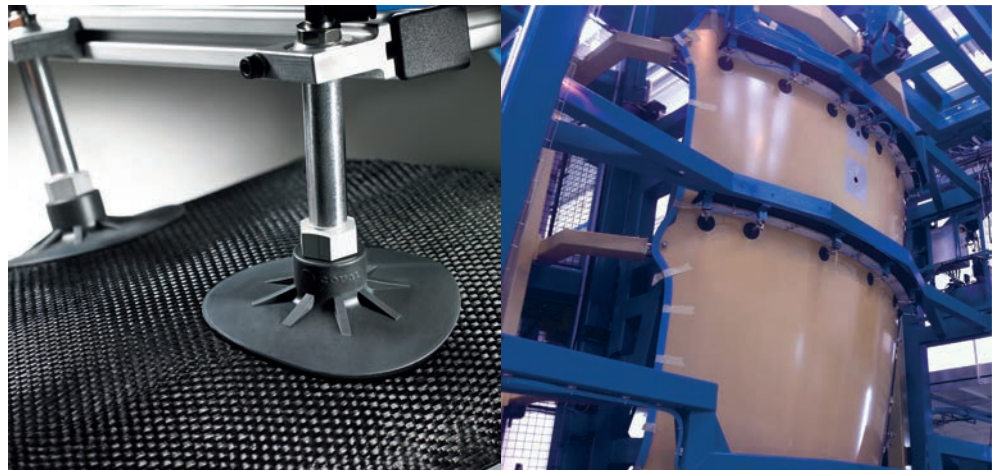




# COVAL

vacuum managers

## VACUUM HANDLING SOLUTIONS FOR THE AEROSPACE INDUSTRY



## ADVANCED VACUUM SOLUTIONS

# Vacuum Managers

COVAL's vocation is to contribute to the performance and safety of industrial processes, by vacuum handling and clamping objects of all sizes, weights and materials.

To achieve this, COVAL has developed specialist expertise in four complementary lines of business:

- Development of technological solutions based on **'just innovation'**
- Manufacturing of vacuum pumps and suction cups in **France and Europe**
- Distribution of its range by our **sales team, consolidated by our 5 subsidiaries abroad**
- **Service before and after** the launch of the product to: analyze the existing process, to help decision-making and to train users.

COVAL is a company that shares with its customers its values of **technical know-how, productivity, commitment, flexibility and responsibility.**

COVAL has developed for its customers a comprehensive range of vacuum handling services. This is why COVAL employees are **Vacuum Managers.**



## You require more than just vacuum

*What distinguishes us is our capacity to provide you with a complete solution above and beyond just our products.*

*We are always able to analyse, propose, develop, manufacture and provide THE perfectly adapted solution to your needs.*

*This means we are Vacuum Managers, every day.*

- Constant improvement of product and service quality
- Fast reactivity in developing new solutions
- The capacity to assist companies in new markets
- A global solution provider, including services before and after installation

COVAL supplies the different companies involved in the Aerospace industry with comprehensive management of vacuum handling for the manufacturing process as a whole: lifting, moving and clamping of plane parts.

COVAL solutions, such as vacuum pumps and suction cups, equip all the tooling used in the process of manufacturing, machining and assembly of the different sections that make up an aircraft.

The numerous processes required by the aerospace industry need technical skills, expertise, innovation, and service. To meet these challenges, COVAL relies on:

- A strong capacity for development and innovation
- A team 100% dedicated to the Aerospace industry
- A full product range integrating mechatronics for better productivity
- « Fully integrated » vacuum solutions
- Compliance with the strictest quality standards
- Presence in economic areas with strong potential, thanks to 5 subsidiaries



We are here to assist you  
from start to finish

**AUDIT OF  
EXISTING SYSTEM  
ADVICE**



**INSTALLATION**



**MAINTENANCE**

## COVAL, your partner

### Materials that we handle

- Aluminum
- Titanium
- Composite materials: cured or uncured
- Fiberglass

### Machines that we equip

- CNC machines
- Robot cells
- Lifting systems
- Assembly jigs
- Composite layup tables

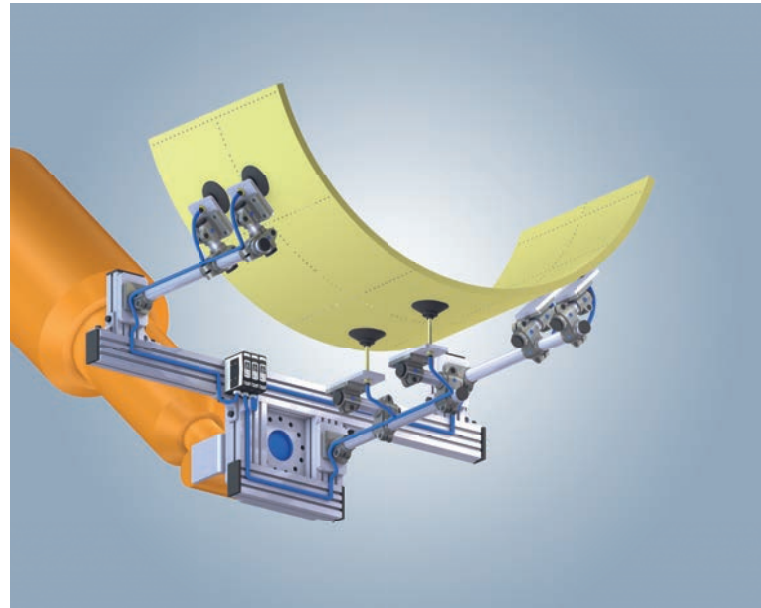
### Plane parts that we clamp

- Wings / Stringers
- Keel Beam
- Sub-assembly Center Wing Box (CWB)
- Horizontal stabilizers, HTP, VTP...
- Fuselage

### References

- AIRBUS GROUP
- BCEING
- BOMBARDIER
- DASSAULT
- EMBRAER
- STELIA

### EQUIPMENT FOR ROBOT CELLS



#### Integration of our vacuum solutions for robots:

- Compact and intelligent vacuum generators with fieldbus option, communication with PLC...
- Different flow rates depending on the types of parts handled
- Wide range of suction cups to equip end effectors,  $\varnothing 1$  to 500 mm
- Specific suction cup materials for the Aerospace sector (resistance to cleaning agents, no particle migration, etc...)
- Different accessories for simplified mounting



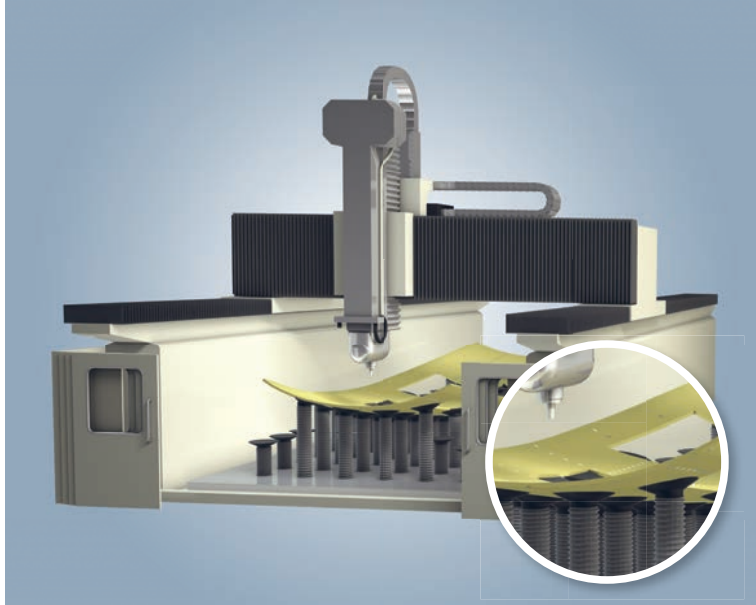
1 C series high-performance suction cup on robot line.

2 Gripping a composite part before autoclaving.

3 Composite wing skin lifter.

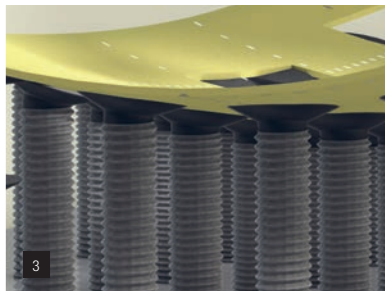
# for Aerospace applications

## EQUIPMENT FOR CNC MACHINES



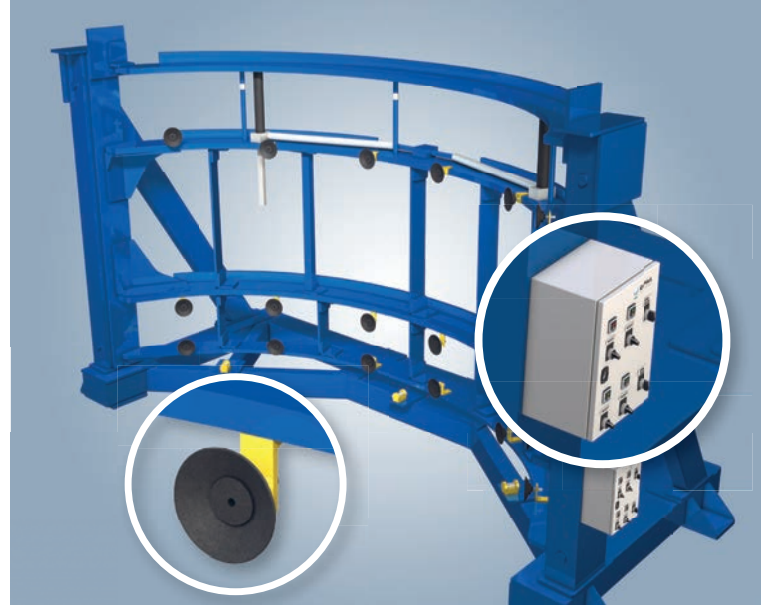
### Specific clamping solutions for machining processes:

- Suction cups adapted to lateral stresses
- Rigid cleats inside the suction cups to ensure accurate positioning.
- Vacuum generators with an adjustable vacuum level depending on the thickness/material clamped in position by UHF/FLEXIBLE TOOLING
- Accessories for uneven surfaces



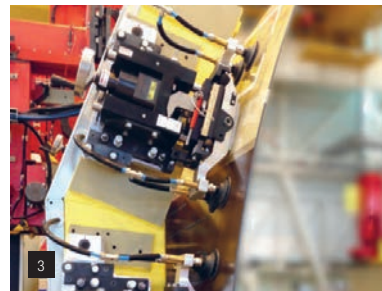
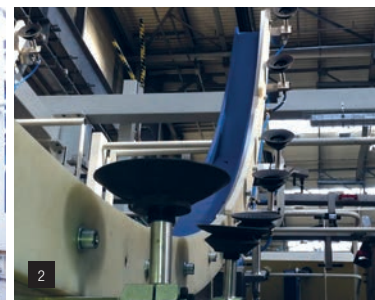
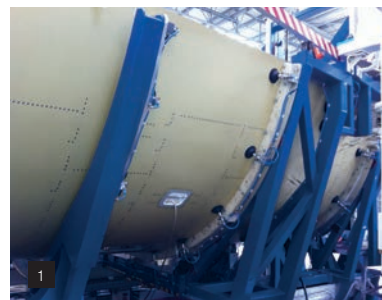
- 1 Horizontal clamp tooling placed in a CNC machine.
- 2 Clamping stringers.
- 3 Vacuum pumps and suction cups on UHF/FLEXIBLE TOOLING.

## EQUIPMENT FOR ASSEMBLY JIGS



### Vacuum clamping of plane parts on assembly jigs:

- Specific non-slip suction cups
- Pneumatic vacuum pump without air consumption: energy savings
- Turnkey vacuum box to activate clamping, zone by zone: helping to position parts
- Dimensioning and installation on pneumatic network tooling
- Safety integration to guarantee maintaining vacuum when moving tooling without energy



- 1 Clamping: nose section sub-assembly.
- 2 Suction cups on mechanical support : clamping lower shell.
- 3 Tooling on PREFAL A350.



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vacuum managers

# A range and the needs of the

## Suction cups

### C series suction cups

- Optimized suction cups for gripping thin parts without deformation
- Ideal for vertical handling or clamping
- Non-slip cleats ensuring optimal positioning and clamping



### Standard suction cups: VSA, VS, VPG, VPO

- Compatible with many types of materials
- Different standard materials available
- Large diameters: from 25 mm to 250 mm
- Round, oblong, flat shapes, with bellows



**NEW**

### VPSC composite suction cup

- Gripping aeronautical parts made with uncured composite materials
- Gripping of folds after cutting
- Non-marking of composite part



## Vacuum pumps and Vacuum boxes

### LEMAX - LEMAX+ - LEMCOM series

Mini vacuum pumps with « ASC » integrated

- Very compact and light
- More than 90% energy savings
- Operational silence
- Auto-adaptation depending on the material to be handled
- Optional fieldbus

### Use

Handling all airtight or low porosity pieces

**NEW**



### Vacuum box with integrated functions

- Integrated pneumatic or electrical vacuum pump
- Façade control console, with manual or automated activation of vacuum zones
- Visual alarm with a light
- Vacuum activation, sequence by sequence, helping to position a curved plane panel

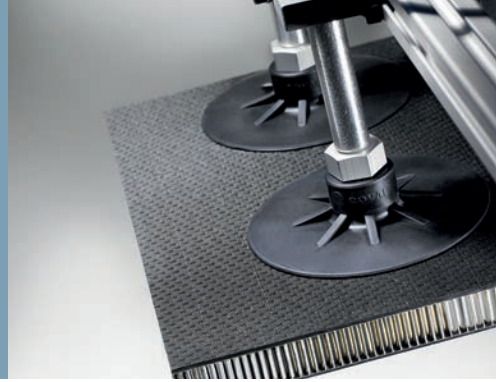


### Control box for compacting raw composite

- Regulate and control vacuum level
- Compacting time set by timer
- Automatic stop at end of cycle
- Visual indicator of vacuum level
- Audible alarm in case of vacuum loss



# technologies to meet Aerospace sector



## Accessories

### L series extensions

- Ensure that the suction cups are fastened
- Make it possible to adjust the position of the suction cup on the tooling
- Guarantee airtightness of the assembly by using a coil fitting with an O-ring



### Vacuum switches

Electronic, electric or pneumatic  
PSD, PSK, PSA100, PSE, PSP



### Spring systems

1/8G – 1/4G – 3/8G Standard  
or anti-rotation TS – YS – TSOP – TSOG



### Vacuum filter

1/8G – 1/4G – 3/8G – 3/4G – 2"  
Filtering cartridge:  
paper, stainless steel  
or polyamide



### Mechanical sensors

Enabling suction cups to be independent on the same vacuum network

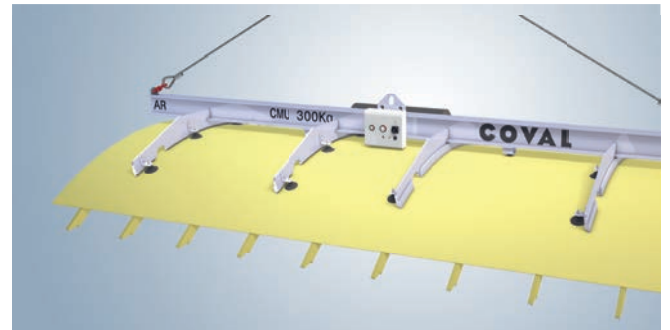
- Activation of vacuum by contact with the part
- No risk of marking, thanks to material used
- No risk of marking very fragile parts



## Vacuum lifters

COVAL proposes a range of vacuum lifters.  
Design and manufacture of customized handling solutions

- Horizontal, vertical, pivoting
- A variety of accessories to fit to any type of radius of curvature
- Loads: 50 kg to 3 tons
- Safety factor integration required in the event of power failure



## COVAL Global Services

Our goal is the efficiency of your installation from design to operation. To achieve this, COVAL works with its clients at every stage of the project to bring the most comprehensive solution possible:

- Software to help determine appropriate vacuum network (fittings, vacuum reserve, tubing)
- Supply of all necessary mounting elements for attaching our products to tooling
- Installation of complete solution on site
- Final tests and controls performed with the customer

A service that makes the COVAL team **Vacuum Managers** in your installation.



You will find our catalogues and 3D CAD Models of all our products, on our web site [www.coval.com](http://www.coval.com), or via our free downloadable Mobile apps.

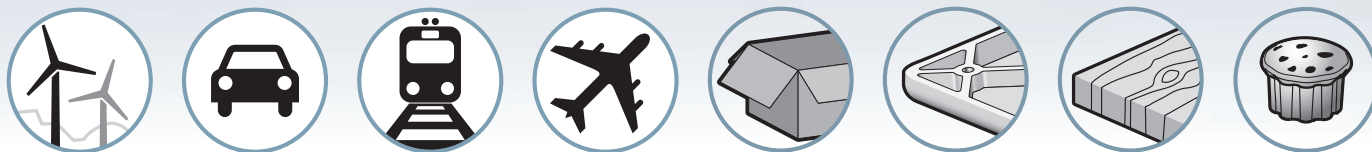


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# COVAL, as close as possible to your production



- Factory
- ▲ Head office
- Subsidiaries
- Distributors



Distributed by:



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