



Composite Manufacturing Capabilities

Lay up

Automated Ply Profiling: Zund G3 CNC Controlled Conveyor Cutting Bed.
 Cutting Area: 3.2m x 2.0m

Gerber CNC Controlled Conveyor Cutting Bed.
 Cutting Area: 3.5m, 1.8m

Clean Area

Room 1: 6800 ft² (631 m²)
 Positive pressure controlled.
 Temperature/Humidity controlled.
 Particle count monitored.
 Three Laser Ply Positioning Projection Systems

Room 2: 4800 ft² (446 m²)
 Positive pressure controlled.
 Temperature/Humidity controlled.
 Particle count monitored.

Room 3: 880 ft² (82 m²)
 Positive pressure controlled.
 Temperature/Humidity controlled.
 Particle count monitored.

All Clean Room parameters are continuously monitored & recorded.

Wet lay-up area: 700 ft² (65 m²)

Curing

Autoclave 1: 6.0m x 2.5m
 Cure up to 230 °C
 Pressure 100 PSI

Autoclave 2: 7.5m x 2.3m
 Cure up to 200 °C
 Pressure 145 PSI

Autoclave 3: 3.0m x 1.0m
 Cure up to 200 °C
 Pressure 100 PSI

Autoclave 4: 8.0m x 3.0m
 Cure up to 220 °C
 Pressure 100 PSI

Autoclave 5: 8.0m x 3.0m
 Cure up to 250 °C
 Pressure 100 PSI

Oven1: 3.0m x 3.0m x 3.0m
 Cure up to 200 °C

Oven2: 8.0m x 1.0m x 1.0m
 Cure up to 150 °C

Oven3: 2.0m x 2.0m x 2.0m
 Cure up to 225 °C

Oven4: 3.0m x 2.0m x 2.0m
 Cure up to 225 °C

Enquires contact: Tel: 0151 334 8200, Email: cml_enquiries@teledyne.com, Web: www.teledynecml.com



Materials

Dry or pre-preg forms of:

Glass fibre
Carbon fibre:
Unidirectional tape
Woven fabric
Kevlar fabrics
Hybrids
Lightning strike protection material

Resins:

Epoxy
Phenolic
Bismaleimide
Polyester
Film adhesives

Cores:

Honeycombs: Nomex / Aluminium (plain & slotted)

Foams:

Rohacell
PVC
Polyurethane

Cold Storage: Bonded storage:

Long term storage of pre-preg materials with temperature records
For control of details and materials

Tooling:

Metallic
Composite
Wooden
To match part manufacture requirements

Post Cure

Trim/Finishing Area:

1200 ft² (111 m²)
Equipped with various hand machinery and surface preparation equipment.

Clean Assembly Area

Environmentally controlled for Temperature and Humidity

Machining

CMS ARES 4826
CNC 5 Axis, twin shuttle table, carbon shielded router.
(x = 4.8m; y = 2.6m; z = 1.2m)

CMS ARES 6026
CNC 5 Axis, twin shuttle table, carbon shielded router.
(x = 6.0m; y = 2.6m; z = 1.2m)

CNC 3 axis router 3m x 1.25m

Metal-to-Metal bonding

Redux 775 bonding:

Skin to skin structural applications
Skin to stringer applications

Structural Bonding:

Skin to skin,
Skin to honeycomb
Aircraft primary structure

Hysol bonding:	Airframe structure
Nacelle bonding:	Use of reticulating film adhesives for acoustic application
Sheet detail:	Produced in house (see next section)
Paint and Coatings:	Paint Shop: Preparation Booth (4m x 3m x 2.4m) Spray-bake System (components to 11m x 4m x 3m) Epoxide primer Stoving finish Bond primer Textured finish Spray paint (air drying system)

Sheet Detail Fabrication:

Rubber Press: 500mm, 700mm, 450T.

Age treatment oven 700mm, 750mm, 6m long; 120°C to 230°C approved to WAPS520-01 and BS2M54.

CNC LVD Brake Press 2.5m long, 100 ton.

Two fly presses.

Guillotines: 2m, 2.5mm thick and 2.5m, 4mm thick.

Light Angle Rolls.

Testing and Inspection:

Conductivity testing
Hardness testing
Flexural Strength & Modulus (at room & elevated temperatures)
Inter-laminar Shear Strength (at room & elevated temperatures)
Honeycomb Peel Strength (Climbing Drum)
Gel Time
Optical Gauge Inspection
Microscopy
Tack
Resin Flow
Fibre & Void content (cured)
DMA / DSC
Tensile Lap Shear Strength (at room & elevated temperatures)
Flatwise Tensile (at room & elevated temperatures)
Metal to Metal testing
Tensile Test

Non Destructive Testing

“A” Scan pulse echo testing
“A” Scan through transmission testing
“C” Scan (manual)
Phased Array
Bond-test inspection
Tap test