



www.carbonia.se



Carbonia Business Concept

Rational and cost-effective serial production of high performance composite products

- Core technology: Infusion Moulding (Vacuum infusion, RTM)
- Secondary technology: Structural bonding



Carbonia Undertakings

- Mechanical Design and Analysis
- Mould Design and Manufacturing
- Moulding
 - RTM
 - Vacuum Infusion
- Trimming
 - Water jet cutting
 - 5 axis CNC Milling
- Sub Assembly (Bonding)
- Surface Treatment /Painting
- Measurement and control
- Testing





RTM Process

- Tight dimensional tolerances
- High repeatability
- Excellent surface finish (all surfaces)
- Excellent mechanical properties
- Integration of inserts, cabling, and fittings
- Fast production rate (5 –20 times faster than open mold techniques)
- Low (zero) emissions

















Measuring and Control

Fotogrammetry

- Good for measuring shapes
- 3D-measuring
- Fast
- Contact free
- High accuracy (+/- 1/100 mm)







Carbonia Product Segments

- Telecommunication (antennas)
- Power generation
- Transportation
- Medical/Rehabilitation















Interior trim concept

- CAM based processing in all steps
- Multi cavity tooling
- Bond substrates in to one "waffle"
- 5-axis milling
- One layer of clear coat



- Low scrap rate compared to Prepreg or handmade
- Lower cost compared to Prepreg or handmade
- High and flexible output with low-skilled workforce









Carbon Fibre Interior Trim





VSAT Antennas





Manufacturing of Antenna Components

- Main reflectors
- Sub reflectors
- Feed arms
- Back structures
- Casings
- Locking devices



Over 3000 Antenna systems manufactured !

- 90 cm "Suit case"
- 120 cm Drive-away
- 120 cm 4-segmented Fly-away
- 150 cm Drive-away
- 150 cm 4-segmented Fly-away
- 150 cm 6-segmented Fly-away
- 150 cm (stabilized)
- 240 cm (stabilized)
- 200 cm 6-segmented Fly-away





High Precision Mirrors for solar power reflectors

High Accuracy
High Reflectivity
Light Weight
Strong
Durable
Low Cost







Involvement in Technology projects

SteamR reflector

- Feasability study of a Very Accurate Space Based Reflector for Steam-R radiometer system
- Reflector demonstrator manufactured and measured
- Customer: Swedish Space Corporation/ESA

BB Green

- Developing of High efficiency passenger/light cargo vessel
- with zero emission.
- Battery powered, Air Supported Vessel (ASV) Hull
- Efficient Surface Piercing carbon composite props (Carbonia)
- Seventh Framework Programme

Deep Green (EnerKite)

- Underwater tidal energy device (Kite)
- High strenght, high stiffness, light -weight structure
- Customer: Minesto





Very accurate space based reflector study

- Customer: Swedish Space Corporation
- ESA Steam-R project (climate studies)
- Dimensional accuracy RMS < 10 μm





Tooling cost

Size of part	No. Of cavities	Anual need (for 5 years)	Tooling cost	Tooling cost /part
800x500x200	1	1000 (5000)	€ 20 000	€ 4
200x100x20	20	10 000 (50 000)	€ 20 000	€ 0.4





Production rate

Total process cycle ca 20- 40 min

 Number of cavities
 1
 10

 Number of parts/h
 1-2
 10-15

 Number of parts/day (8 h)
 10-20
 100-150

 Parts per year (200 d)
 2-4.000
 20-30.000





Key Figures 2001-2011

