



**ENG**

## INSTALLATION AND PROGRAMMING INSTRUCTIONS

v 01-2019-ENG

This manual is intended for users of Universal Robots (e-Series) collaborative robots who wish to use the COVAL URCap plugin, compatible with COVAL vacuum grippers, Séries :

- **CVGC\_\_A50C1**
- **CVGL\_\_A50C1**

You will find the necessary information to install and program the URCap plugin.

## SUMMARY

- I. Installation of the URCap
- II. Configuration of vacuum gripper inputs / outputs
- III. Setting the part gripping threshold (L1/h1)
- IV. Vacuum control
- V. Part release control
- VI. Available variables



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The COVAL URCap plugin is targeted at users of the UNIVERSAL ROBOTS e-Series robots and provides programming for the vacuum gripper functions:

- **CVGC**\_\_\_**A50C1**
- **CVGL**\_\_\_**A50C1**

The COVAL plugin URCap allows the user to easily access the following functions:

- Suction control  
(and blowoff in the case of CVGL\_\_\_A50C1)
- Instant vacuum level in %
- Setting the thresholds L1/h1 ("part gripped")
- Signals: - part gripped (*covalGripped*)  
- part lost (*covalLost*)
- Cycle counters: - parts gripped (*covalGrippedCnt*)  
- parts lost: *covalLostCnt*)

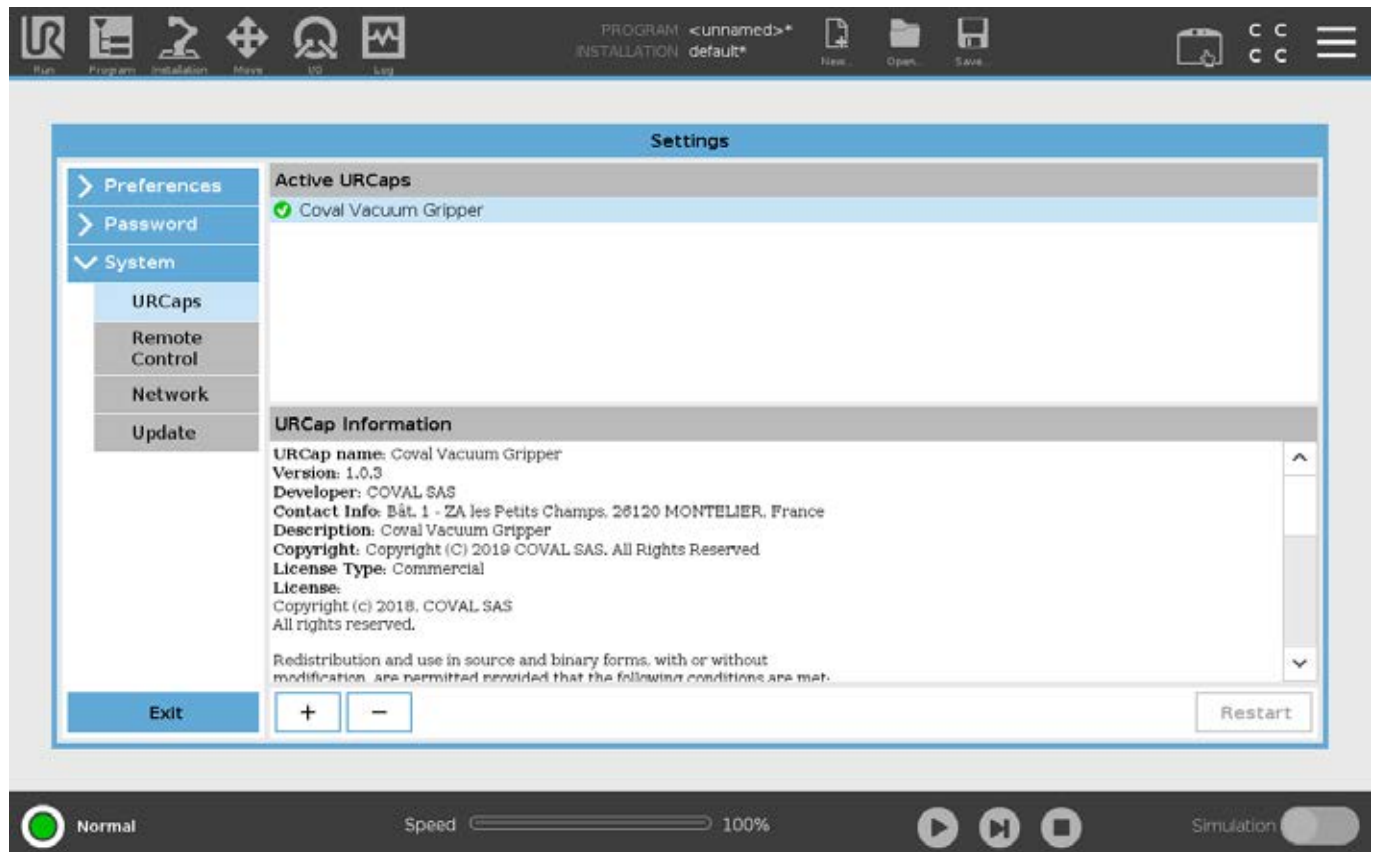
## I. INSTALLING THE URCap

To install the URCap:

- Download the "coval-vacuum-gripper-X.X.X.urcap" file from our website: <https://doc.coval.com/CVGC>
- Copy the **coval-vacuum-gripper-X.X.X.urcap** file to a USB flash drive and connect it to the UR Teach.

From the main menu > Settings > System > URCaps :

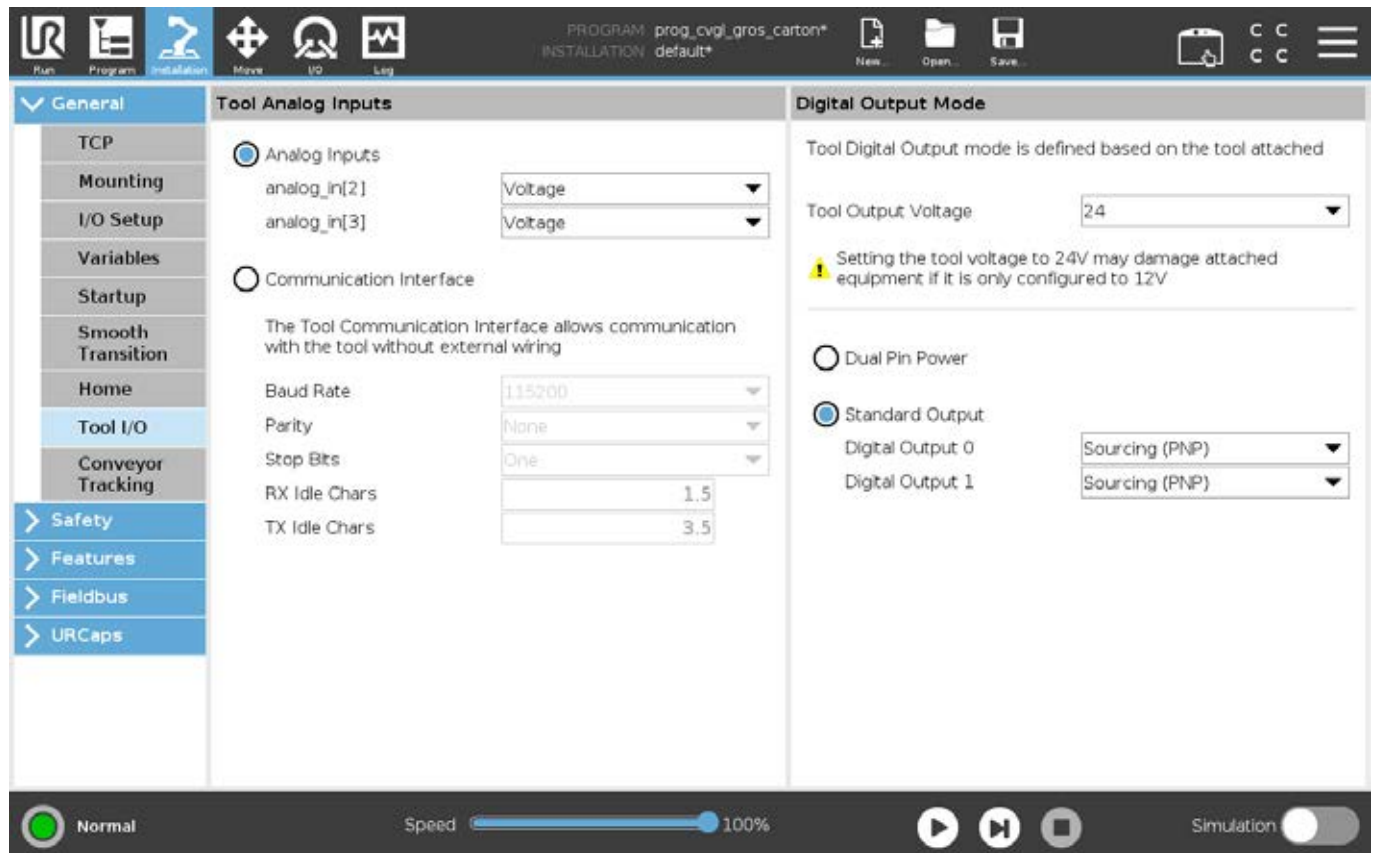
- Press "+" and select the file on the USB drive.
- Validate the installation (wait a few seconds for the validation to be registered).
- Exit the setup screen, the installation is complete.



## II. CONFIGURATION OF VACUUM GRIPPER INPUTS/OUTPUTS

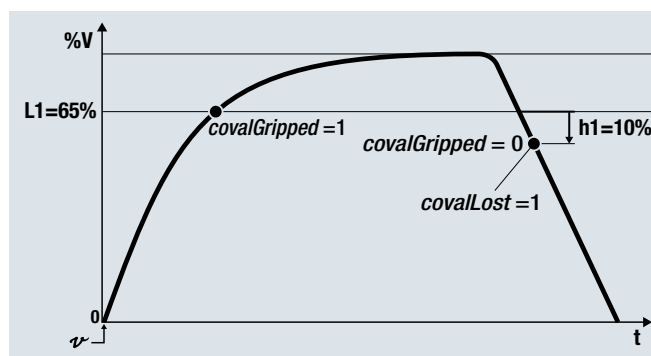
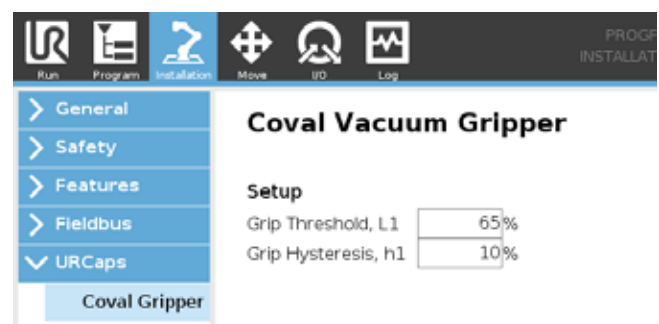
From the main menu > Installation > General > Tool I/O, configure the inputs/outputs with the following parameters:

- Tool output voltage: **24V**
- Standard Output 0/1: **Sourcing (PNP)**



## III. SETTING THE PART GRIPPING THRESHOLD (L1/h1)

From the main menu > Installation > URCaps > Coval Gripper, configure the L1/h1 thresholds used to trigger the **covalGripped** and **covalLost** signals.



L1= vacuum level generating the “part gripped” signal (e. g. 65%)  
h1= hysteresis of L1, deviation resulting in the loss of the “part gripped” signal (e. g. 10%)

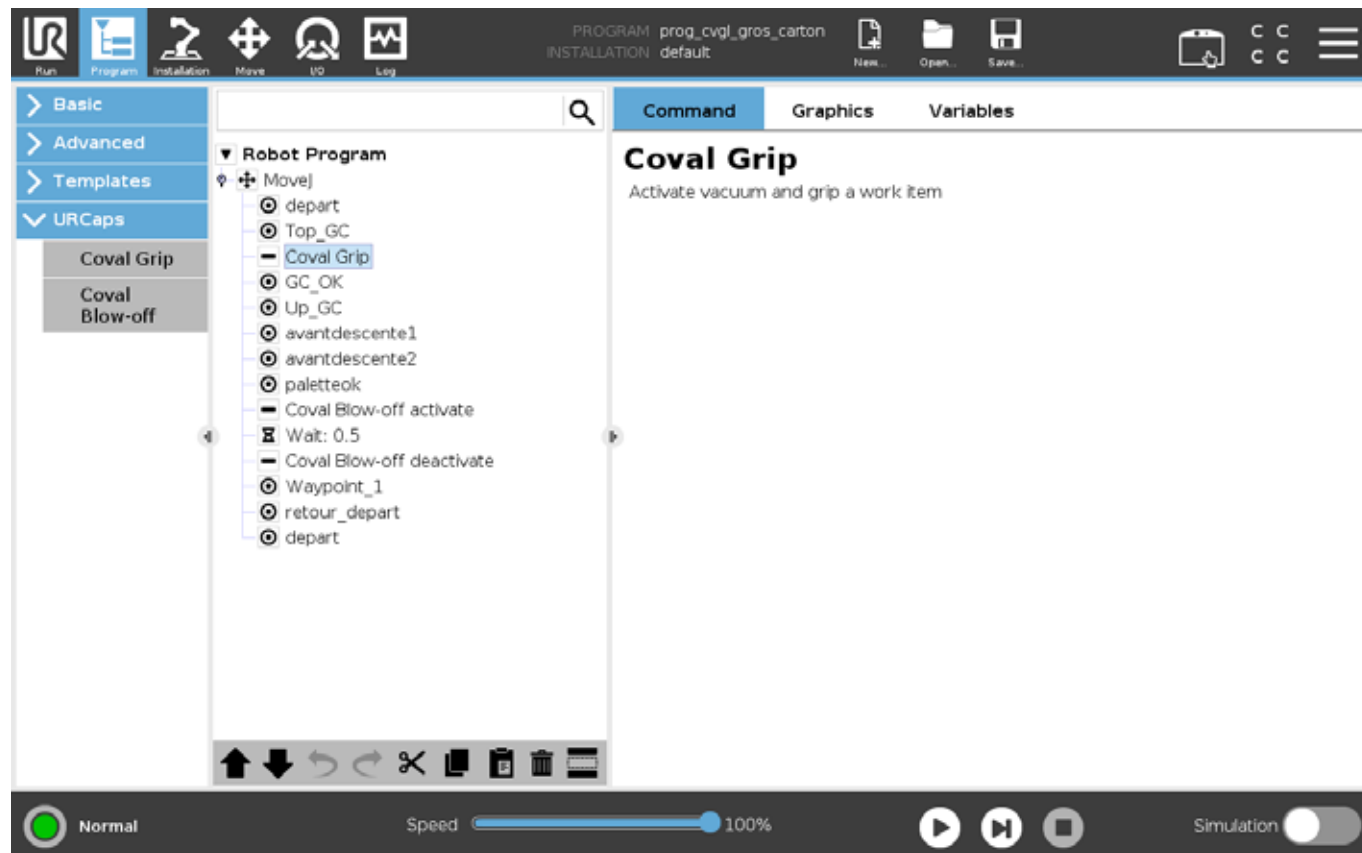
The values of L1 and h1 are to be determined according to the application (Factory setting: L1 : 65 %, h1 : 10 %).

Examples:

- During the vacuum buildup phase, when the instant vacuum level exceeds the threshold L1, the **covalGripped** variable = 1 (part gripped).
- During handling, if the vacuum level falls below L1-h1, **covalGripped** = 0 and **covalLost** = 1 (part lost).

## IV. VACUUM CONTROL

To activate the vacuum control on the gripper, simply add a “**Coval Grip**” node to the program



## V. PART RELEASE CONTROL

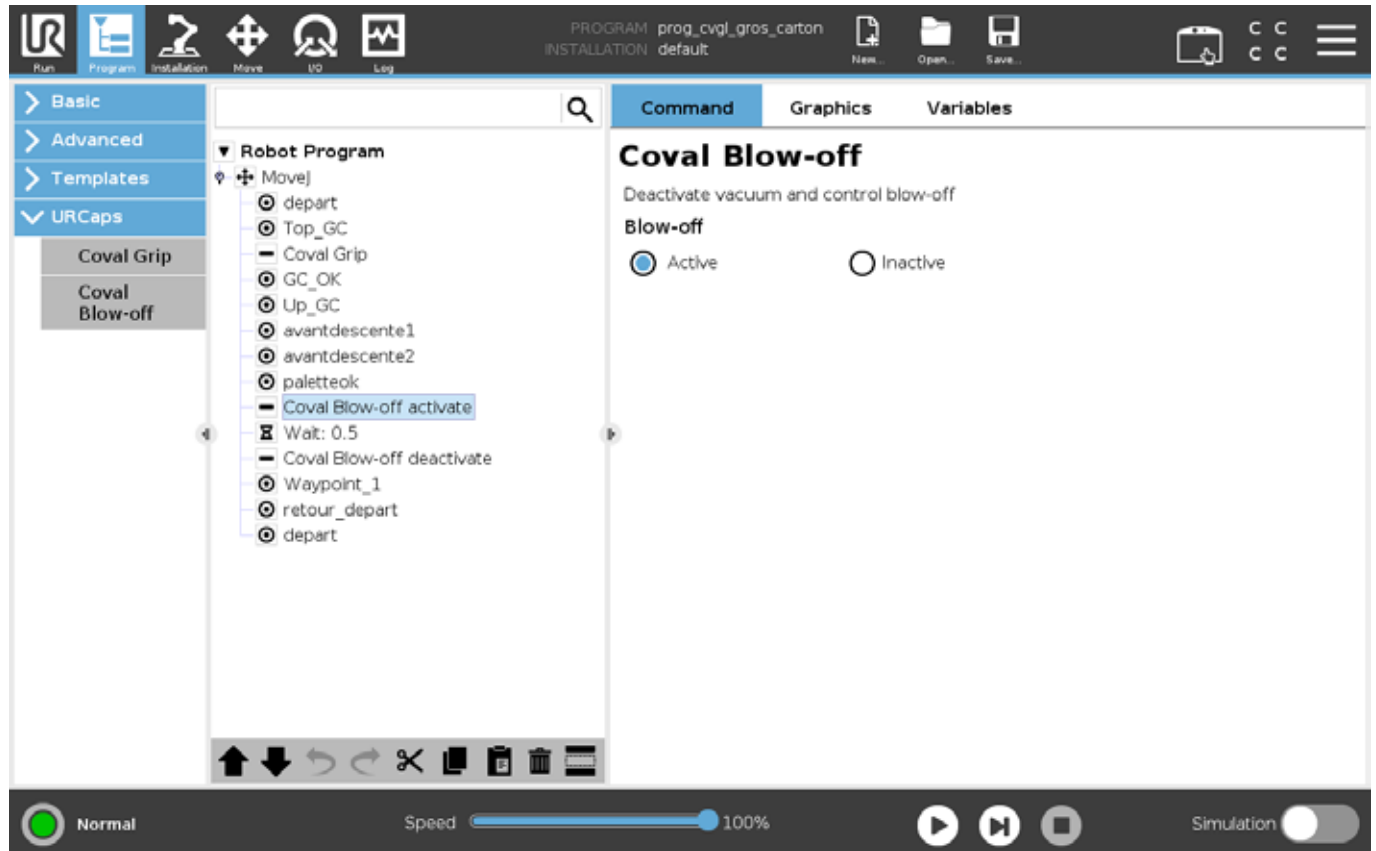


Blow-off function only available on vacuum grippers  
**CVGL\_\_A50C1**

Vacuum stops automatically when the node “**Coval Blow-off = Active**” is added to the program.

- For a vacuum gripper **CVGL\_\_A50C1**, this control deactivates vacuum and activates the blow-off solenoid valve.
- For a vacuum gripper **CVGC\_\_A50C1**, this control deactivates vacuum (release by venting the gripper).

The blow-off is stopped by adding a “**Coval Blow-off = Inactive**” node to the program.



## VI. AVAILABLE VARIABLES

The COVAL URCap provides access to the following variables:

Variable	Type	Description
<b>covalGripped</b>	BOOL	“Part gripped” signal, active when the vacuum control is active and the vacuum level is higher than L1.
<b>covalGrippedCnt</b>	UINT32	Counter for part gripped cycles, increasing with each <b>covalGripped</b> signal.
<b>covalLost</b>	BOOL	“Part lost” signal, active when the vacuum control is active and the vacuum level is less than L1-h1.
<b>covalLostCnt</b>	UINT32	Counter for part lost cycles, increasing with each <b>covalLost</b> signal.
<b>covalVacuumLvl</b>	UINT8	Instant vacuum level (0 to 100% vacuum).

Within a program, it is possible to access these variables directly in the “**fonction f(x)**” field by typing the name of the desired variable.

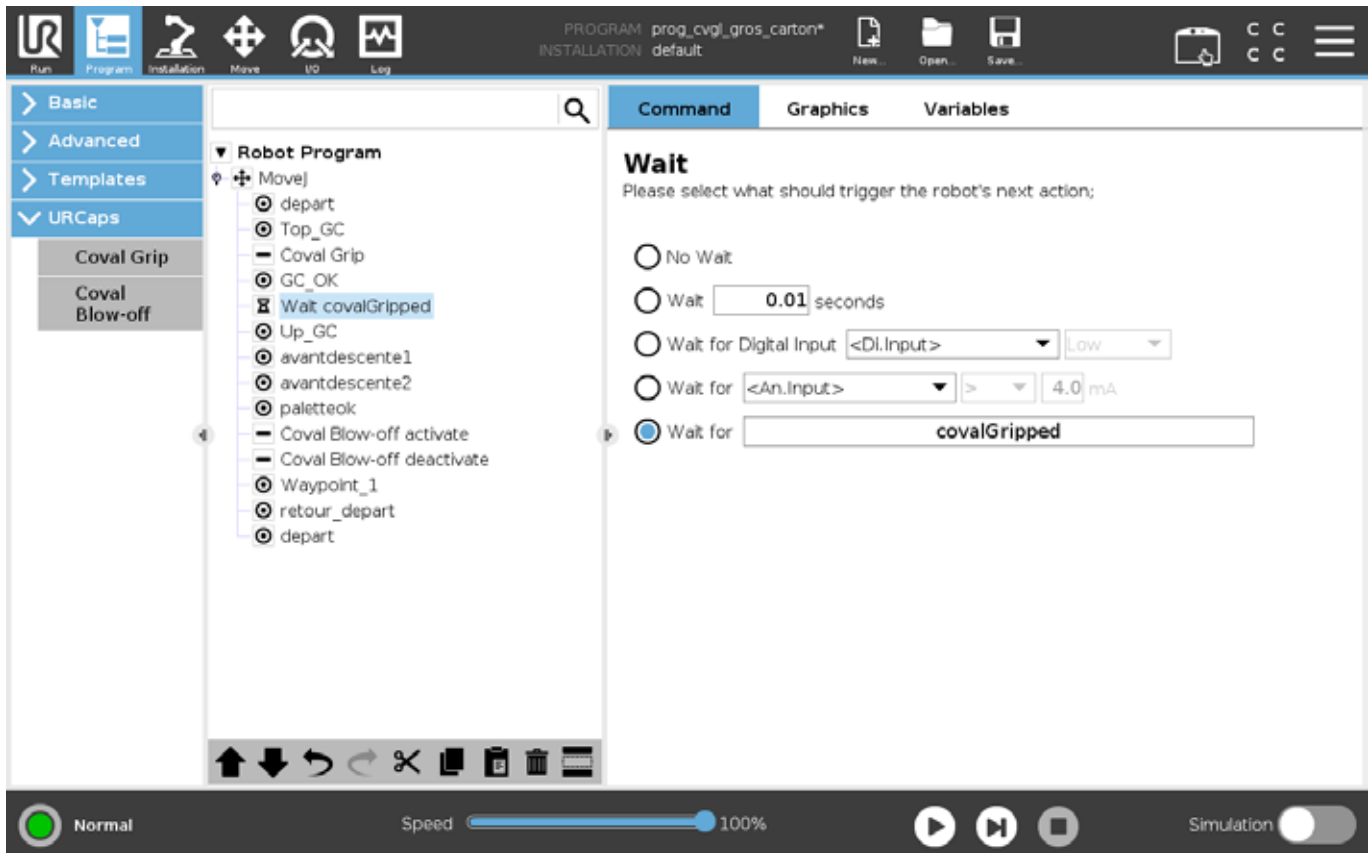


Figure above: Example of waiting for a higher level on the covalGripped signal.

In the example above, the step “**Wait covalGripped**” is only passed when the **covalGripped** signal is set to “1”, i. e. when the vacuum level is > L1.



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Located in the southeast region of France, COVAL conceives, manufactures and globally distributes high performance, advanced vacuum automation components and systems for industrial applications in all branches.

COVAL is an ISO 9001: V2015 certified company which offers innovative solutions integrating reliable and optimized components with intelligent functionalities. The focus is to provide the most personalized and economic solution to a given application while assuring a significant improvement in the productivity and the safety for the vacuum users around the world.

COVAL has an ambition for technical excellence and innovation. As a specialist in vacuum automation, COVAL is reputed for offering reliable, personalized, cost effective and productive solutions.

The references of COVAL can be found in several industrial sectors (Packaging, Automotive Industry, Plastic, Graphic, Aeronautic...) where vacuum handling is important for high efficiency and productivity.

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