

**Sujet d'épreuves de la 48<sup>e</sup> Compétition Nationale  
des Métiers**

# **MÉTIER N°19**

# **CONTROLE INDUSTRIEL**

## **MODULE 2 : Projet IHM**

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# EXPLICATION DU MODULE

DUREE TOTALE DE L'ÉPREUVE	4 heures
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DIFFUSION DU SUJET	Découvert le jour de la compétition
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## VARIABLES IHM

POSITION	VARIABLE	ACTION	COMMENT
Color of the top banner : Dark blue : 35, 74, 134			
200	/	Event	Change screen View : AUTO
	hmiAuto	Event	SetBitInTag
201	/	Event	Change screen View : MANU
	hmiManu	Event	SetBitInTag

POSITION	VARIABLE	ACTION	COMMENT
Color of the top banner : Yellow : 255, 255, 0			
1	/	Event	Change screen View : HOME
	hmiManu	Event	ResetBitInTag
2	hmiWaterGo	Event	Set bit while key is pressed
3	P2	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
4	hmiWaterWeight	Input / Output Field	Format : Kg
5	hmiSodaGo	Event	Set bit while key is pressed
6	P4	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
7	hmiSodaWeight	Input / Output Field	Format : Kg
8	hmiOilGo	Event	InGreen bit in tag
9	P3	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
10	hmiSodaWeight	Input / Output Field	Format : Kg
11	hmiSaltGo	Event	Set bit while key is pressed
12	P5	Background color	0 : 242; 244; 255 - Grey 1 : 255, 204, 0 - Orange
13	hmiSaltWeight	Input / Output Field	Format : Kg

POSITION	VARIABLE	ACTION	COMMENT
14	hmiHeaterGo	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
		Event	InGreen bit in tag
15	hmiHeaterInOperation	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
16	hmiHeaterTemp	Input / Output Field	Format : °C
17	hmiFlowGo	Event	Set bit while key is pressed
18	P10	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
19	hmiFilledBottlesManu	Output Field	Format : btl(s)
20	hmiAgitatorSpeed	Input / Output Field	Format : %
21	hmiAgitatorInOperation	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
22	hmiAgitatorForGo	Event	Set bit while key is pressed
23	hmiAgitatorBackGo	Event	Set bit while key is pressed
24	hmiAgitatorStop	Event	Event
25	conveyor	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
26	hmiConveyorGo	Event	Set bit while key is pressed
27	hmiConveyorStop	Event	Set bit while key is pressed
28	P2	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
29	P3	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
30	P4	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
31	P5	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
32	hmiHeaterInOperation	Background color	0 : 200, 205, 215 - Grey 1 : 255, 0, 0 - Red
33	hmiAgitatorInOperation	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
34	P9	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
35	P10	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
36	Weight	Output Field	Format : Kg
37	Temperature	Output Field	Format : °C
38	hmiConveyorFull	Visibility	0 : NO 1 : YES
39	conveyor	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
40	B13	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
41	B12	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
42	B11	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
43	24VSAFETY	Visibility	0 : YES 1 : NO

POSITION	VARIABLE	ACTION	COMMENT
Color of the top banner : Sky blue : 0, 204, 255			
100	/	Button Event	Change screen View : HOME
	hmiAuto	Button Event	ResetBitInTag
101	hmiWaterFinished	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
102	P2	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
103	hmiOilFinished	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
104	P3	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
105	hmiSodaFinished	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
106	P4	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
107	hmiSaltFinished	Background color	0 : 200, 205, 215 - Grey 1 : 0, 255, 0 - Green
108	P5	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
109	hmiTankWeight	Output Field	Format : Kg
110	hmiTankInOperation	Background color	0 : 200, 205, 215 - Grey 1 : 255, 204, 0 - Orange
111	S9	Background color	0 : 200, 205, 215 - Grey 1 : 0,255,0 - Green
112	hmiHeaterTempRequest	Output Field	Format : °C
113	Temperature	Output Field	Format : °C
114	hmiFilledBottles	Output Field	Format : btl(s)
115	hmiBottlesQuantity	Output Field	Format : btl(s)
116	hmiFillingGood	Button Event	Set bit while key is pressed
117	hmiWaterSetpoint	Input / Output Field	Format : Kg
118	hmiOilSetpoint	Input / Output Field	Format : Kg
119	hmiSodaSetpoint	Input / Output Field	Format : Kg
120	hmiSaltSetpoint	Input / Output Field	Format : Kg
121	hmiHeaterSetpoint	Input / Output Field	Format : °C
122	hmiBottlesQuantity	Input / Output Field	Format : btl(s)
123	hmiRecipeOk	Background color	0 : 200, 205, 215 - Grey 1 : 0,255,0 - Green
124	step	Output Field	Format : nothing
125	hmiHeaterTempRequest	Trend	Line color : 255,0,0
	Hysteresis_bas	Trend	Line color : 0,204,255
	Hysteresis_haut	Trend	Line color : 0,204,255
	Temperature	Trend	Line color : 0,0,0
	Scale value - maximum : 120 Scale value - maximum : 0 Scaling automatic : NO Automatically adapt value range : NO Output format : °C Trend mode : Stepped		

## VARIABLES IHM

IDENTIFICATION	TYPE	PROVENANCE	DESIGNATION
S1_1	BOOL	INPUT PLC	Arrêt d'urgence (bouton coup de poing)
S1_3	BOOL		DCY
S2	BOOL		Vanne d'eau
S3	BOOL		Vanne d'huile
S4	BOOL		Vanne de soude
S5	BOOL		Vanne de sel
S9	BOOL		Cuve : niveau haut
S10	BOOL		Débitmètre
24VSAFETY	BOOL		Relais de sécurité
B11	BOOL		Capteur : pose de nouveaux flacons
B12	BOOL		Capteur : station de remplissage
B13	BOOL		Capteur : convoyeur plein
P1_3	BOOL	OUTPUT PLC	Mode automatique
P2	BOOL		Vanne d'eau
P3	BOOL		Vanne d'huile
P4	BOOL		Vanne de soude
P5	BOOL		Vanne de sel
P9	BOOL		Vanne de vidange de la cuve
P10	BOOL		Vanne de dosage
P15.1	BOOL		Voyant vert
P15.2	BOOL		Voyant rouge
conveyor	BOOL		Moteur du convoyeur
R71_R72	INT	ANALOG OUTPUT PLC	Alimentation des potentiomètres (0-10V)
T6	INT		Température de la cuve (0-10V)
R7_1	INT	ANALOG INPUT PLC	Potentiomètre (température)
R7_2	INT		Potentiomètre (poids)
ETAT_VAR	WORD	PROFINET	Etat du variateur
VIT_VAR	INT		Vitesse du variateur

IDENTIFICATION	TYPE
Temperature	INT
Weight	INT
HysteresisBas	INT
HysteresisHaut	INT
step	INT
stepConveyor	INT
stepSauv	INT
varSpeed	INT
InterlockManu	BOOL
varJogFor	BOOL
varJogBack	BOOL
lockG7	BOOL

IDENTIFICATION	TYPE
hmiHeaterTempRequest	INT
hmiHeaterSetpoint	INT
hmiHeaterInOperation	INT
hmiHeaterTemp	INT
hmiFilledBottlesManu	INT
hmiFilledBottles	INT
hmiBottlesQuantity	INT
hmiWaterSetpoint	INT
hmiOilSetpoint	INT
hmiSodaSetpoint	INT
hmiSaltSetpoint	INT
hmiTankWeight	INT
hmiWaterWeight	INT
hmiOilWeight	INT
hmiSodaWeight	INT
hmiSaltWeight	INT
hmiAgitatorSpeed	INT
hmiManu	BOOL
hmiAuto	BOOL
hmiConveyorFull	BOOL
hmiAgitatorInOperation	BOOL
hmiWaterGo	BOOL
hmiOilGo	BOOL
hmiSodaGo	BOOL
hmiSaltGo	BOOL
hmiAgitatorForGo	BOOL
hmiAgitatorBackGo	BOOL
hmiAgitatorStop	BOOL
hmiConveyorGo	BOOL
hmiConveyorStop	BOOL
hmiFlowGo	BOOL
hmiHeaterGo	BOOL
hmiRecipeOk	BOOL
hmiWaterFinished	BOOL
hmiOilFinished	BOOL
hmiSodaFinished	BOOL
hmiSaltFinished	BOOL
hmiFillingGood	BOOL

# SOAP MACHINE - HOME PAGE



Select operating mode

Automatic 200

Manual 201

## SOAP MACHINE - MANUAL MODE



WATER		OIL		HEATER		AGITATOR				CONVEYOR					
GO <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">02</span>		GO <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">08</span>		GO <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">14</span>		0 % <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">20</span>		<span style="background-color: #27ae60; color: white; padding: 5px; border-radius: 5px;">ON</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">22</span>		<span style="background-color: #27ae60; color: white; padding: 5px; border-radius: 5px;">ON</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">23</span>		IN OPERATION <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">25</span>		<span style="background-color: #27ae60; color: white; padding: 5px; border-radius: 5px;">ON</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">26</span>	
<span style="background-color: #f1c40f; color: white; padding: 5px; border-radius: 5px;">IN OPERATION</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">03</span>		<span style="background-color: #f1c40f; color: white; padding: 5px; border-radius: 5px;">IN OPERATION</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">09</span>		<span style="background-color: #f1c40f; color: white; padding: 5px; border-radius: 5px;">IN OPERATION</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">15</span>		<span style="background-color: #f1c40f; color: white; padding: 5px; border-radius: 5px;">IN OPERATION</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">21</span>		<span style="background-color: #c0392b; color: white; padding: 5px; border-radius: 5px;">OFF</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">24</span>		<span style="background-color: #c0392b; color: white; padding: 5px; border-radius: 5px;">OFF</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">24</span>		<span style="background-color: #f1c40f; color: white; padding: 5px; border-radius: 5px;">IN OPERATION</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">25</span>		<span style="background-color: #c0392b; color: white; padding: 5px; border-radius: 5px;">OFF</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">27</span>	
0 Kg <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">04</span>		0 Kg <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">10</span>		0 °C <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">16</span>											

SODA		SALT		FLOW	
GO <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">05</span>		GO <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">11</span>		GO <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">17</span>	
<span style="background-color: #f1c40f; color: white; padding: 5px; border-radius: 5px;">IN OPERATION</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">06</span>		<span style="background-color: #f1c40f; color: white; padding: 5px; border-radius: 5px;">IN OPERATION</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">12</span>		<span style="background-color: #f1c40f; color: white; padding: 5px; border-radius: 5px;">IN OPERATION</span> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">18</span>	
0 Kg <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">07</span>		0 Kg <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">13</span>		0 b/s (s) <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">19</span>	

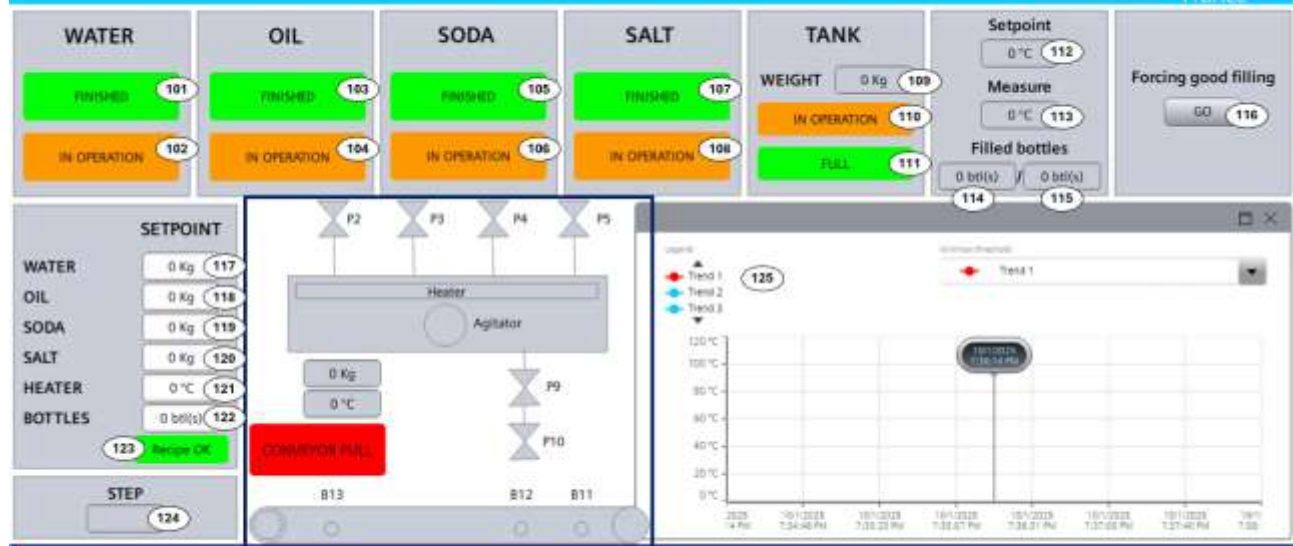
EMERGENCY STOP

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# SOAP MACHINE - AUTOMATIC MODE

Home 100

worldskills  
France



EMERGENCY STOP