized** **April (2008)**
- first EUDET alveolar layer **July (2009)**
- "Assembly mould" design finished **October (2009)**
- 14 alveolar layers + structure assembled **2sd half-year (2009)**
- "14" H or U Short structure **2010**
- "1" H or U long structure **2010**