

# User Manual

## Maintenance Operation Hydraulic Lockout-Tagout



# Summary

<b>Summary</b>	<b>1</b>
<b>Introduction</b>	<b>2</b>
<b>Safety Instructions</b>	<b>2</b>
<b>In game menu</b>	<b>4</b>
Menu in exercise	4
<b>Controls</b>	<b>5</b>
Pico Neo 3 : Controllers and Buttons	5
Meta Quest 2 : Controllers et Boutons	7
Focus 3 : Controllers and Buttons	8
Focus Plus : Controllers and Buttons	10
<b>Main Menu</b>	<b>11</b>
<b>Tutorial</b>	<b>12</b>
<b>Course of an exercise</b>	<b>13</b>
Factory scenario	13
<b>Network scenario</b>	<b>25</b>
<b>Debriefing and correction</b>	<b>33</b>
<b>Site Plan - Factory Scenario</b>	<b>35</b>
<b>Site Plan - Network Scenario</b>	<b>36</b>
<b>Support</b>	<b>37</b>

## Introduction

Immersive Hazard Spotting© - Hydraulic Consignation is a virtual reality simulation of hazard spotting in a hydraulic environment.

The goal of the exercise is to close and consign hydraulic valves and pipes to securize the environment for the work manager to verify the procedure.

It allows learners to become familiar with the hazards in a hydraulic work environment and to raise awareness of bad behaviors in their workspace.

At the end of each circuit, the learner receives a score and a correction of the hazards he/she could not identify. This is called the “debriefing” screen.

There is two separate environments where the learner can learn how to perform a lockout/tagout.

One inside a confined environment, with valves to close, and the other one outside, on the street.

Duration of the exercise: between 5 and 10 minutes.

## Safety Instructions

Virtual reality is an extremely immersive technology, as a consequence material and human accidents can be caused by the movements and reactions of the learners. In order to minimize the risks of equipment damage or injuries, we invite you to follow these safety instructions:

- Do not wear glasses under the virtual reality headset.
- Make sure that the area around and above you or the learner is sufficient for you to play.
- Keep the playing area clear of obstacles (people, animals, furniture, etc.)
- Do not play near stairs, windows and heat sources.
- Be aware of the cables and connections around you and to avoid tripping over or pulling them when playing. Failure to do so may result in injury or property damage.
- Take care of the controllers, hold them firmly when playing and always use the wrist straps. Hitting something or someone with the controllers or releasing them while playing can cause injury or property damage.
- Keep the volume low so that you are aware of your surroundings when playing.
- If you have experienced epileptic symptoms in the past, consult your doctor before playing VR content.

In addition, when you play a VR video game:

- VR content can be particularly immersive and give the feeling of a real experience, which can cause brain and body reactions. Stop playing an Immersive Factory VR video game if you are ill, experience loss of balance, or have difficulty with hand-eye coordination. Until you have fully recovered from these symptoms, do not engage in activities that may have potentially serious consequences, such as driving or operating machinery.

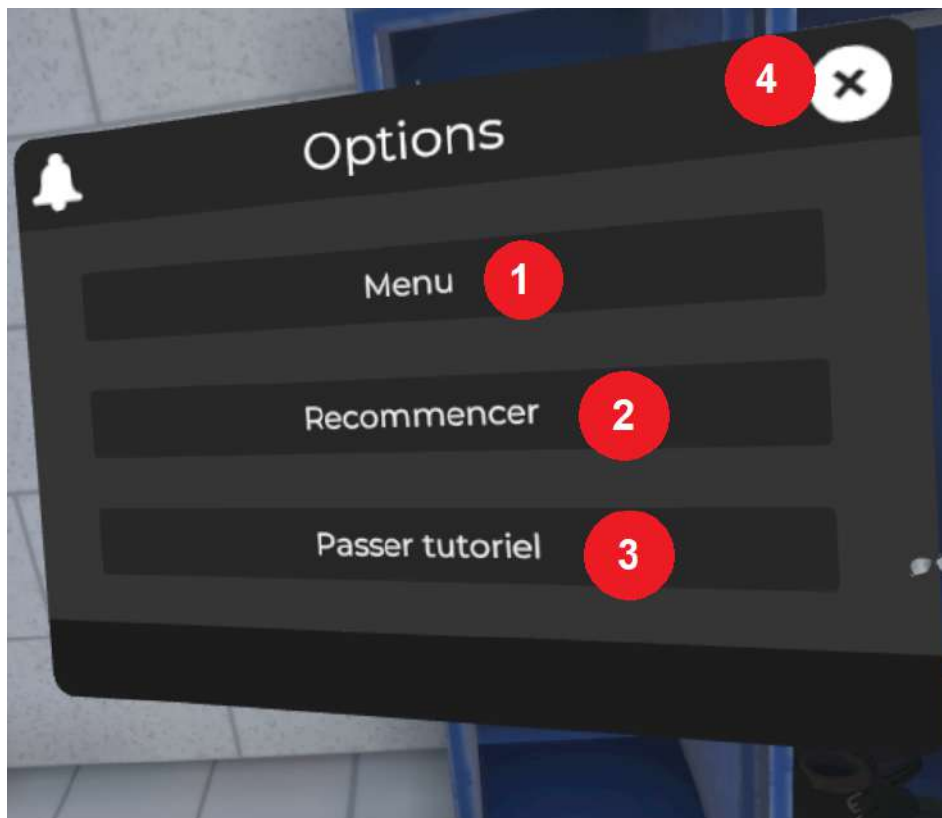
- Certain types of content, such as violent, scary or adrenaline-inducing content, may cause increased blood pressure, heart rate, panic attacks, anxiety or other adverse effects. Stop playing immediately if you begin to experience any of these effects.
- Keep in mind that the virtual objects simulated in Immersive Factory VR video games do not exist in real life, and interacting with them as if they were real (e.g., sitting in a virtual chair) can cause injury.
- It is best to remain seated.
- Be careful not to trespass on other people's property.
- It is recommended to take breaks every 10-15 minutes.

In addition to these items, please read any health and safety warnings contained in the manual supplied with your VR headset/equipment

## In game menu

### Menu in exercise

At any time during a risk-monitoring session, you can click on the left-hand menu button on one of your **device** controllers (see below) to open a context-sensitive interface.

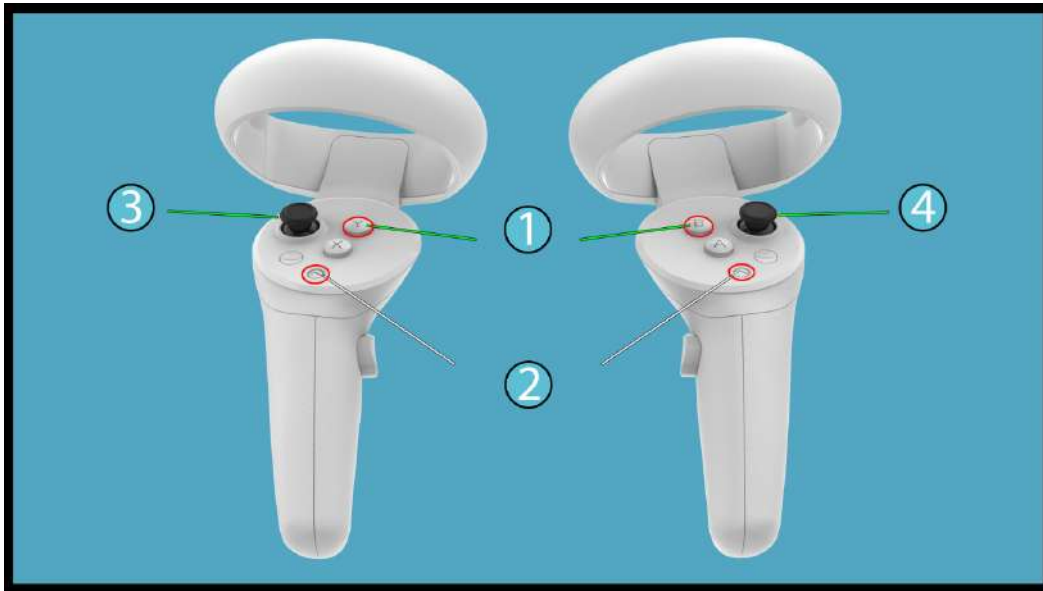


1. Menu : Return to the application's main menu
2. Restart: Restart the exercise with the same settings
3. Skip tutorial: Go directly to the exercise
4. Cross: Close the interface

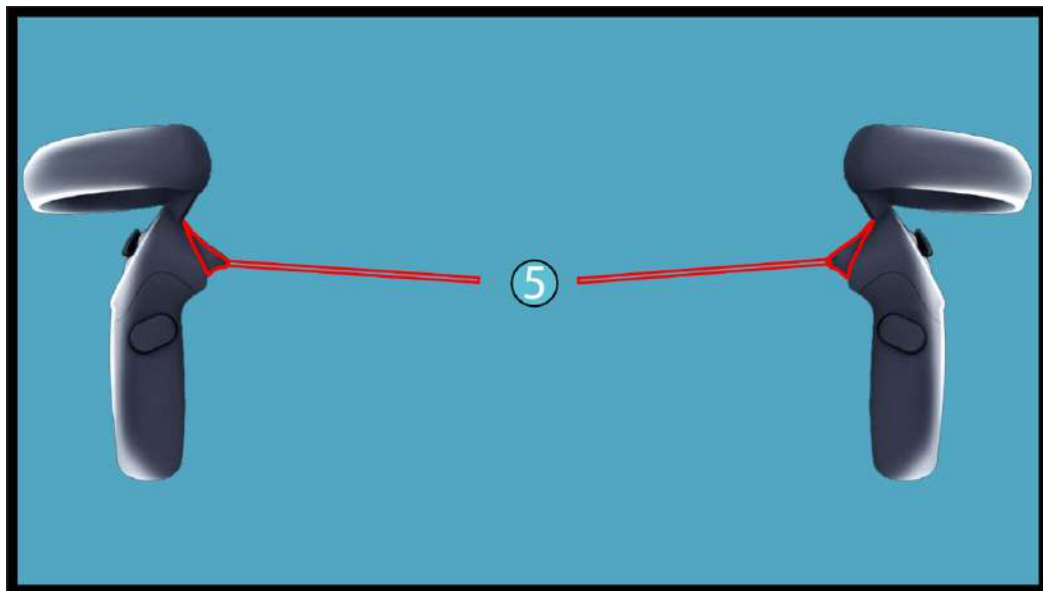
# Controls

## Pico Neo 3 : Controllers and Buttons

Controllers front view



Controllers Profile view

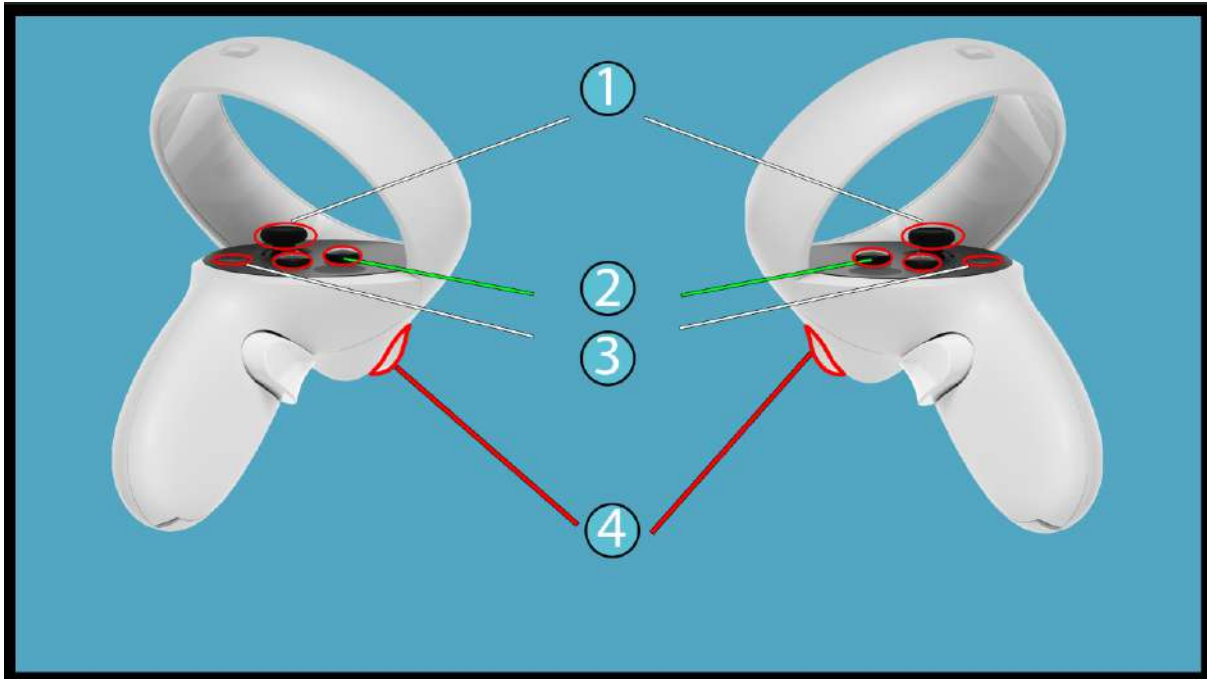


1. The B Button is used to show a menu during the sessions, which can lead back to the main menu.
2. The Pico Button is used to display the main menu of the Pico Neo Headset, this menu contains multiple actions :
  - Screenshots
  - Video Recording

- Quit the Application
  - Go back to the Application
  - Go back to the main menu
3. The left joystick is used to move. **Press the joystick** to select a direction, and release it to move.
  4. The right joystick is used to move. **Press the joystick** to select a location, and release it to move.
  5. The triggers are used to **grab objects**.

## Meta Quest 2 : Controllers et Boutons

Controllers :



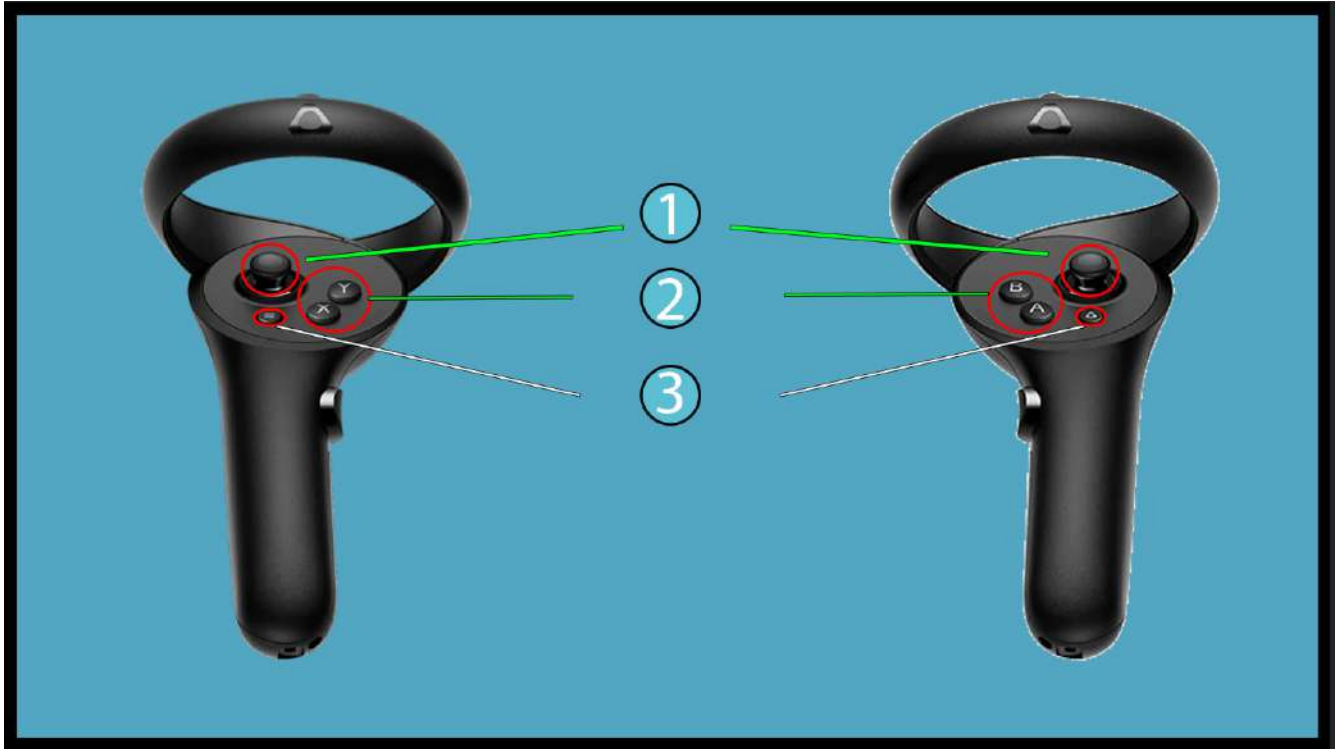
1. The joysticks are used to move. **Press the joystick** to select a valid location, and release it to move on it.
2. The **B button** is used to display the main menu in game.
3. The Oculus Button is used to display the main menu of the Meta Quest 2 Headset, this menu contains multiple actions :
  - Screenshots
  - Video Recording
  - Quit the application
  - Go back to the application
  - Go back to the main menu
4. The triggers are used to **grab**.

**Caution :** A setting is available inside the simulation to modify which hand is holding the camera, you can choose which trigger does which action, according to your preferences.



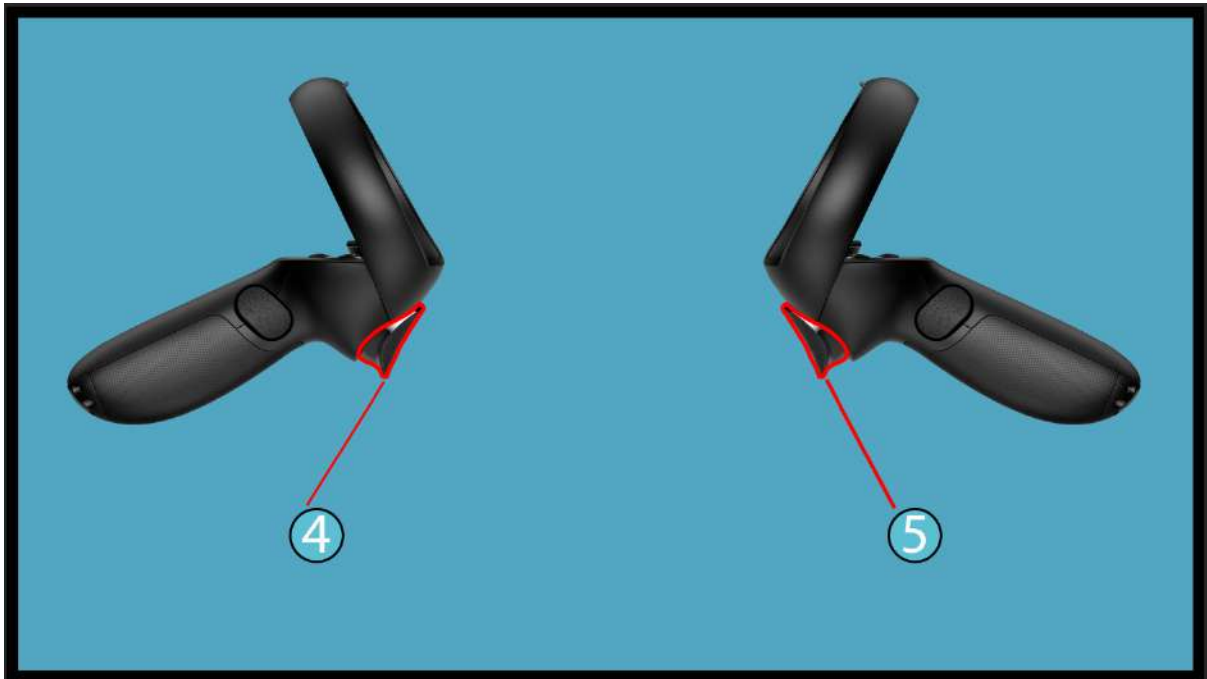
## Focus 3 : Controllers and Buttons

Controllers front view :



1. The joysticks are used to move. **Press the joystick** to select a valid location, and release it to move on it.
2. The **B** Button is used to show a menu during the sessions, which can lead back to the main menu.
3. The HTC Button is used to display the main menu of the Focus 3 Headset, this menu contains multiple actions :
  - a. Screenshot
  - b. Video Recording
  - c. Quit the application
  - d. Go back to the application
  - e. Go back to the main menu

## Controllers profile view :

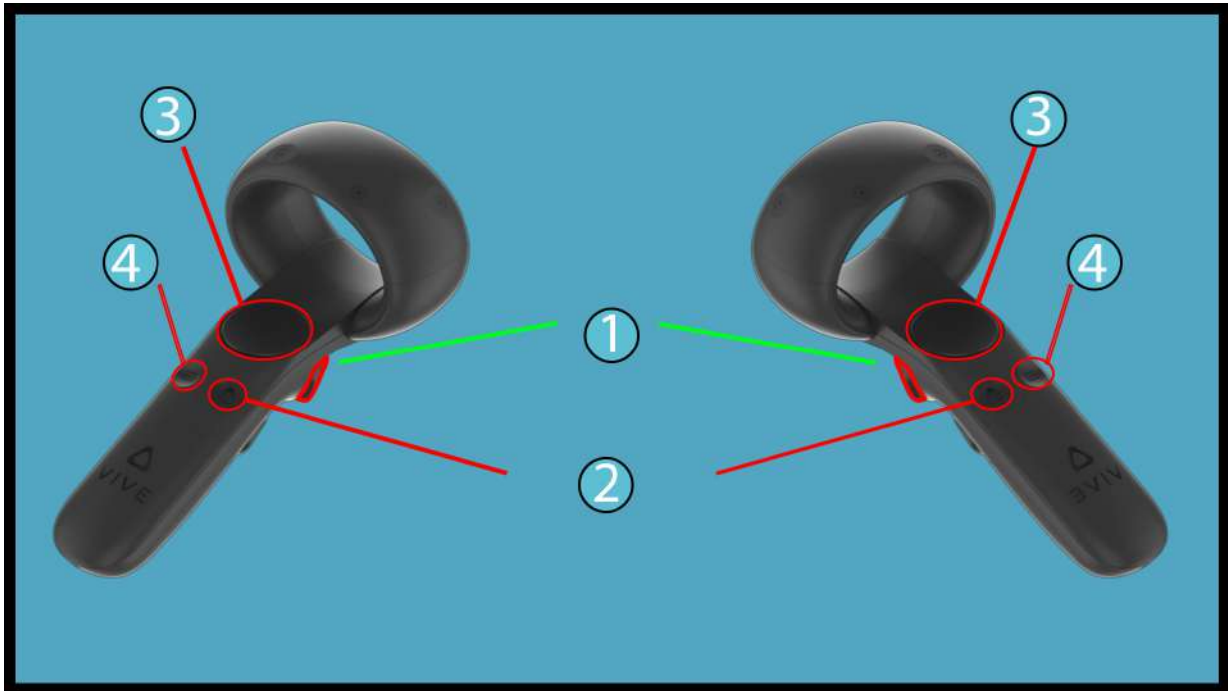


4. The left trigger is used to **grab objects**.
5. The right trigger is used to **grab objects**.

**Caution :** A setting is available inside the simulation to modify which hand is holding the camera, you can choose which trigger does which action, according to your preferences.

## Focus Plus : Controllers and Buttons

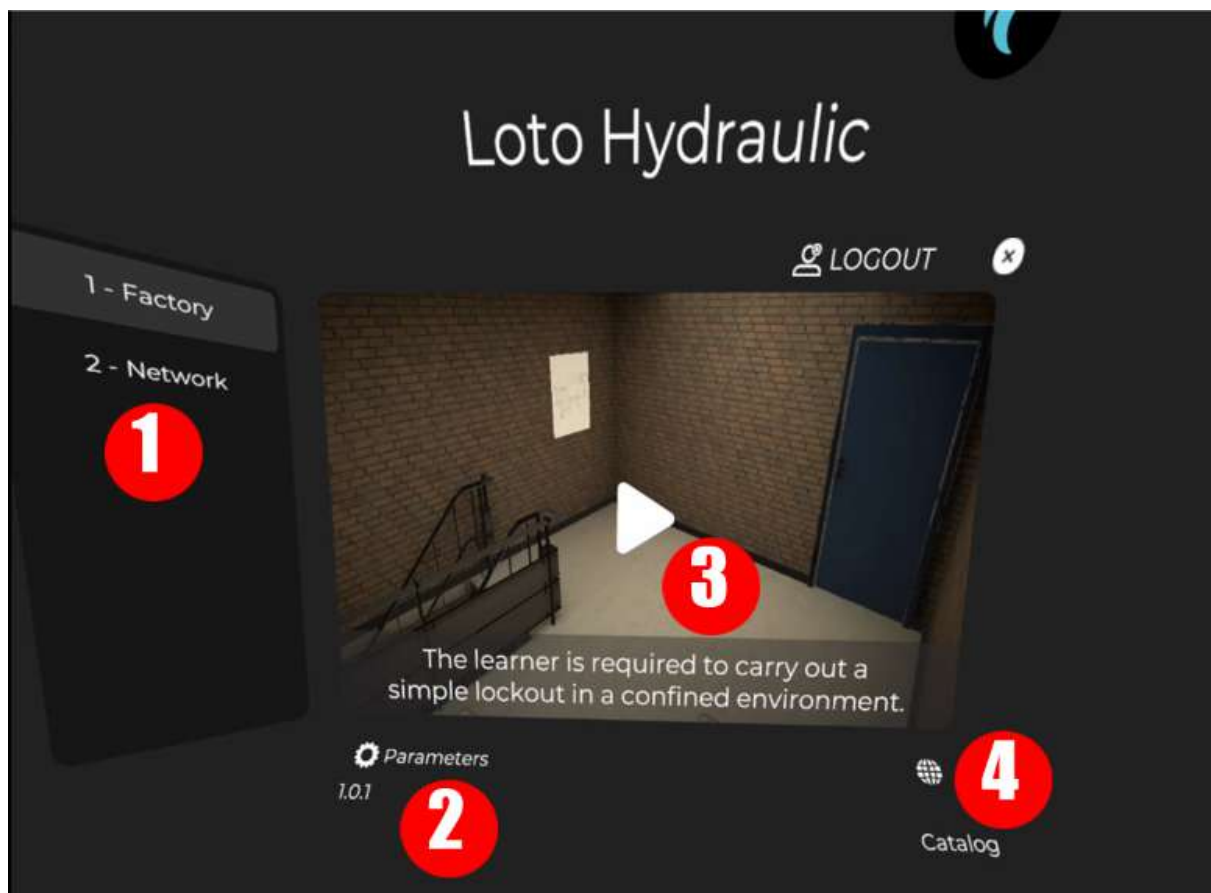
Controllers :



1. Main Triggers are **used to grab**.
2. The HTC button is used to display the main menu of the Focus Plus Headset. This menu contains multiple actions :
  - a. Screenshot
  - b. Video Recording
  - c. Leave the application
  - d. Go back to the application
  - e. Go back to the main menu
3. The touch pad is used to **move**. **Press the touchpad to select a valid location, and release it to move on it.**
4. The option button is used to display the menu during ongoing sessions, allowing you to retry and go back to the main menu.

**Caution :** A setting is available inside the simulation to modify which hand is holding the camera, you can choose which trigger does which action, according to your preferences.

## Main Menu





1. Start menu: choose a session from the two scenarios available :
  - a. Plant
  - b. Network
2. Parameters (*see parameters options below*)
3. Start button: launch the session
4. World map: choose the language

SENSITIZATION



# Loto Hydraulic

 LOGOUT 

Parameters

General

- Tutorial
- presence of the telephone

 Return

1.0.1



Catalog

## Tutorial

The learner starts the tutorial in the locker room. They first learn how to use teleportation to move around. An area on the floor is highlighted and the learner must move to it by aiming at the area while holding the trigger down to make the teleportation beam appear, then releasing the trigger once the area is aimed at.

The learner learns to equip himself by interacting with his work clothes (PPE helmet, boots, goggles, and gloves). When the trigger is pulled while in contact with the PPE, the learner is instantly equipped.

The learner then learns to interact with the objects by signing a work permit. Once this is done, a 3-second timeout occurs, and the learner is automatically teleported into the level.

The tutorial ends after this interaction.



# Course of an exercise

## Factory scenario

In this scenario, the learner must perform a simple lockout (2 valves to lock out, one upstream, one downstream). The learner must identify the pipe on which to carry out the lockout (choice between several pipes).

Before starting the work, the trainee is told that the upstream pump has been stopped and locked out and that it is a drinking water network. This information is displayed on the work permit on the table in front of the learner when he/she starts.

## Step 1 - Tutorial

Starts in the locker room and must select PPE. He equips himself with the PPE he feels is necessary. He must equip himself with :

- Helmet with chin strap
- Safety shoes / boots
- Handling gloves
- Safety glasses

## Step 2 -

Depending on the level he/she choose, the learner has to equip him/herself with PPE.

## Step 3 (mandatory)

The learner grabs the document (work permit) and signs it. The document provides context on the intervention to be performed (risks, etc.). The learner then had to wait 3 seconds and be automatically teleported in the main level he/she choose.

## Step 4 (mandatory)

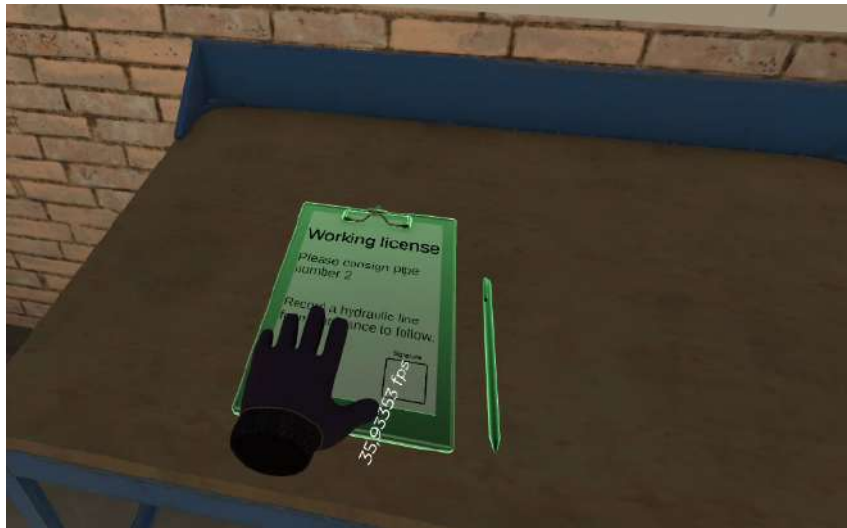
The learner arrives on site. A metal staircase leading to a dimly lit basement is in front of him. On the wall next to the staircase, the learner can see the map of the valves/pipes at the bottom of the staircase.

A table with a work permit is positioned in front of the learner, and he/she has to sign the document before grabbing the stairs to go down. This step gives context to the lock out/tag out to the learner.





We invite the learner to sign the work permit and to descend the stairs by grabbing the railing.



## Step 5 (mandatory)

On the wall in front of him/her, he/she can see the piping and valves as shown at the top of the map. The lockout kit and mobile phone (if selected) are already placed on a table.



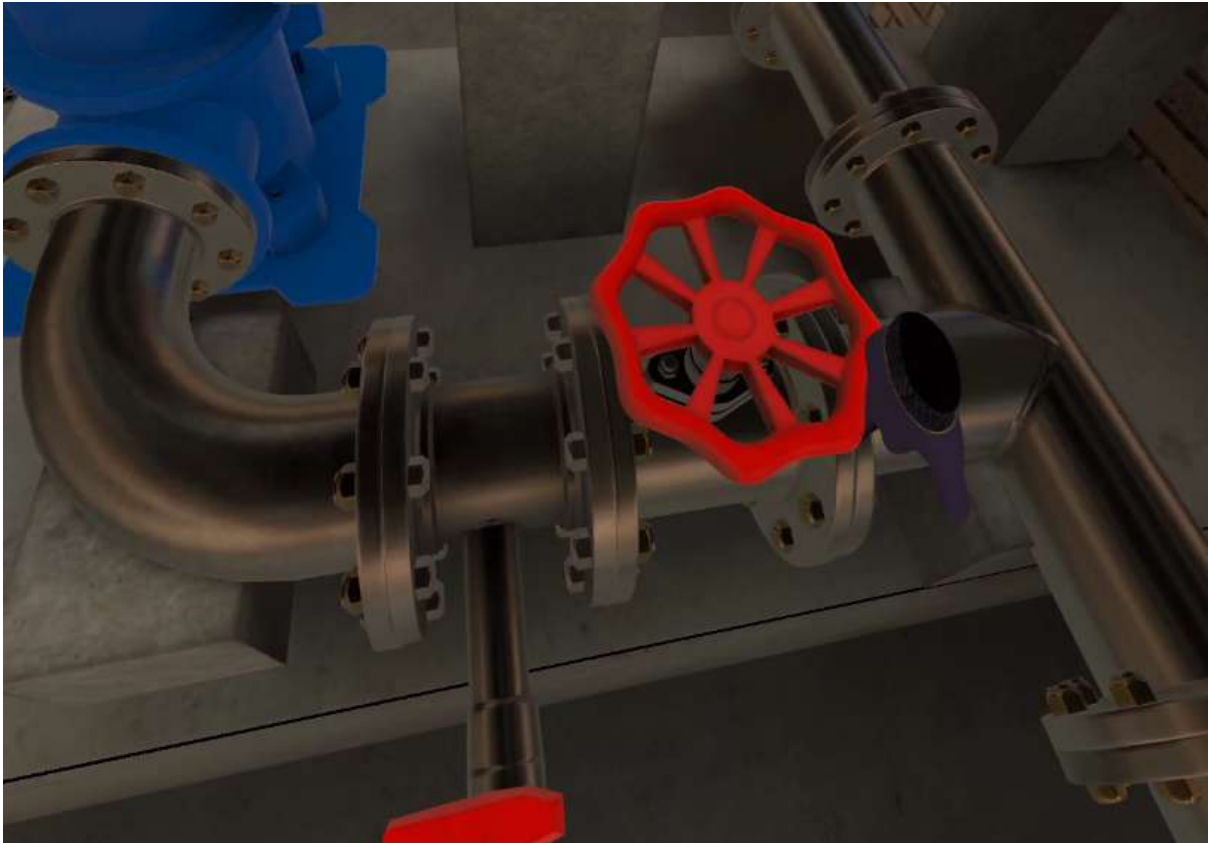
## Step 6: Identification

The learner must identify the pipe on which he is to work. The learner must remember what he/she saw on the work permit to find the right pipe/valve. If the option has been enabled, the learner can also use the phone by interacting with it to be told which pipe to work on (it will be highlighted).



## Step 7: Separation (mandatory)

The learner begins by closing valve 1, grabbing valve 1 and turning it. Valve 1 is now closed (separation phase)



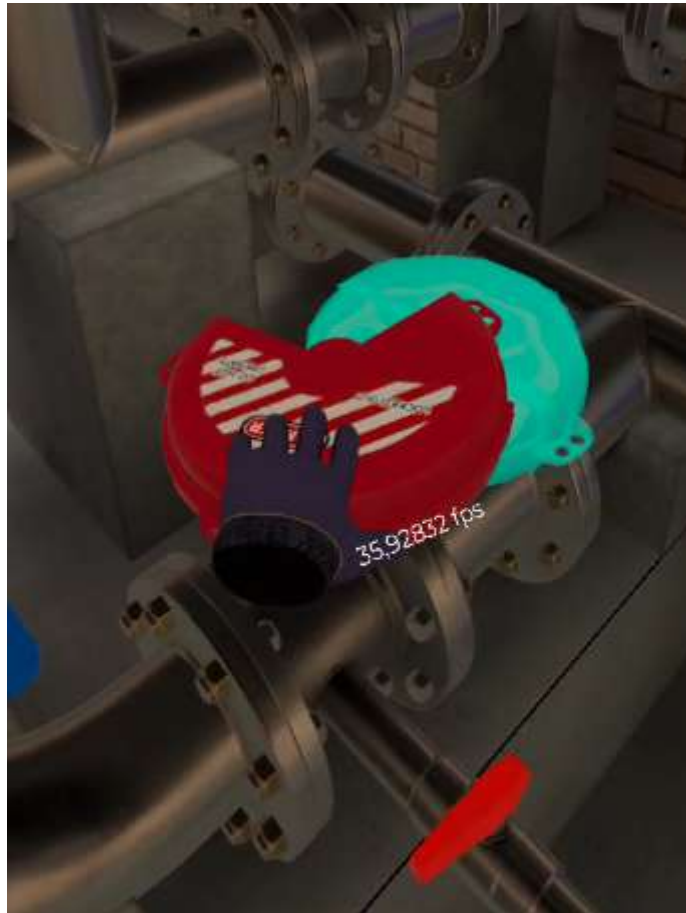
## Step 8: Separation (mandatory)

The learner begins by closing valve 2. He/she grabs valve 2 and turns it. Valve 2 is now closed, the separation phase is done.



## Step 9: valve 1 Lock-out (mandatory)

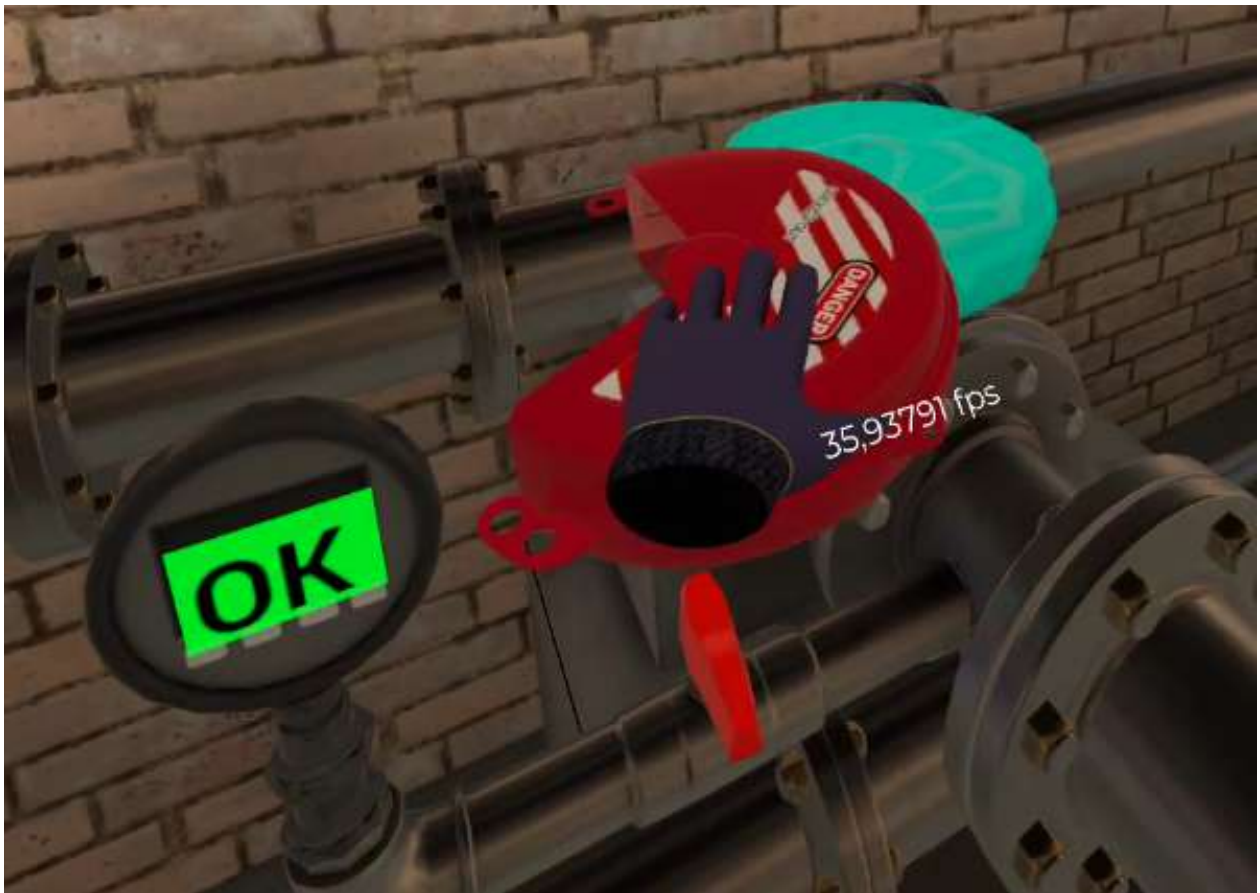
The learner grabs the padlock and places it on a first valve.





## Step 10: valve 2 Lock-out (mandatory)

The learner grabs the padlock and places it on the second valve.



## Step 11: Pressure check (optional)

The learner now has to open the valve connecting the pressure gauge. This step is optional, the pressure gauge is considered as dysfunctional and won't be considered as relevant to show the pressure in the pipe.





## Step 12: Pressure release (mandatory)

The learner must now open the pressure valve to ensure that there is no pressure in the system to be operated. This step is mandatory because the malfunctioning pressure gauge should not be considered sufficient to verify that there is no pressure left.



## Step 14: Sign the logbook (mandatory)

The learner grabs the logbook and pen and signs the logbook.



## Step 15: Arrival of the intervention officer (mandatory)

The operator arrives on site to repair a leak in the piping system. During his operation, he suffers an accident if the procedure has not been followed, after having checked that the consignment is recorded in the logbook.

At this step, if the 2 valves from the correct circuit to clock-out are not locked and tagged an accident will occur.

At this step, if the verification of purge is not done, an accident will occur.



## Network scenario

The learner must perform a valve lockout on a common water line (3 valves should be locked and tagged). The pipe circuit is shown in an opened trench.

Before starting his intervention, the learner has to sign a work permit signaling that the main pipe has been lock out and closed. The work permit and the logbook are located in the utility vehicle.

### Step 1 (mandatory)

The learner starts on site, in the back of his utility vehicle. He equips himself with the PPE that is accessible in the back of the truck since the trunk is open. He must equip himself with

:

- Helmet with chin strap
- Safety shoes / boots
- Handling gloves
- Safety glasses



## Step 2 (mandatory)

Once equipped, the learner grabs the document (work permit) and signs it. The document provides context on the intervention to be performed (risks, etc.).





### Step 3: Keyhole separation (mandatory)

The learner starts by closing valves 1, 2, 3 and 4. To do this, he/she goes to the key holes on the road in line with the common water line. The keys to be used are placed next to each key. The learner grabs the key, and then turns it to close the underground valves.

Note: contextual tutorial at this stage (highlight / outline screens)

Keyhole : small hole on the road in which a key is inserted



#### Step 4: Descending into the excavation (optional)

At any time, the learner can go into the excavation. There is a ladder to get there. The learner grabs the ladder to be teleported directly into the excavation (at the bottom of the ladder).

The learner can teleport directly into the pit without using the ladder, but this will be criticized later in the debriefing.



## Step 5: Opening of the hydrant valve (optional)

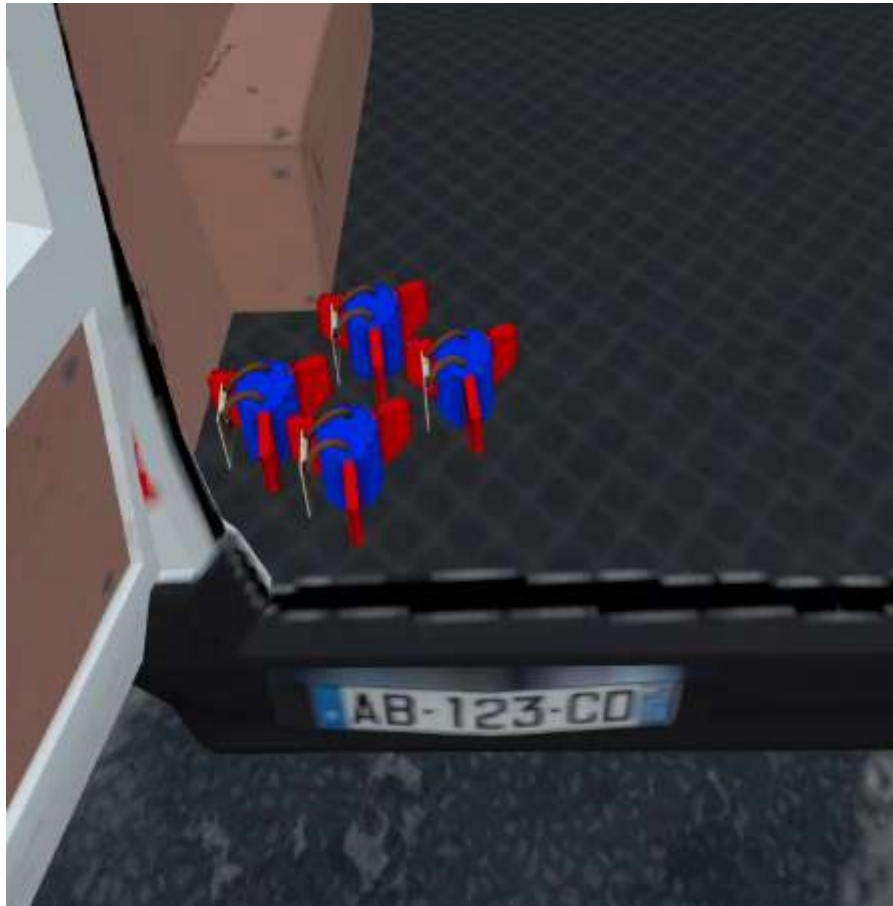
The learner closes valve 4 with a key (similar to the keyhole key). He grabs the key and closes the valve. This valve is located at the other side of the environment.





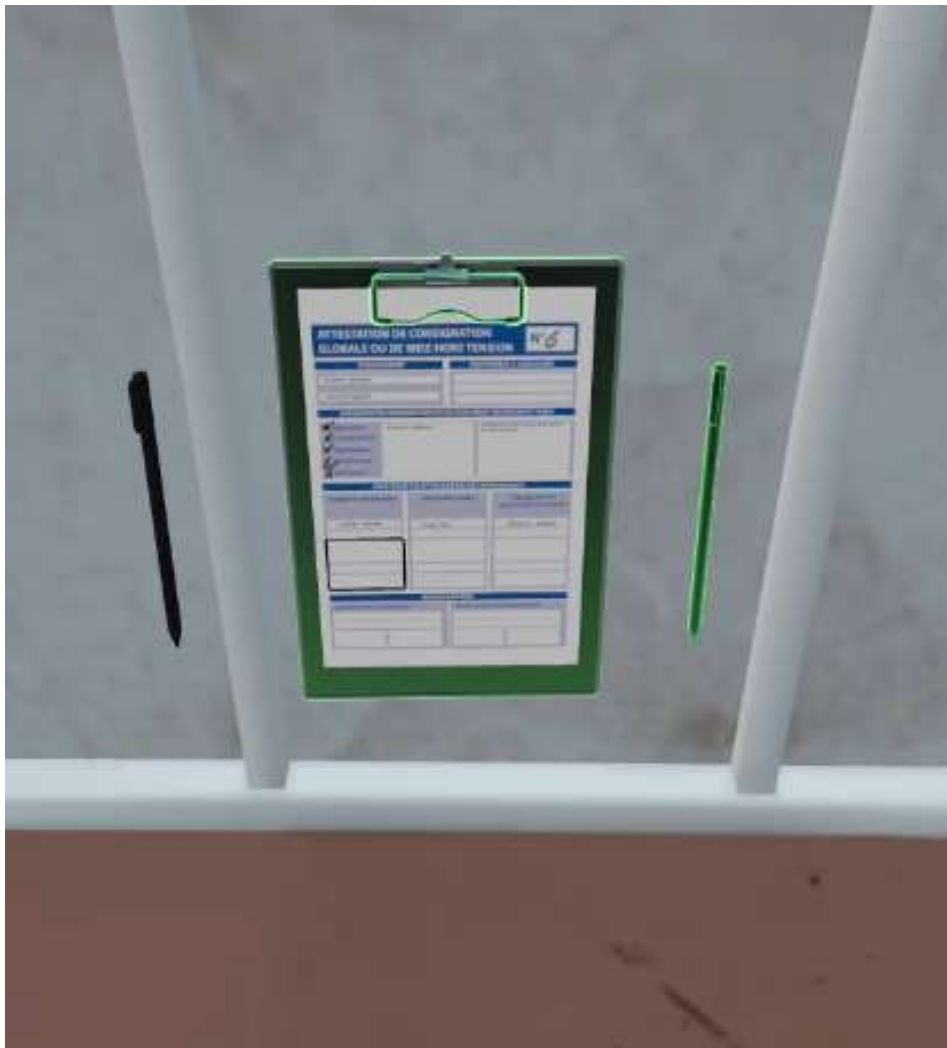
## Step 6.2: Safety Lockout

The learner puts labels to identify the lockout on each separate keyhole of the common water line to secure the keyholes (marking).



## Step 7: Sign the lockout book (mandatory)

Learner grabs the logbook and pen and signs the logbook. The simulation ends.



## Step 8: Arrival of the intervention officer (mandatory)

The operator arrives on site to repair a leak in the pipe. During his operation, he suffers an accident if the procedure has not been followed.

If the learner goes into the trench not using the ladder, a message will be displayed in the debriefing screen.

If at least one of the three valves associated with the common water line is not locked out when the lockout is validated, the leak will worsen while the operator is repairing it.



## Debriefing and correction

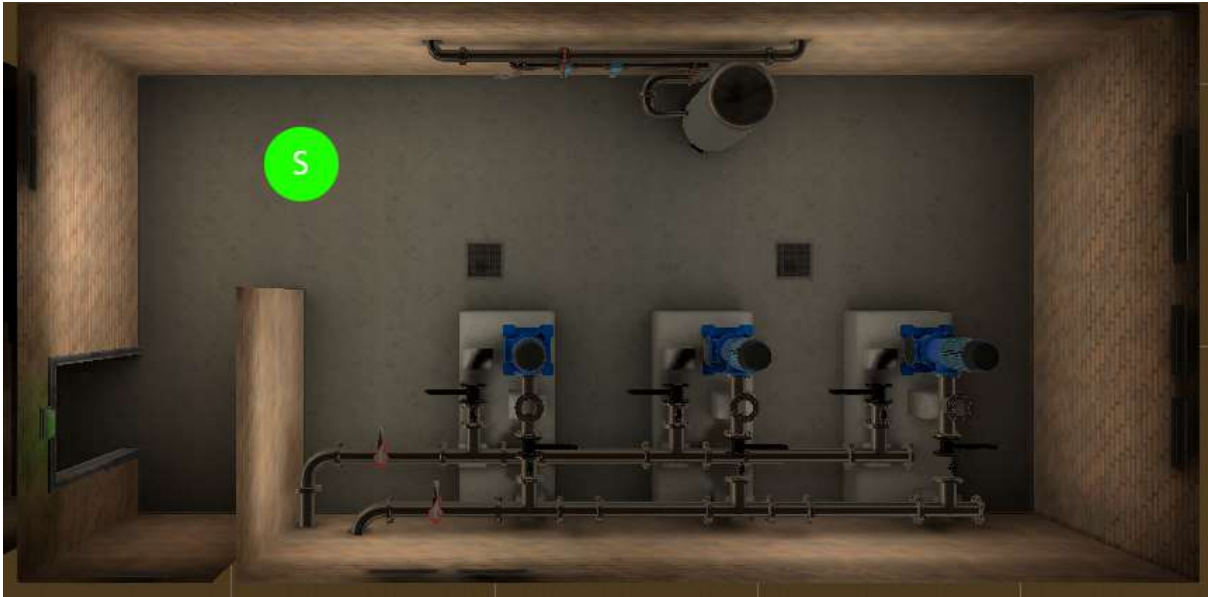
When the simulation is over, either the learner has succeeded or not, the exercise stops and the learner is placed in front of a UI screen showing him the steps he/she completed or not, and if the simulation was successful.

He/she can make two choices : get back to the main menu, or restart the exercise.




## Site Plan - Factory Scenario

**S** → Start



## Site Plan - Network Scenario

 → Start



## Support

In order to get help for the resolution or troubleshooting of an exercise, please go on the online chat of [immersivefactory.com](https://immersivefactory.com).