

ÉIRECOMPOSITES

EXPERTS IN COMPOSITES
DESIGN
MANUFACTURING
CERAMIC TOOLING

SUPPLIERS TO:
AEROSPACE/SPACE INDUSTRY, WIND INDUSTRY, AUTOMOTIVE, LEISURE

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Presentation Overview

- Introduction
- Aerospace
 - Facilities
 - Quality Systems
 - Contracts
- Testing
- R&D
- Renewables
- Summary

- Introduction to ÉireComposites
- Aerospace Manufacturing
 - Facilities
 - Quality Systems
 - Contracts
- Composites Testing
- R&D / Thermoplastics
- Other Company Activities
- Summary

Company Activities Manufacturing Testing Tooling Design Research

Company Overview

- Introduction
- Aerospace
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- Composites design, manufacturing and testing
- Established in 1997
- Aerospace, Renewables & Industrial/Tooling sectors
- Leader in composites testing in Europe (CTL)
- AS/EEN 9100 and NADCAP approved
- Aerospace manufacturing – thermoset & thermoplastic composites
- R&D specialises in thermoplastic composite technology & testing
- Supplier to 4 aircraft programmes
 - Bombardier Global
 - Bombardier C Series
 - V2500 Engine
 - A340 Engine Carenages

Company Activities Manufacturing Testing Tooling Design Research

Company Facilities

- Introduction
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- 60,000 sq.ft. facility in Galway
- Fully-accredited aerospace manufacturing facility
- Accredited mechanical testing facility
- Aerospace design facility
- Research and Development facility

Cleanroom

Company Activities Manufacturing Testing Tooling Design Research

Aerospace Equipment

EIRECOMPOSITES

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Aerospace

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Summary

- Autoclave 1: 450°C, 10 bar 1.5m Ø x 3m
- Autoclave 2: 250°C, 10 bar 2.5m Ø x 6m
- 100k Class Cleanrooms (264 sq m for prepreg layup; 250 sq ft for dry fabric layup)
- Calibrated ovens (2m x 2m x 2m)
- Thermoplastic compatible press platen size: 1.5m x 0.5m
- Liquid processing equipment (RTM)
- Paint booth
- Non-destructive testing pulse echo & through-thickness-transmission





Company Activities
Manufacturing
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Design
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Quality System Approvals

EIRECOMPOSITES

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Summary

- PRI Nadcap accreditation for composites manufacturing
- PRI Nadcap accreditation for NDT
- PRI Nadcap accreditation for composites testing
- AS/EN 9100 for aerospace manufacturing and design
- ISO 17025 for composite materials testing in CTL
- ADS SC21 approval
- Additional OEM and Tier One approvals





Company Activities
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Bombardier Global Jet

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Summary




- 24 Thermoset Prepreg Parts, Elevator and Rudder skins, spars and ribs
- Varying sizes up to 6.0m
- Monolithic & Sandwich

Company Activities
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V2500 Engine Nacelle

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IAE V2500 Engine

Other Aerospace Customers





Company Activities
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Company Testing Facilities

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Company Testing Facilities

Composites
Testing Laboratory
CTL Tástáil Teo.

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Summary

- Composites Testing Laboratory is 100% owned subsidiary
- CTL Equipment
 - 400kN static test machine
 - 250kN static test machine
 - 10kN static test machine
 - 4 x 100kN fatigue test machines
 - 1 x 250kN fatigue test machines
 - DMTA and fibre volume fraction facilities
 - Microscopy and void analysis capability
 - Fully-equipped workshop for specimen preparation

All static test machines are fitted with environmental chambers & can operate between -75°C to +200°C

Company Activities

Manufacturing Testing Tooling Design Research

Selection of Customers – Testing

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Other Industries

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R&D and Thermoplastics

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R&D and Thermoplastics at ÉireComposites

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Thermoplastic Capabilities

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Design/Stress

- Catia V5 r 21
- FEA



Manufacturing

- Thermoplastic Press
- Induction Welding
- Automated Tape Placement



Inspection/ Testing

- Test Lab
- NDT



Projects – A350 CF/PPS Clips Development

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- Development of CF/PPS Clips for A350 with Airbus Nantes
 - CF/PPS
 - Thermoplastic Stamping



Projects – CF/PPS Covers

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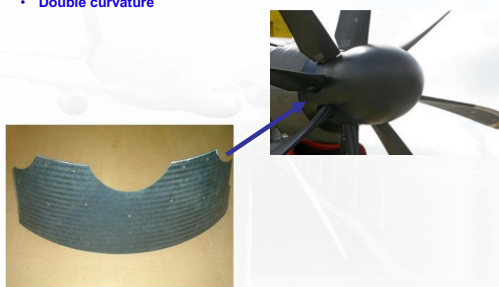
Testing

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- Development of CF/PPS covers
 - Thermoplastic Stamping
 - Double curvature



ALCAS Thermoplastic Ribs and Stringers

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Summary

- ÉireComposites was a partner in the EU Framework 6 ALCAS project
- Lead by Airbus UK, 59 partners
- €100m project budget
- Design and Build of CF/PEKK Lateral Wing Rib with Airbus UK

Lateral Wing Rib



Final Assembly into Wing at Airbus UK



ALCAS Thermoplastic Ribs and Stringers

- **Manufacture of CF/PEKK Centre Wing Box Stiffeners with Airbus France**
- **Press forming of UD Tape**

Wing Box Stiffeners

Assembly on CWB Rib in Airbus Nantes

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European Space Agency

- **ÉireComposites has worked with ESA since 2006 developing thermoplastic composite materials and process for space applications**
- **Technology focused on OOA automated processes for thermoplastic manufacturing and assembly**

CF/PEEK Bracket

CF/PEEK Strut

1m CF/PEEK Stiffened Panel

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European Space Agency - CryoTank

- **Feasibility of using CF/PEEK for Cryotank application**
- **Comprehensive testing of CF/PEEK material (-296°C – 80°C)**
- **LOX compatibility testing**
- **Permeability testing after Cryo cycling**
- **Design, manufacture and test of a Tank Demonstrator**
 - **Ø0.5m and Ø1.5m scaled demonstrators**
- **Automated Tape Placement with In-situ Consolidation**

ATP of 0.5m Cylinder

Structural Testing of 0.5m Cylinder

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European Space Agency – Cone

- **Payload Adaptor**
- **In-situ consolidation of 1.5m Cone using Automated Tape Placement**

Automated Tape Placement of 1.5m Payload Adaptor

1.5m Payload Adaptor

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Aircraft Flap – Induction Welding EIRECOMPOSITES

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- ÉireComposites collaborated with an Aerospace OEM to develop a 1.5m Thermoplastic Flap Demonstrator
- CF/PPS and CF/PEEK

Thermoplastic Flap Design



Induction Welding Assembly



Other Company Activities - Renewables EIRECOMPOSITES

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Summary

- Manufacture of Blades using Powder Epoxy
- One piece moulding
- No gluing of spars to skins etc.
- No exotherm in thick sections (120mm)
- New project underway to manufacture wind/tidal turbine blades - €2.7m EU H2020 Funding





Thermoplastic Wind Blades EIRECOMPOSITES

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Summary

- Thermoplastic micro-wind turbine blades
- Blades up to 20KW in Glass Fibre PP

Potential Areas of Collaboration EIRECOMPOSITES

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- Development of Thermoplastic parts to replace metal or Thermoset
- Supply of Autoclave cured Thermoset parts to support increase in build rates
- Accredited Composites Test Lab
- Horizon 2020 funding proposals

Company Activities

Manufacturing Testing Tooling Design Research

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Introduction

Aerospace
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Non-Aero

Summary

[Company Activities](#) Manufacturing Testing Tooling Design Research