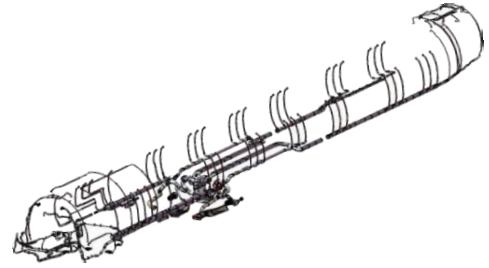


## DISRUPTIVE DIGITAL TECHNOLOGIES

### Low Pressure Environmental Control System (“ECS”) Ducting

#### About Senior Aerospace BWT

Senior Aerospace BWT is based in the UK, with circa 400 employees. A division of Senior plc, BWT specialises in the design and manufacture of proprietary rigid & semi-rigid ultra-lightweight ECS ducting systems with proven ability to reduce cost and weight on aircraft throughout the aerospace industry. BWT is a market leader providing ducting solutions to major OEMs such as Boeing, Bombardier, Embraer & Gulfstream.



Example BWT Regional Aircraft ECS Low Pressure System

BWT has two facilities based near Manchester in the UK – one manufacturing facility and one test facility. Turnover is approximately \$35m p.a. BWT is accredited to AS9100 Rev C & ISO9001. BWT is also a Beneficiary of the UK government’s “Sharing in Growth” programme which has a focus on exploitation of new automated manufacturing techniques, lean production, removal of waste, increased efficiency and lower end cost to the customer.

#### Disruptive Digital Technologies

BWT has developed, in conjunction with a partner, a new thermoplastic composite product range. BWT have invested \$1.8m in a Composite Development Centre with dedicated engineering resource in support of the development process, to the extent that the Technology Readiness Level is now between TRL levels 7 to 8, with parts due to be manufactured for use on an aircraft platform later this year.



BWT’s new \$1.8m Composite Development Centre

This technology and facility provides BWT with in house capability for the manufacture of 3D “near net-shape” preforms which can incorporate complex features such as beads, flanges and stubs integral to the structure whilst maintaining continuous fibre support throughout.



Complex structures at minimal recurring cost

Matrix materials include PEI Ultem™ 9085 & 9011 and PC Lexan™ FST 9705 with reinforcement materials such as glass and Kevlar™. BWT’s current development focus is on low pressure ducting applications; however there is also the possibility of using this technology in other areas such as electrical housings, radomes and structural components.

BWT is also investing in new Fusion Deposition Modelling (“FDM”) technology in aerospace approved Ultem™ 9085 resins, and already has parts flying on regional aircraft in its Low Pressure ECS Ducting Systems.

#### Key Benefits

The process is quickly and easily scalable and has the capability to provide significant cost savings and greater product reliability in comparison with the current recognised thermoset methods – **NO** hand layup, **NO** costly prepreg, **NO** excessive material waste and **NO** autoclaves. BWT believes the FDM & “Near Net Shape” technologies which could be utilised to greater effect on commercial single aisle and twin aisle platforms for customers such as Airbus.

**Senior Aerospace BWT is displaying at the Hamburg Interiors Show (Stand 2U73) – you can visit our stand for more information on our disruptive digital technologies or contact Nick Parr at [nparr@bwt.co.uk](mailto:nparr@bwt.co.uk) or our website [www.senioraerospacebwt.co.uk](http://www.senioraerospacebwt.co.uk)**