



Disruptive pemfc stack with nOvel materiaLs,  
Processes, archiHitecture and optimized INterfaces

# DOLPHIN



**D**isruptive pemfc stack with n**O**vel materia**L**s, **P**rocesses,  
arch**H**itecture and optimized **I**Nterfaces

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WP 5: Proposal of a Carbon Composite Integrated  
Terminal plate solution

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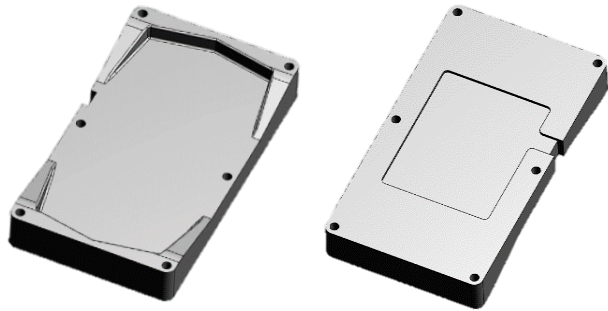
	Allowable Properties	Hexcel's Carbon Composite Terminale plate
Maximum Volume	2065cm <sup>3</sup>	1354cm <sup>3</sup>
Maximum Weight	Lower as possible	2,1kg
Flatness (mm)	0,05 < F < 0,07	0,03 < F < 0,05
Maximum Bending in active Area	0,2mm	0,05mm
Maximum Bending in the flow Field Area	0,05mm	0,03mm
		Insulating Property

## HexMC®/C/2000/M81/38%

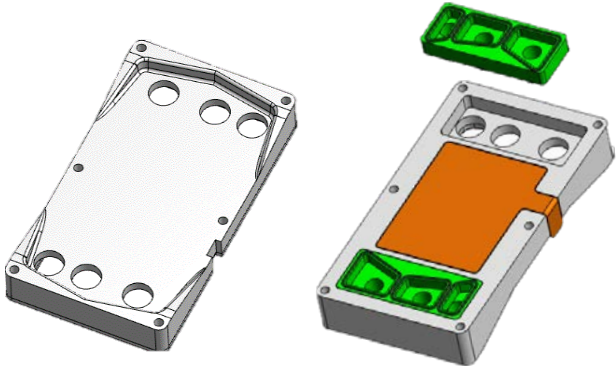


- Quasi Isotropic Carbon compound
- Designed for complex shape parts & Compression molding process
- Material Density: 1,55g/cm<sup>3</sup>
- Nominal Fiber Vol: 57%
- Typical Cure Temperature: 150°C
- Typical Cure Time: 3 to 15mn

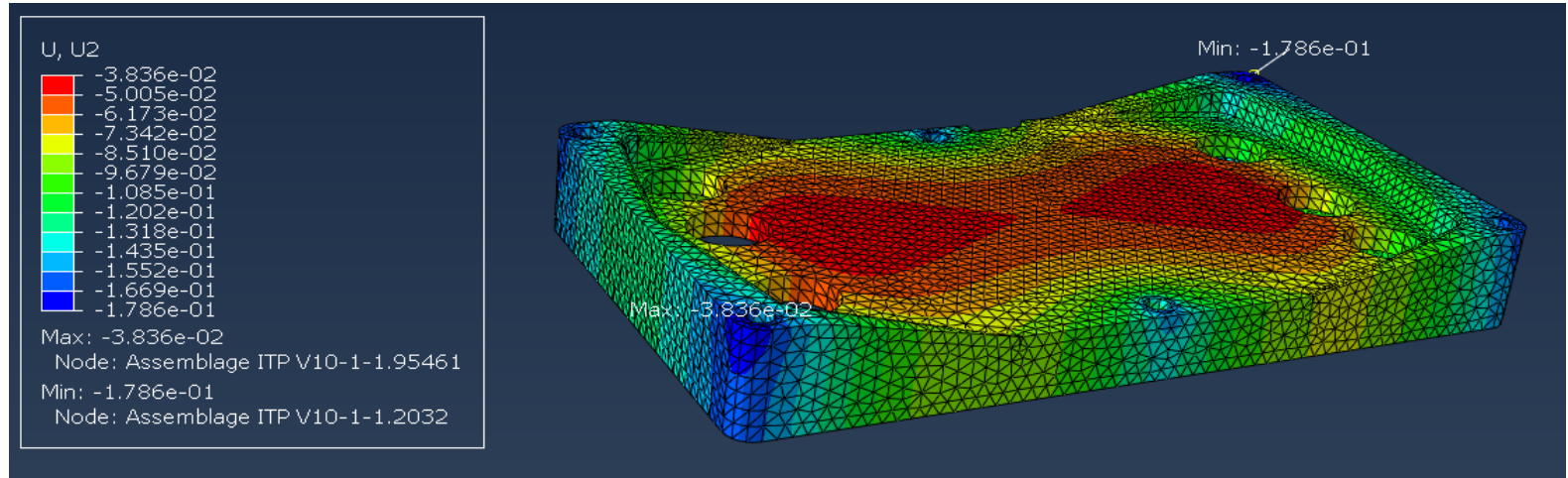




Anode part: 2,1kg



Cathode part: 1,6kg



	Max bending // to flow field (mm)	Max bending T to flow field (mm)	Max bending in active area (mm)	Overall max bending (mm)	Cathode Weight (g)
Aluminium Solution	0,015	0,09	0,025	0,075	2,8kg
Carbon Solution	0,022	0,024	0,07	0,141	1,6kg
Allowable (mm)	0,05	0,05	0,2	0,2	-

Carbon solution = 43% of mass reduction



## Preform making

Automatic Ply  
Cutting



Plies  
Weighing



Preform  
Assembly



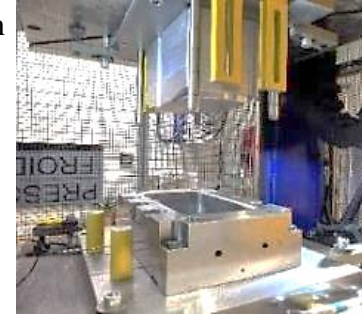
## Preheating Step



Preform Preheating

## Moulding & Machining

Compression  
Molding



Demolding  
Deburring  
Machining



## Parts Ready for Assembly

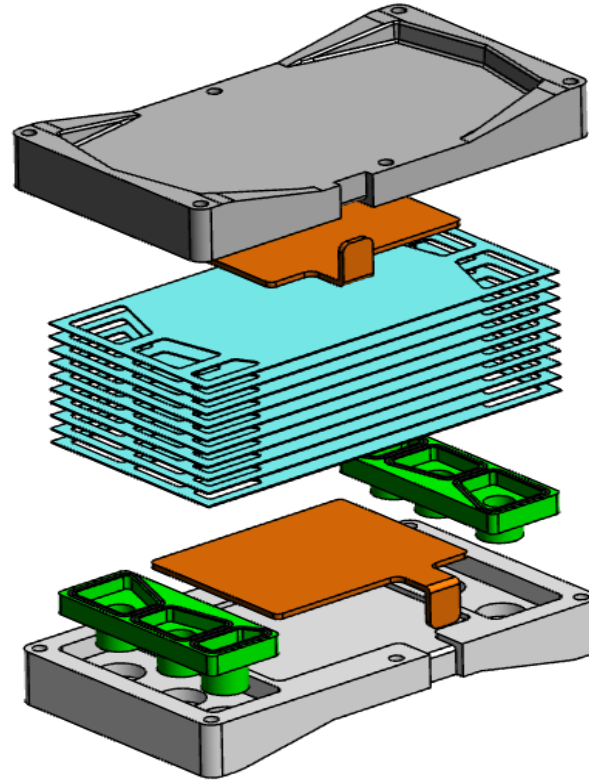
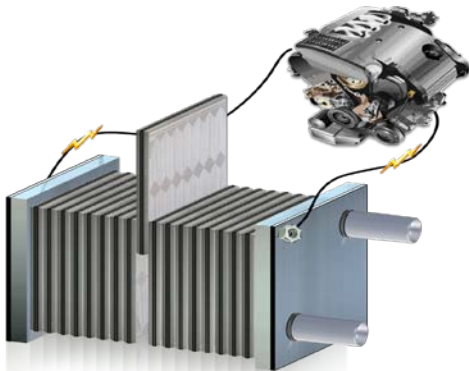




# Thank you for your attention!



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