3 SIF-402 – Container filling station - solid

3.1 Station function

At this station, the containers are filled with solid raw material **(pellets or granules)**.

The raw material can be of three different colours (red, blue and yellow) and can be supplied independently or mixed, in different doses.

Once the containers are filled, the amount of material introduced into the container is checked.

3.2 Station operation

This mode consists of manually **feeding the containers (round or square) with solid pellets (blue, yellow and red)** in different quantities.

Below is the **main screen** of the HMI panel:
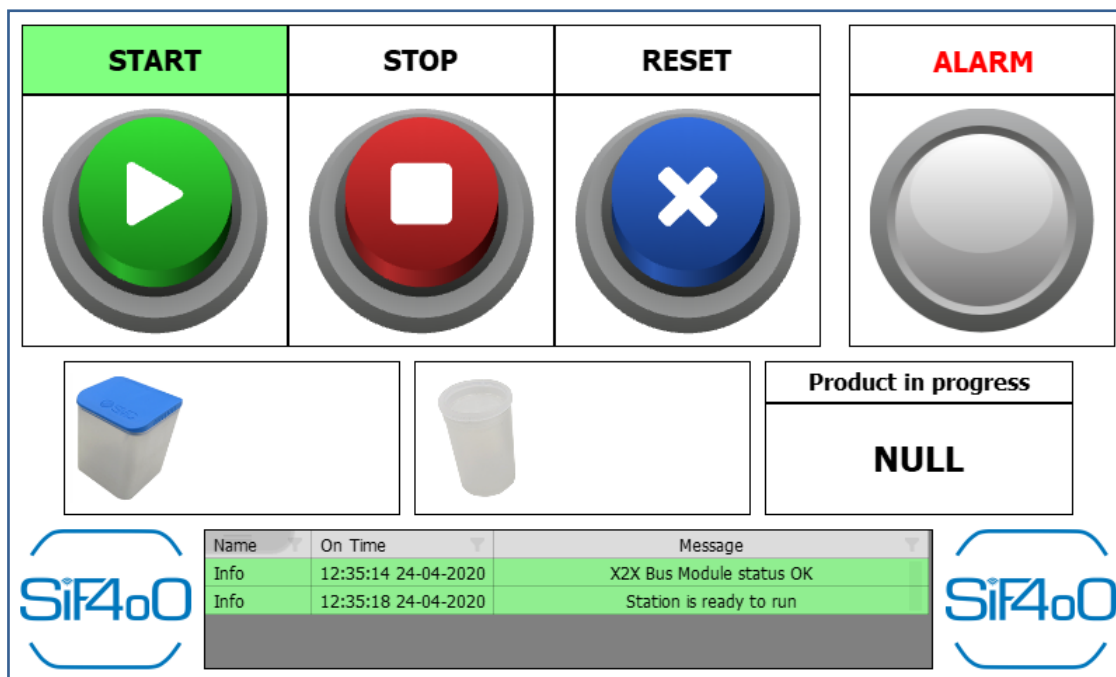
The SIF-402 station has two different operating modes, **manual** mode and **integrated** mode. To operate in integrated mode, you will need to run the **SIFMES-400** operation software.

For further information on how to use integrated mode see Operation Manual - Integrated Mode

To operate in manual mode, follow the recommended procedure below.

3.2.1 Configuring the station in manual mode

Configure the station to work in manual mode from the main screen of the HMI panel.

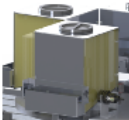> For further information on how to set up the station in manual mode, refer to Manual mode & integrated mode
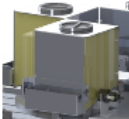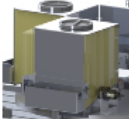
3.2.2 Checking the availability of raw materials

- **Pellets**

Go to the configuration screen "*Station Configuration*" and verify that the station correctly detects the type of hopper inserted in each position, as well as the presence of pellets.

Below is an illustration of the different messages that can be displayed:

1. "*Hopper presence*": the hopper is detected correctly.

2. "*Pellet presence*": there are pellets present.

3. "*Min level of pellet*": no pellets present.

4. "*No hopper unit*": there is no hopper detected.

If the configuration screen shows messages 3 or 4, position the hopper correctly and fill with the appropriate pellets.

To manually set the hopper to the desired colour, follow the steps below:

1. Click the button "*Configure"* for the hopper you want to set up.

2. From the pop-up screen, choose the **colour of pellets** contained in the hopper by clicking one of the three buttons.
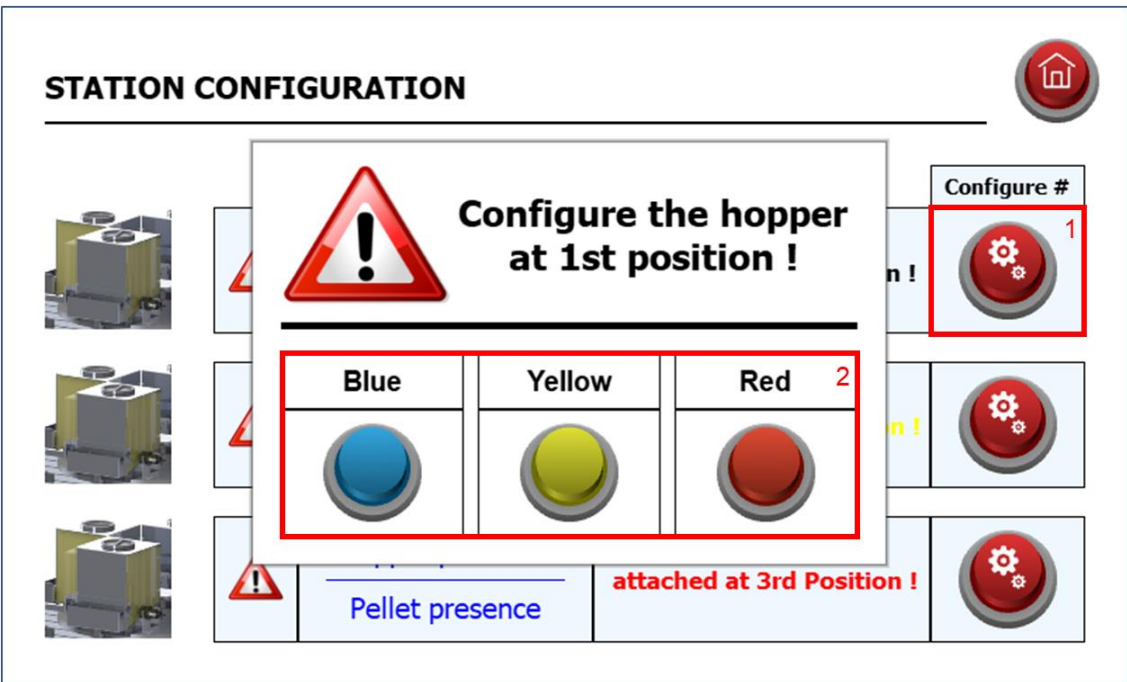
Planned stops due to changing raw materials or tools affect the OEE. To record them, follow the instructions in Planned stops

3.2.3 Select product

To launch a product, go to the "*Launch a product*" production screen on the HMI panel and follow these steps:

1. **Select container**: select the type of container to be used.

2. **Select colour(s)**: select the required colour(s).
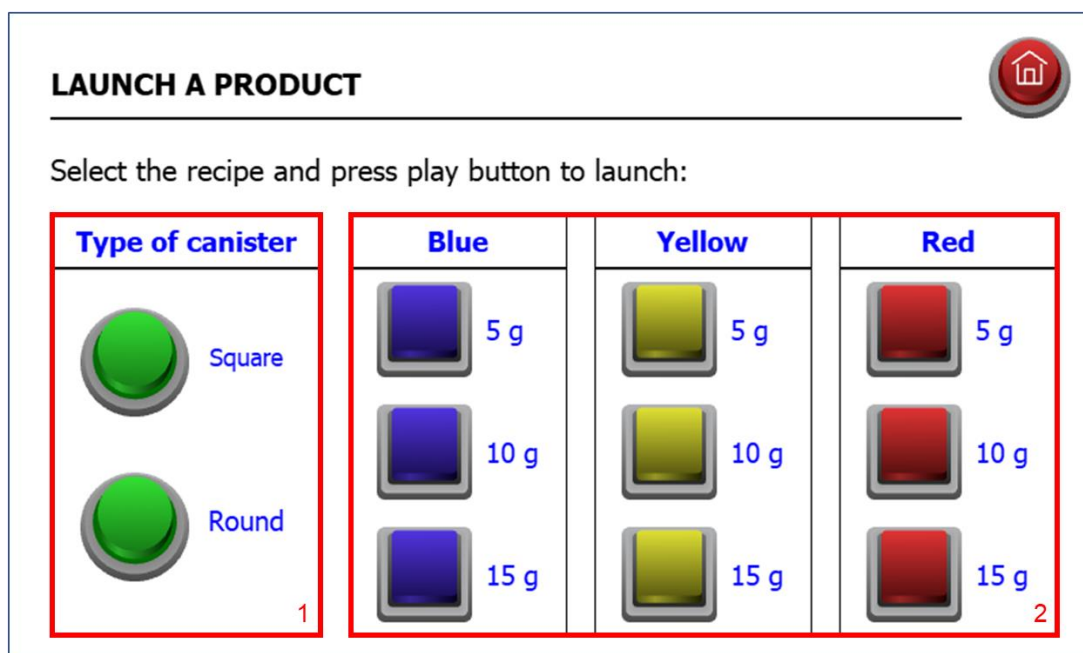
3. **Check recipe**: go to the main screen of the HMI panel and check that the recipe is correct.

By way of illustration, the table below shows all the possible products that can be produced at the SIF-402 station:

Product	Recipe	Description
1	SSB100	15 g blue in square container
2	SSB200	30 g blue in square container
3	SSB300	45 g blue in square container
4	SSY010	15 g yellow in square container
5	SSY020	30 g yellow in square container

6	SSY030	45 g yellow in square container
7	SSR001	15 g red in square container
8	SSR002	30 g red in square container
9	SSR003	45 g red in square container
10	SSM111	15 g blue + 15 g yellow + 15 g red in square container
11	SSM110	15 g blue + 15 g yellow in square container
12	SSM210	30 g blue + 15 g yellow in square container
13	SSM120	15 g blue + 30 g yellow in square container
14	SSM101	15 g blue + 15 g red in square container
15	SSM201	30 g blue + 15 g red in square container
16	SSM102	15 g blue + 30 g red in square container
17	SSM011	15 g yellow + 15 g red in square container
18	SSM021	30 g yellow + 15 g red in square container
19	SSM012	15 g yellow + 30 g red in square container
20	ESM000	Square container is empty
21	SRB100	5 g blue in round container
22	SRB200	10 g blue in round container
23	SRB300	15 g blue in round container
24	SRY010	5 g yellow in round container
25	SRY020	10 g yellow in round container
26	SRY030	15 g yellow in round container
27	SRR001	5 g red in round container
28	SRR002	10 g red in round container
29	SRR003	15 g red in round container
30	SRM111	5 g blue + 5 g yellow + 5 g red in round container
31	SRM110	5 g blue + 5 g yellow in round container
32	SRM210	10 g blue + 5 g yellow in round container
33	SRM120	5 g blue + 10 g yellow in round container
34	SRM101	5 g blue + 5 g red in round container
35	SRM201	10 g blue + 5 g red in round container
36	SRM102	5 g blue + 10 g red in round container
37	SRM011	5 g yellow + 5 g red in round container
38	SRM021	10 g yellow + 5 g red in round container

39	SRM012	5 g yellow + 10 g red in round container
40	ERM000	Round container is empty

3.2.4 Launching production

Go to the **main screen** of the HMI panel and verify that the following message appears in green in the message area: "***Station is ready to run"***.

Name	On Time	Message
Info	11:06:27 24-04-2020	X2X Bus Module status OK
Info	11:08:01 24-04-2020	Station is ready to run

Place a pallet with the selected container in position 1 on the conveyor belt as shown in the image below.
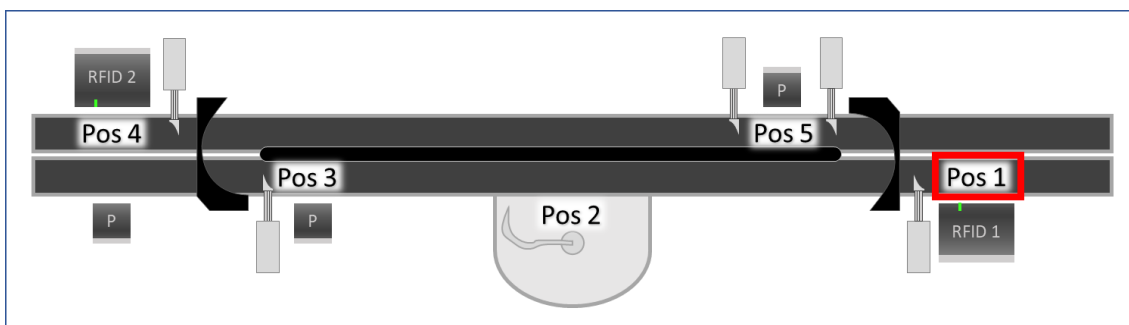
Press the *START* button on the HMI panel, the system will start working.
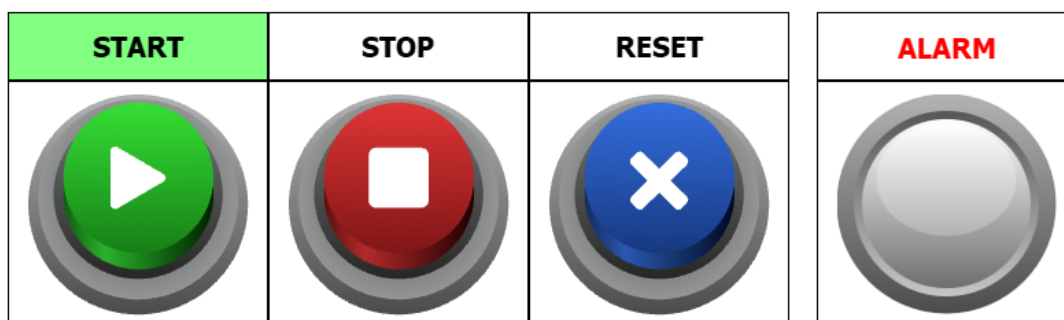
> For further information on controlling production from the control button unit, see Starting and stopping production

3.2.5 Alarms during the cycle

If there is a problem during production, the station will display an alarm in the message table on the main display of the HMI panel. The alarms shown can be of two types:

Alarms that **allow production to continue** (**yellow** message):

1. ***"Missing hopper 1..3"***: the hopper indicated is not detected at the station. To continue, put the hopper in place and verify that it's been detected on the "*Station Configuration*" screen of the HMI panel. To finish, press the RESET button on the main screen of the HMI panel.

Name	On Time	Message
Info	12:25:14 24-04-2020	X2X Bus Module status OK
Warning	12:26:43 24-04-2020	Missing hopper 1

Name	On Time	Message
Info	12:25:14 24-04-2020	X2X Bus Module status OK
Warning	12:27:01 24-04-2020	Missing hopper 2
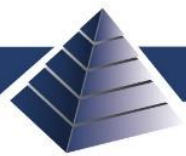
Name	On Time	Message
Info	12:25:14 24-04-2020	X2X Bus Module status OK
Warning	12:27:13 24-04-2020	Missing hopper 3

2. ***"Please refill blue / yellow / red pellets":*** the product cannot be produced because there are not enough pellets of the colour indicated. To continue, fill the corresponding hopper with pellets. To finish, press the RESET button on the main screen of the HMI panel.

Name	On Time	Message
Info	12:25:14 24-04-2020	X2X Bus Module status OK
Warning	12:25:36 24-04-2020	Please refill blue pellets

Name	On Time	Message
Info	12:25:14 24-04-2020	X2X Bus Module status OK
Warning	12:26:13 24-04-2020	Please refill yellow pellets

Name	On Time	Message
Info	12:25:14 24-04-2020	X2X Bus Module status OK
Warning	12:26:30 24-04-2020	Please refill red pellets

3. **"Install hopper with blue / yellow / red pellets"**: no hopper is installed with the colour required for production.

Name	On Time	Message
Info	12:25:14 24-04-2020	X2X Bus Module status OK
Warning	12:27:24 24-04-2020	Install hopper with blue pellets

Name	On Time	Message
Info	12:25:14 24-04-2020	X2X Bus Module status OK
Warning	12:28:00 24-04-2020	Install hopper with yellow pellets

Name	On Time	Message
Info	12:25:14 24-04-2020	X2X Bus Module status OK
Warning	12:28:13 24-04-2020	Install hopper with red pellets

- A pop-up window will appear on the main screen indicating the colour(s) of pellets required for production.

- To continue, insert a hopper with the required colour of pellets and go to the configuration screen "***Station Configuration***" of the HMI panel to configure the station. To finish, press the RESET button on the main screen of the HMI panel.

Alarms that **do not allow production to continue** (**red** message):

1. **Electrical axis failure**: electrical axis failure at the station. The steps to follow are shown in the message itself. If the failure is critical, you will need to turn the station off and on again.

Name	On Time	Message
Info	11:10:47 24-04-2020	X2X Bus Module status OK
Error	11:12:17 24-04-2020	JXC918 Table error, please RESET the station

Name	On Time	Message
Info	11:10:47 24-04-2020	X2X Bus Module status OK
Error	11:12:38 24-04-2020	JXC918 Table error, please POWER OFF the station

Name	On Time	Message
Info	11:10:47 24-04-2020	X2X Bus Module status OK
Error	11:11:30 24-04-2020	JXC918 Rotary error, please RESET the station

Name	On Time	Message
Info	11:10:47 24-04-2020	X2X Bus Module status OK
Error	11:11:57 24-04-2020	JXC918 Rotary error, please POWER OFF the station

Name	On Time	Message
Info	12:33:07 24-04-2020	X2X Bus Module status OK
Error	12:33:15 24-04-2020	JXC918 Linear error, please RESET the station

Name	On Time	Message
Info	12:33:07 24-04-2020	X2X Bus Module status OK
Error	12:33:45 24-04-2020	JXC918 Linear error, please POWER OFF the station

2. **Emergency stops**: these are non-production alarms that prevent the system from operating correctly. For example, pressing the Emergency Stop button.

Name	On Time	Message
Error	11:10:14 24-04-2020	Emergency status

> ℹ️ To recover the station from an emergency stop, refer to <u>Reset the station</u>

3.3 Power consumption

The SIF-400 system is capable of independently measuring the energy consumption of the stations in operation. The **power consumption** is measured individually for each station and the **air consumption** is measured for the entire system.

To display the power consumption data of the SIF-402 station, access the following screen:

SIF-402 ELECTRICAL DATA

Current: 0,37 A

Voltage: 232,26 V

Active Power: 56 W

Power Factor: 0,64

Energy Consumption

Total: 82452 Wh

Partial: 0 Wh

Press to start a new partial energy measurement:

By pressing the red **PLAY** button, you can make a partial measurement of the energy or air consumption in a given interval, allowing the consumption to be measured from that moment.

> ⚠️ The air consumption of the SIF-400 system will only be shown on the HMI display of the station containing the EDR cabinet

3.4 Screen messages

The system displays different types of message at the bottom of the main display of the HMI panel depending on the status of the station.

The following shows the different types of messages for the SIF-402 station in both manual and integrated mode:

Information Messages	
Station is ready to run	Station is ready to start cycle
X2X Bus Module status OK	Actuators and sensors have power

Warning Messages	
Please reset station	Station is waiting to be reset
Station is resetting Step 0	Apply initial conditions
Station is resetting Step 1	Power signal to electrical actuators
Station is resetting Step 2	Send electrical actuators to the start position
Station is resetting Step 3	Electrical actuators in start position
Station is resetting Step 4	Check initial conditions
Missing hopper 1..3	No hopper detected 1..3
Please refill blue pellets	Blue pellet hopper is empty
Please refill yellow pellets	Yellow pellet hopper is empty
Please refill red pellets	Red pellet hopper is empty
Install hopper with blue pellets	No hopper installed with blue pellets
Install hopper with yellow pellets	No hopper installed with yellow pellets
Install hopper with red pellets	No hopper installed with red pellets
Please check product quality	Check product quality
Maintenance Stop, Repairing Component#1..5	Planned maintenance stop for repair of component #1..5
Finish the planned stop and then reset the station!	Station is waiting to be reset
Planned Stop, performing preventive maintenance	Planned stop for maintenance
Planned Stop, performing a tool change	Planned stop for tool change
Planned Stop, changing raw material	Planned stop for new raw material
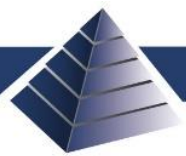
Error Messages	
Emergency status	Emergency Stop button pressed by user
Remote I/O not in function	No connection to the remote I/O unit
Please reset station	No initial conditions
JXC918 Table error, please RESET the station	Electrical axis error, reset station
JXC918 Table error, please POWER OFF the station	Electrical axis error, restart station
JXC918 Rotary error, please RESET the station	Electrical axis error, reset station
JXC918 Rotary error, please POWER OFF the station	Electrical axis error, restart station
JXC918 Linear error, please RESET the station	Electrical axis error, reset station
JXC918 Linear error, please POWER OFF the station	Electrical axis error, restart station
Component#1..5 is broken, please repair it	Unplanned stop due to component failure 1..5