

# Prepare to Liftoff with Swiss Structural Design



Contraves Space, Switzerland's largest Space technology company, has extensive know-how in lightweight structural design and manufacturing of products using composite technologies.

It's competence in this field is underlined by more than 20 Spacecraft Structures and over 140 Payload Fairings for the Ariane Launcher family.

### Company Profile

Contraves Space AG was founded in November 1999 as a spin off of the space activities of the former Oerlikon Contraves AG Zurich Business Unit Space.

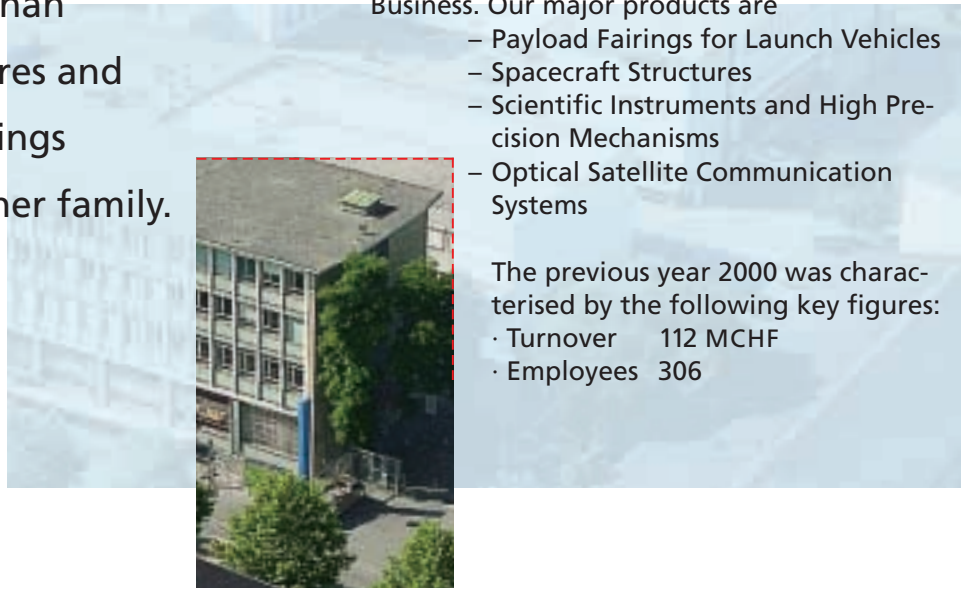
Contraves Space has its headquarters at the former premises in Zurich/Switzerland and is fully owned by the Unaxis Holding Ltd (formerly Oerlikon-Bührle Holding).

At present Contraves Space incorporates the complete infrastructure needed for the Space Business. Our major products are

- Payload Fairings for Launch Vehicles
- Spacecraft Structures
- Scientific Instruments and High Precision Mechanisms
- Optical Satellite Communication Systems

The previous year 2000 was characterised by the following key figures:

- Turnover 112 MCHF
- Employees 306



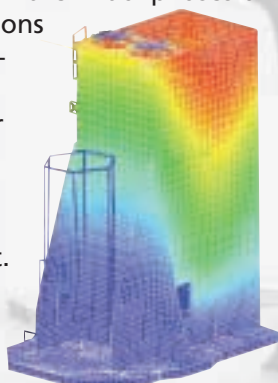
### Engineering



Contraves Space has extensive experience gained in more than 35 years of activities in Aerospace programmes.

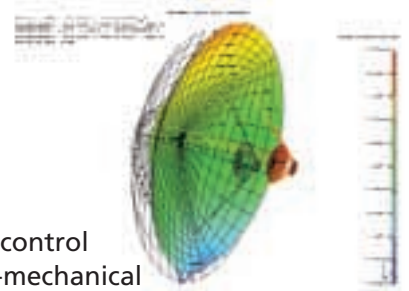
The necessary tools and techniques for the development and complete definition of structures of all kinds with chief importance of composite materials are available. All engineering and design tasks

are carried out from the initial phases of conceptual definitions up to the establishment of detailed documentation for manufacturing, verification and operations of a matured product.



Our main capabilities in structural analyses are

- State of the art FE modelling
- Global stress
- Stiffness
- Dynamic response
- Stability
- Detailed stress
- Design sensitivity
- Optimisation
- Fatigue and fracture control
- Thermal and thermo-mechanical
- Mechanism kinematics



Contraves Space engineers work with today's main Software packages such as

- CATIA
- NASTRAN
- I-DEAS Master Series
- ABAQUS
- MATHCAD



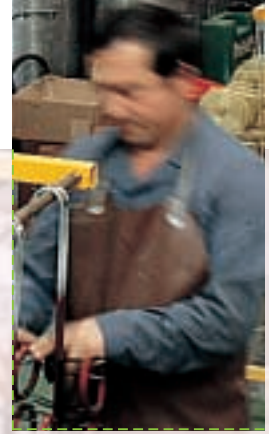
## Manufacturing



At Contraves Space all facilities required for the manufacture of lightweight structures such as composite or metallic sandwiches, integrally stiffened composites or full metallic structures are available.

Our main facilities are

- Composite materials workshops
- Large assembly and integration rooms
- Adhesive bonding laboratory
- Autoclaves (up to 4 m diameter)
- Power presses (up to 2000 x 3000 mm)
- Several CNC machining centres (5-axis, up to 6000 x 3000 x 1000 mm)
- Electroplating and painting workshop



## Testing & Product Assurance

The performance of destructive and non-destructive material tests are standard procedure. Contraves Space has the necessary modern equipment for carrying out these tests in-house. For example, during sandwich panel manufacturing, in-process samples are produced, i.e. with identical material and process, to verify the quality of the manufactured item.



Furthermore Contraves Space has facilities for all kind of mechanical tests up to large scale structures qualification.

- Two static load test facilities (15 x 15 x 15 m, 5 x 5 x 5 m)
- Two Electro-dynamic shakers
- Thermal vacuum chamber

Contraves Space is capable of managing programmes with subcontractors and suppliers in a complex development environment. Network based information management with all involved partners is applied and modern software tools such as DOORS and ORACLE are in use.

Contraves Space is a ISO 9001 qualified company (accredited by national organisations in CH, F, NL, GB, USA) and has a process-integrated Product Assurance department reporting directly to the CEO.

Furthermore a comprehensive product assurance plan tailored to the customers needs is established and closely monitored.





### Contact

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