

MARQUEZ  
AEROSPACE  
LOW PRESSURE  
AIR DISTRIBUTION SYSTEM

We are  
Marquez.



FROM RESOURCE TO INNOVATION

*High Performance Composite and Plastic Components*

# INNOVATIONS BY MARQUEZ



**Innovation Award Finalist**  
Category: Aerospace

Our newest manufacturing process, **Marquez CFS™ (Continuous Fibre Shaping)**, redefines the standards in low pressure air distribution. Our new generation ducts feature the following:



## Weight

*Better Weight-Performance-Cost ratio*

- **0.093 lb/sq.ft. or 454 gsm** for a glass/polyetherimide construction
- Weight reduced by 55% when compared with glass/phenolic
- High air-tightness coefficient: no sealant required
- No adhesive: unique welding process



## Lower overall cost

*Better overall Performance-Cost ratio*

- Shorter cycle time
- Automated manufacturing process
- Process allows flexibility and rapid response time
- High volume of parts per tooling, reducing non-recurring cost
- Superior impact resistance: lower replacement costs during assembly and maintenance



## Flammability

*Better Flammability-Cost ratio*

- Complies with Standard FAR 25.853 and with the forthcoming Standard **FAR 25.856 part A**

*See Comparative Performance Table of the Various Composites*

## Other features

- Complies with smoke and toxicity standards (**35/35 OSU**)
- Integrated assembly support
- Material approved by **Boeing** and **Airbus**
- Quick connect assembly system available

### Comparative Performance Table: Polyetherimide/Fiberglass and the most common composite components

Flammability Resistance Tests

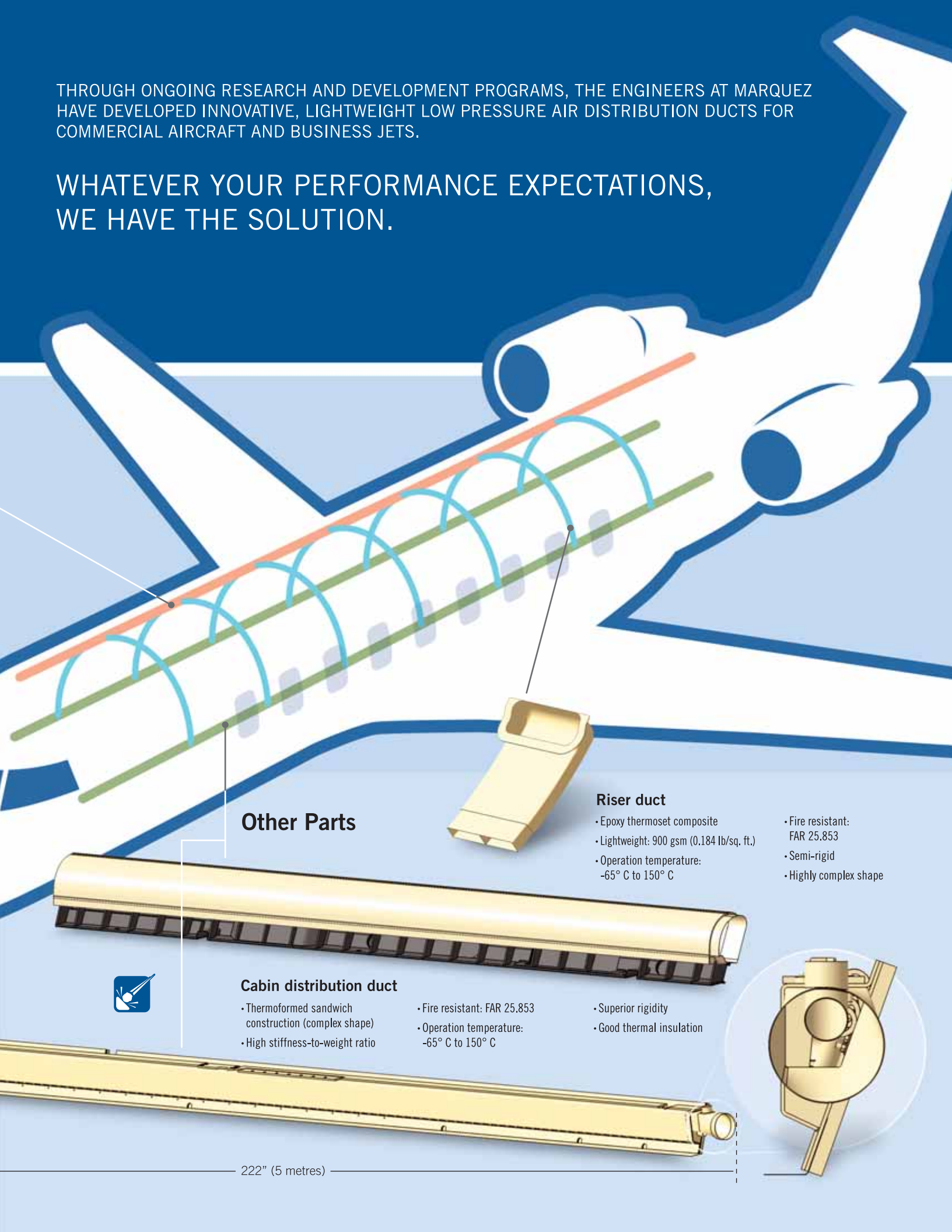
Pass

Fail

Rank	Material	FAR 25.853		Heat Release (OSU)		Smoke	FAR 25.856 a	
		Length	Time	Peak	Total hr	Toxicity	Prop.	Time
1	Polyetherimide/Fiberglass	2	2	1	1	1	2	4
2	Polyphenylene Sulfide	4	1	2	2	2	3	2
3	Phenolic/Fiberglass	1	5	5	Fail	3	1	5
4	Polyester/Fiberglass	3	6	3	3	4	Fail	1
5	Epoxy/Fiberglass	6	3	4	Fail	6	Fail	3
6	Polyamide	5	4	Fail	6	5	Fail	6

THROUGH ONGOING RESEARCH AND DEVELOPMENT PROGRAMS, THE ENGINEERS AT MARQUEZ HAVE DEVELOPED INNOVATIVE, LIGHTWEIGHT LOW PRESSURE AIR DISTRIBUTION DUCTS FOR COMMERCIAL AIRCRAFT AND BUSINESS JETS.

WHATEVER YOUR PERFORMANCE EXPECTATIONS, WE HAVE THE SOLUTION.



### Other Parts



### Riser duct

- Epoxy thermoset composite
- Lightweight: 900 gsm (0.184 lb/sq. ft.)
- Operation temperature: -65° C to 150° C
- Fire resistant: FAR 25.853
- Semi-rigid
- Highly complex shape



### Cabin distribution duct

- Thermoformed sandwich construction (complex shape)
- High stiffness-to-weight ratio
- Fire resistant: FAR 25,853
- Operation temperature: -65° C to 150° C
- Superior rigidity
- Good thermal insulation



222" (5 metres)



# ENGINEER TO ENGINEER: OUR TRADEMARK

At our best, we work as partners with your product development team. Whether working to specs or in charge of design; whatever the performance criteria, weight, rigidity, total costs... we will enhance the product value, performance and development time. With our long industry experience, we ensure that our designs comply with all regulatory agency standards and with aeronautic industry requirements.



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## PROCESSES

### COMPOSITES-THERMOPLASTIC

#### Marquez CFS™

We have developed a unique solution enabling us to form a three-dimensional part out of a continuous fiber reinforcement, using a patent pending process.

### COMPOSITES

Composites laminating  
Low-pressure curing for pre-impregnation in a vacuum, and by a pressure bladder

### THERMOFORMING

Twin-sheet forming  
Vacuum forming  
Pressure forming  
Compression moulding

## DESIGN

### COMPUTER-ASSIST DESIGN



3D scan

## MATERIALS

### COMPOSITES

#### Fabrics

Carbon Fiber  
(Graphite)  
Aramid (Kevlar)  
Fiberglass  
Other

#### Resins

Phenolic  
Epoxy  
Polyester  
Polyamide  
Polyetherimide  
Polyphenylene  
Sulfide  
Other

#### Cores

Nomex Honeycomb  
Aluminum Honeycomb  
Klegecell  
Divinycell  
Rohacell  
Other Foam Core

### PLASTICS

Polycarbonate (PC)  
Polyphenylene Sulphide (PPS)  
Polyetherimide (PEI)  
Polyamide (Nylon)  
Acrylonitrile-Butadiene-Styrene (ABS)  
Acrylic (PMMA)

Polyethylene Terephthalate (PET)  
Acrylic-Styrene-Acrylonitrile (ASA)  
Polyethylene (PE)  
Polypropylene (PP)  
Polystyrene (PS)

## CERTIFICATIONS AND STANDARDS

Supplier certified:

**BOMBARDIER** **VOLVO**

Quality System: **ISO-9001 : 2000** and **AS-9100**



[www.marquez.ca](http://www.marquez.ca)

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