First , as shown in Fig. 1, the end user needs to license the application to launch the application in the emGORA workspace. Next, he/she can start the application using the emGORA workspace user inteface presented on Fig. 2. The application owner can also check the status of the application execution on this interface.
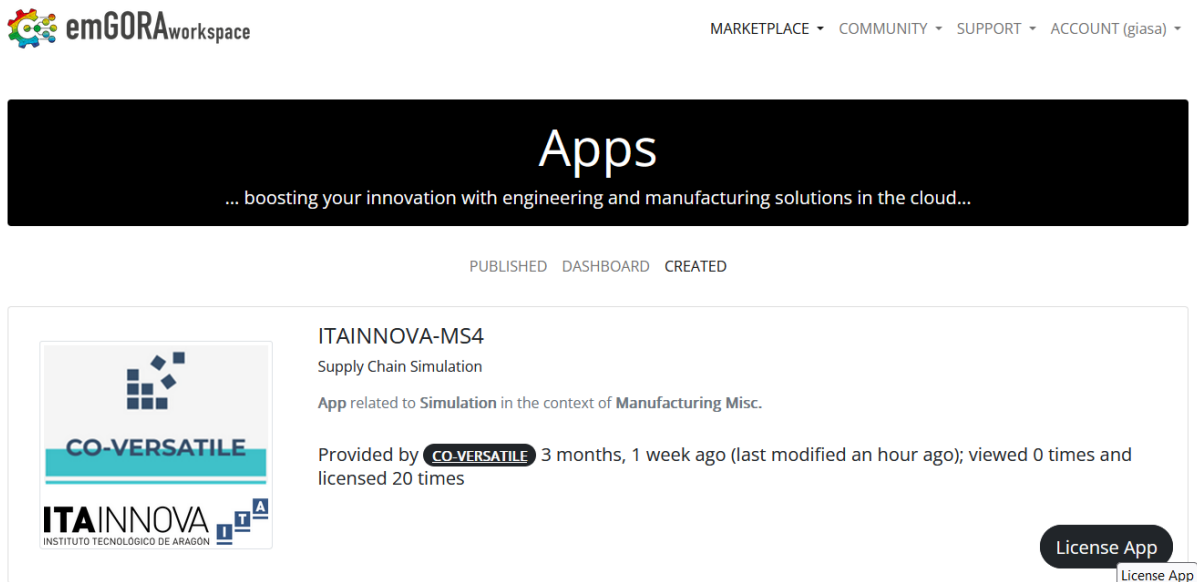

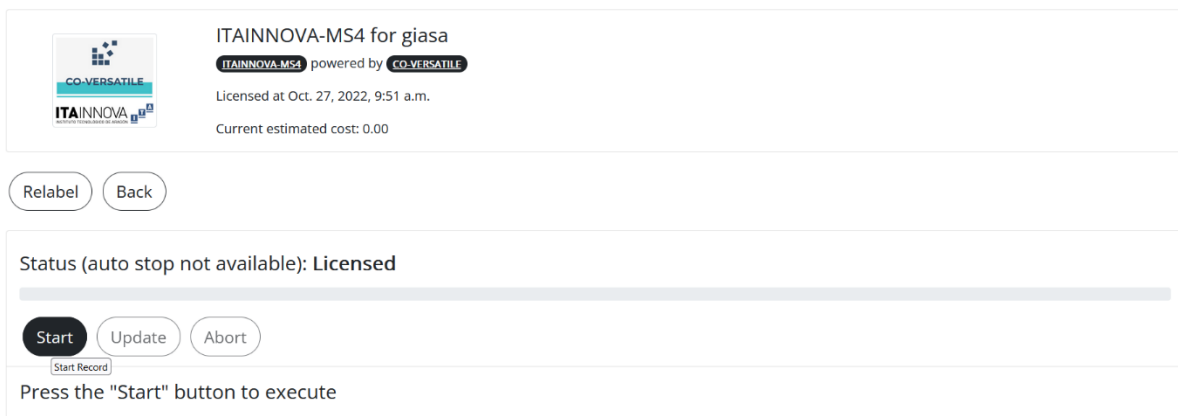**Figure 1: Licensing the aplication in the emGORA workspace for execution**

Figure 2: Staring the aplication in the emGORA workspace

After clicking the start button, the user needs to wait till the application status changes to "Executing". Once this status is shown, the user interface will show the URL and login information to the MiCADO dashboard. Please see Fig. 3.
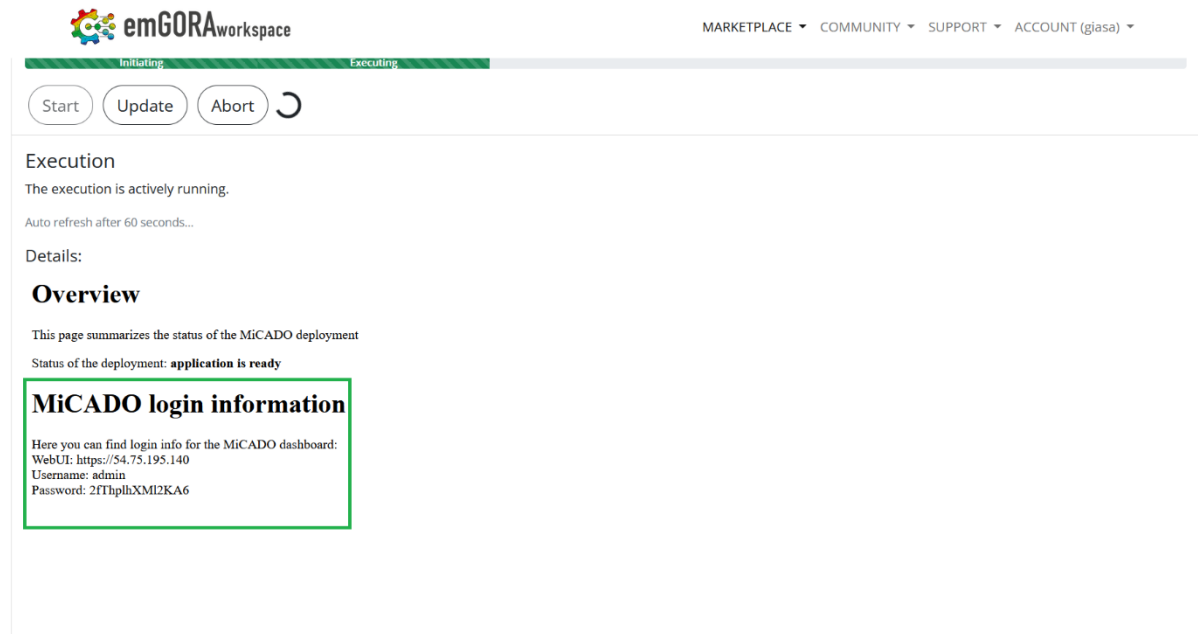
Figure 3: MiCADO dashboard login information

When the application is ready, as shown in Fig.4, please click the nodes option. It will show the domain name of the machine where the application is deployed. Please see Fig. 5.
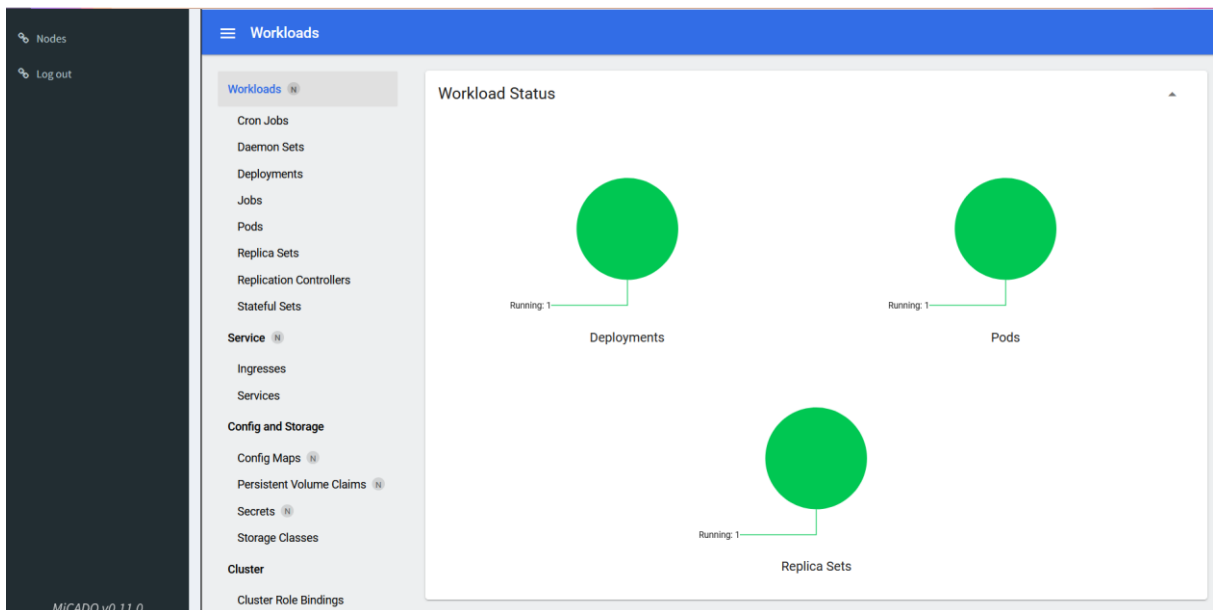

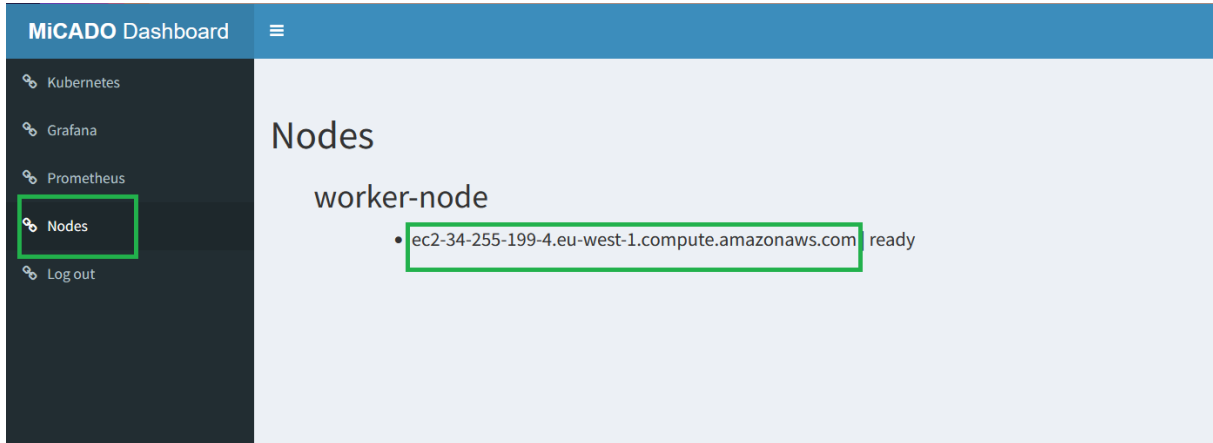**Figure 4: Status of the application in the MiCADO dashboard**

Figure 5: Domain name of the machine hosting the application

Please visit the link – *http://<domain-name-of-the-machine>* to use the application.

Using the application interface, the user can evaluate different output variables, as well as the individual influence of each of the input parameters in the selected output.
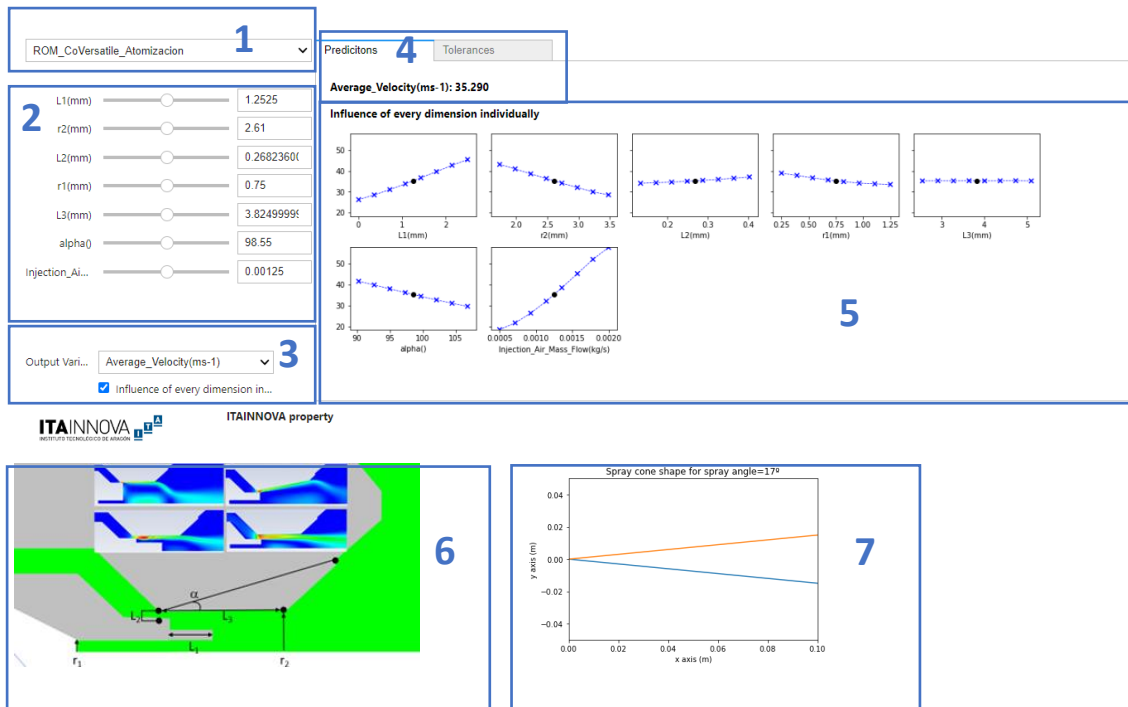

Figure 6: Application Overview

1. Display indicating that the set of ROMs for the COVERSATILE atomization spray nozzle is loaded.
2. Process and design parameters area. The available parameters are displayed. Each parameter has a scroll and a display box; the user can directly move the scroll or introduce the desired value (in the available range) for that parameter in the display box.

3. Output variable area. The dropdown menu allows the user to select the relevant results to be analyzed. The available output variables are:
    - Average_Velocity
    - Max_Radius
    - Injection_Pressure
    - Water_Suction_Pressure
    - Standard_Deviation
    - D10
    - D30
    - D32
    - Spray_Angle
    - Mu
    - Xi
    - Sigma

A thick box allows to activate/deactivate the graphical area

4. The output of the ROM for the desired variable is displayed in the box.
5. Graphical area: In this area, a XY graph is displayed for each design/process parameter. It represents the influence of every parameter in the selected output variable, for a specific combination of input parameters. The prediction is shown in the graph as a black dot. This info is useful for the user to decide which are the more sensitive parameters for that specific output variable, given a fixed combination of input parameters, and in which direction can be changed to get results within tolerances.
6. Design parameters description.
7. Spray shape graph: Using the Spray_Angle output variable, through a python script, a graph displaying the shape of the spray is plotted.
8. Tolerances tab. In this tab, a prediction of all the available variables is displayed. It allows the user to activate target limits for each result.

Output Variable	Activate	Inf value	Activate	Sup value	Offset	Prediction
Average_Velocity(ms-1)	☐	0	☐	80	0	33.981
D10	☐	0	☐	30	0	10.457
D30	☐	0	☐	50	0	28.512
D32	☐	0	☐	60	0	22.248
Injection_Pressure	☐	0	☐	50000	0	187523.748
Max_Diameter	☐	0	☐	50	0	11.233
Mu	☐	-60	☐	60	0	9.855
Sigma	☐	0	☐	10	0	2.452
Spray_Angle	☐	0	☐	10	0	17.024
Standard_Deviation	☐	0	☐	10	0	0.000
Water_Suction_Pressure	☐	-4000	☐	10000	0	-4617.898
Xi	☐	-10	☐	10	0	-0.503

Figure 7: The tolerance tab of the application

9. The offset box allows to introduce a correction to account for differences found between predicted values and those from real spray nozzle measurements.