Base Load Power Hub (BLPH)

HMI Screens Print Out

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

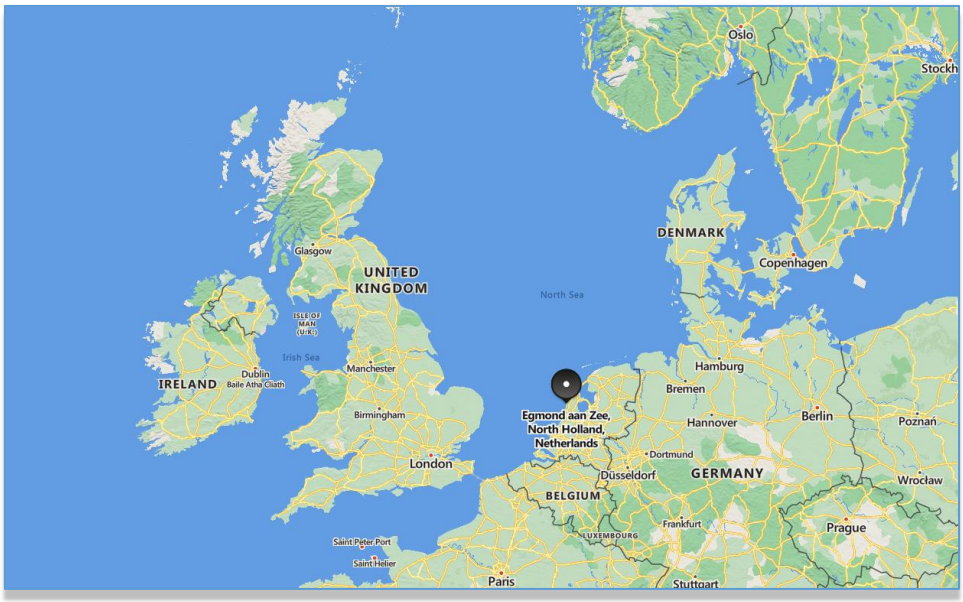


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map

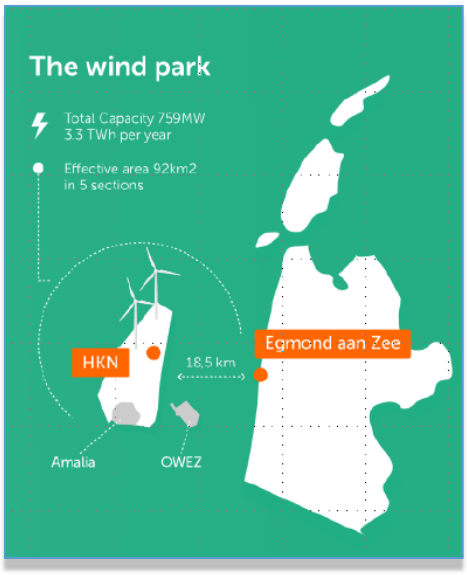


Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

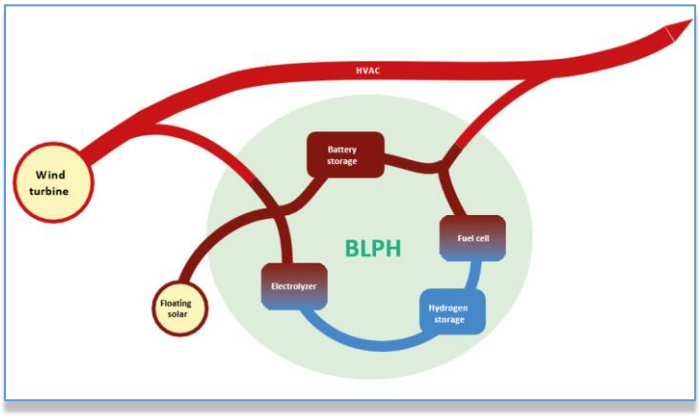


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

This document describes the List of Human Machine Interface (HMI) Screens for the Yokogawa PCS, SIS and FGS.

The aim of this document is to ensure that the Human Machine Interface (HMI) is equipped with the facilities and functionalities needed by the operators to perform supervisory and control tasks in an efficient and effective way. The functionality of HMI is limited to graphics.

2.1 REFERENCES

Doc. No.	Description
1724000594-IN-SP-00018	PCS and SAFETY SISTEMS Software Functional Design Specification (FDS-SW)
1724000594-IN-DD-00015	System Architecture
1724000594-IN-SP-00019	EMCS Software Functional Design Specification (FDS-SW)
1724000594-IN-LIS-00004	PCS and Safety System IO List (HW and SW)
1724000594-IN-LIS-00005	EMCS IO List (HW and SW)
K559-2254-IC-SPE-001	System specification for Main Automation Contractor
K559-2254-EL-LST-001	BLPH CONTROL ALARM AND MONITORING TABLE
CWHKN-INN-INP-SPC-00005	SCADA Functional Design Specification

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

Abbreviations	Definition
BLPH	Base Load Power Hub
COMPANY or Client (CPY)	Crosswind
CONTRACTOR (CTR)	ROSETTI MARINO S.p.A.
C&E	Cause and Effect
EMCS	Electrical Monitoring and Control System
FGS	Fire and Gas System
HMI	Human Machine Interface

OWS	Operator workstation
PROJECT	HOLLANDSE KUST NOORD WIND PARK Project
PCS	Process Control System
P&ID	Piping and Instrument Diagram
SCADA	Supervisory Control and Data Access
SIS	Safety Instrumented System

Table 2 - Definitions and Abbreviations

3 HMI SCREENS

Process operators monitor and control their respective units through the Yokogawa Human Machine Interface (HMI). SCADA shall is configured so that the operator can work simultaneously in the following two modes:

Proactive mode

This mode requires the proactive role of the operator in controlling the plant. Operator monitors the status of the plant by paging through displays, watching trends and deviations, and acting when required or appropriate. Awareness is improved by a well-designed hierarchical arrangement and a logical and understandable grouping of the HMI displays.

Reactive mode

This reactive mode is triggered by events such as alarms. The operator's attention is demanded and directed by the system to displays where he can see what has happened and can take appropriate corrective action. Visualization of alarms and access to corrective controls depend on the urgency of action required.

3.1 GENERAL GUIDELINES

HMI Screens provides a wide range of user-defined views, for operation and monitoring, as well as for system maintenance. Operation and monitoring functions are functions such as receiving and acknowledging of alarms, set point control, output manipulation, process data monitoring, trending, reporting, controller mode changing, etc.

The layout of the graphics conforms the following guidelines:

Layout Standard:

- All Graphic displays contain, as a minimum, Graphic Title, Navigation arrows and Navigation bar.
- Graphic title is in the top middle of the graphic. It includes operating unit name, as well as specific graphic function description.
- The bar has max. 21 configurable navigation targets that facilitates operator to navigate to Unit menu, FGS display, SIS display and process displays.

Process and Instrument Lines:

- Are laid out in a way to minimize distracting clutter and to provide a simplified process flow view.
- Process flow is from left to right in a process graphic page.
- Layout minimizes piping (line) crossovers. The vertical line is broken in case of cross over.
- Lines are separated (both vertically and horizontally) by enough gap based on the line thickness.
- Layout minimizes the number of turns in a line.
- Directional arrows are placed only where process line enters equipment, at pipe corners or where lines leave the page.
- Process lines are of a thickness such that they are easily distinguishable from signal lines.
- Do not join lines in an X-pattern (four lines meeting at a point). Exception is where a single line splits into an odd number of branches.
- All control signal lines connected to another graphic shall have a dynamic “connector” target.
- Single color and pattern are used for all process lines.
- When process lines are continued in a separate graphic, both source and destination graphics will have dynamic connector arrows. Pipeline / process lines leaving a graphic will enter at the same height on the destination graphic.

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Graphic Parts & Symbols:

- All shapes are two-dimensional.
- Balance equipment on screen distribution to prevent density clusters.
- Dynamic shapes are not re-sized.
- As much as possible place control and on/off valves on horizontal lines only.
- Place valves symmetrically (aligned with each other).
- Do not show details to match operational requirement (e.g., do not show trays in a distillation tower).

Process Values & Tag Names:

- All analog values associated with field instrumentation are displayed next to the measuring point. The number of process digits to be displayed is based on the engineering range. The Instrument line connection to the process line is situated between the engineering unit and measuring point.
- Measurements from externally mounted instruments, inferred differentials, calculations, etc., are located adjacent to the process line or vessel and connected to the process line or vessel.
- Equipment names are placed inside the equipment symbol.
- Where there is logic associated with the starting and stopping of pumps by level or pressure measurement, the motor symbol is joined to the display value via an instrument line.
- Only acronyms and tag names are displayed in all capital letters. Engineering units are displayed as per the standard. Other texts are displayed using leading capitals (title case). When there is more than one word, the leading letter of each word is capitalized. This applies to tag comments, menu option, Graphic title and equipment labels.

General:

- In general, only process lines (or areas) that show PCS, SIS, and FGS instrumentation are shown on displays, although other lines may be shown to specify the position of field instruments.
- Graphic representation of dynamic shapes is consistent with that of static shapes.
- Local pneumatic loops, relief valves, steam traps, hand valves without position indication, etc., do not appear on displays.
- Graphics are to be distinguishable and readable from a distance of 1 meter from the screen
- Dynamic color modifier based on status and alarm are available in Appendix -5 HMI Graphic Objects
- EMCS Current Mode indication is shown in Hydrogen storage vessel graphics and Electrical graphics, which shall be navigating to EMCS overview template.
- Alarm Severities

There are 4 severities defined for Alarms. Two severity types are defined for “Logging” events and the return to “Normal” function. The severities are linked to CI Server priorities. The priority levels in CI Server are used for filtering and assigning alarm colors. The internal CI Server priorities and associated colors are provided in the table below.

ALARM ICON	PRIORITY LEVEL	SEVERITY LEVEL	INTEPRETATION
	1	Critical	Critical Alarm
	2	High	High priority Alarm
	3	Medium	Medium priority Alarm
	4	Low	Low priority Alarm
	15		Alarm to Normal state

Table 3 – Alarm Severity colors

3.2 LIST OF HMI SCREENS

Sl. No	P&ID	HMI Screen Name	Type of Display	Windows Hierarchy Level
1	K559-2254-PR-BLD-001	BLPH_OVERVIEW	PROCESS	Level-1
2	123A90-DDL-IN-RE-40095	BLPH_CCS_OPERATIONS	PROCESS	Level-2
3	-	M7_ MAINTENANCE _CSS_1	POPUP	Level-3
4	-	M7_ MAINTENANCE _CSS_2	POPUP	Level-3
5	-	M7_SHUTDOWN_CSS_1	POPUP	Level-3
6	-	M7_SHUTDOWN_CSS_2	POPUP	Level-3
7	-	M7_PRO_CHARGE_CSS	POPUP	Level-3
8	-	M7_PRO_STR_CHARG_CSS	POPUP	Level-3
9	-	M7_PRO_DISCHARGE_CSS	POPUP	Level-3
10	123A-90-DD- PR-PID-80013	H2_STG_VESSELS_HEADER_INLET	PROCESS	Level-2
11	123A-90-DD- PR-PID-80014	H2_STG_VESSELS_HEADER_OUTLET	PROCESS	Level-2
12	123A-90-DDL-PR-PID-80015	HYDROGEN_STORAGE_VESSEL_A	PROCESS	Level-2
13	123A-90-DD- PR-PID-80016	HYDROGEN_STORAGE_VESSEL_B	PROCESS	Level-2
14	123A-90-DD- PR-PID-80017	HYDROGEN_STORAGE_VESSEL_C	PROCESS	Level-2
15	123A-90-DD- PR-PID-80018	HYDROGEN_STORAGE_VESSEL_D	PROCESS	Level-2
16	123A-90-DD- PR-PID-80019	HYDROGEN_STORAGE_VESSEL_E	PROCESS	Level-2
17	123A-90-DD- PR-PID-80020	HYDROGEN_STORAGE_VESSEL_F	PROCESS	Level-2
18	123A-90-DD- PR-PID-80029	HYDROGEN_VENT_DRUM	PROCESS	Level-2
19	123A-90-DD- PR-PID-80028	HYDROGEN_VENT_HEADER	PROCESS	Level-2
20	1724000428-PR-PID-00019	INSTRUMENT_AIR_PACKAGE	PROCESS	Level-2
21	123A90-DDL-PR-PID-80027	INSTRUMENT_AIR_PACKAGE_DISTRIBUTION	PROCESS	Level-2

Sl. No	P&ID	HMI Screen Name	Type of Display	Windows Hierarchy Level
22	1724000428-PR-PID-00018	NITROGEN_PACKAGE	PROCESS	Level-2
23	123A-90-DD- PR-PID-80021	SEA_WATER_INTAKE_SYSTEM1	PROCESS	Level-2
24	123A-90-DD- PR-PID-80025	WATER_DISPOSAL_SHEET_1	PROCESS	Level-2
25	123A-90-DD- PR-PID-80026	WATER_DISPOSAL_SHEET_2	PROCESS	Level-2
26	1724000428-PR-PID-00014	WTP_BIOCIDE_DOSAGE	PROCESS	Level-2
27	1724000428-PR-PID-00013	WTP_SEA_WATER_FILTRATION_1	PROCESS	Level-2
28	1724000428-PR-PID-00013	WTP_SEA_WATER_FILTRATION_2	PROCESS	Level-2
29	1724000428-PR-PID-00013	WTP_SEA_WATER_REVERSE_OSMOSIS	PROCESS	Level-2
30	1724000428-PR-PID-00013	WTP_ACID_ANTISCALANT_DOSAGES	PROCESS	Level-2
31	1724000428-PR-PID-00013	WTP_FRESH_WATER_STORAGE	PROCESS	Level-2
32	1724000428-PR-PID-00013	INTRUSION_DETECTION_SYSTEM	PROCESS	Level-2
33	123A-90-DDL-PR-PID-80011	ELECTROLYSER_PACKAGE_A20000	PROCESS	Level-2
34	123A-90-DD- PR-PID-80012	FUEL_CELL_PACKAGE_A80000	PROCESS	Level-2
35	1724000049-HV-PID-00039	BLPH_B100_HV	PROCESS	Level-2
36	1724000049-HV-PID-00040	BLPH_B200_HV	PROCESS	Level-2
37	1724000049-HV-PID-00041	BLPH_B300_HV	PROCESS	Level-2
38	1724000049-HV-PID-00042	BLPH_B400_HV	PROCESS	Level-2
39	123A90-DDL-IN-CE-40000	CE_ASD	PROCESS C&E	Level-2
40	123A90-DDL-IN-CE-40000	CE_ESD1	PROCESS C&E	Level-2
41	123A90-DDL-IN-CE-40000	CE_ESD1D_1	PROCESS C&E	Level-2
42	123A90-DDL-IN-CE-40000	CE_ESD1D_2	PROCESS C&E	Level-2
43	123A90-DDL-IN-CE-40000	CE_ESD1D_3	PROCESS C&E	Level-2
44	123A90-DDL-IN-CE-40000	CE_PSD_1	PROCESS C&E	Level-2

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Sl. No	P&ID	HMI Screen Name	Type of Display	Windows Hierarchy Level
45	123A90-DDL-IN-CE-40000	CE_PSD_2	PROCESS C&E	Level-2
46	123A90-DDL-IN-CE-40000	CE_MOB_PUSH_BUTTON	PROCESS C&E	Level-2
47	123A90-DDL-IN-CE-40002	CE_B100	FGS C&E	Level-2
48	123A90-DDL-IN-CE-40002	CE_B200	FGS C&E	Level-2
49	123A90-DDL-IN-CE-40002	CE_B300	FGS C&E	Level-2
50	123A90-DDL-IN-CE-40002	CE_B400	FGS C&E	Level-2
51	123A90-DDL-IN-CE-40002	CE_BESS	FGS C&E	Level-2
52	123A90-DDL-IN-CE-40002	CE_ELECTROLYSER	FGS C&E	Level-2
53	123A90-DDL-IN-CE-40002	CE_FIRE_OPEN_AREA_1	FGS C&E	Level-2
54	123A90-DDL-IN-CE-40002	CE_FIRE_OPEN_AREA_2	FGS C&E	Level-2
55	123A90-DDL-IN-CE-40002	CE_FUEL_CELL	FGS C&E	Level-2
56	123A90-DDL-IN-CE-40002	CE_H2_OPEN_AREA_1A	FGS C&E	Level-2
57	123A90-DDL-IN-CE-40002	CE_H2_OPEN_AREA_1B	FGS C&E	Level-2
58	123A90-DDL-IN-CE-40002	CE_H2_OPEN_AREA_2	FGS C&E	Level-2
59	123A90-DDL-IN-CE-40002	CE_H2_OPEN_AREA_3	FGS C&E	Level-2
60	123A90-DDL-IN-CE-40002	CE_MFA_PUSH_BUTTONS_1	FGS C&E	Level-2
61	123A90-DDL-IN-CE-40002	CE_MFA_PUSH_BUTTONS_2	FGS C&E	Level-2
62	123A90-DDL-IN-CE-40002	CE_OXY_OPEN_AREA	FGS C&E	Level-2
63	123A90-DDL-IN-CE-40002	CE_SOUNDERS_BEACONS_1	FGS C&E	Level-2
64	123A90-DDL-IN-CE-40002	CE_SOUNDERS_BEACONS_2	FGS C&E	Level-2
65	123A90-DDL-IN-CE-40002	CE_SOUNDERS_BEACONS_3	FGS C&E	Level-2
66	123A90-DDL-IN-CE-40002	CE_SOUNDERS_BEACONS_4	FGS C&E	Level-2
67	123A90-DDL-IN-CE-40002	WATER TREATMENT	FGS C&E	Level-2
68	-	BLPH_MATRIX_ESD	PROCESS C&E	Level-2
69	-	BLPH_MATRIX_FGS	FGS C&E	Level-2
70	123A90-DDL-SAF-DL-30027	FG_DETECTOR_LAYOUT_1	FGS C&E	Level-2
71	123A90-DDL-SAF-DL-30027	FG_DETECTOR_LAYOUT_2	FGS C&E	Level-2
72	123A90-DDL-SAF-DL-30028	FG_DETECTOR_LAYOUT_5	FGS C&E	Level-2
73	123A90-DDL-EL-DG-20158	OVERALL_SINGLE_LINE_DIAGRAM	ELECTRICAL	Level-2
74	123A90-DDL-EL-DG-20014	TRANSFORMER_INCOMER	ELECTRICAL	Level-2
75	123A90-DDL-EL-DG-20014	BESS_FEEDER	ELECTRICAL	Level-2
76	123A90-DDL-EL-DG-20014	ELECTROLYSER_FEEDER	ELECTRICAL	Level-2
77	123A90-DDL-EL-DG-20014	FUEL_CELL_FEEDER	ELECTRICAL	Level-2
78	123A90-DDL-EL-DG-20014	DISTRIBUTION_TRANSFORMER_FEEDER	ELECTRICAL	Level-2
79	123A90-DDL-EL-DG-20014	SOLAR_FARM_FEEDER	ELECTRICAL	Level-2
80	1723002197-EL-DG-00011	SG_200N1_400_1	ELECTRICAL	Level-2
81	1723002197-EL-DG-00011	SG_200N1_400_2	ELECTRICAL	Level-2

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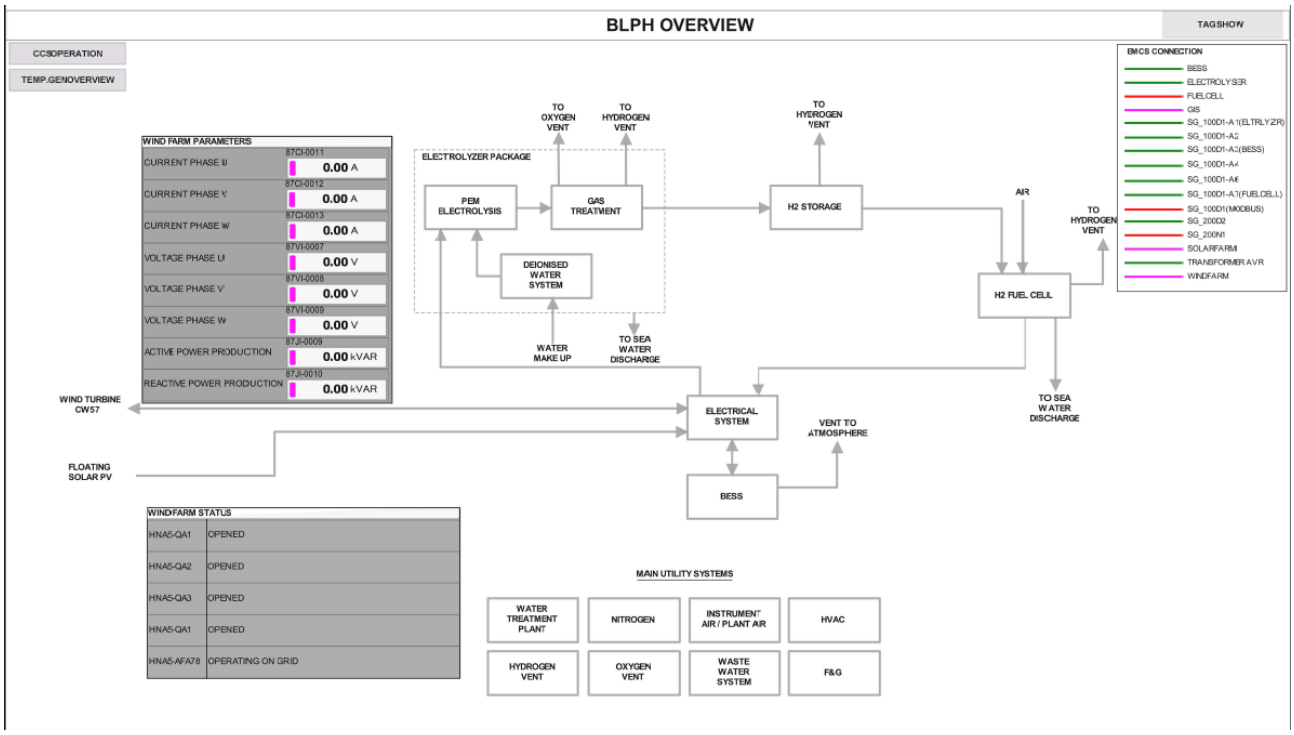
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83	1723002197-EL-DG-00011	SG_200N1_400_4	ELECTRICAL	Level-2
84	-	GIS_7UT85	ELECTRICAL	Level-2
85	-	GIS_7SJ85_DIGITAL	ELECTRICAL	Level-2
86	-	GIS_7SJ85_ANALOG	ELECTRICAL	Level-2
87	K559-2254-CWIWP4202302-C03-001	ELECTROLYSER_STACK	CPI	Level-2
88	-	BLPH_EMCS_MODE	CPI	Level-2
89	-	ELECTROLYSER_PROCESS	CPI	Level-2
90	-	BLPH_ALARMSYSTEM	GENERAL	Level-2
91	-	BLPH_ALARMCURRENT	GENERAL	Level-2
92	-	BLPH_ALARMHISTORY	GENERAL	Level-2
93	-	BLPH_AUDITTRAIL	GENERAL	Level-2

Table 4 – List of Graphics

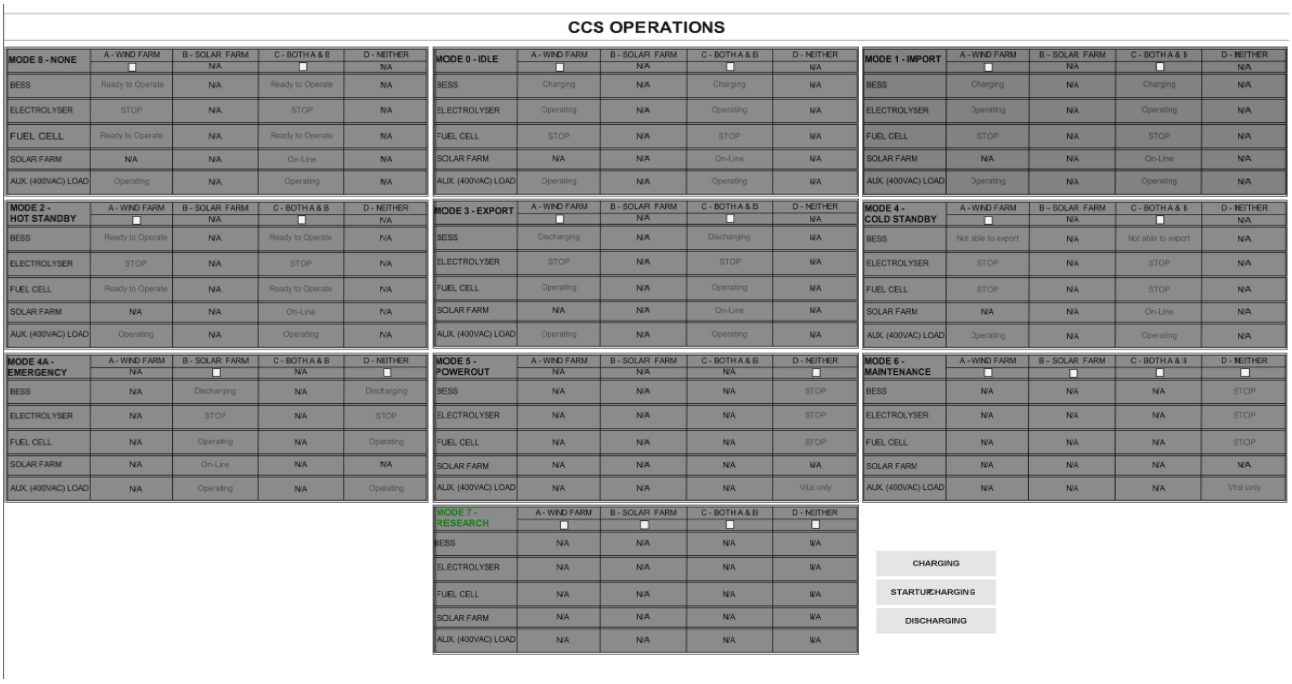
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3.3 HMI SCREENS IMAGES

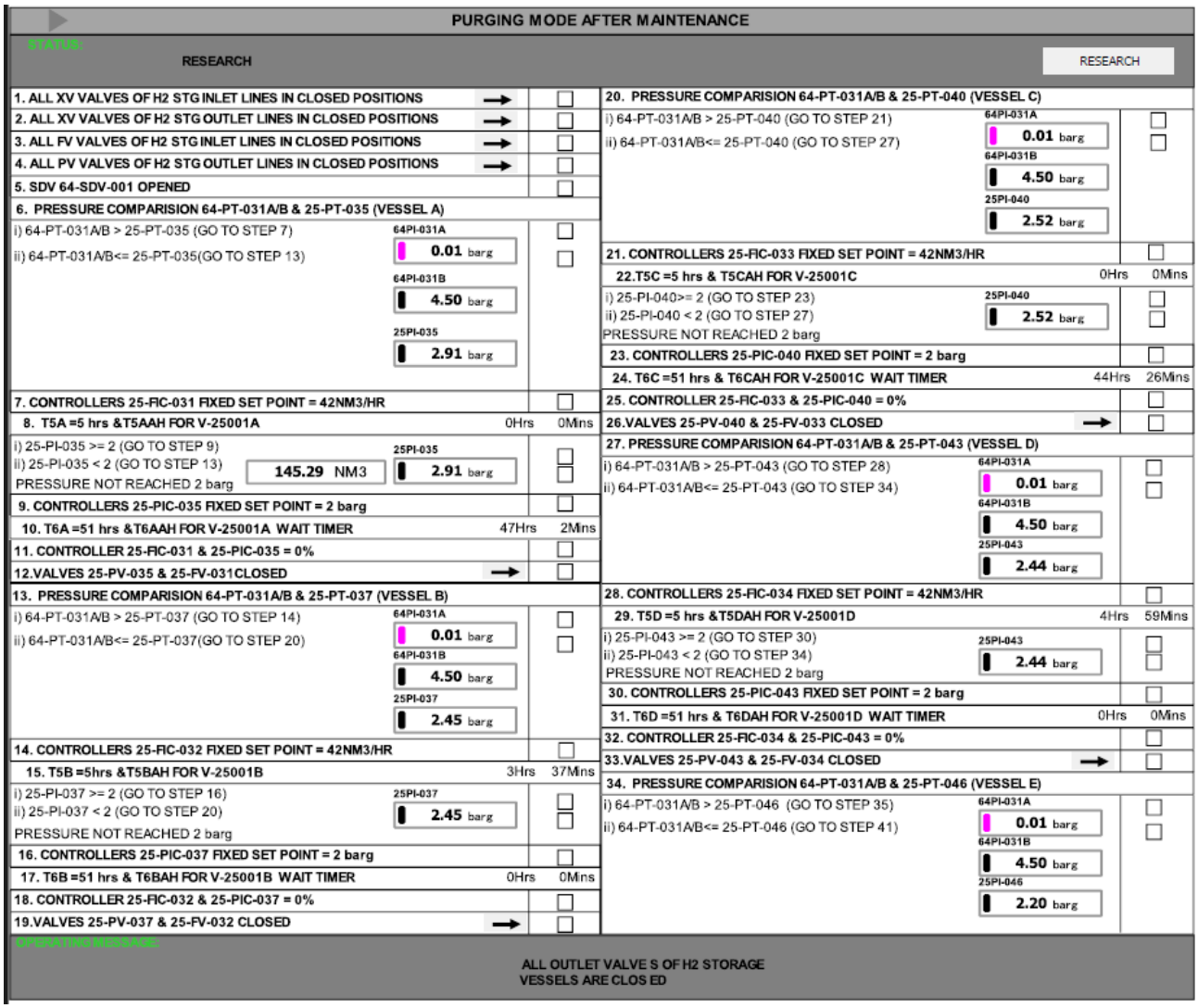
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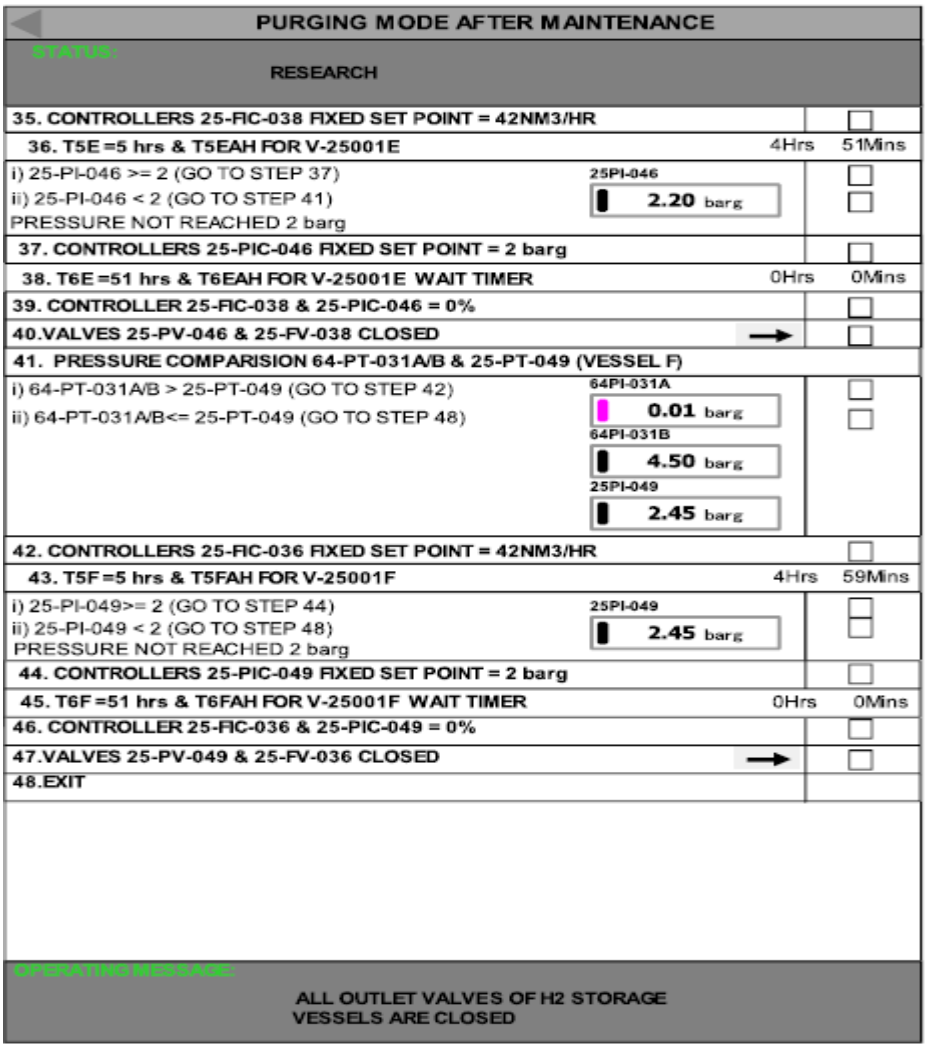
- BLPH_CCS_OPERATIONS



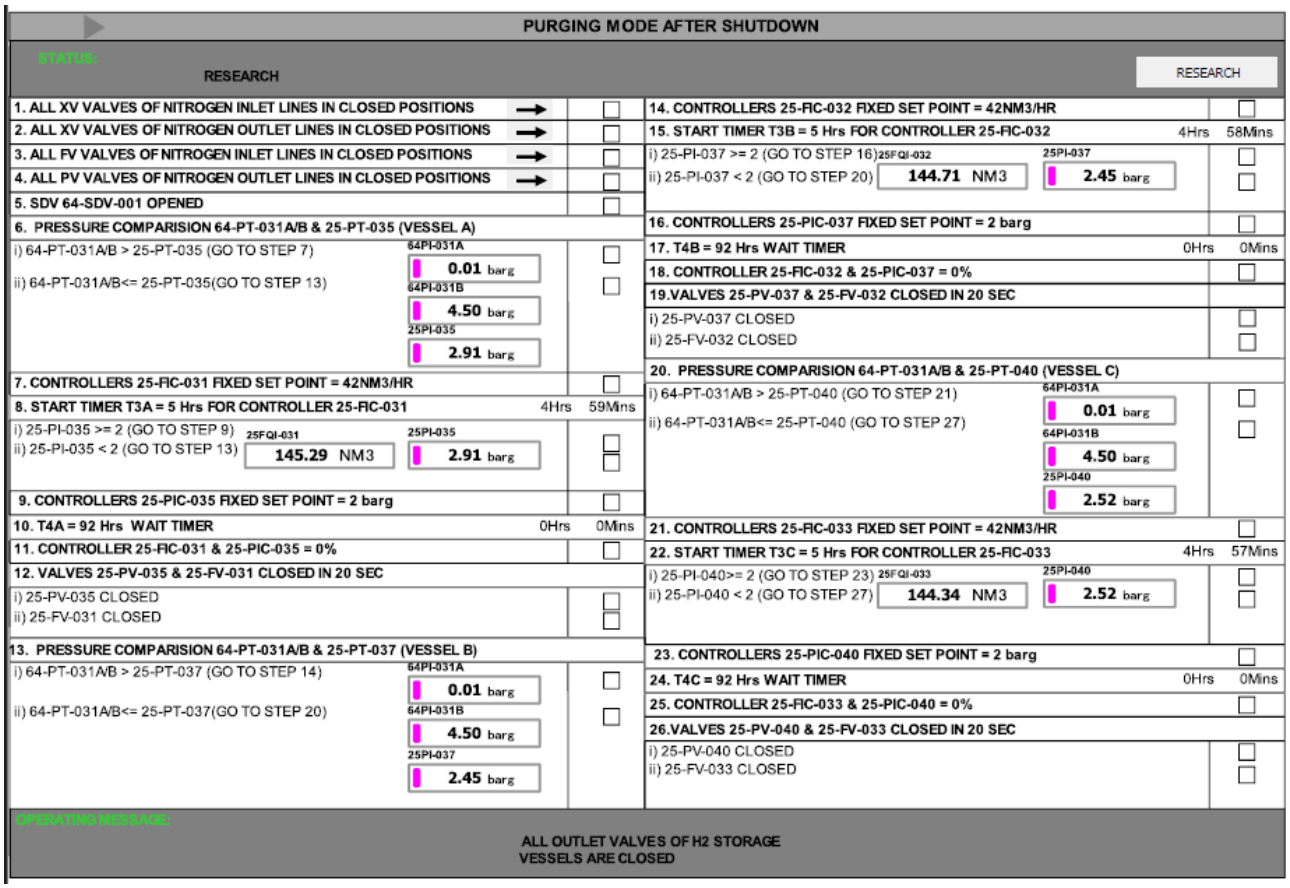
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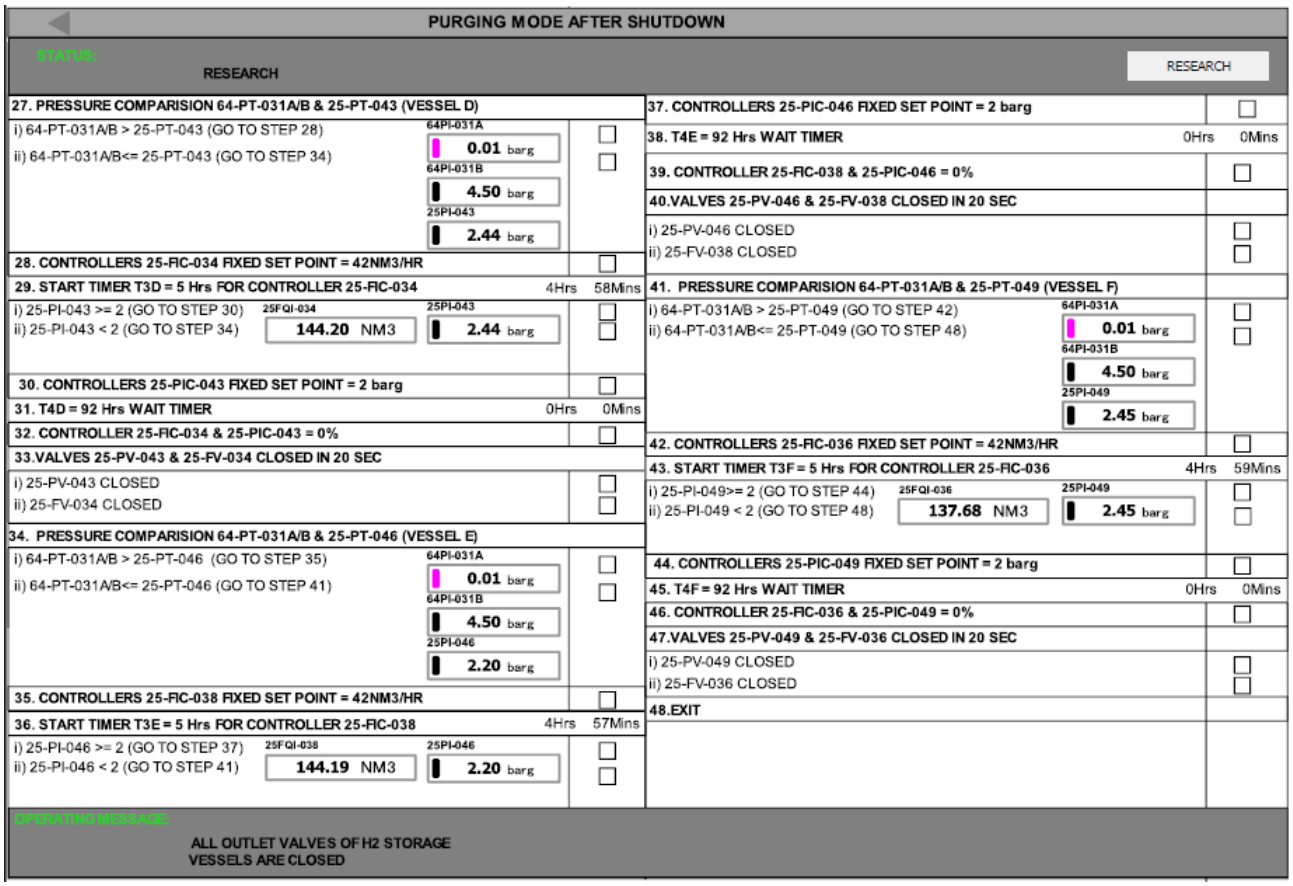
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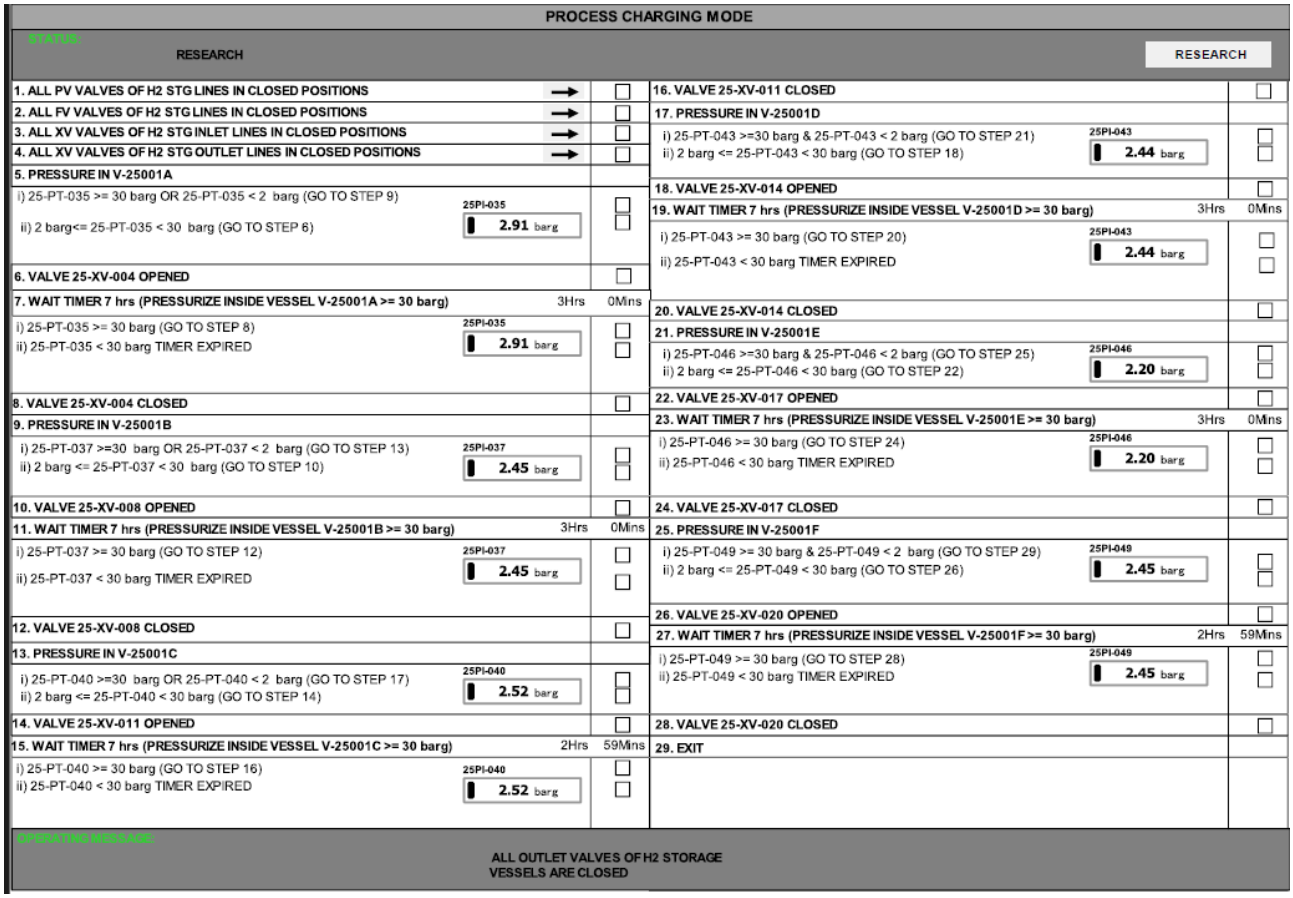
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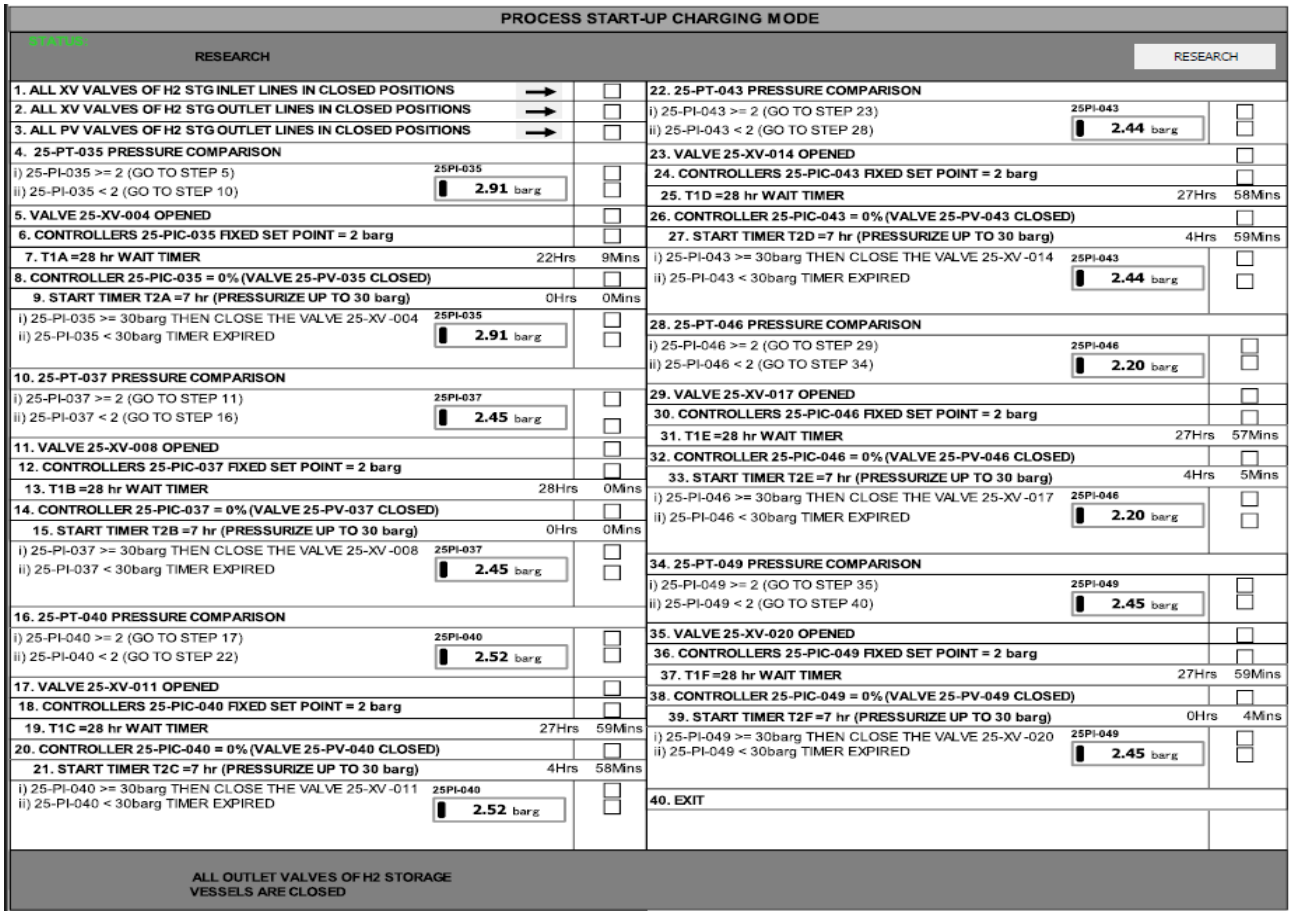
- M7_SHUTDOWN_CSS_2



- M7_PRO_CHARGE_CSS



- M7_PRO_STR_CHARG_CSS



PROCESS START-UP CHARGING MODE

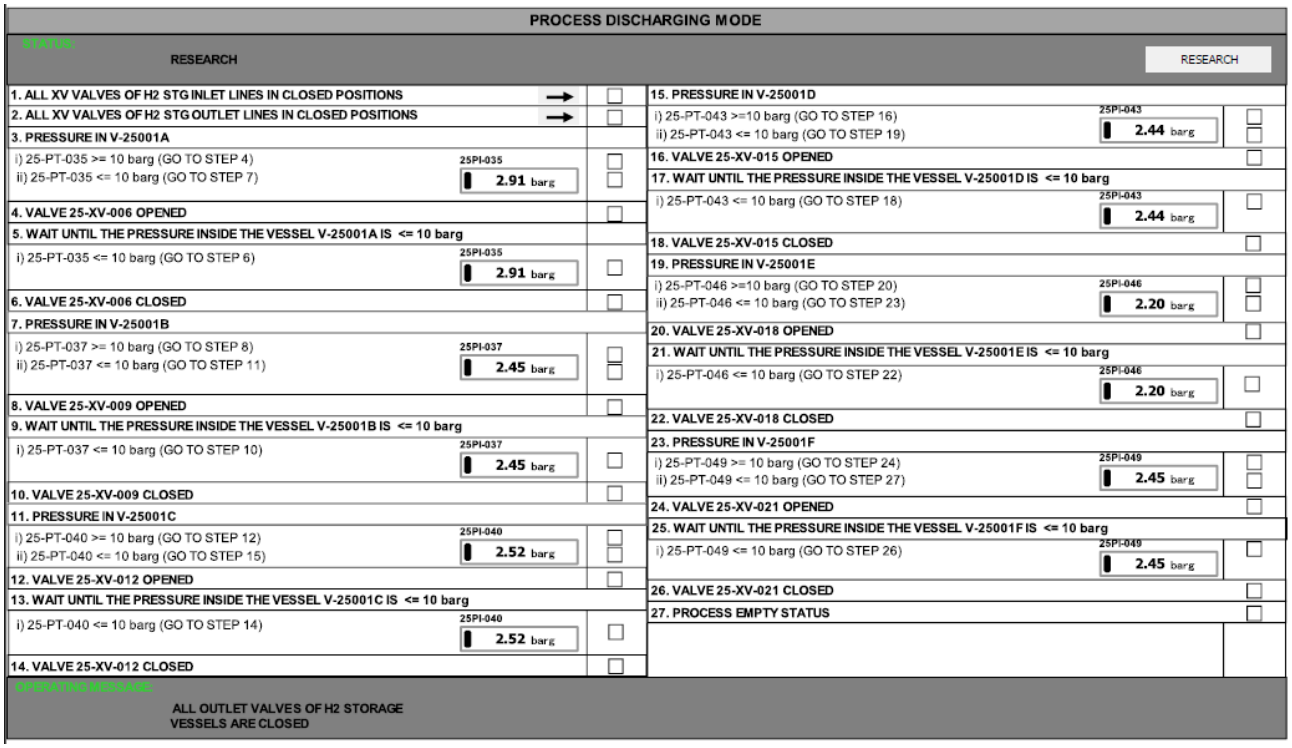
STATUS: RESEARCH — RESEARCH

1. ALL XV VALVES OF H2 STG INLET LINES IN CLOSED POSITIONS	→	☐
2. ALL XV VALVES OF H2 STG OUTLET LINES IN CLOSED POSITIONS	→	☐
3. ALL PV VALVES OF H2 STG OUTLET LINES IN CLOSED POSITIONS	→	☐
4. 25-PT-035 PRESSURE COMPARISON		
i) 25-PI-035 >= 2 (GO TO STEP 5)	25PI-035 2.91 barg	☐
ii) 25-PI-035 < 2 (GO TO STEP 10)		☐
5. VALVE 25-XV-004 OPENED		☐
6. CONTROLLERS 25-PIC-035 FIXED SET POINT = 2 barg		☐
7. T1A =28 hr WAIT TIMER	22Hrs 9Mins	
8. CONTROLLER 25-PIC-035 = 0% (VALVE 25-PV-035 CLOSED)		☐
9. START TIMER T2A =7 hr (PRESSURIZE UP TO 30 barg)	0Hrs 0Mins	
i) 25-PI-035 >= 30barg THEN CLOSE THE VALVE 25-XV-004	25PI-035 2.91 barg	☐
ii) 25-PI-035 < 30barg TIMER EXPIRED		☐
10. 25-PT-037 PRESSURE COMPARISON		
i) 25-PI-037 >= 2 (GO TO STEP 11)	25PI-037 2.45 barg	☐
ii) 25-PI-037 < 2 (GO TO STEP 16)		☐
11. VALVE 25-XV-008 OPENED		☐
12. CONTROLLERS 25-PIC-037 FIXED SET POINT = 2 barg		☐
13. T1B =28 hr WAIT TIMER	28Hrs 0Mins	
14. CONTROLLER 25-PIC-037 = 0% (VALVE 25-PV-037 CLOSED)		☐
15. START TIMER T2B =7 hr (PRESSURIZE UP TO 30 barg)	0Hrs 0Mins	
i) 25-PI-037 >= 30barg THEN CLOSE THE VALVE 25-XV-008	25PI-037 2.45 barg	☐
ii) 25-PI-037 < 30barg TIMER EXPIRED		☐
16. 25-PT-040 PRESSURE COMPARISON		
i) 25-PI-040 >= 2 (GO TO STEP 17)	25PI-040 2.52 barg	☐
ii) 25-PI-040 < 2 (GO TO STEP 22)		☐
17. VALVE 25-XV-011 OPENED		☐
18. CONTROLLERS 25-PIC-040 FIXED SET POINT = 2 barg		☐
19. T1C =28 hr WAIT TIMER	27Hrs 59Mins	
20. CONTROLLER 25-PIC-040 = 0% (VALVE 25-PV-040 CLOSED)		☐
21. START TIMER T2C =7 hr (PRESSURIZE UP TO 30 barg)	4Hrs 58Mins	
i) 25-PI-040 >= 30barg THEN CLOSE THE VALVE 25-XV-011	25PI-040 2.52 barg	☐
ii) 25-PI-040 < 30barg TIMER EXPIRED		☐

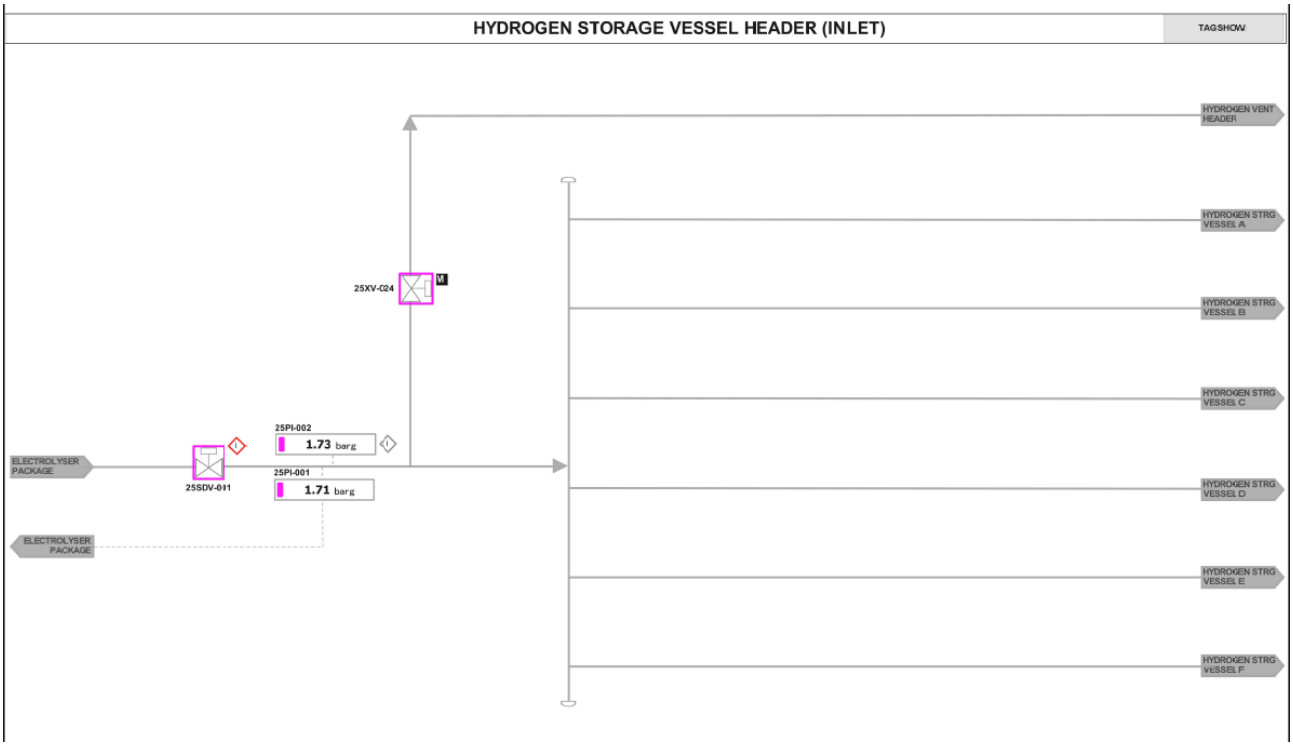
22. 25-PT-043 PRESSURE COMPARISON		
i) 25-PI-043 >= 2 (GO TO STEP 23)	25PI-043 2.44 barg	☐
ii) 25-PI-043 < 2 (GO TO STEP 28)		☐
23. VALVE 25-XV-014 OPENED		☐
24. CONTROLLERS 25-PIC-043 FIXED SET POINT = 2 barg		☐
25. T1D =28 hr WAIT TIMER	27Hrs 58Mins	
26. CONTROLLER 25-PIC-043 = 0% (VALVE 25-PV-043 CLOSED)		☐
27. START TIMER T2D =7 hr (PRESSURIZE UP TO 30 barg)	4Hrs 59Mins	
i) 25-PI-043 >= 30barg THEN CLOSE THE VALVE 25-XV-014	25PI-043 2.44 barg	☐
ii) 25-PI-043 < 30barg TIMER EXPIRED		☐
28. 25-PT-046 PRESSURE COMPARISON		
i) 25-PI-046 >= 2 (GO TO STEP 29)	25PI-046 2.20 barg	☐
ii) 25-PI-046 < 2 (GO TO STEP 34)		☐
29. VALVE 25-XV-017 OPENED		☐
30. CONTROLLERS 25-PIC-046 FIXED SET POINT = 2 barg		☐
31. T1E =28 hr WAIT TIMER	27Hrs 57Mins	
32. CONTROLLER 25-PIC-046 = 0% (VALVE 25-PV-046 CLOSED)		☐
33. START TIMER T2E =7 hr (PRESSURIZE UP TO 30 barg)	4Hrs 5Mins	
i) 25-PI-046 >= 30barg THEN CLOSE THE VALVE 25-XV-017	25PI-046 2.20 barg	☐
ii) 25-PI-046 < 30barg TIMER EXPIRED		☐
34. 25-PT-049 PRESSURE COMPARISON		
i) 25-PI-049 >= 2 (GO TO STEP 35)	25PI-049 2.45 barg	☐
ii) 25-PI-049 < 2 (GO TO STEP 40)		☐
35. VALVE 25-XV-020 OPENED		☐
36. CONTROLLERS 25-PIC-049 FIXED SET POINT = 2 barg		☐
37. T1F =28 hr WAIT TIMER	27Hrs 59Mins	
38. CONTROLLER 25-PIC-049 = 0% (VALVE 25-PV-049 CLOSED)		☐
39. START TIMER T2F =7 hr (PRESSURIZE UP TO 30 barg)	0Hrs 4Mins	
i) 25-PI-049 >= 30barg THEN CLOSE THE VALVE 25-XV-020	25PI-049 2.45 barg	☐
ii) 25-PI-049 < 30barg TIMER EXPIRED		☐
40. EXIT		

ALL OUTLET VALVES OF H2 STORAGE VESSELS ARE CLOSED

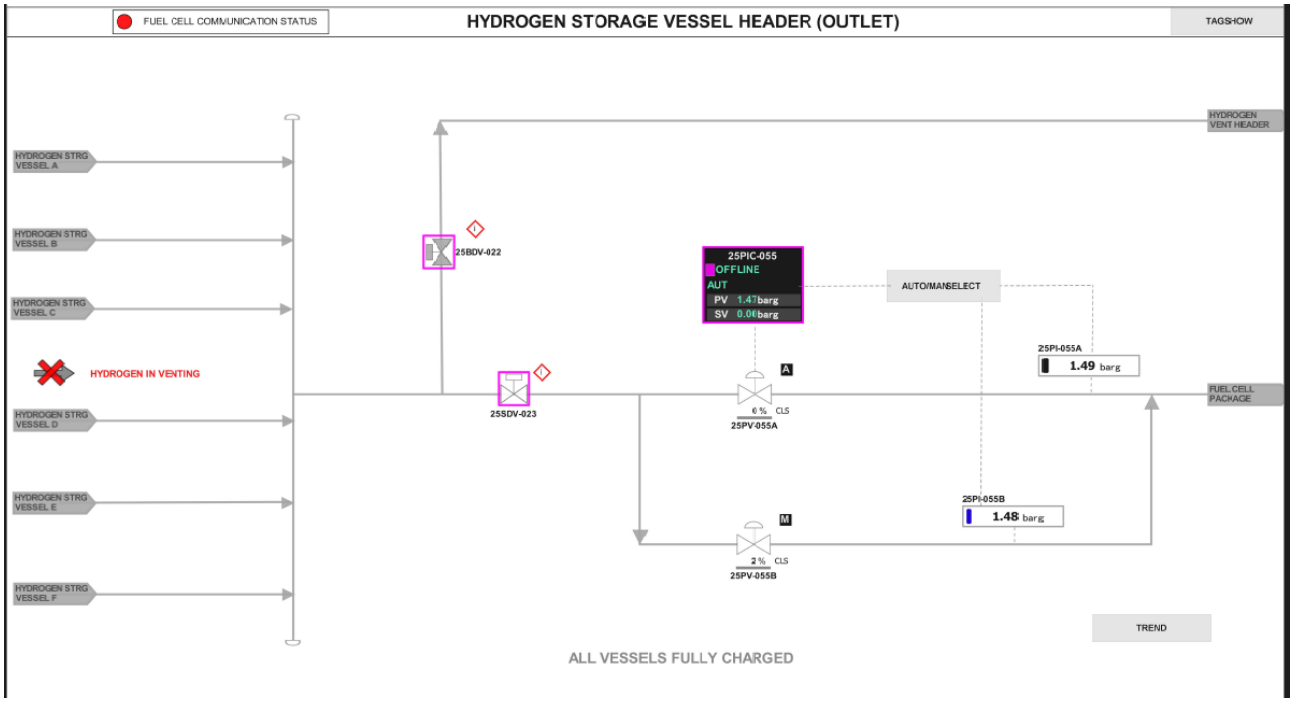
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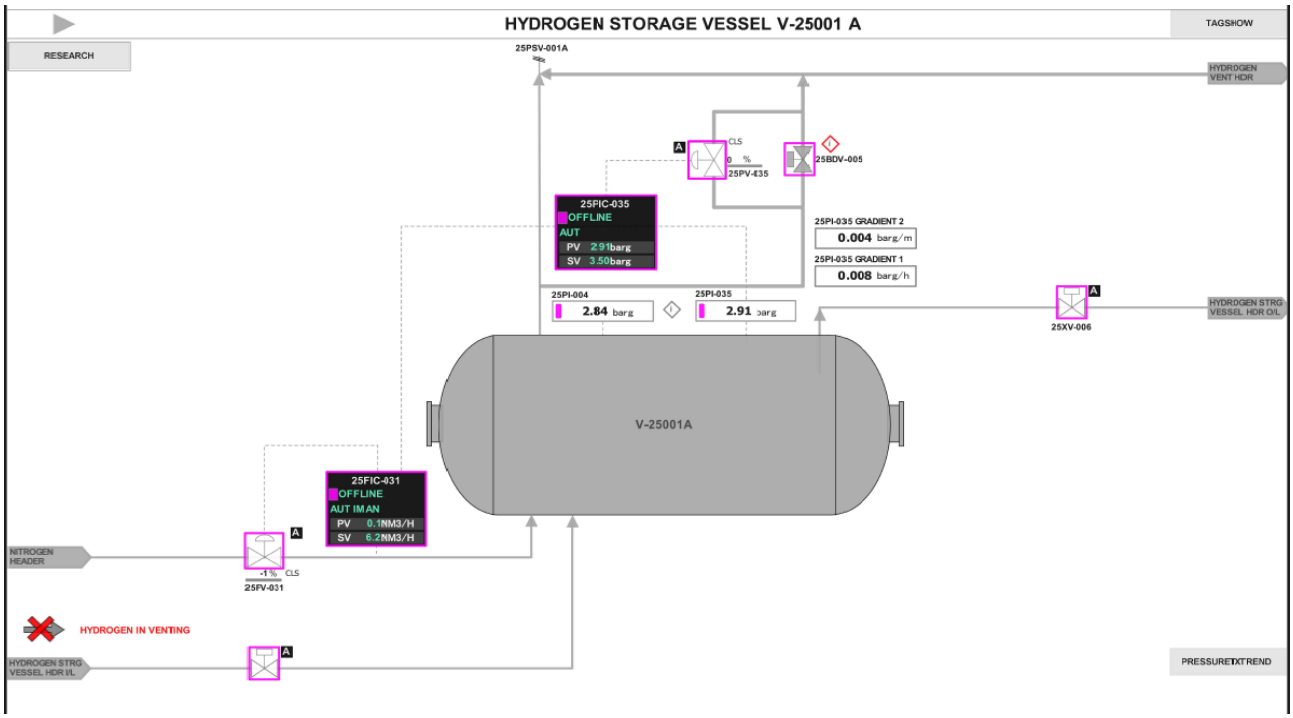
- H2_STG_VESSELS_HEADER_INLET



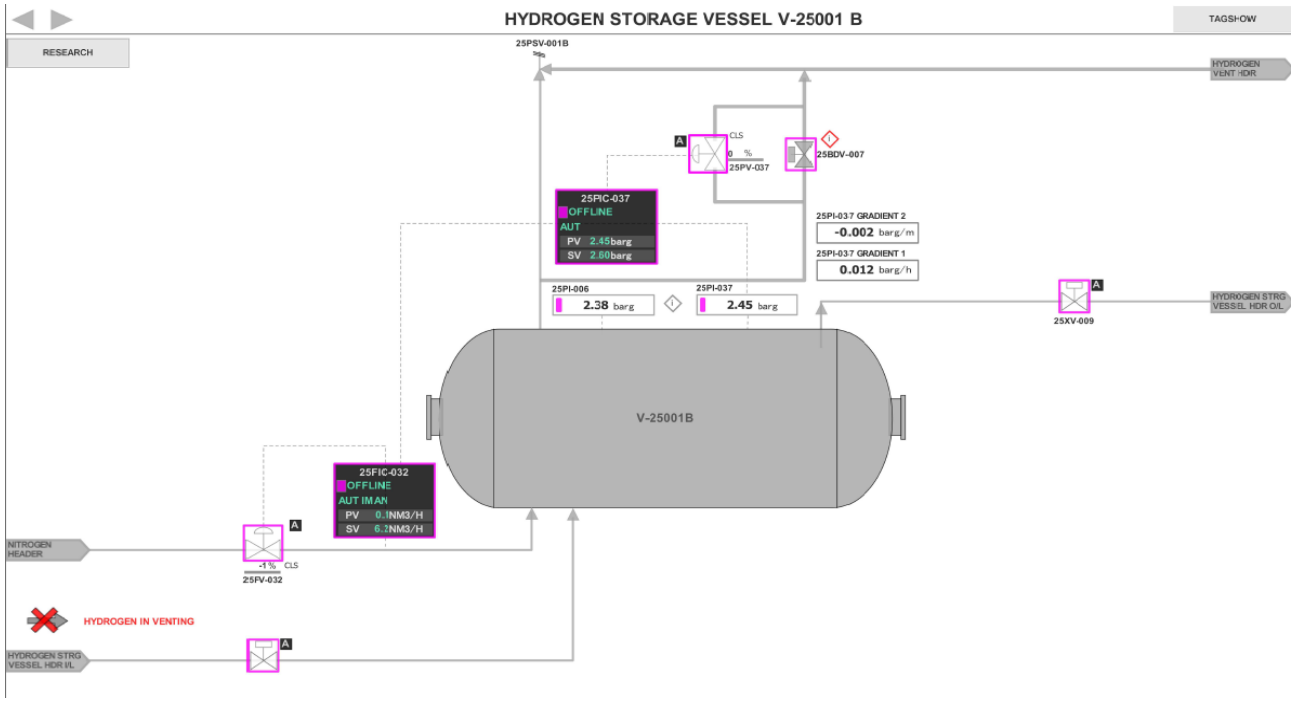
- H2_STG_VESSELS_HEADER_OUTLET



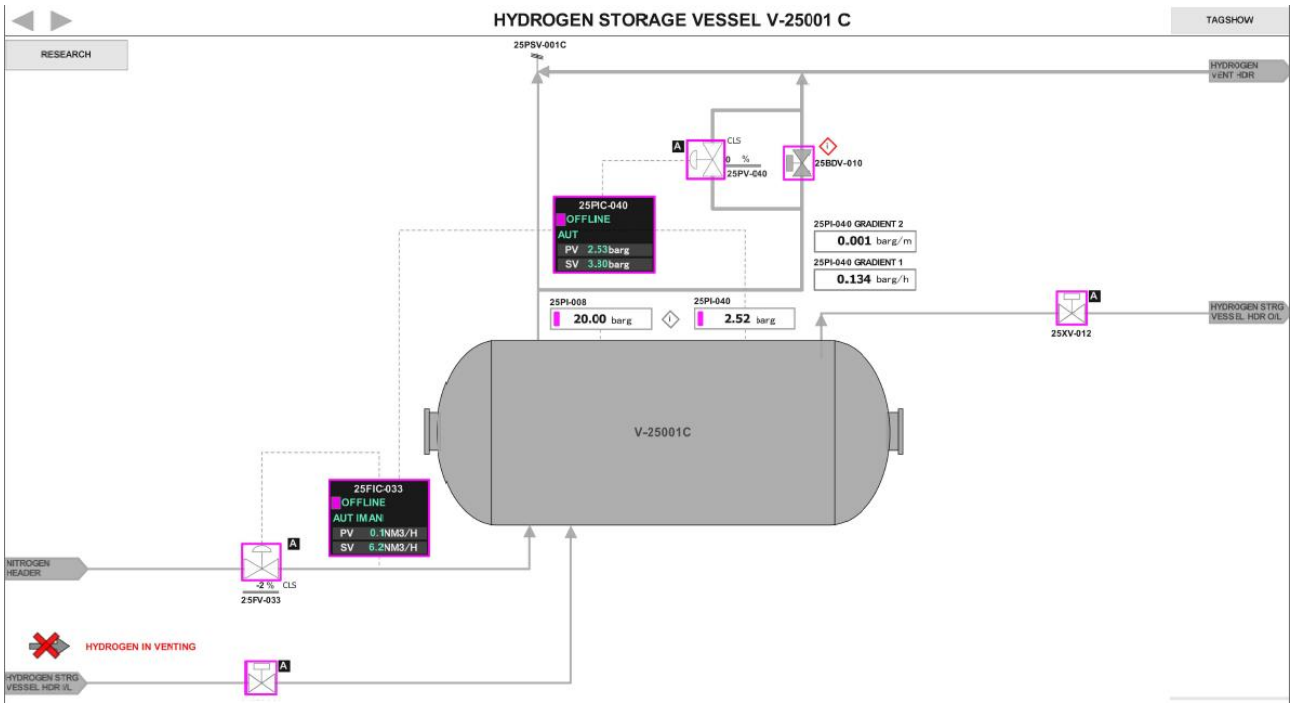
- HYDROGEN_STORAGE_VESSEL_A



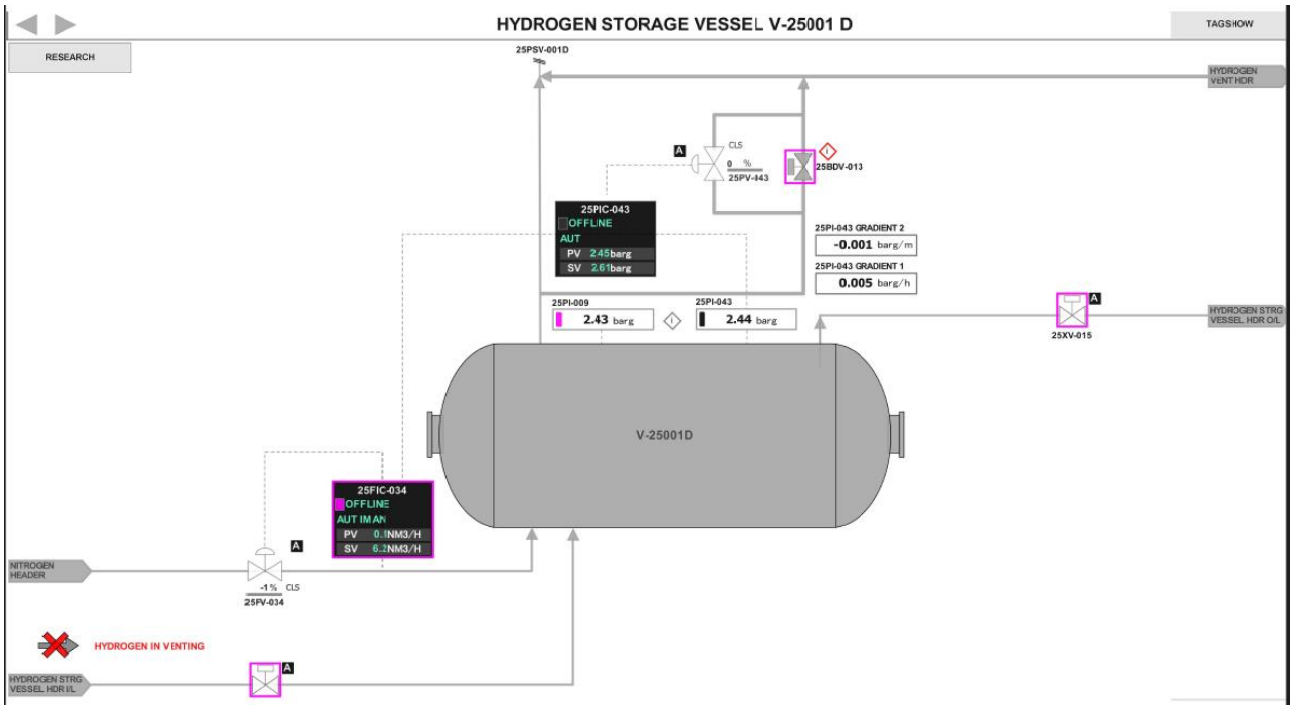
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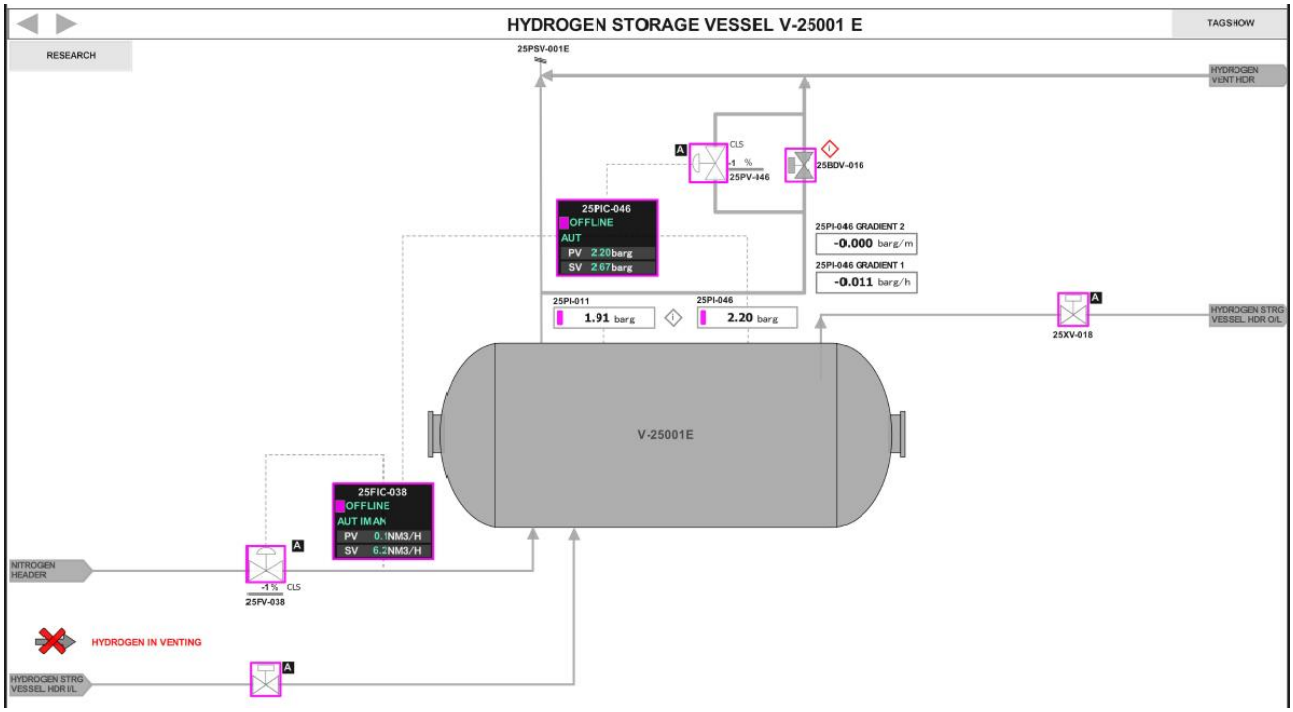
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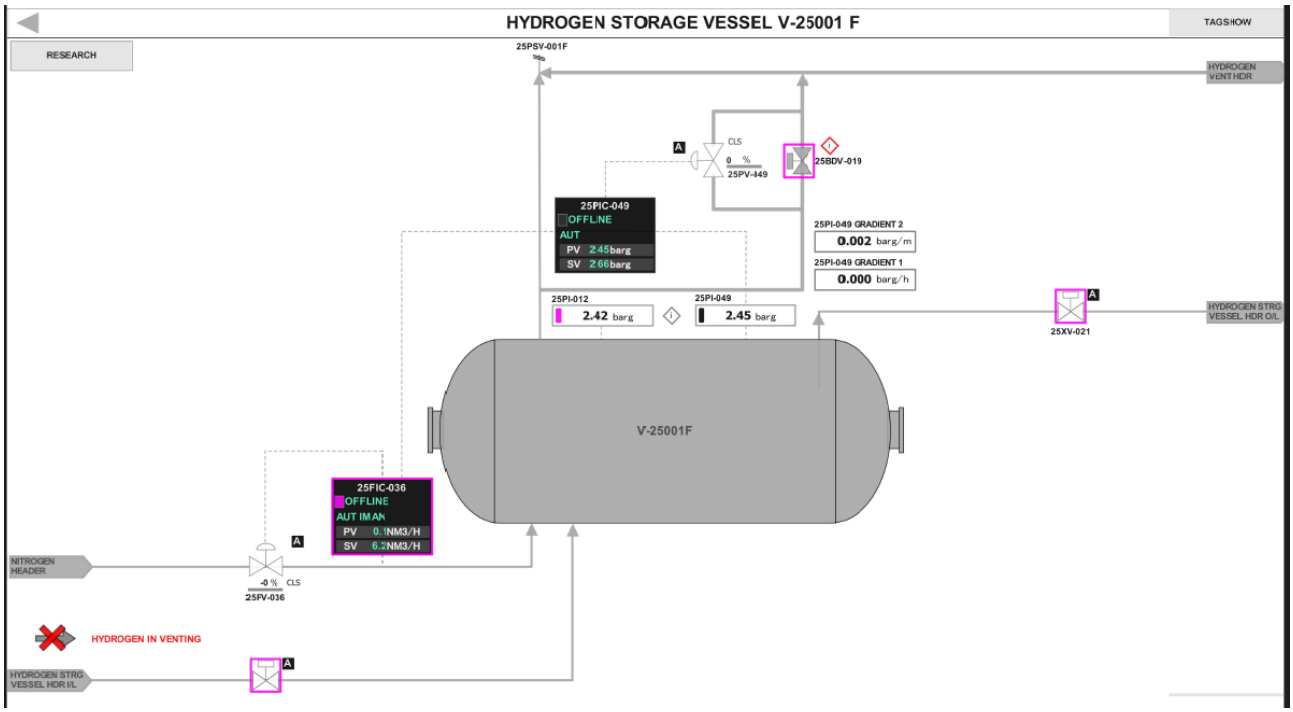
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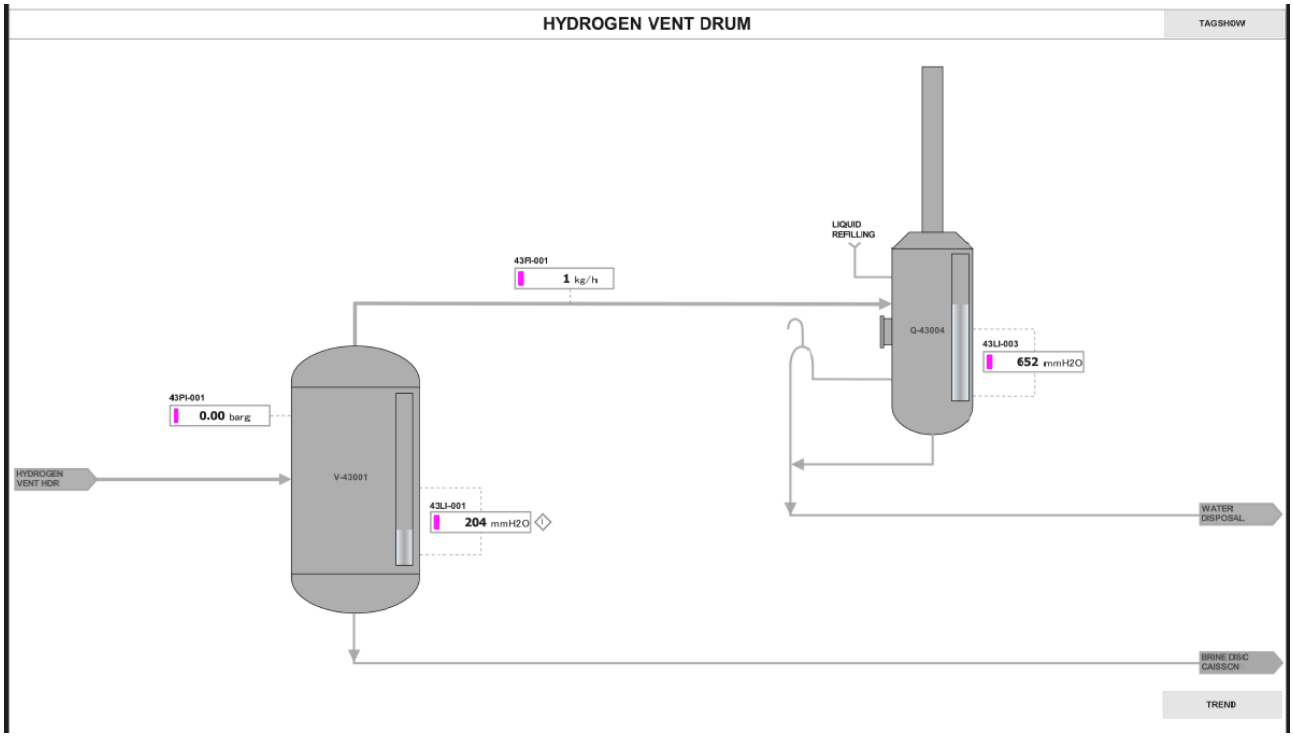
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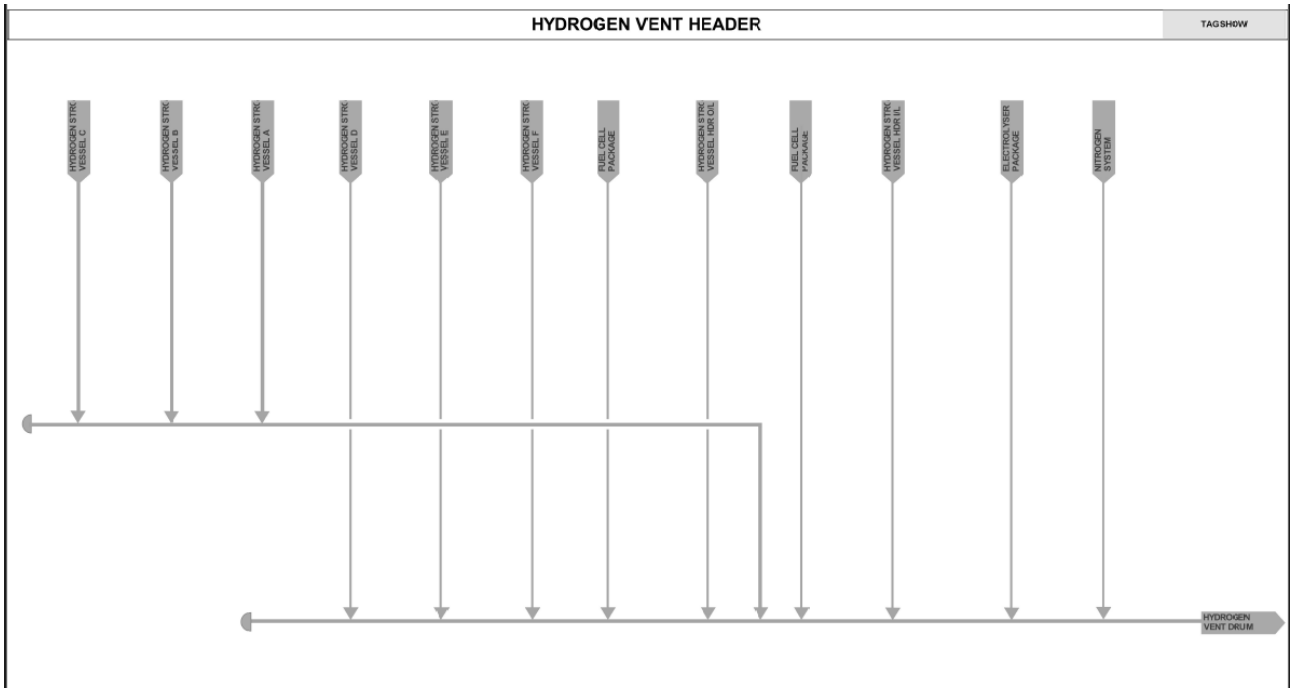
- HYROGEN_STORAGE_VESSEL_F



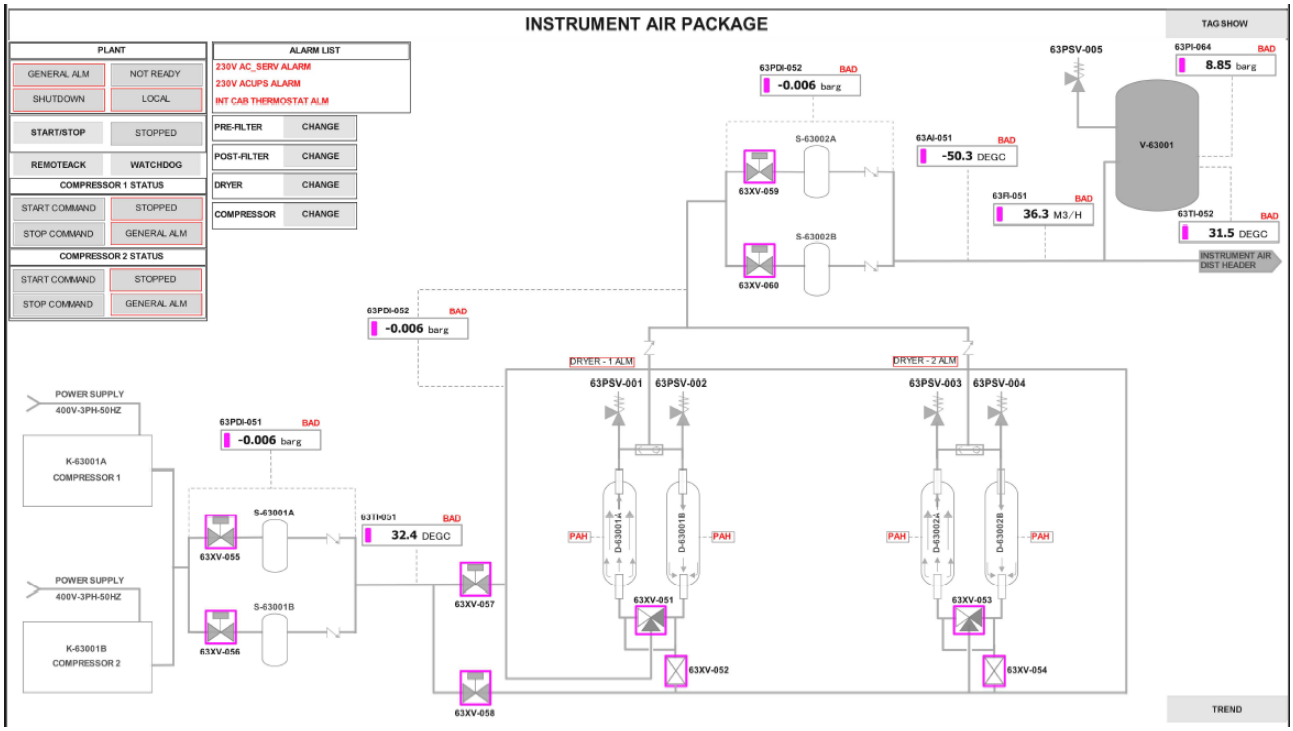
- HYDROGEN_VENT_DRUM



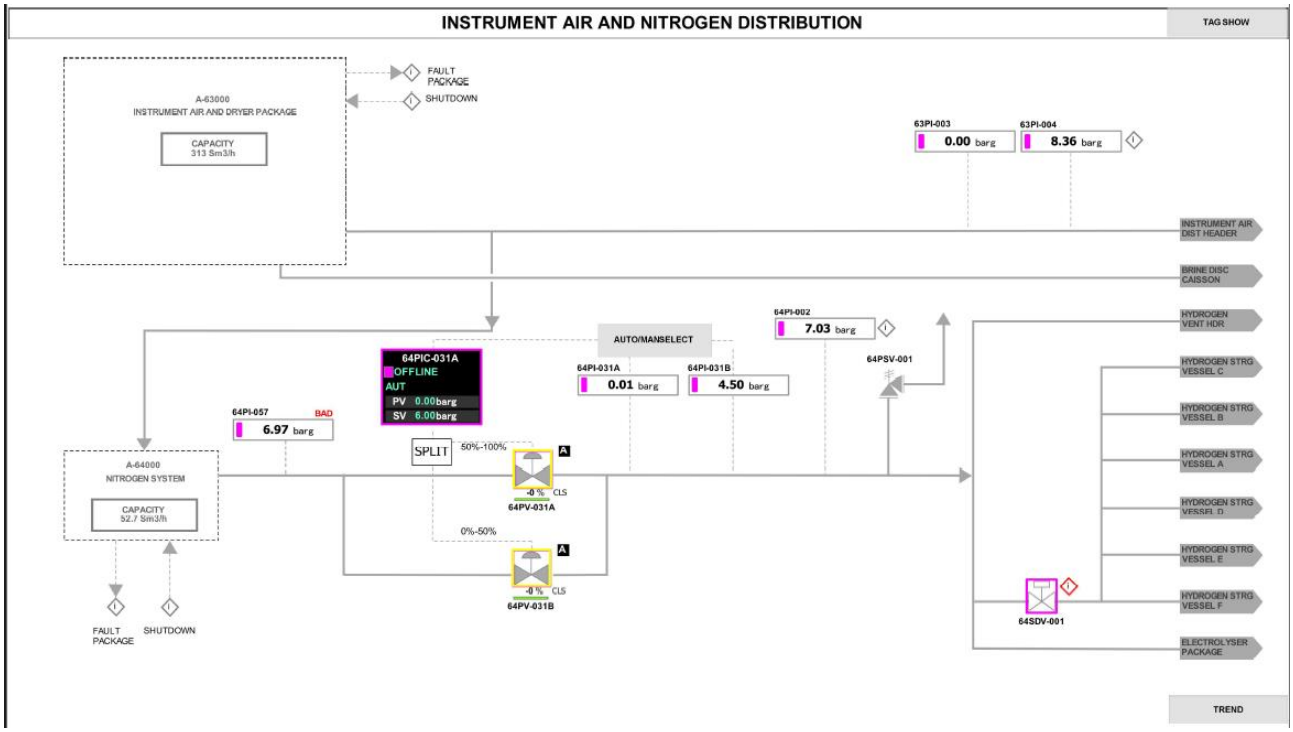
- HYDROGEN_VENT_HEADER



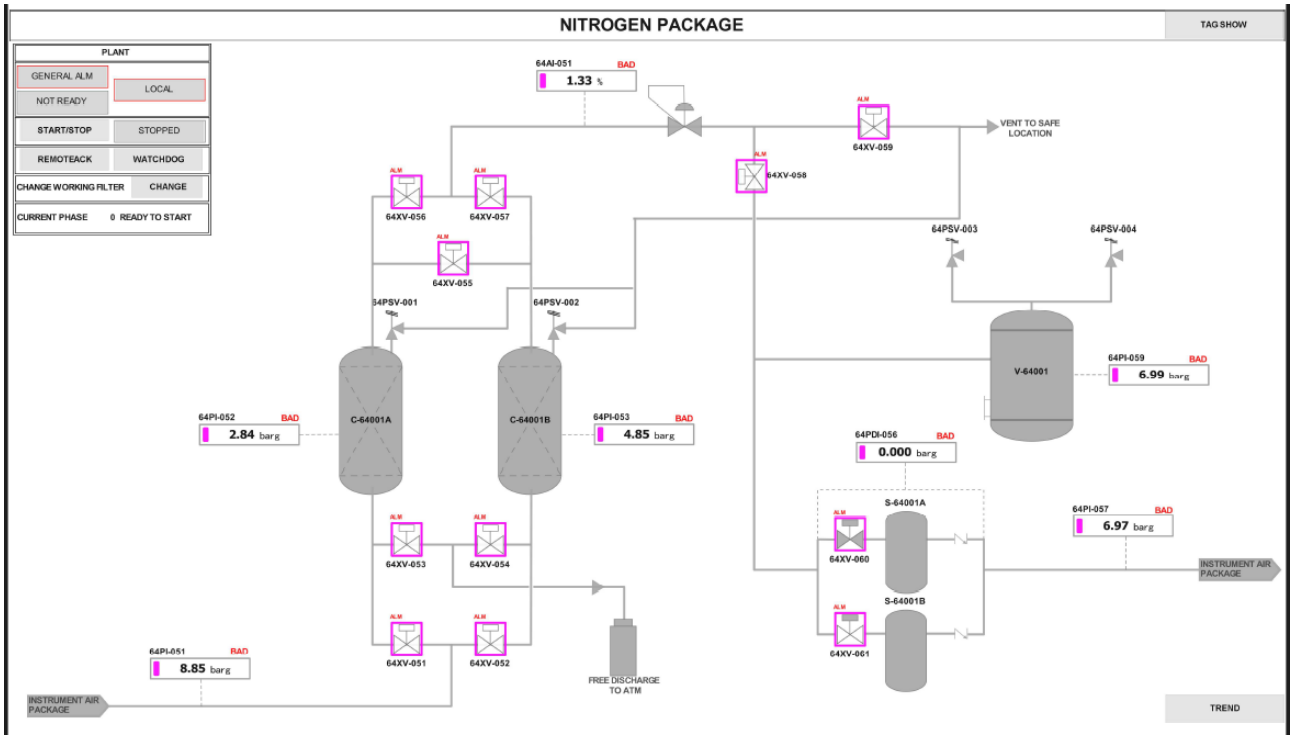
- INSTRUMENT_AIR_PACKAGE



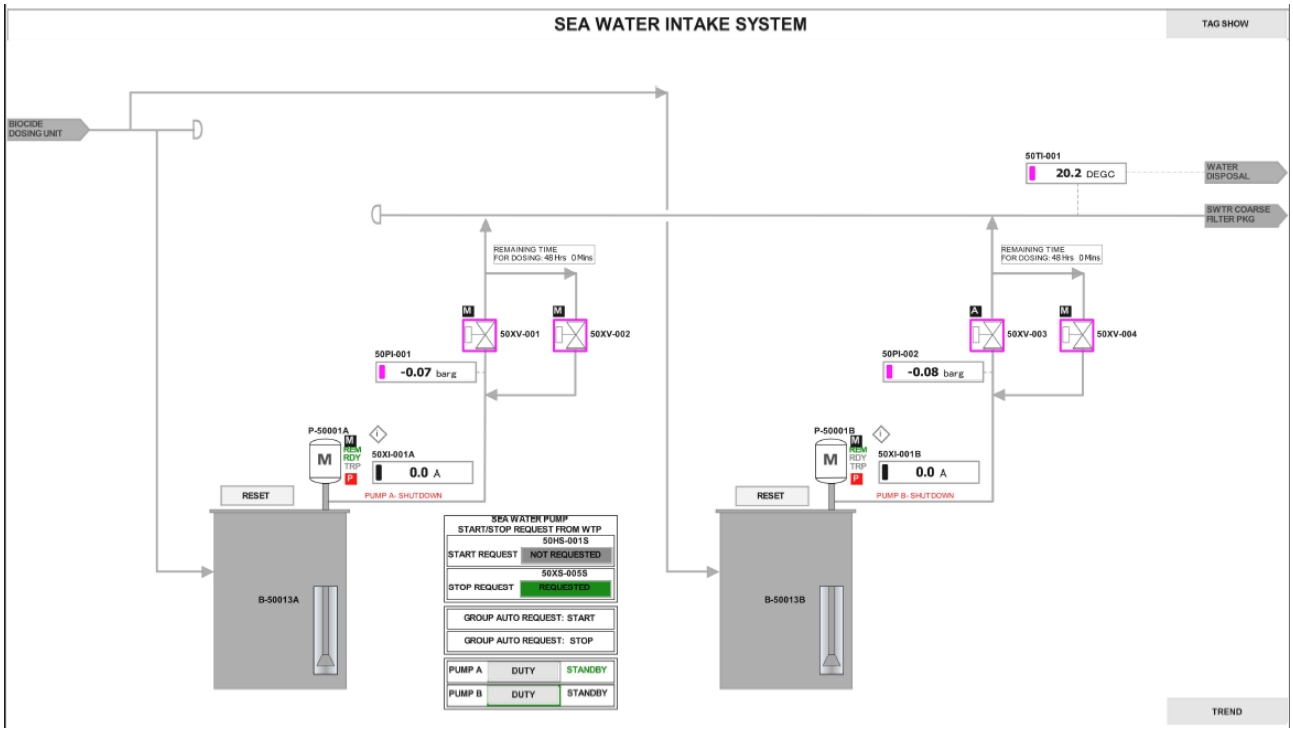
- INSTRUMENT_AIR_PACKAGE_DISTRIBUTION



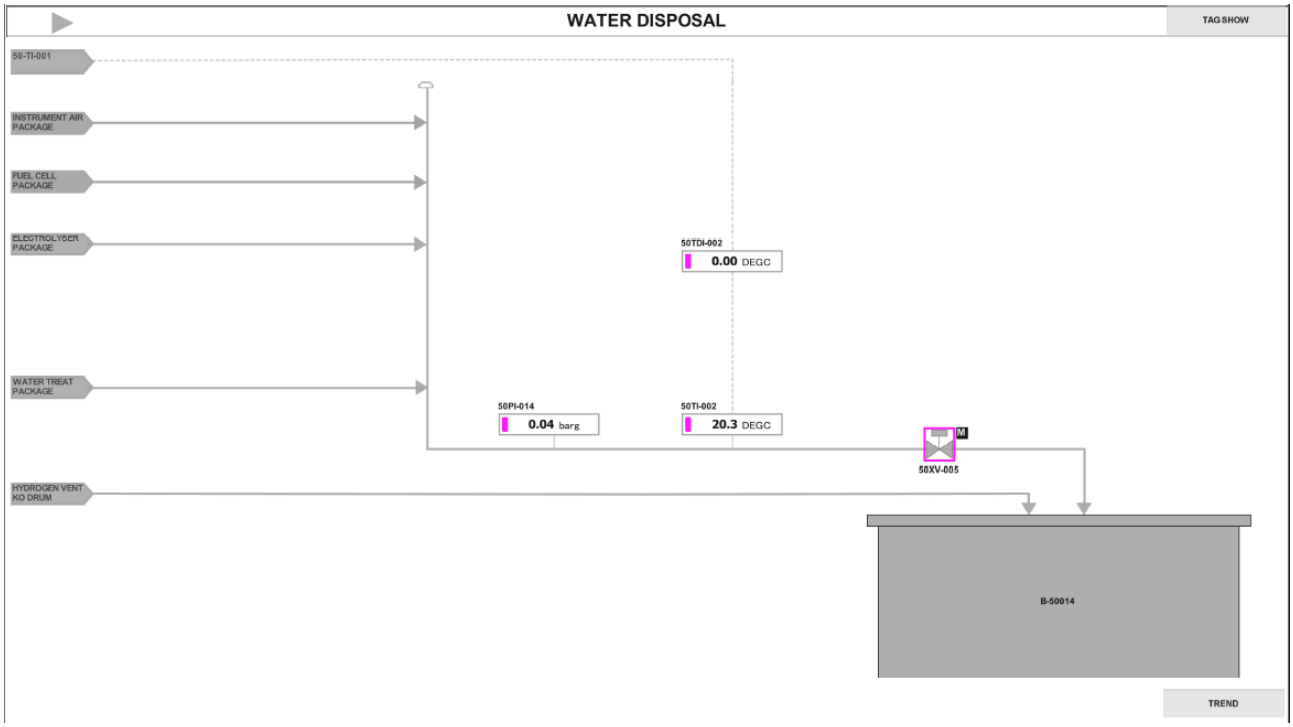
- NITROGEN_PACKAGE



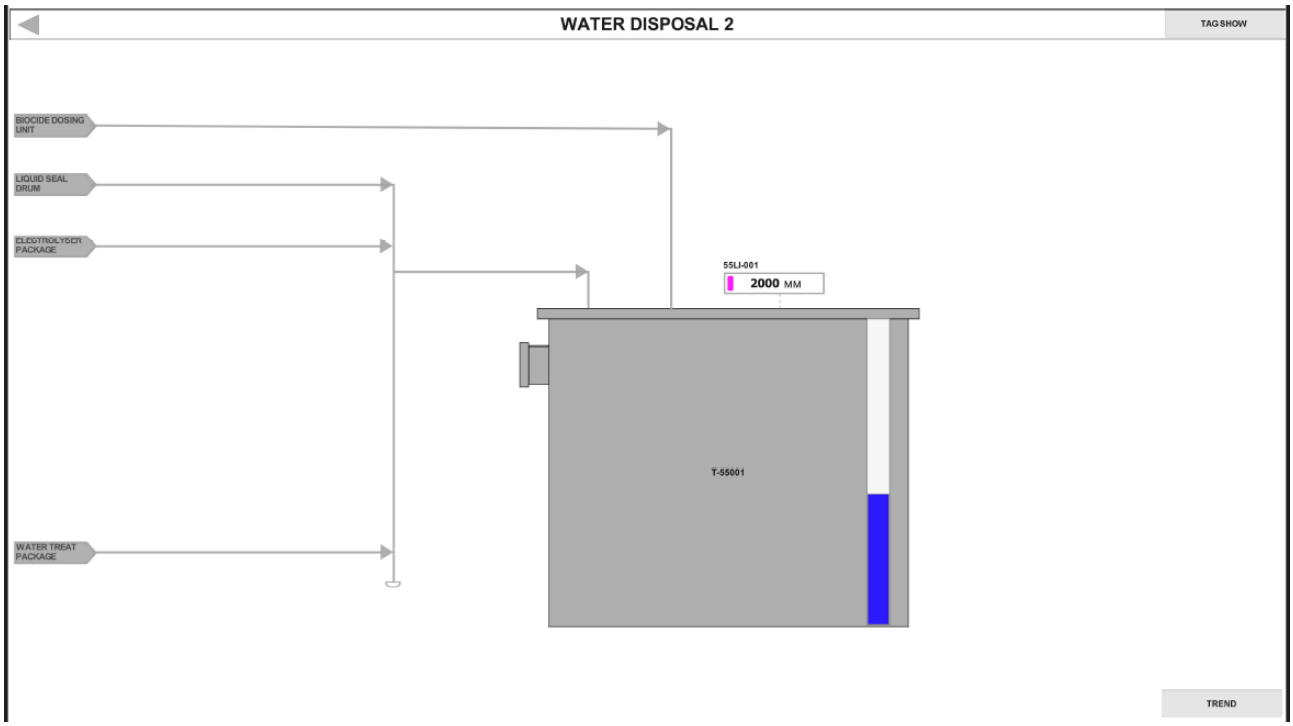
- SEA_WATER_INTAKE_SYSTEM1



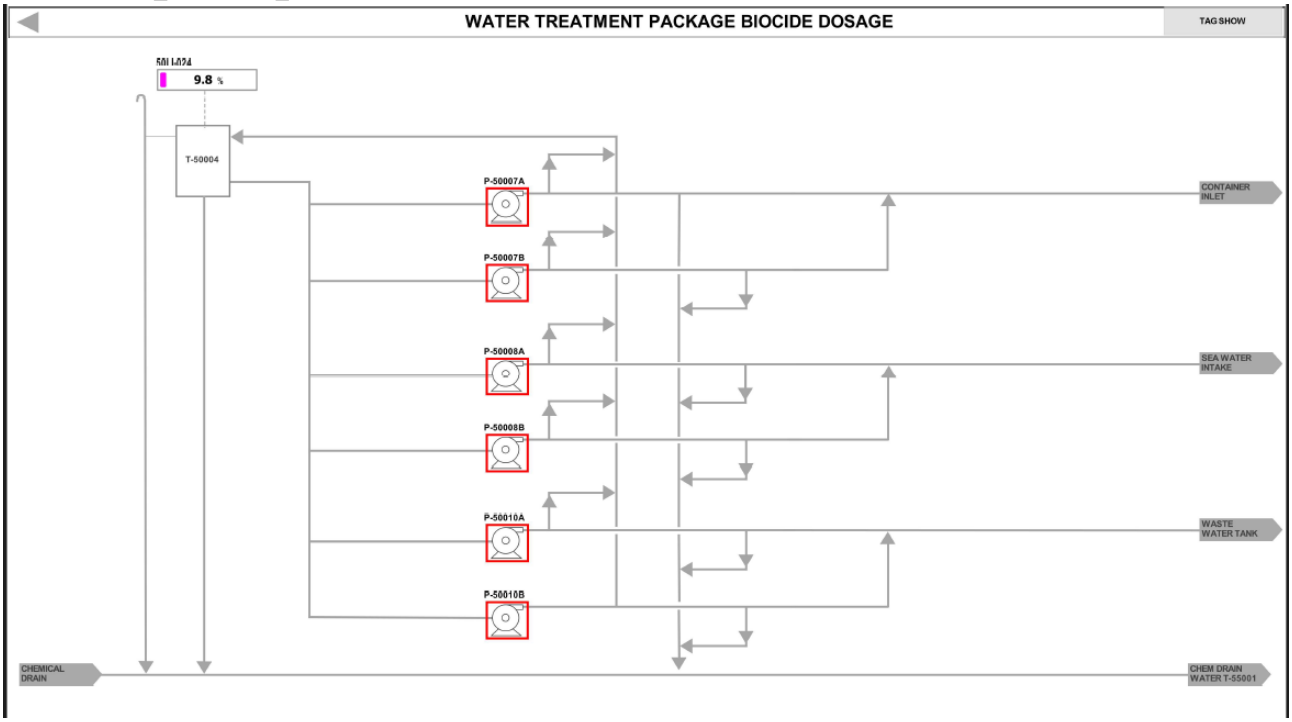
- WATER_DISPOSAL_SHEET_1



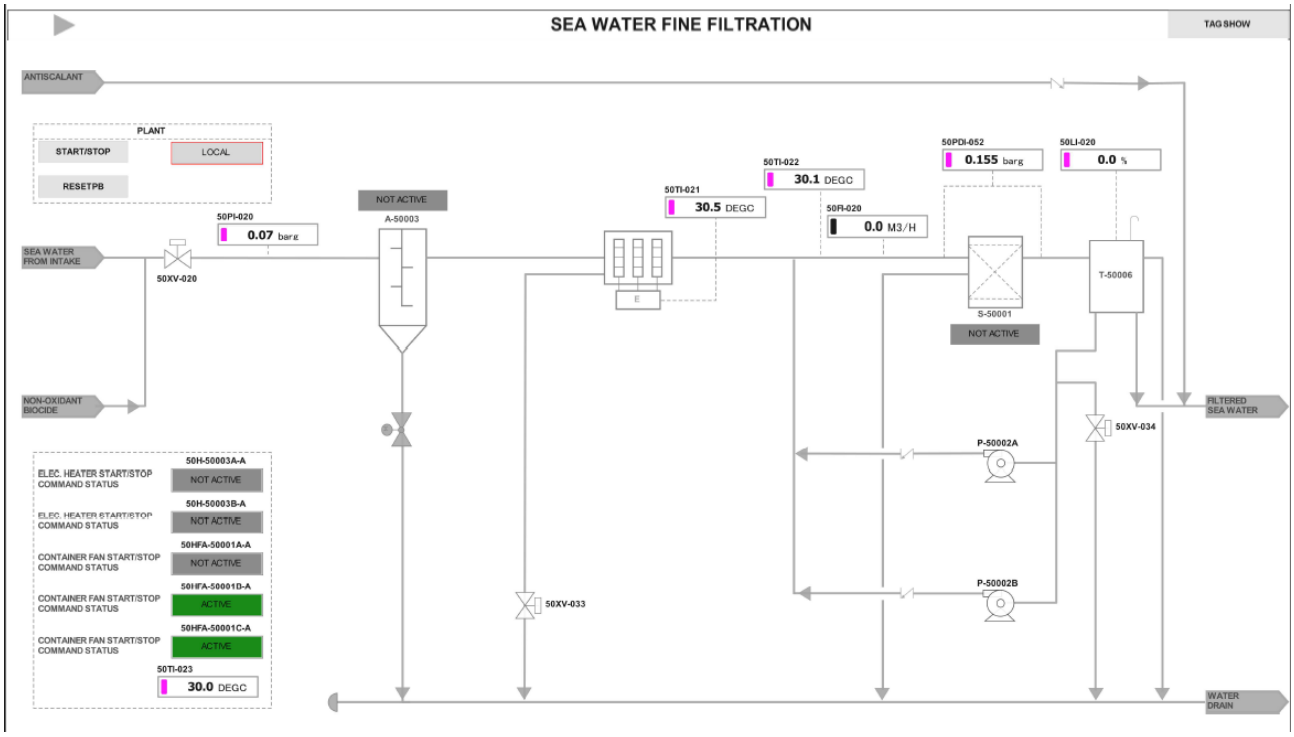
- WATER_DISPOSAL_SHEET_2



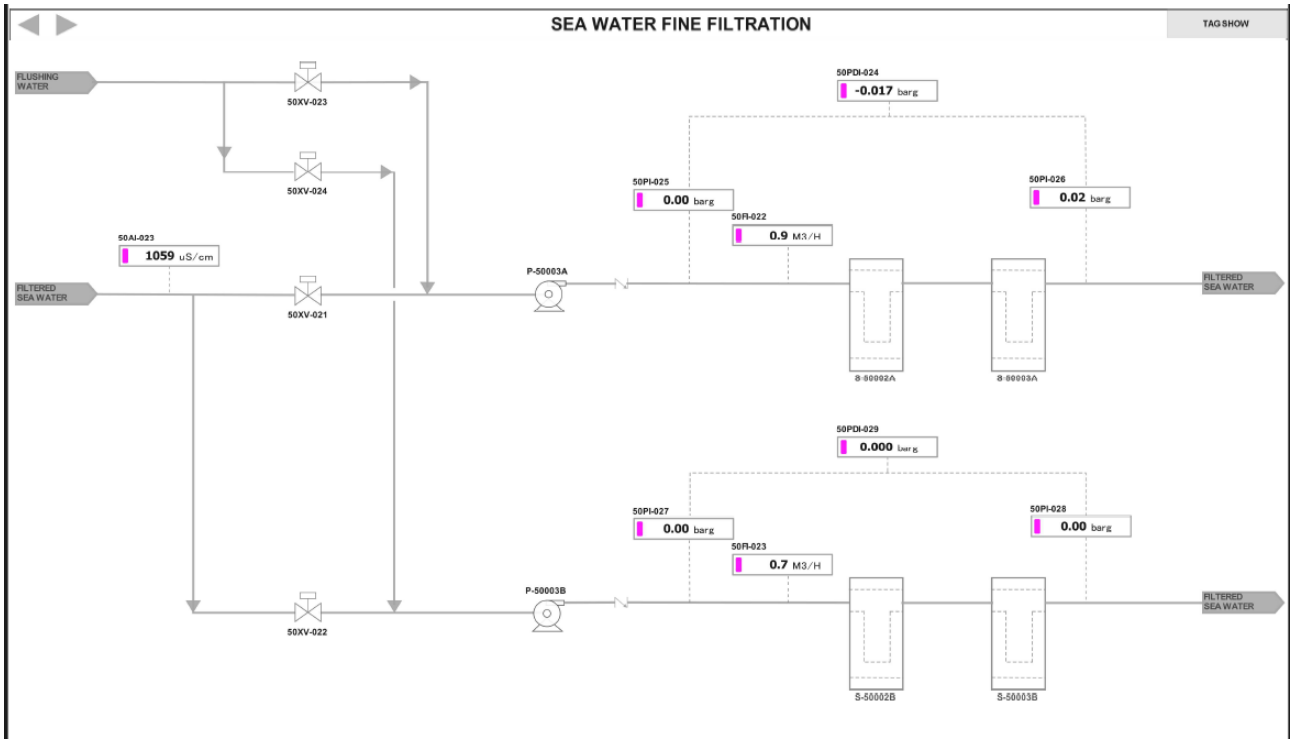
- WTP_BIOCIDE_DOSAGE



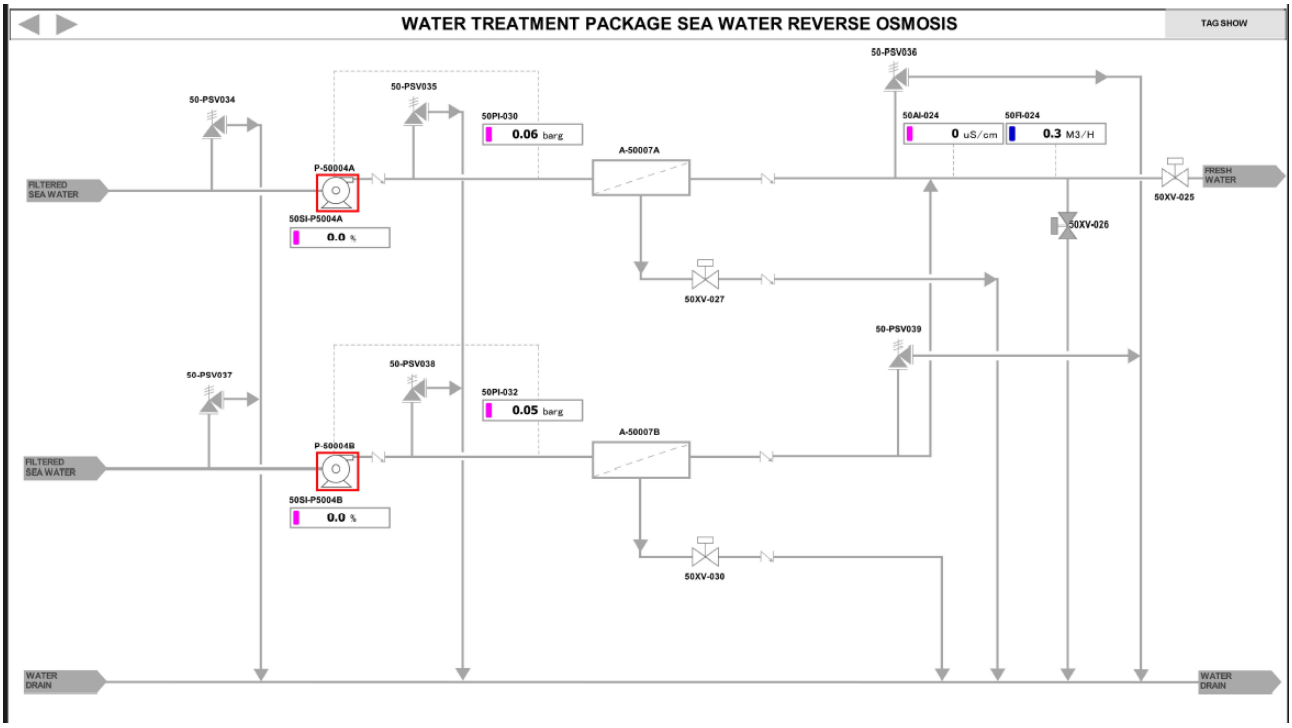
- WTP_SEA_WATER_FILTRATION_1



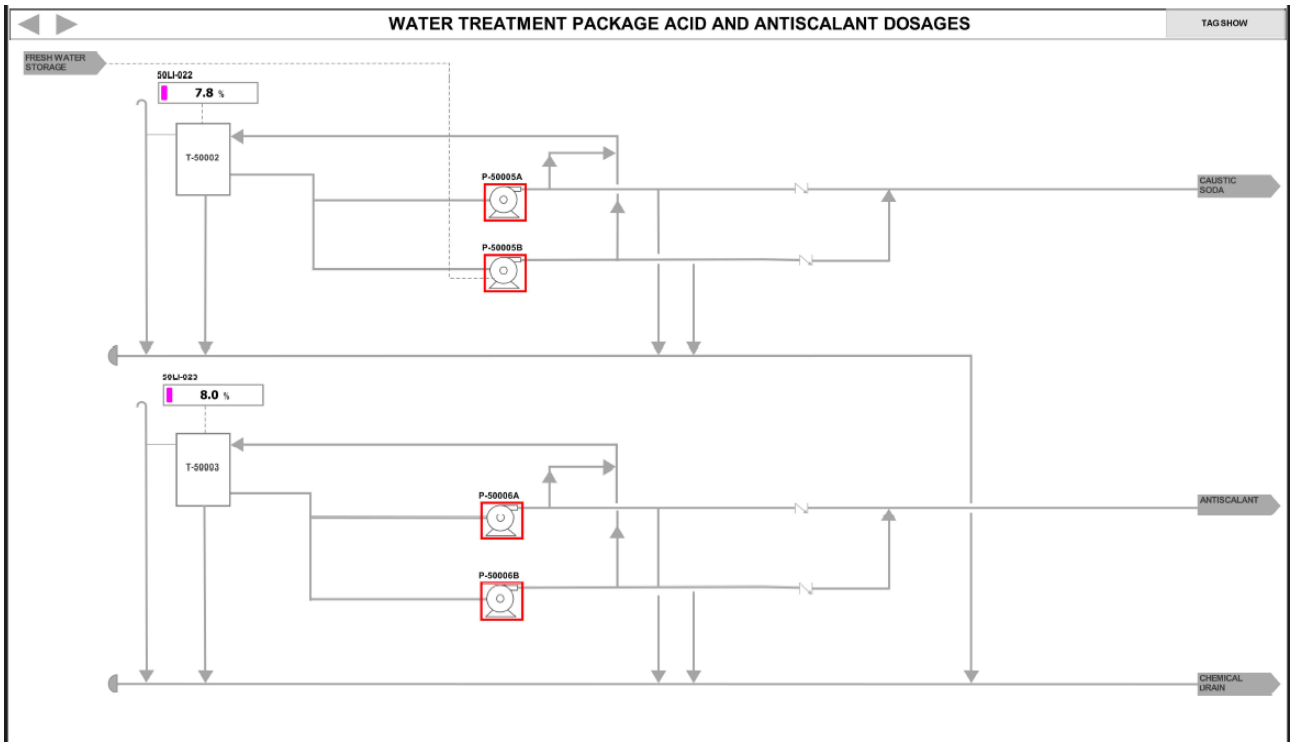
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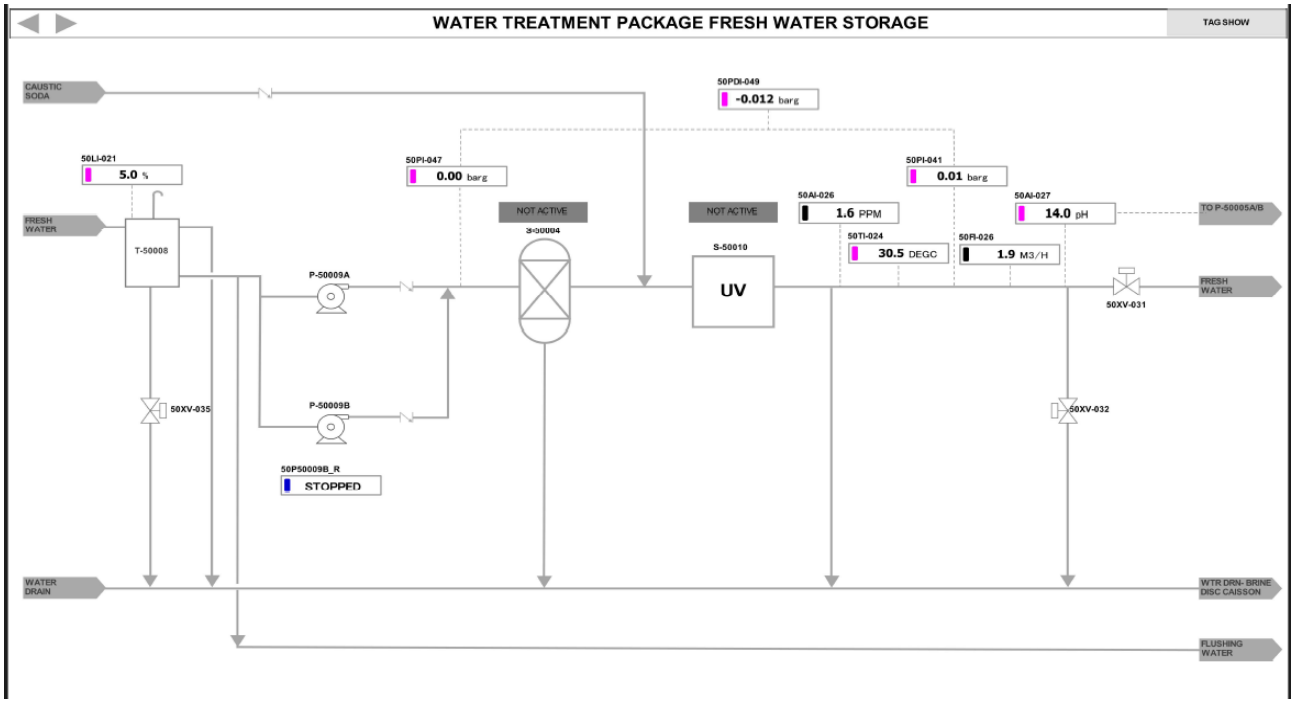
- WTP_SEA_WATER_REVERSE_OSMOSIS



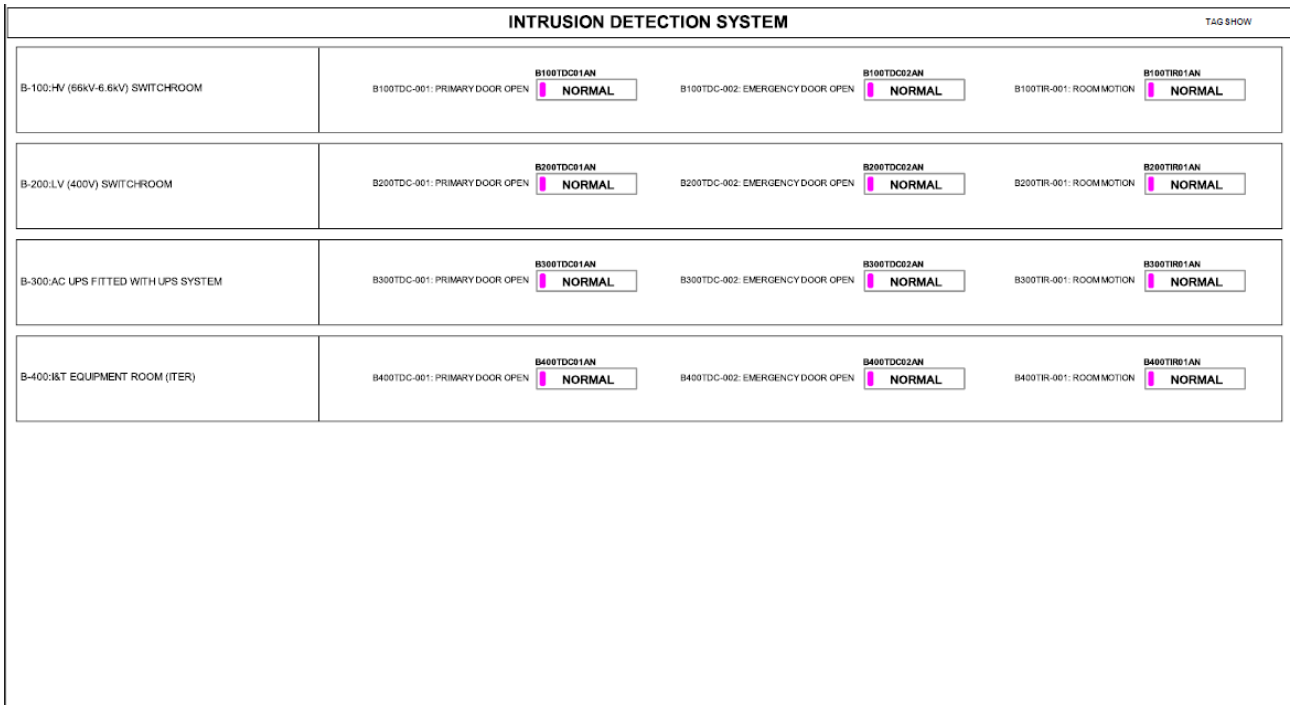
- WTP_ACID_ANTISCALANT_DOSAGES



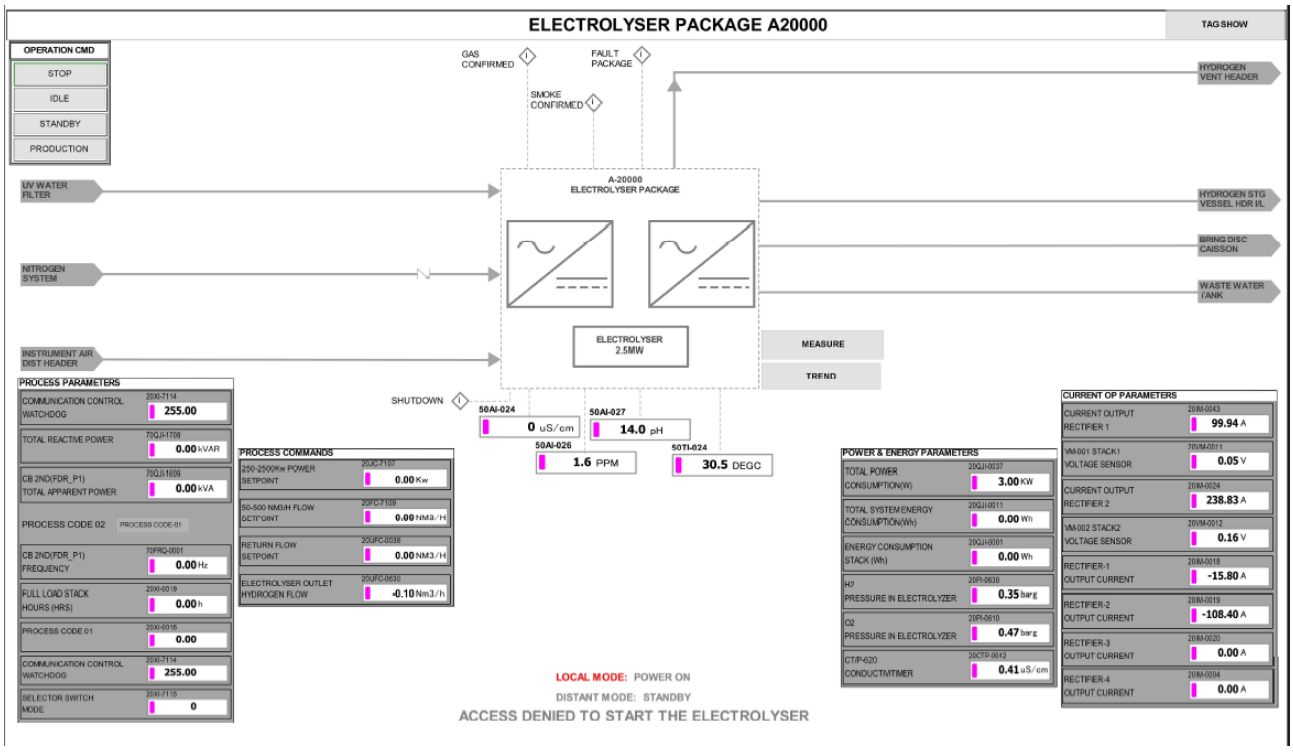
- WTP_FRESH_WATER_STORAGE



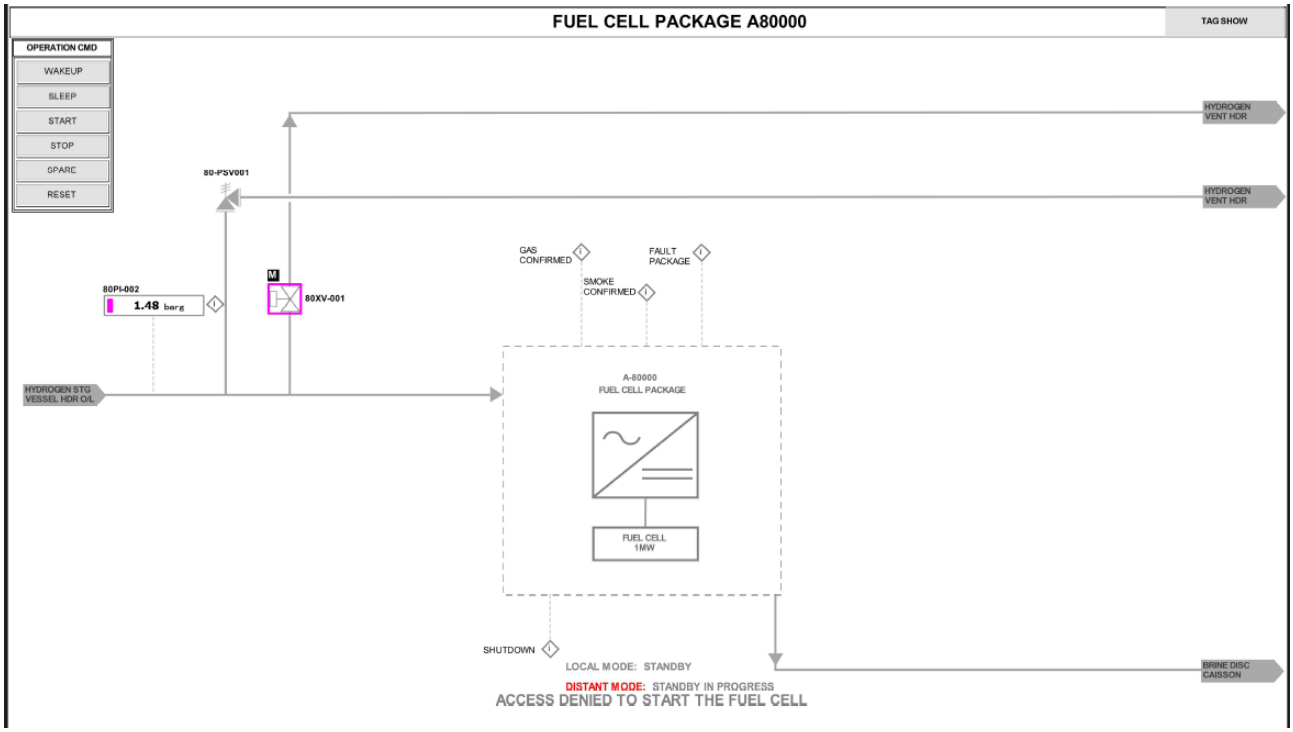
- INTRUSION_DETECTION_SYSTEM



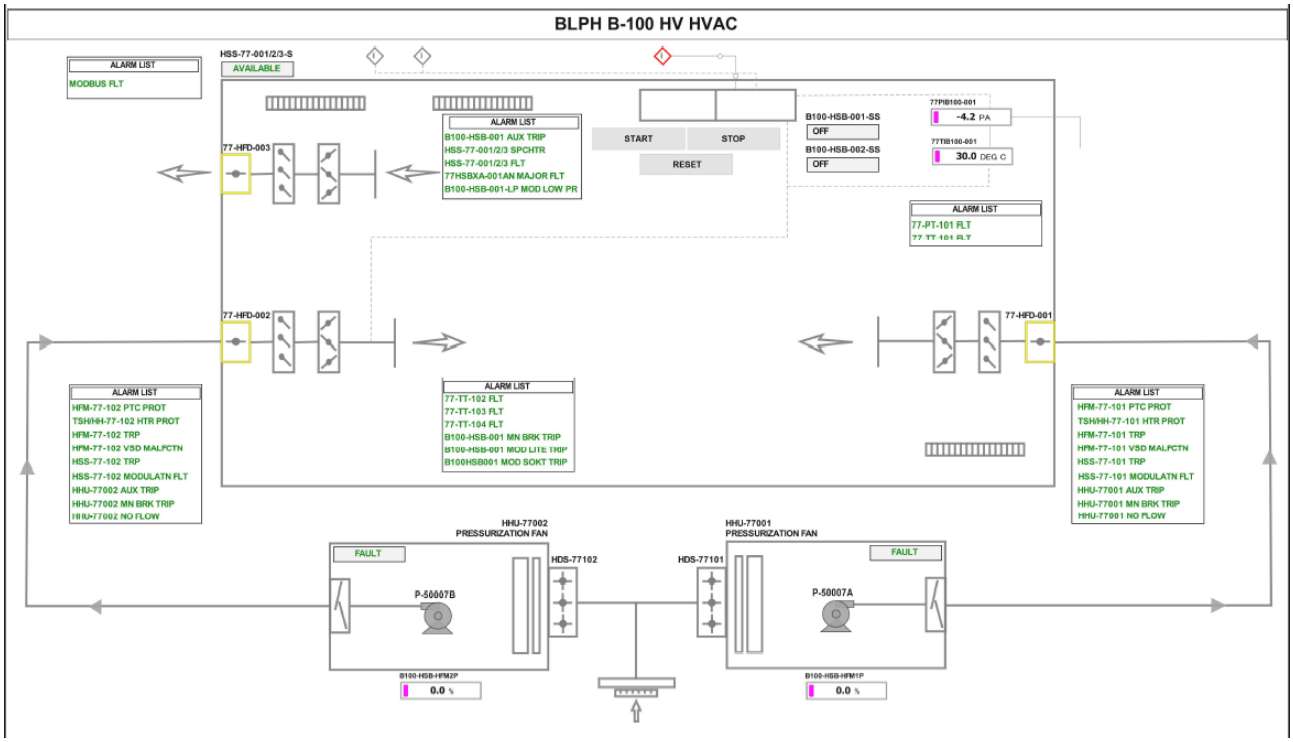
- ELECTROLYSER_PACKAGE_A20000



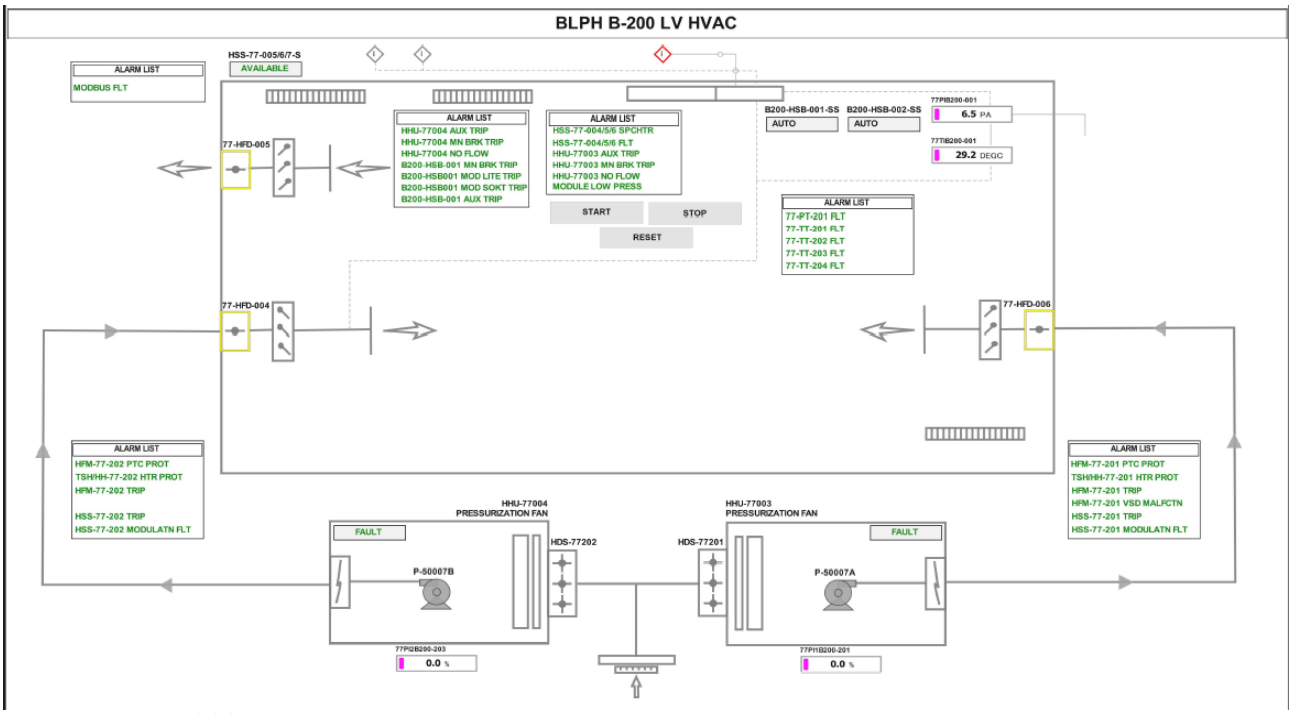
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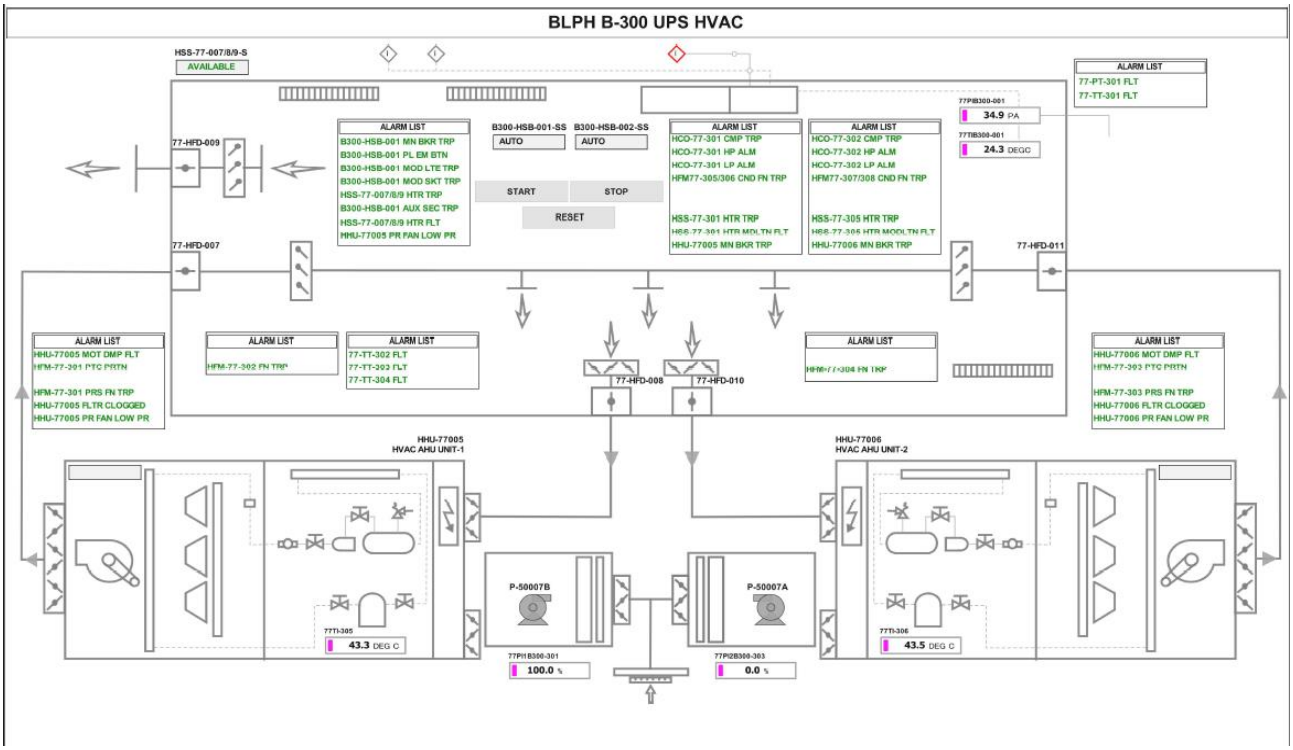
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- BLPH_B200_HV

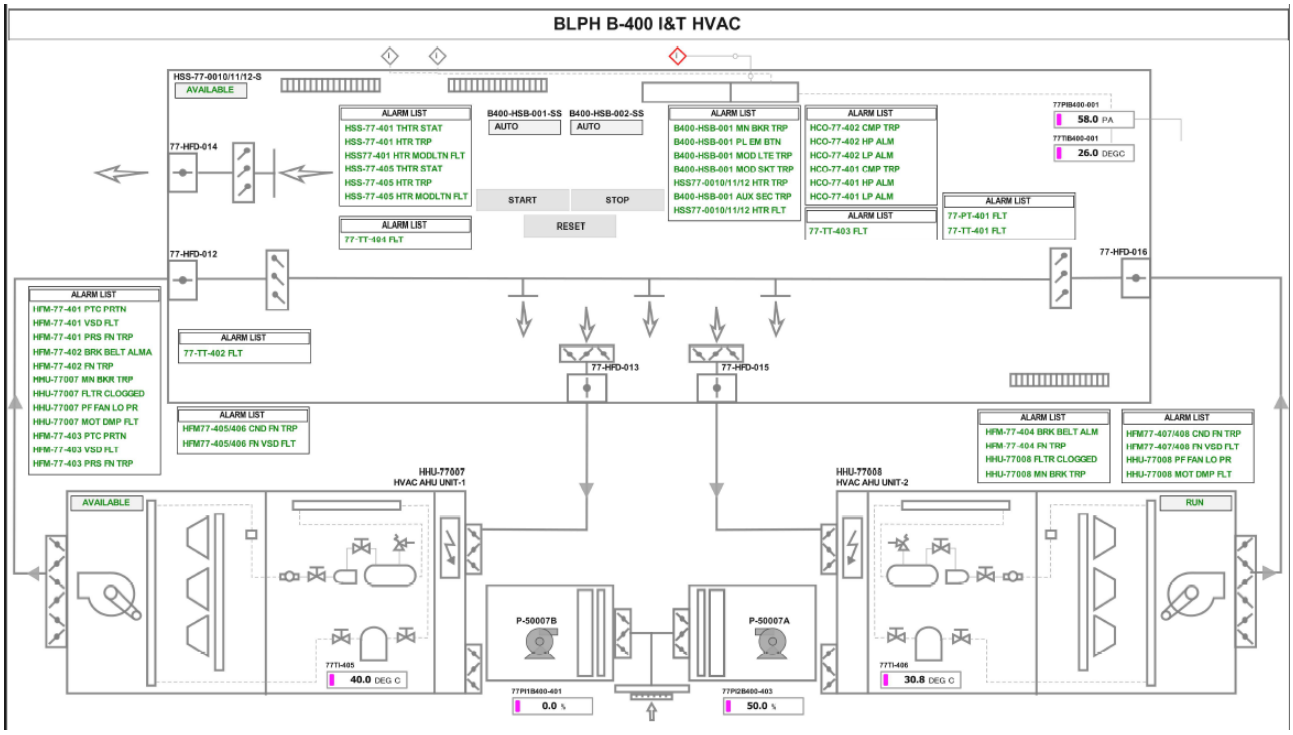


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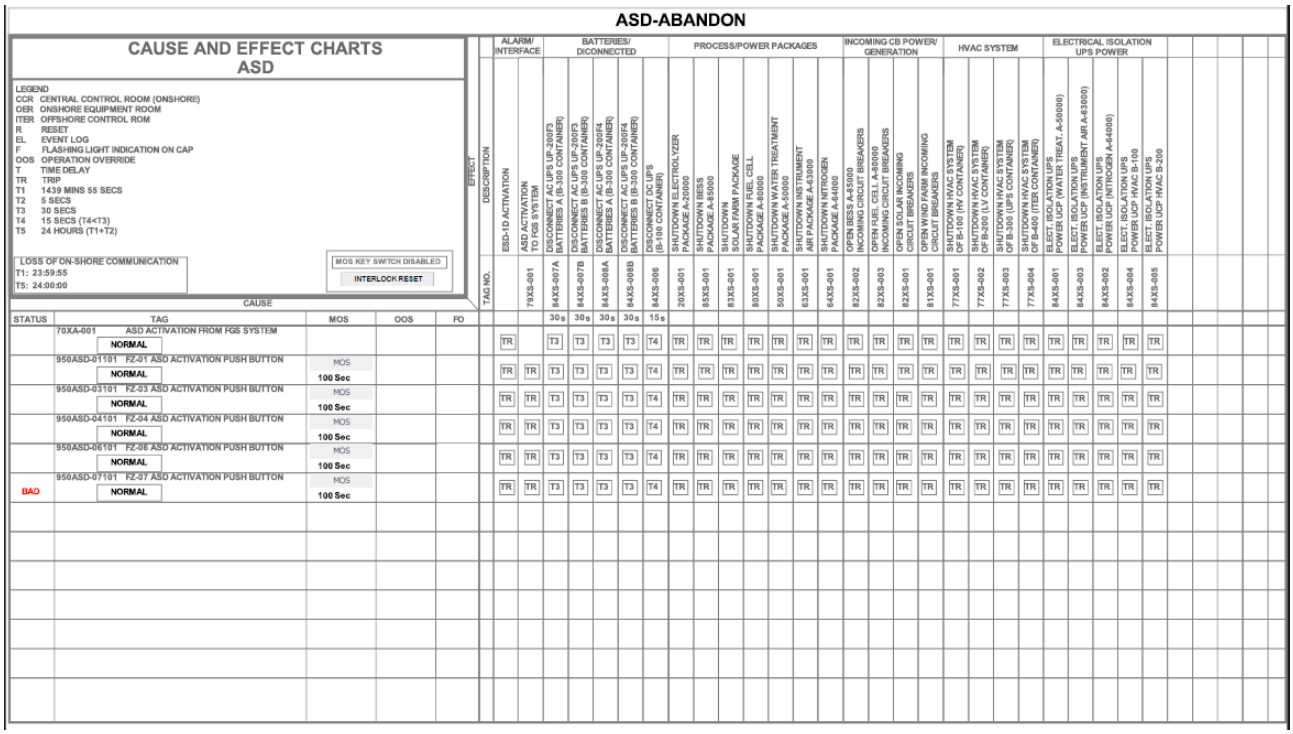


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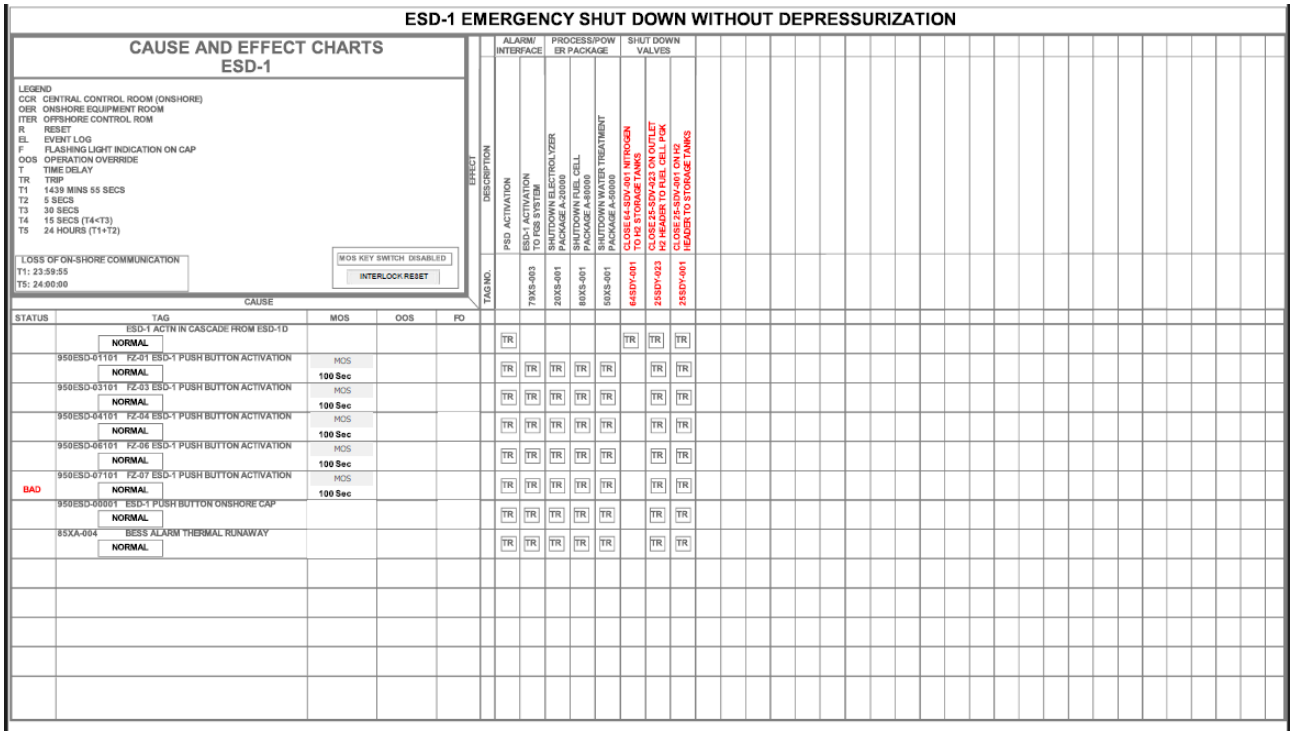
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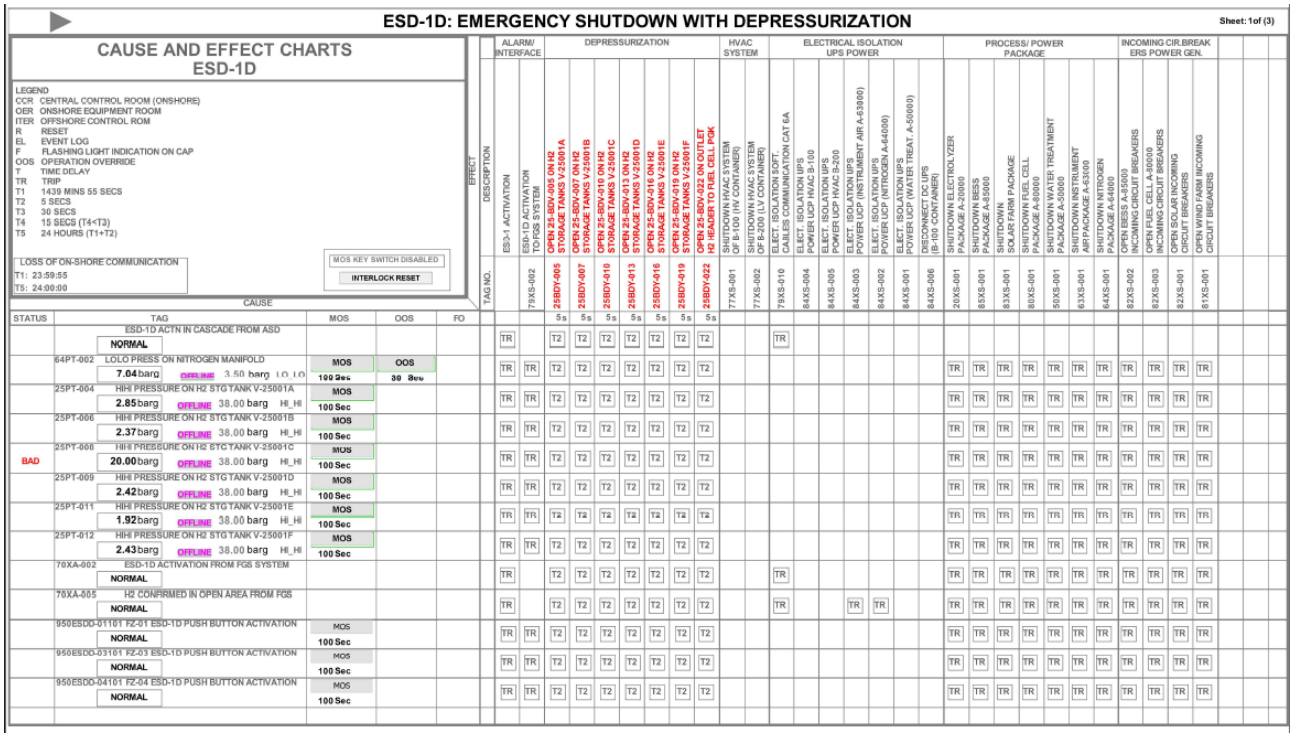
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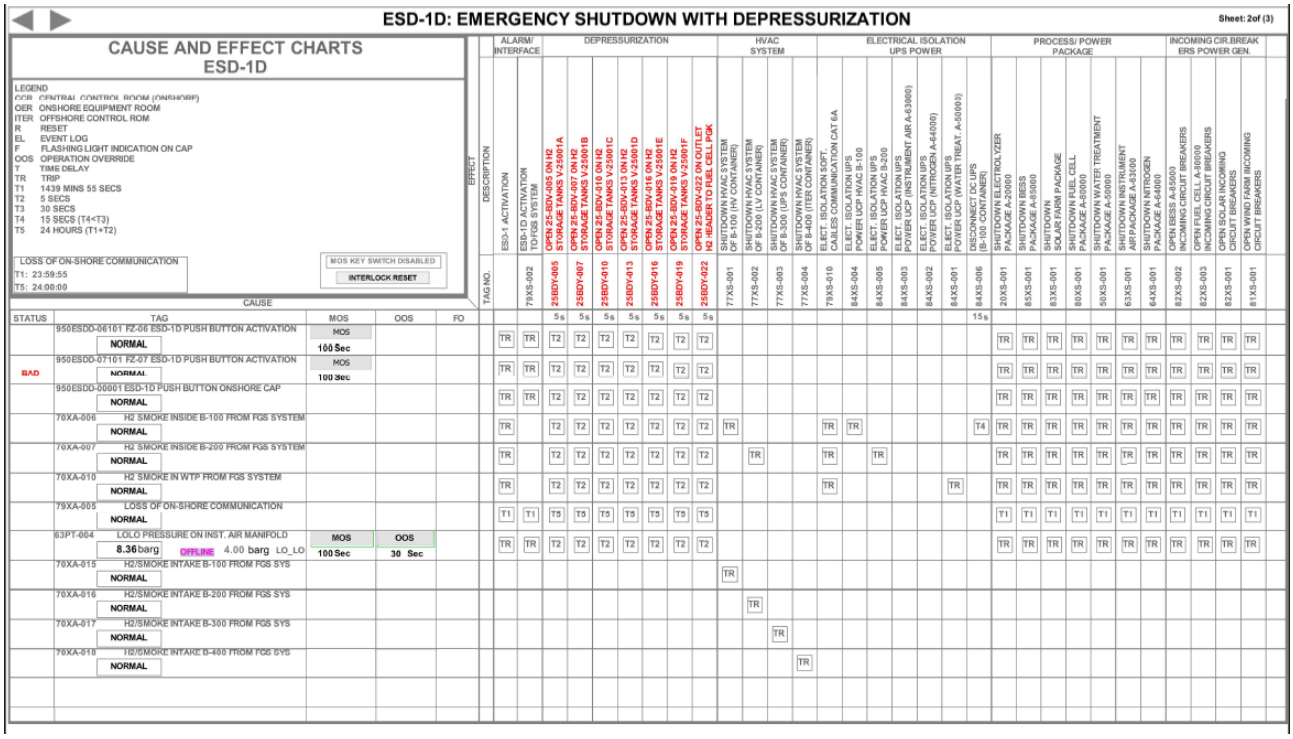
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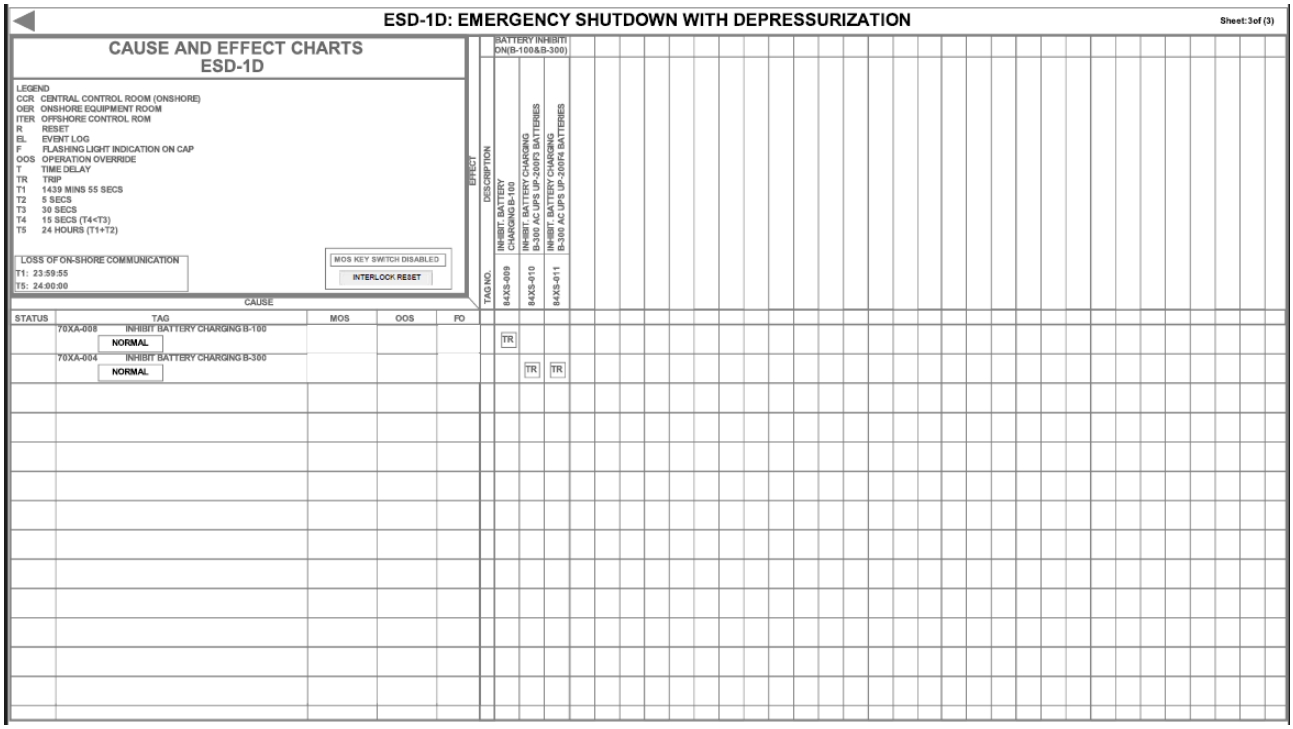
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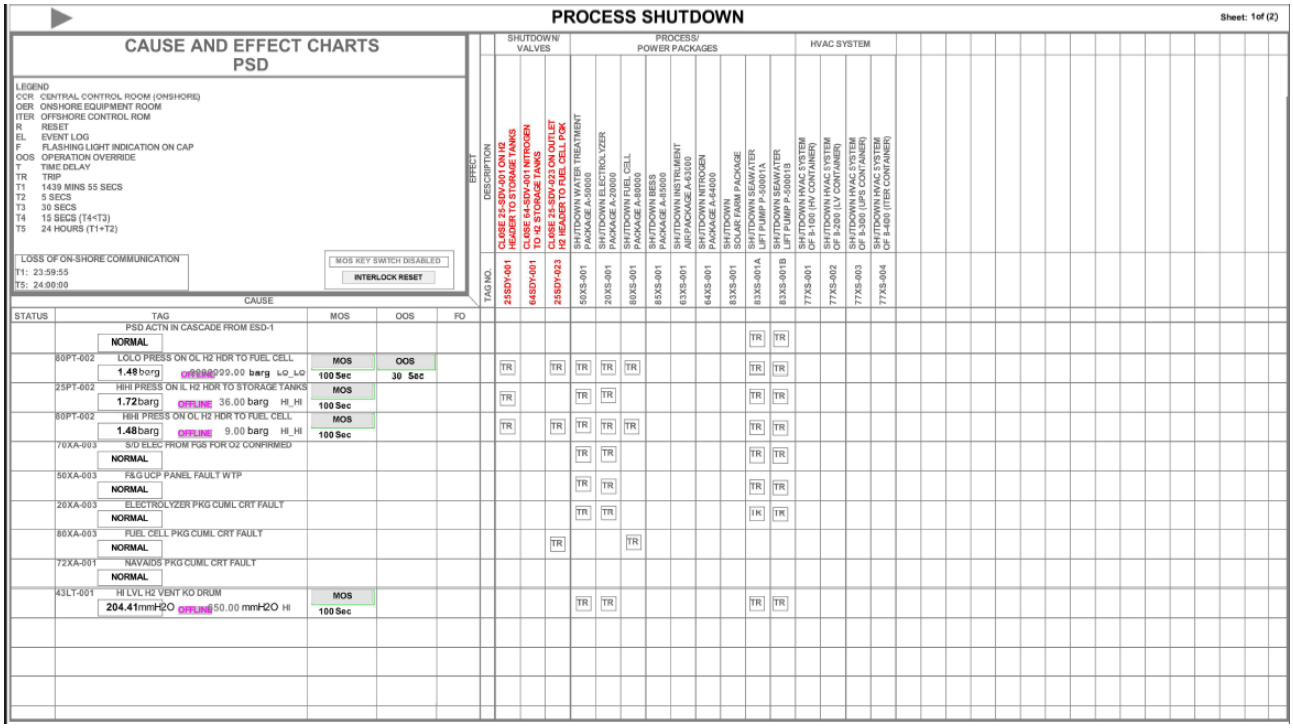
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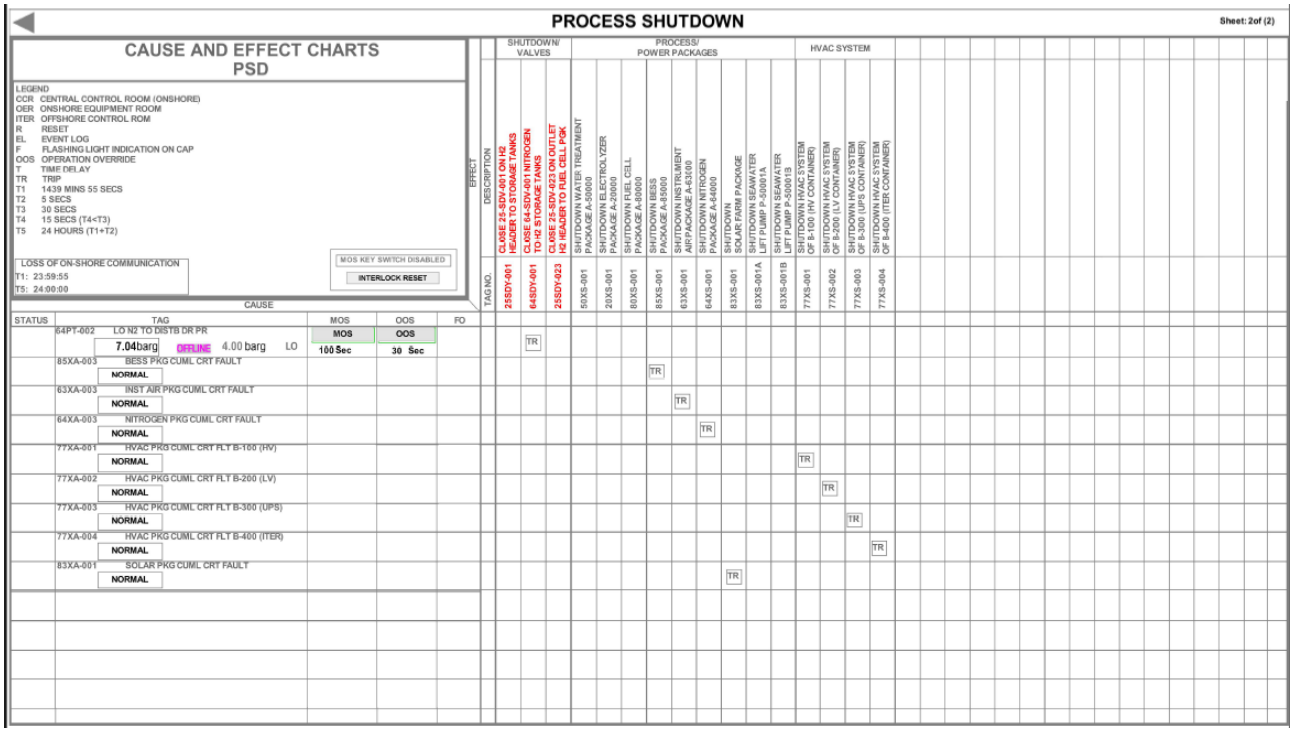
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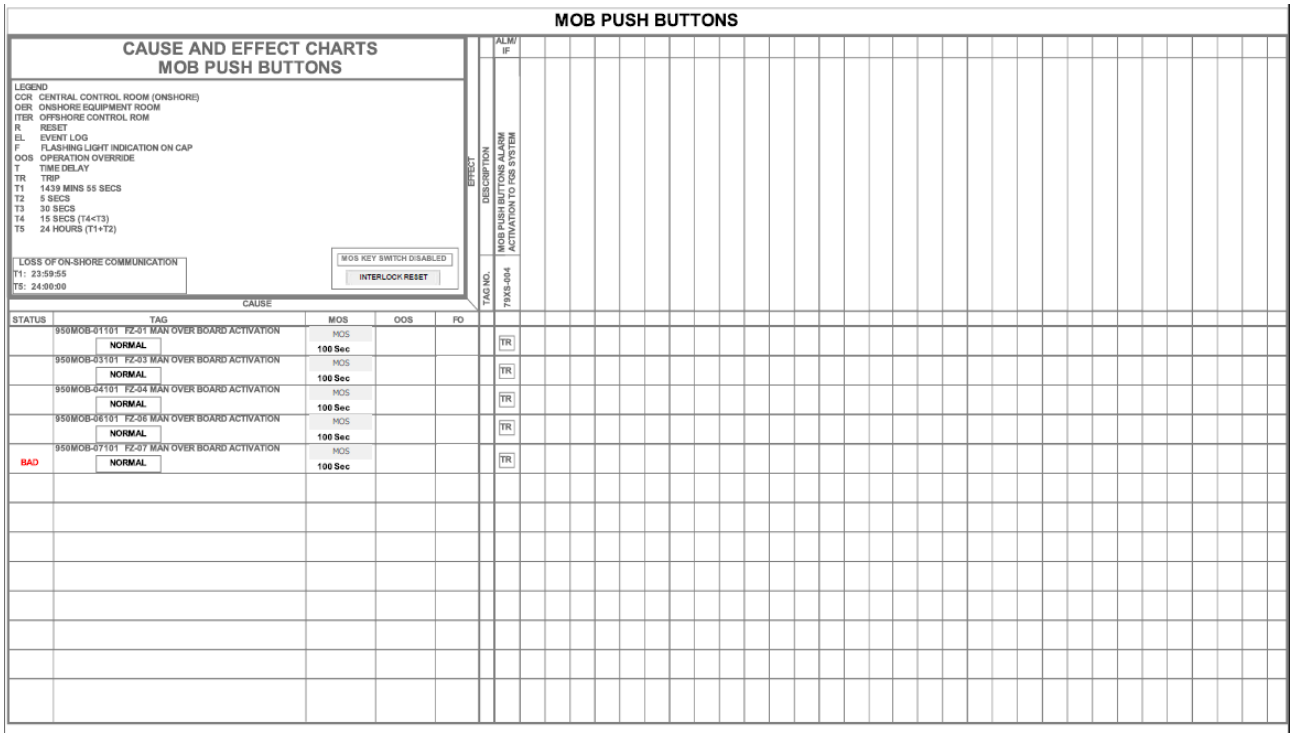
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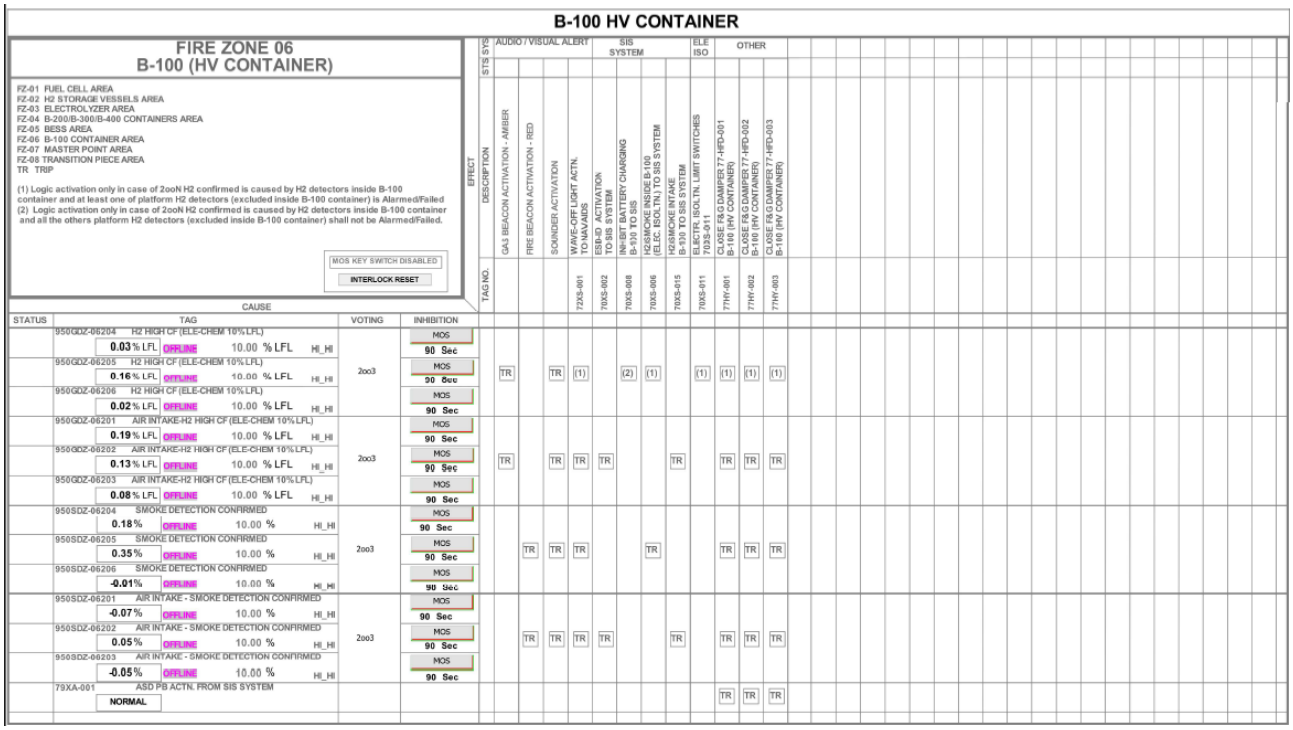
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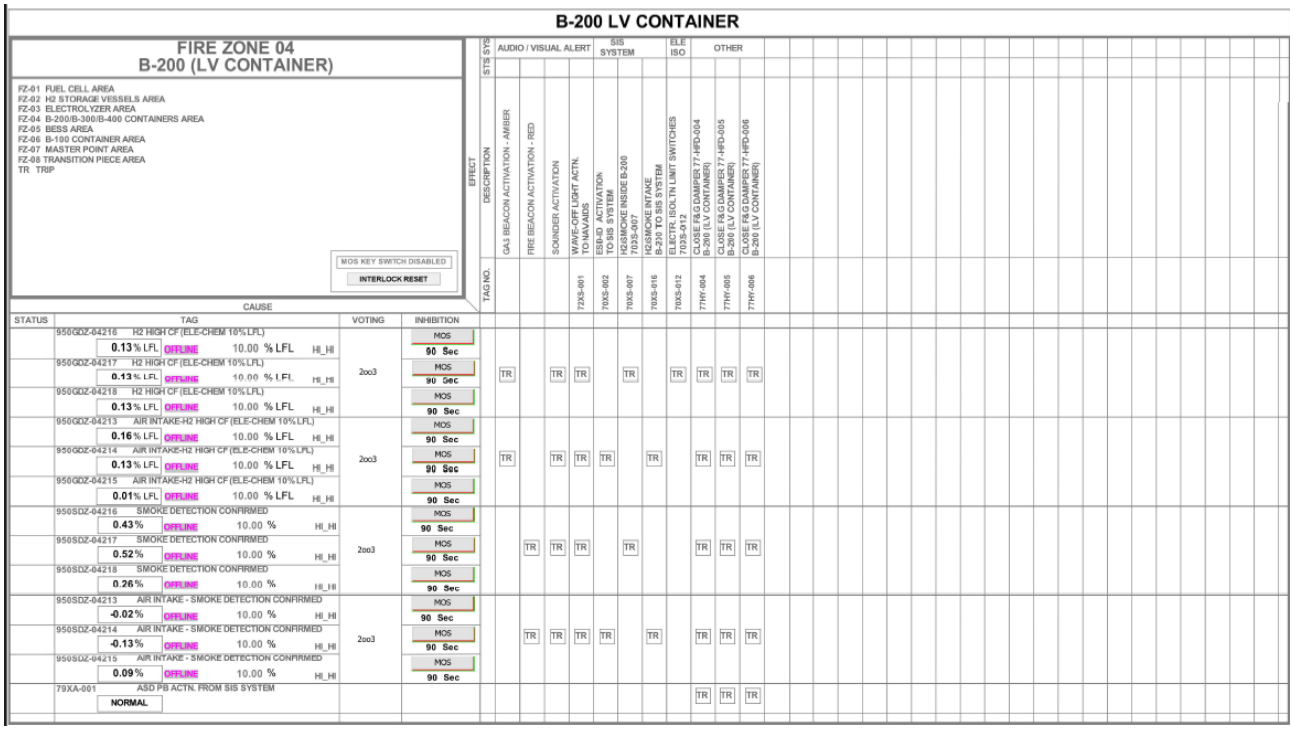
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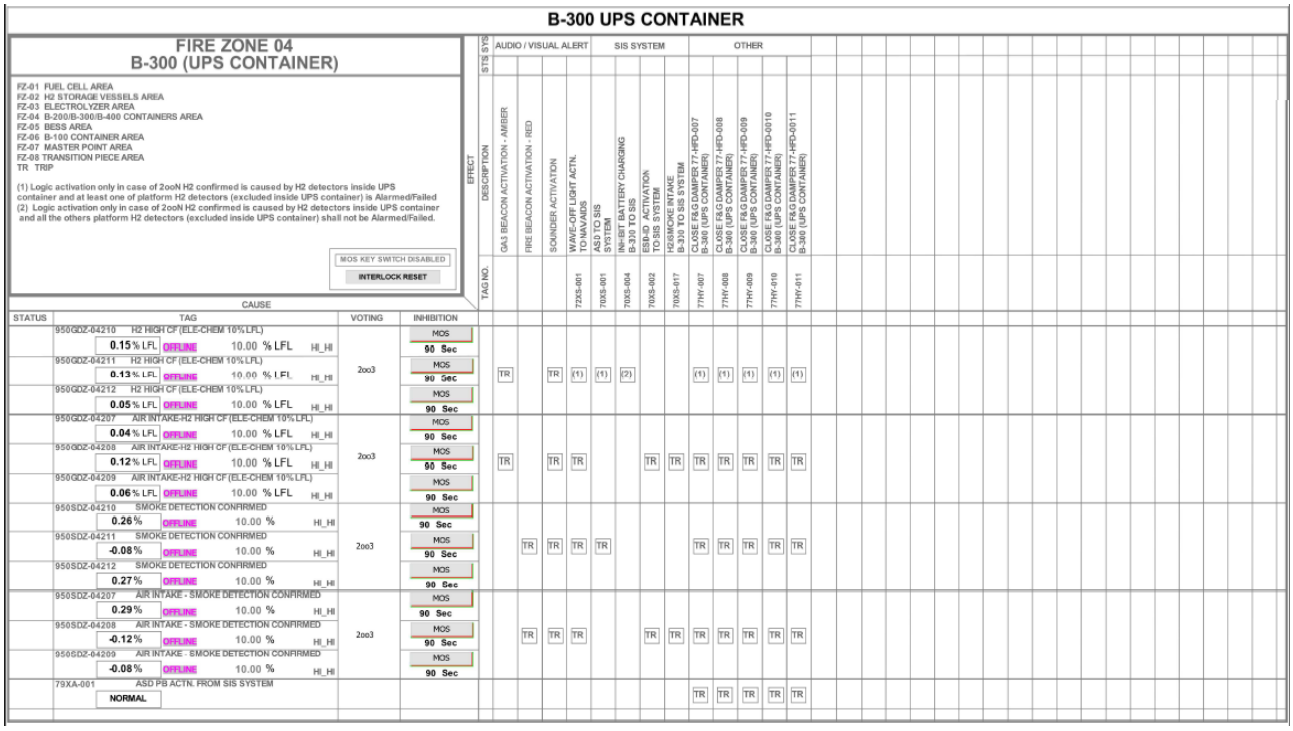
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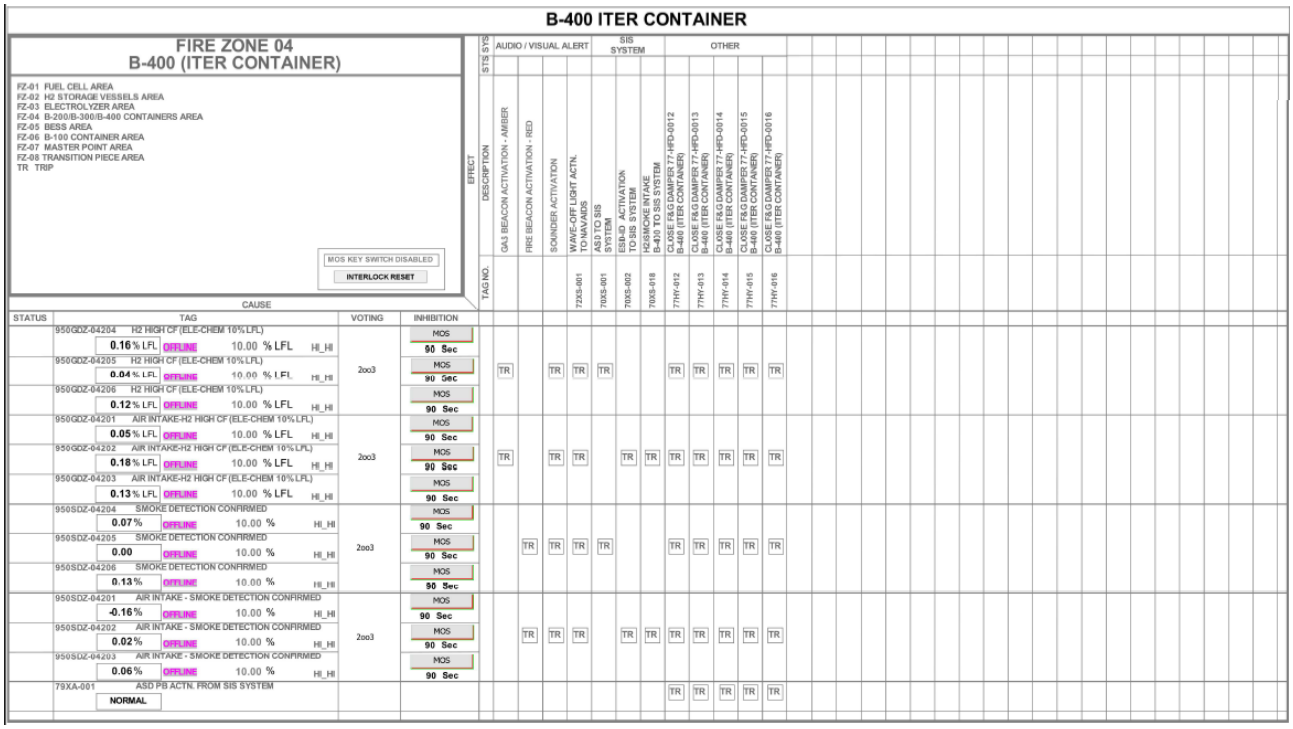
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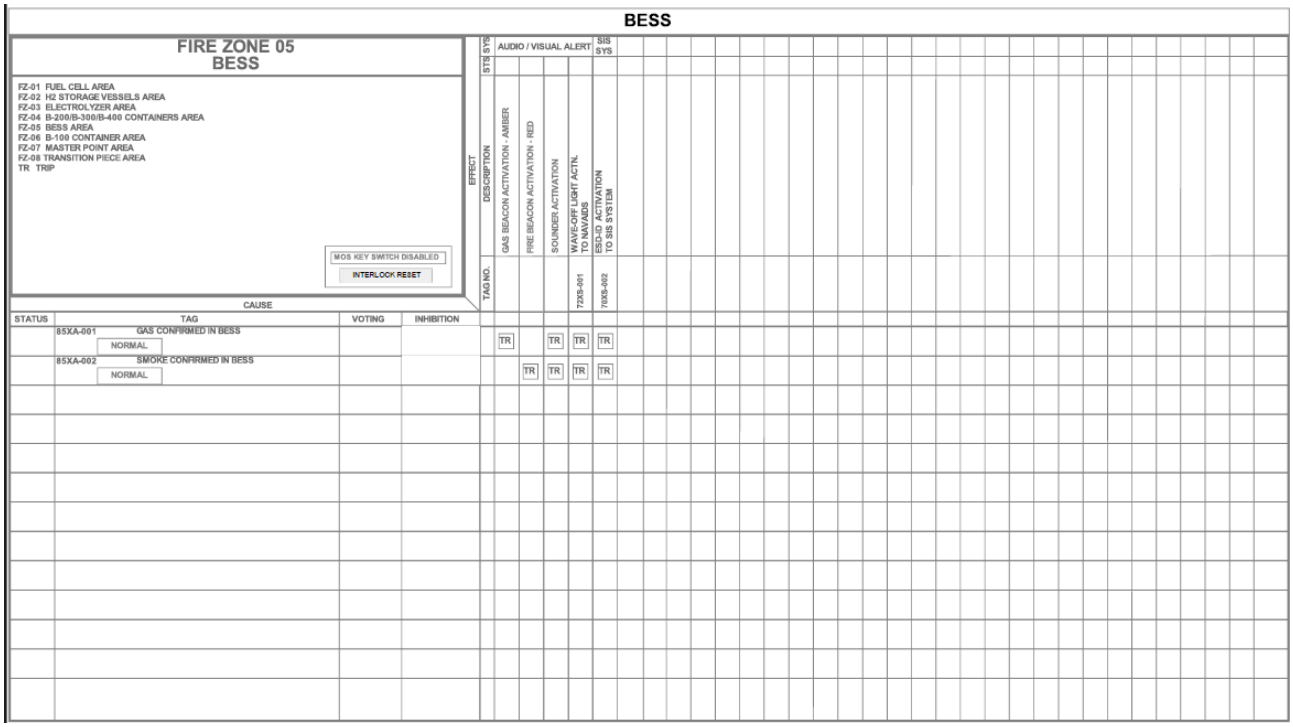
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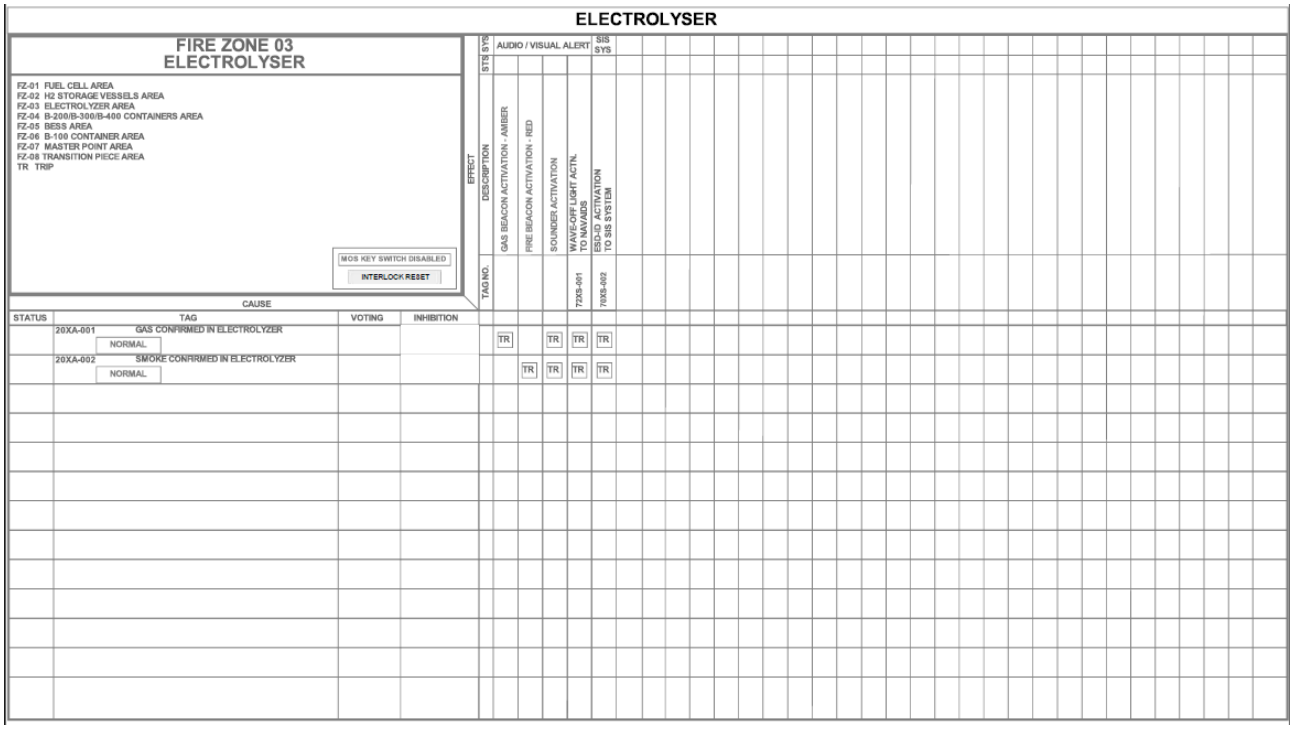
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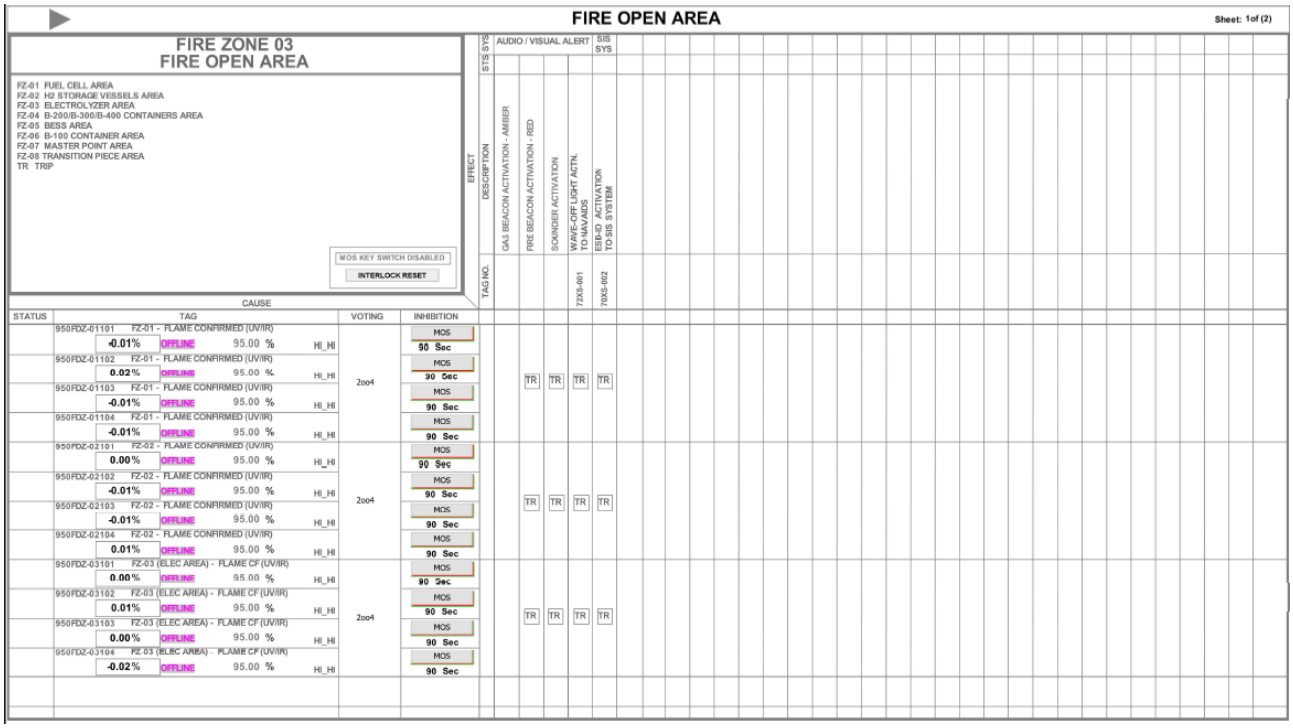
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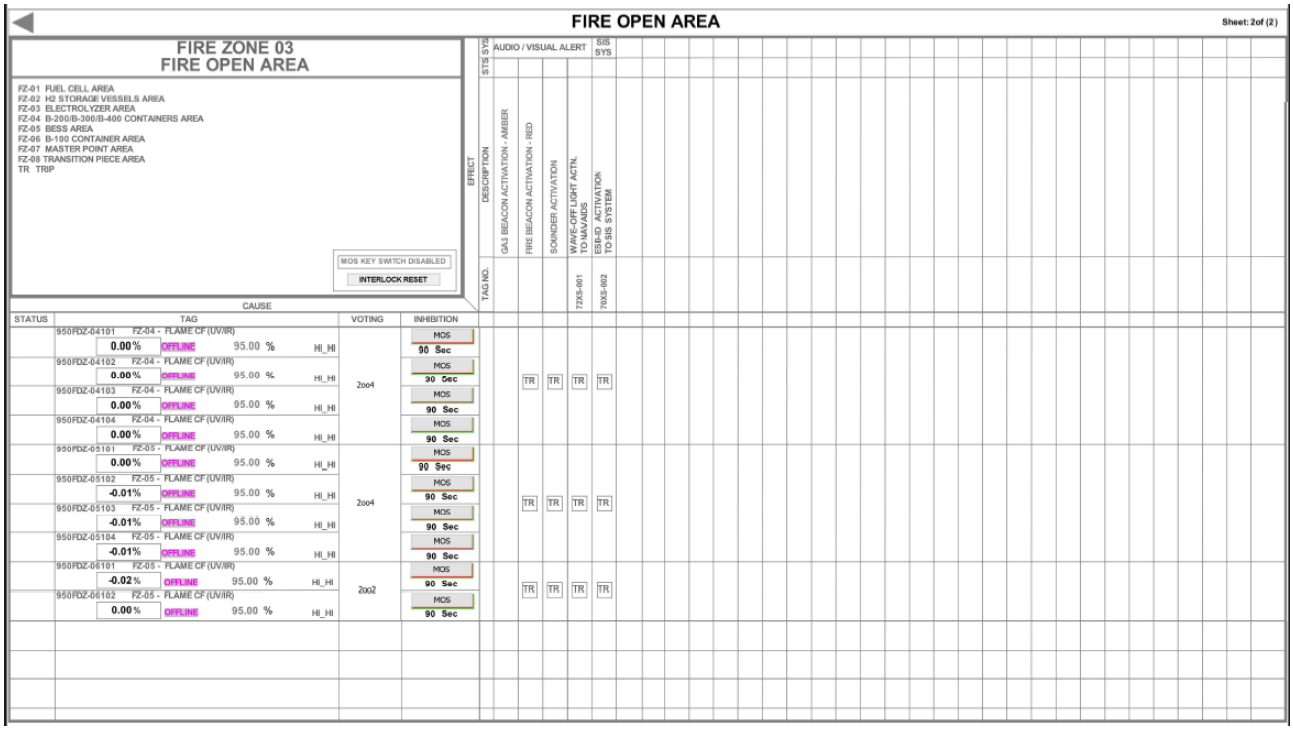
- CE_ELECTROLYSER



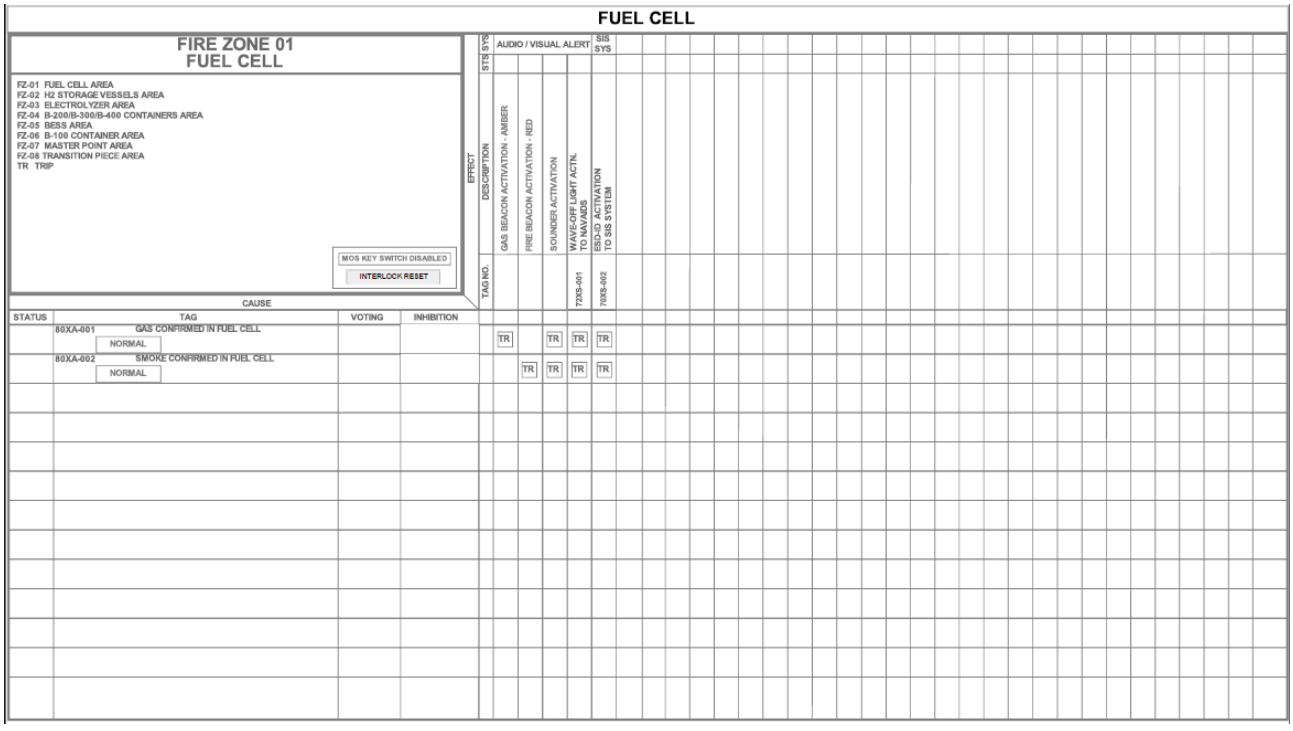
- CE_FIRE_OPEN_AREA_1



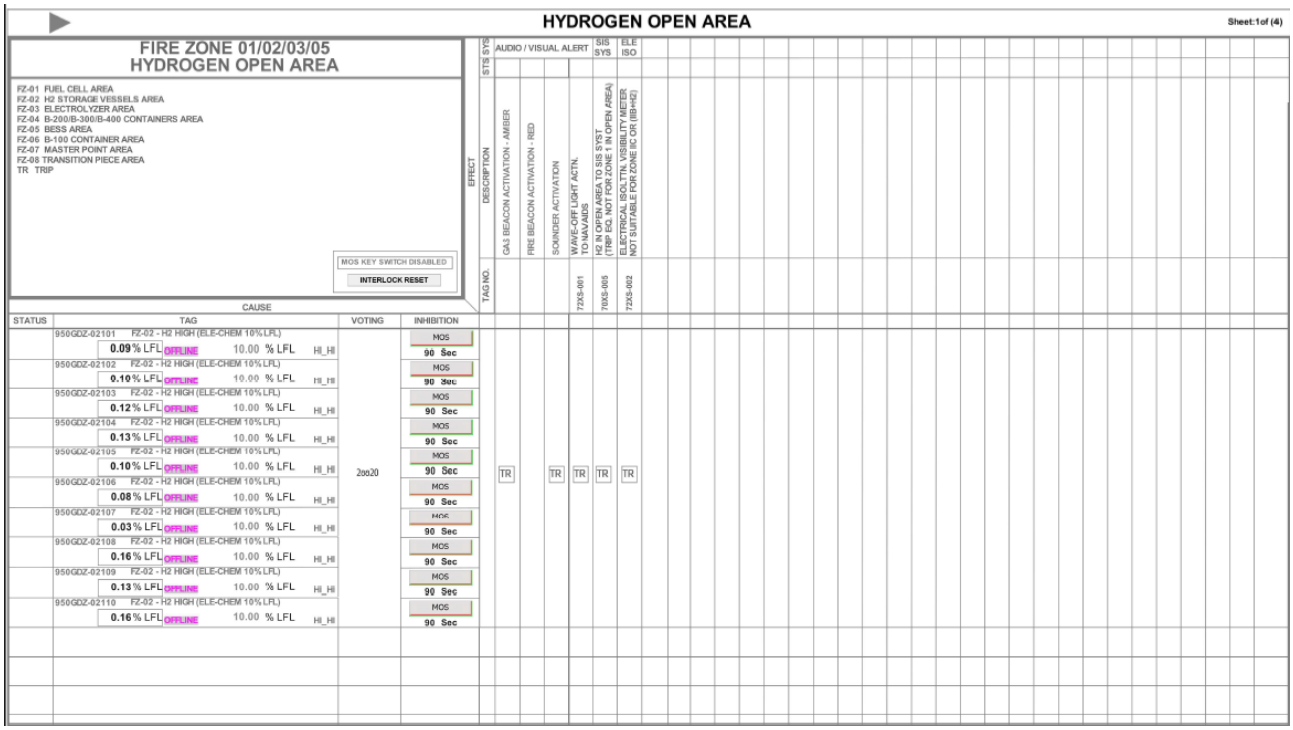
- CE_FIRE_OPEN_AREA_2



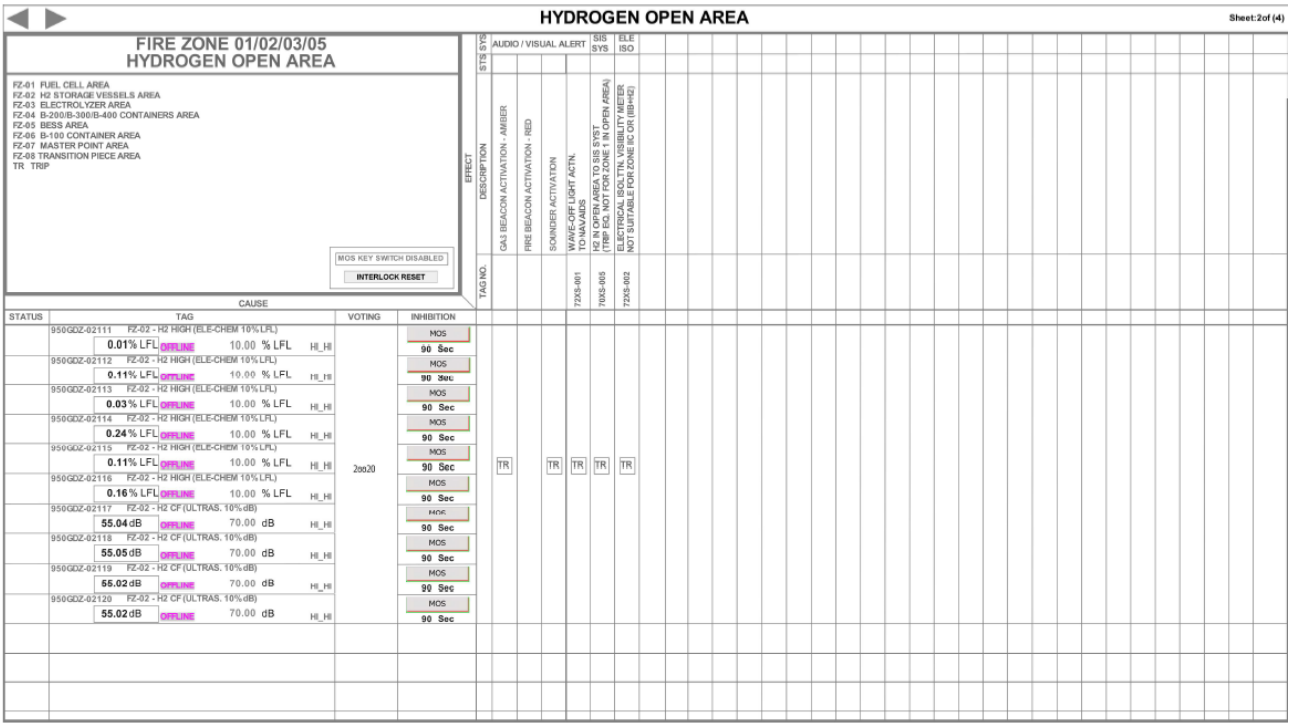
- CE_FUEL_CELL



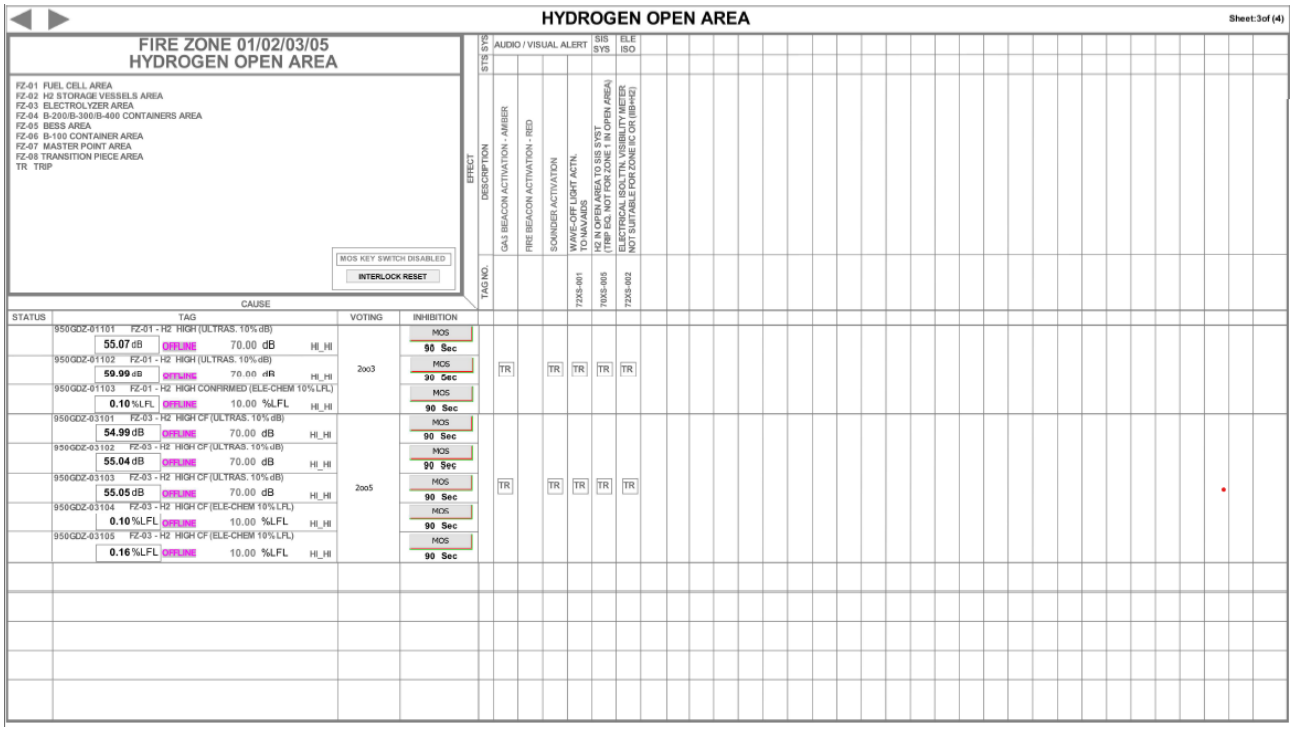
- CE_H2_OPEN_AREA_1A



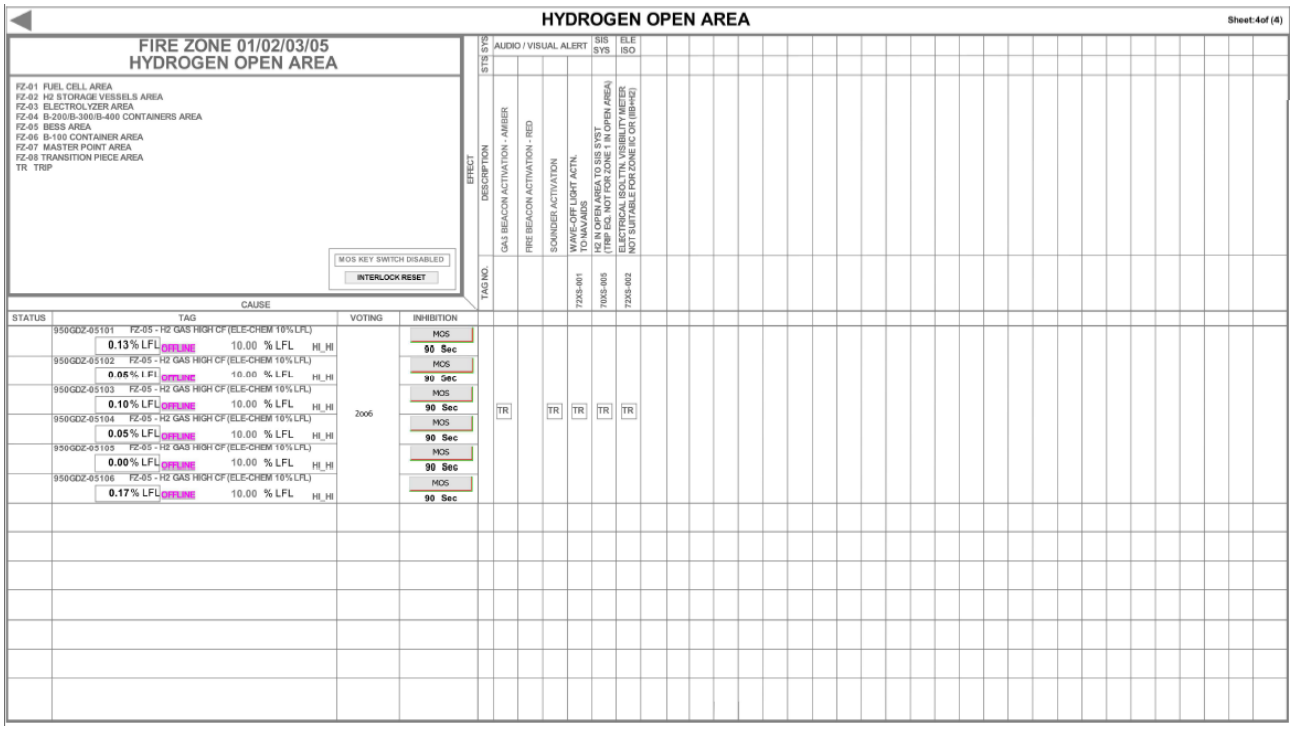
- CE_H2_OPEN_AREA_1B



- CE_H2_OPEN_AREA_2

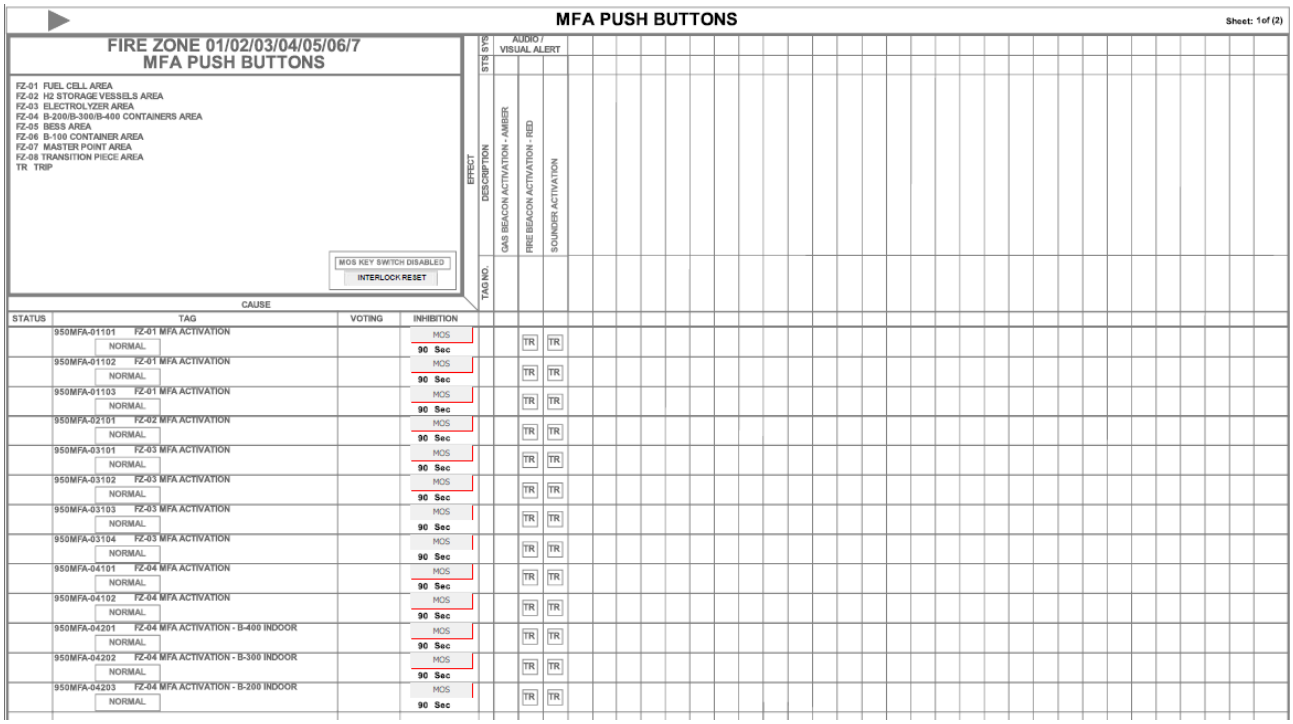


- CE_H2_OPEN_AREA_3

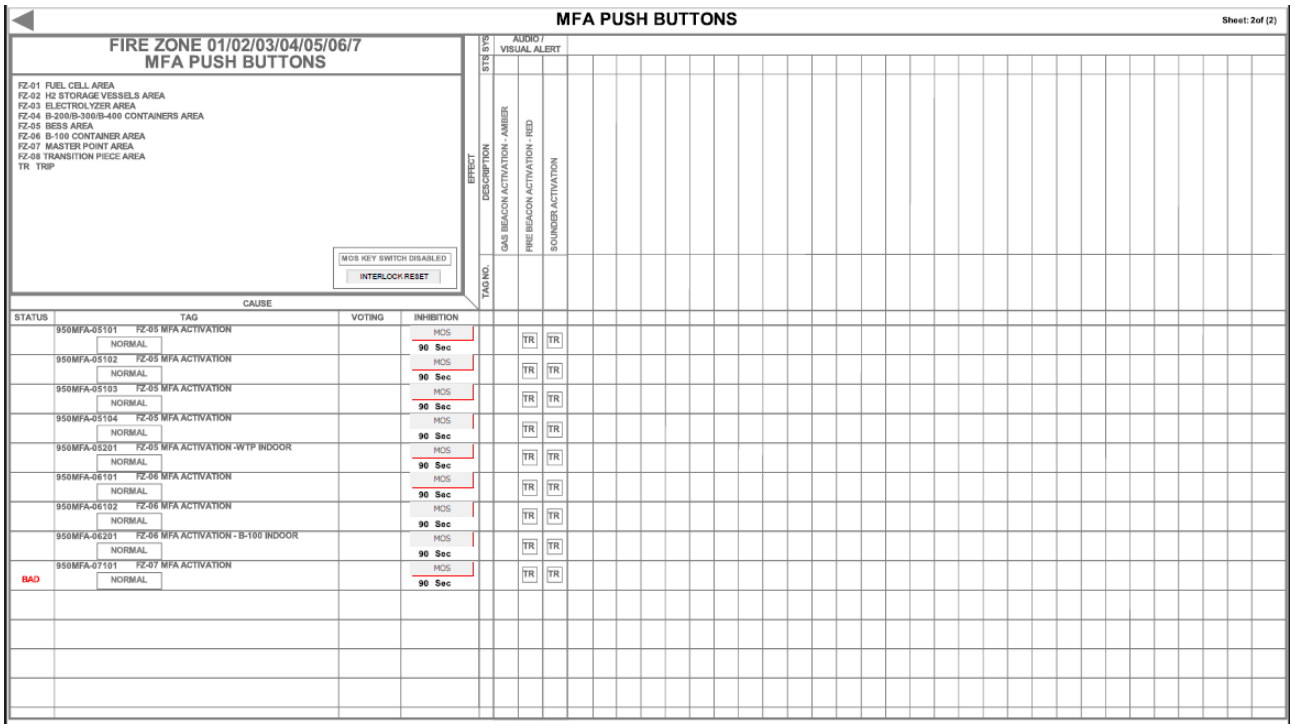


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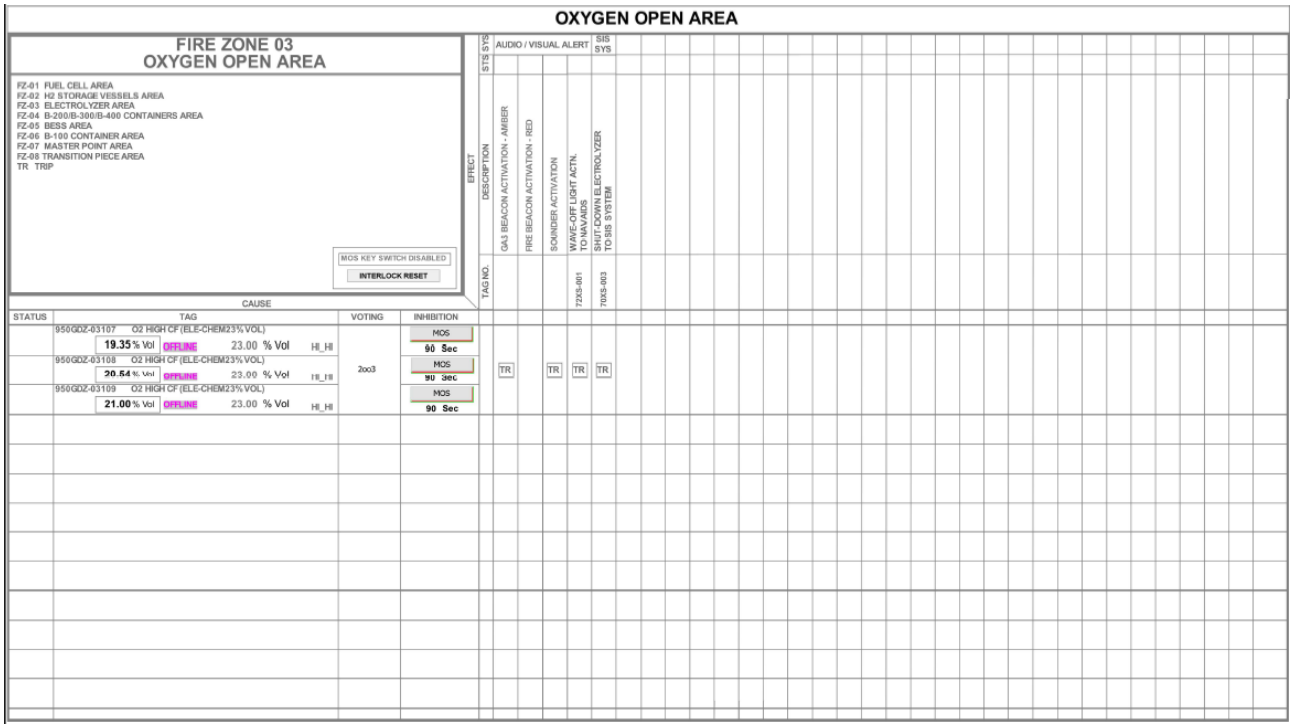
- CE_MFA_PUSH_BUTTONS_1



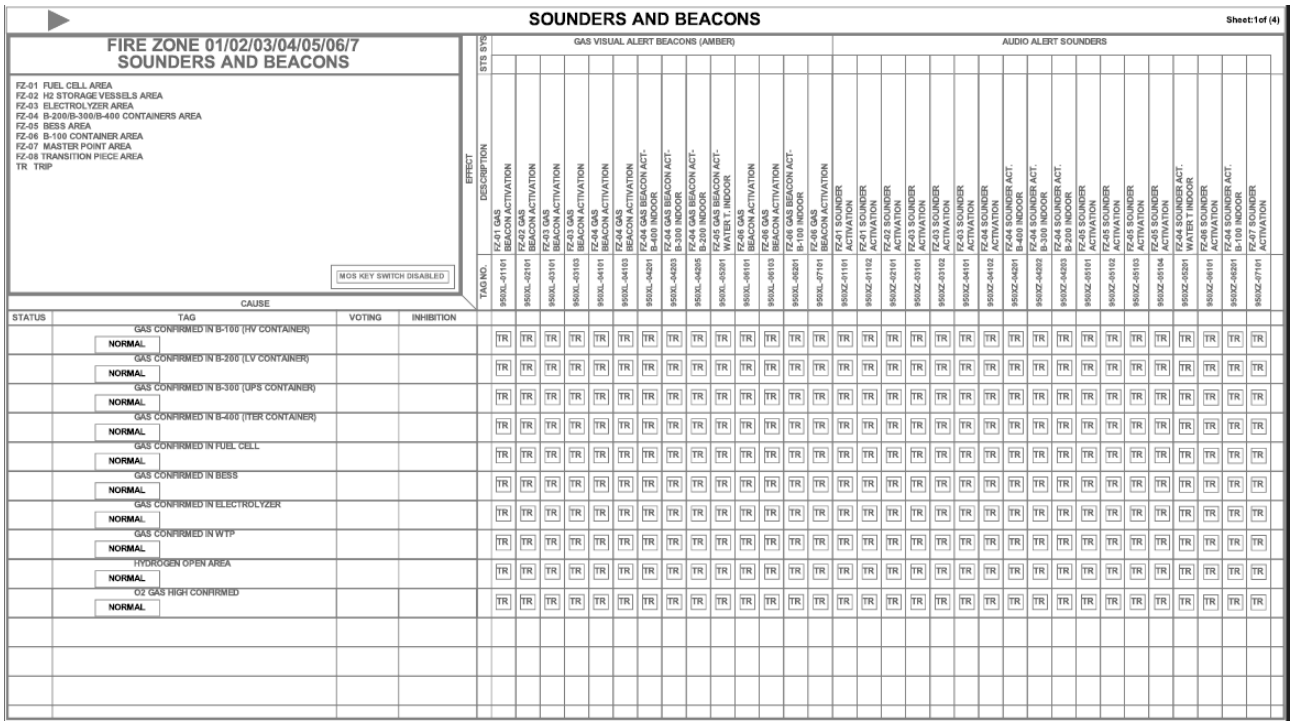
- CE_MFA_PUSH_BUTTONS_2



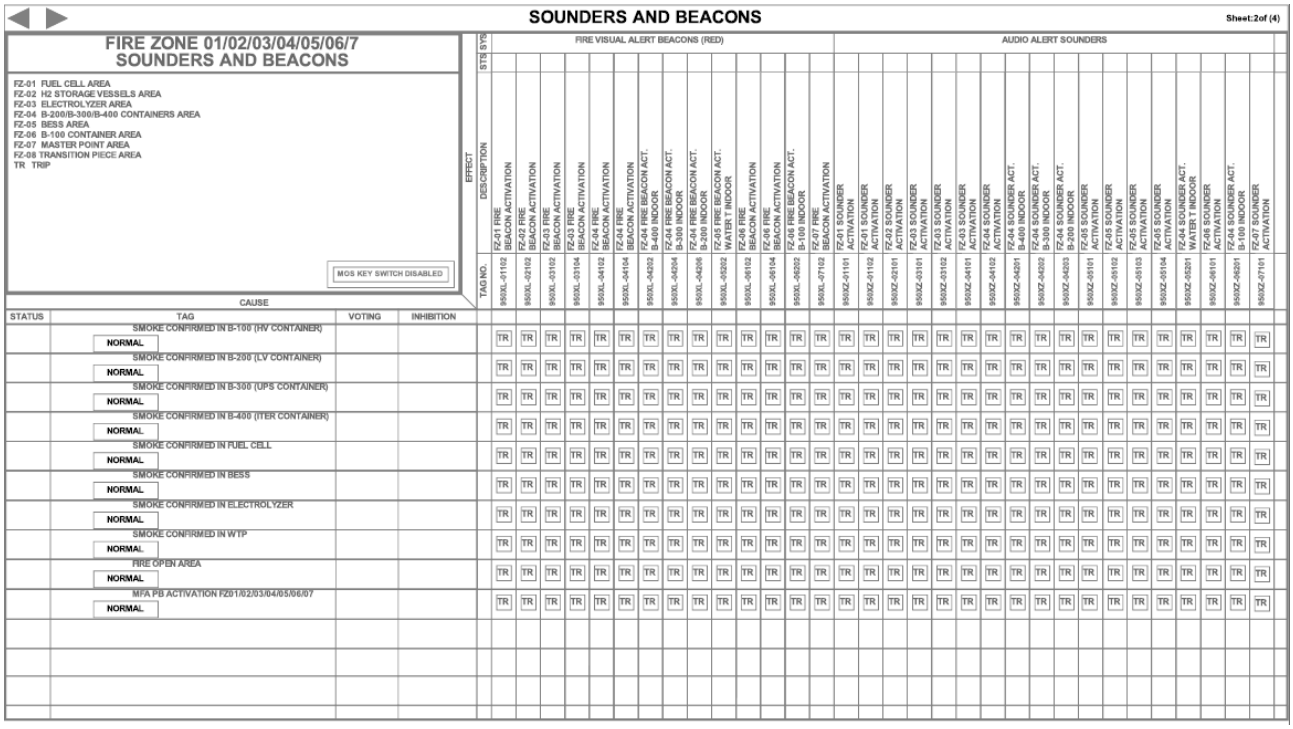
- CE_OXY_OPEN_AREA



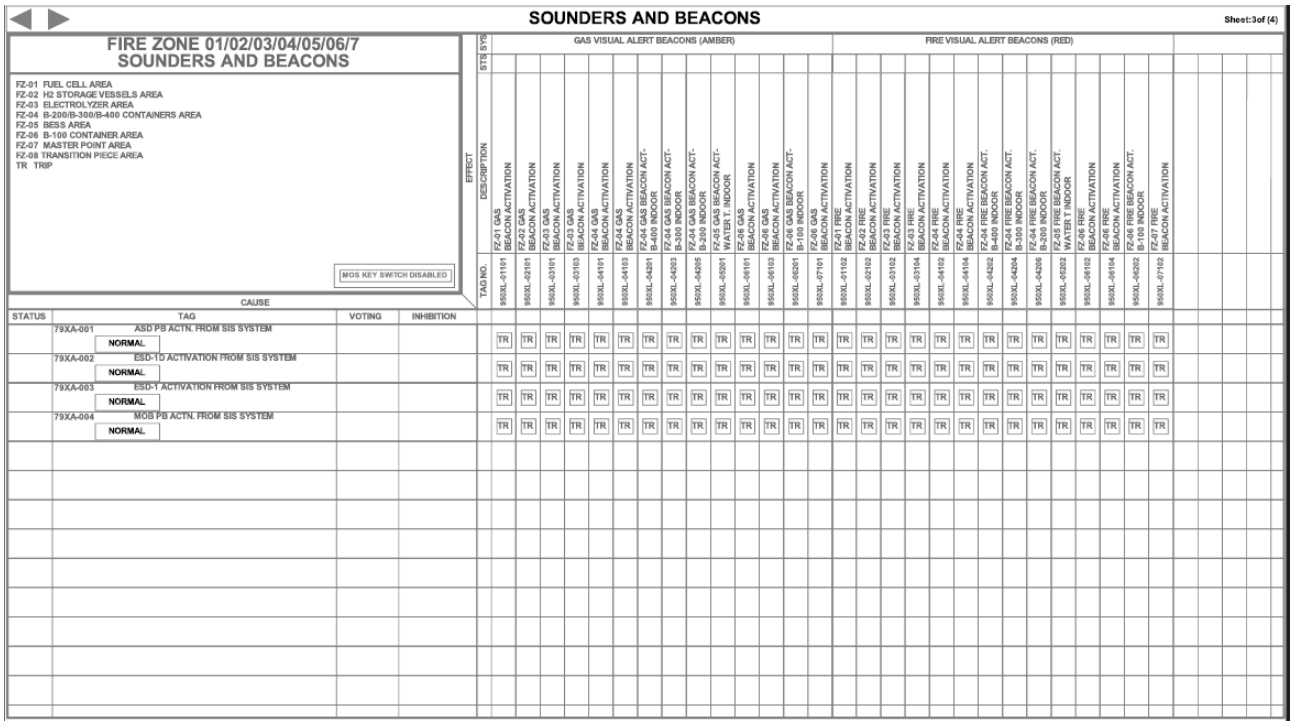
- CE_SOUNDERS_BEACONS_1



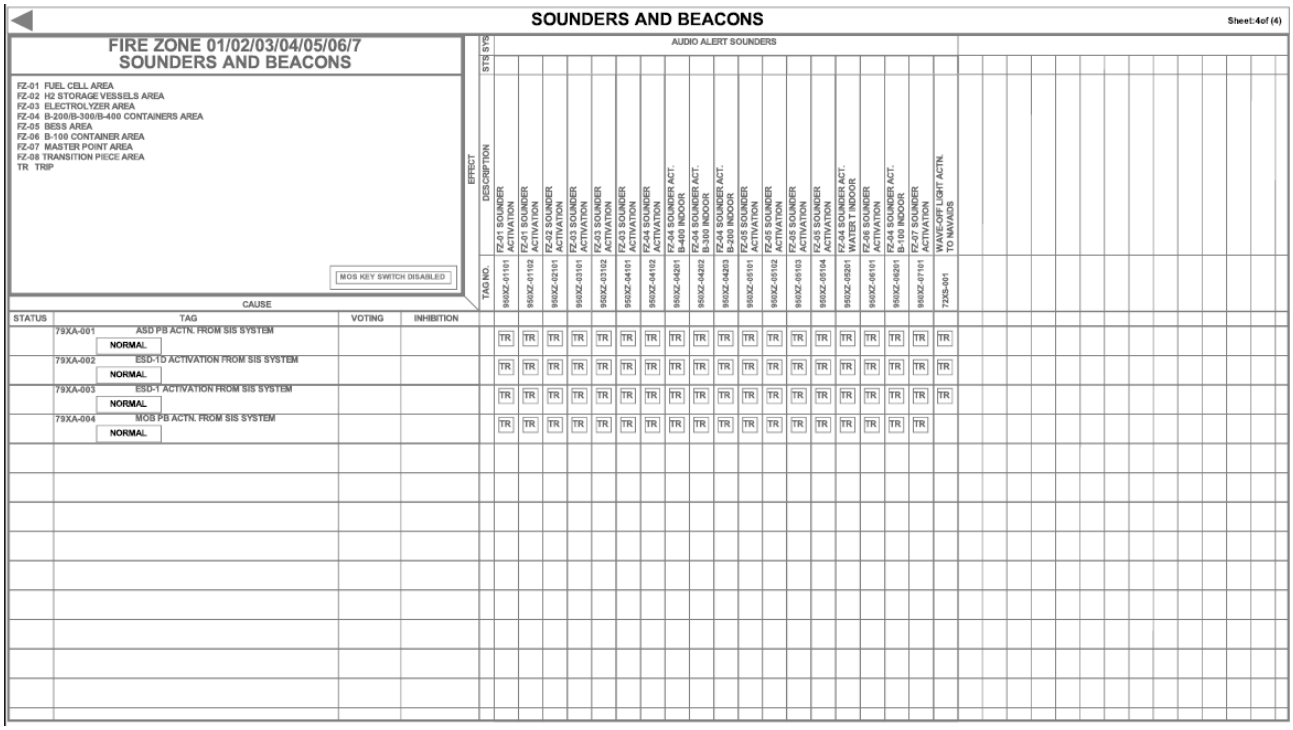
- CE_SOUNDERS_BEACONS_2



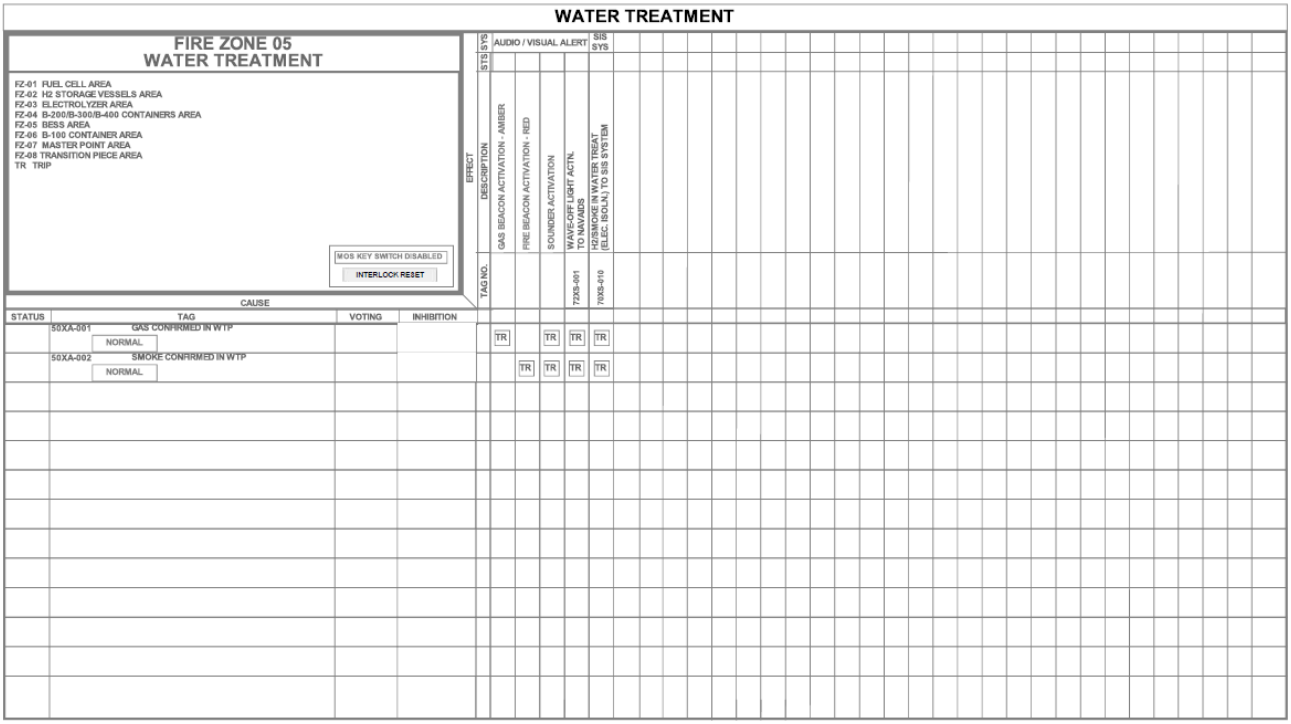
- CE_SOUNDERS_BEACONS_3



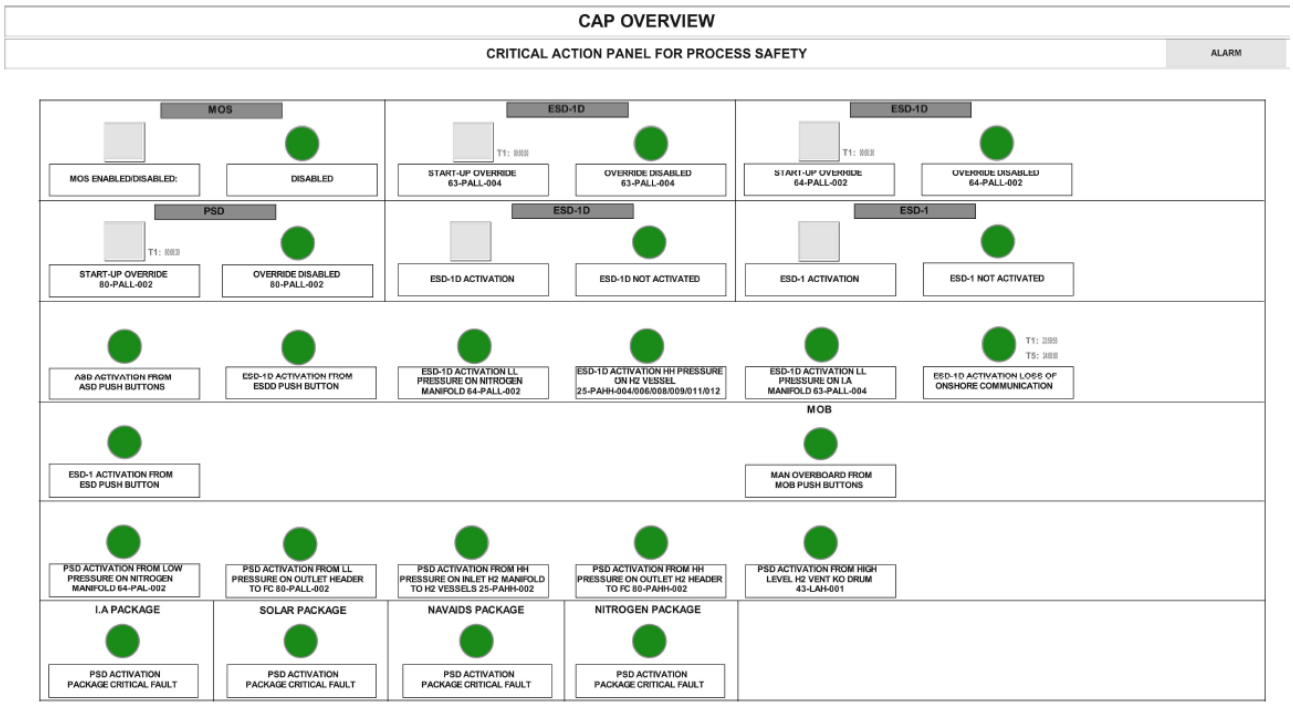
- CE_SOUNDERS_BEACONS_4



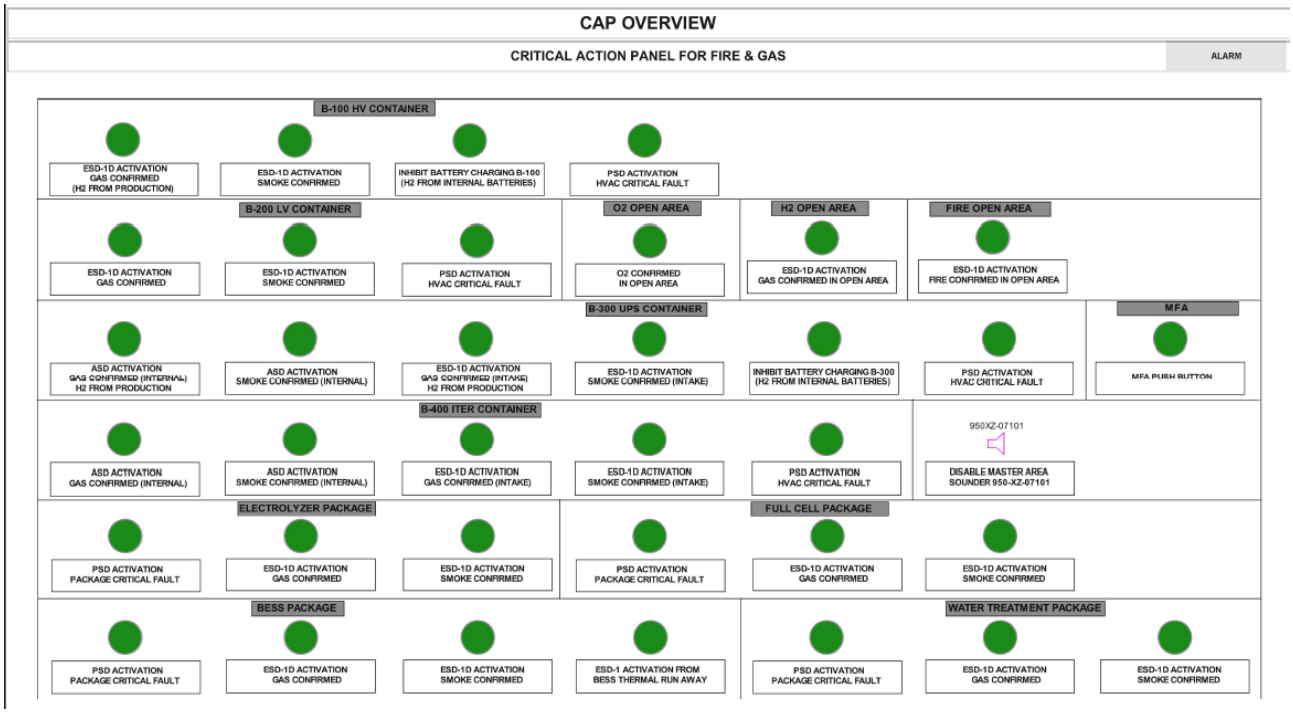
- WATER TREATMENT



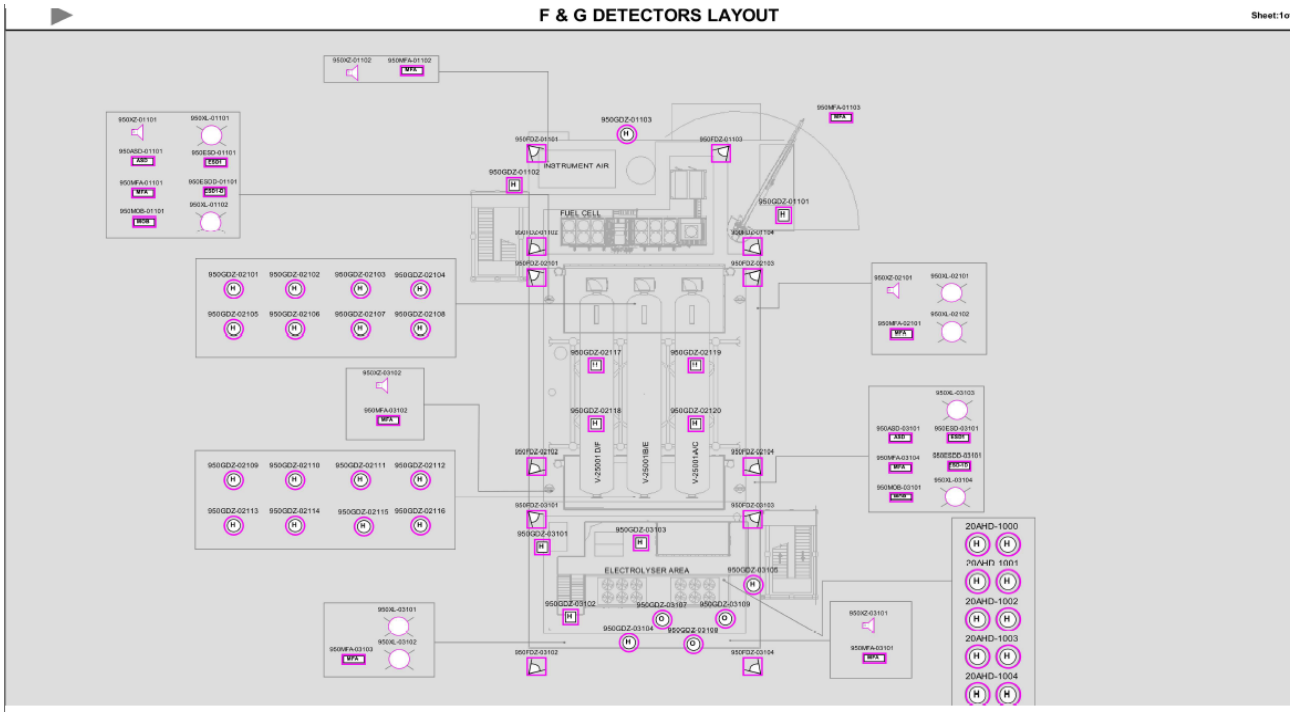
- BLPH_MATRIX_ESD



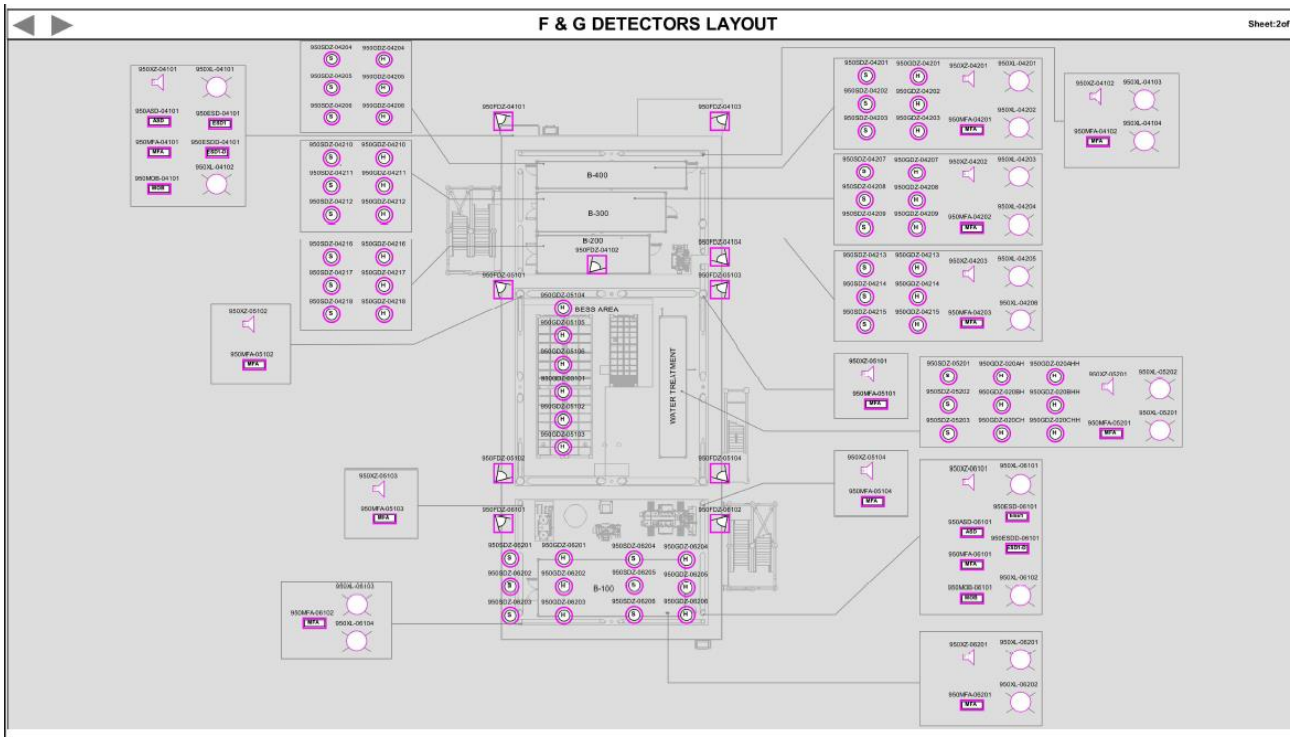
- BLPH_MATRIX_FGS



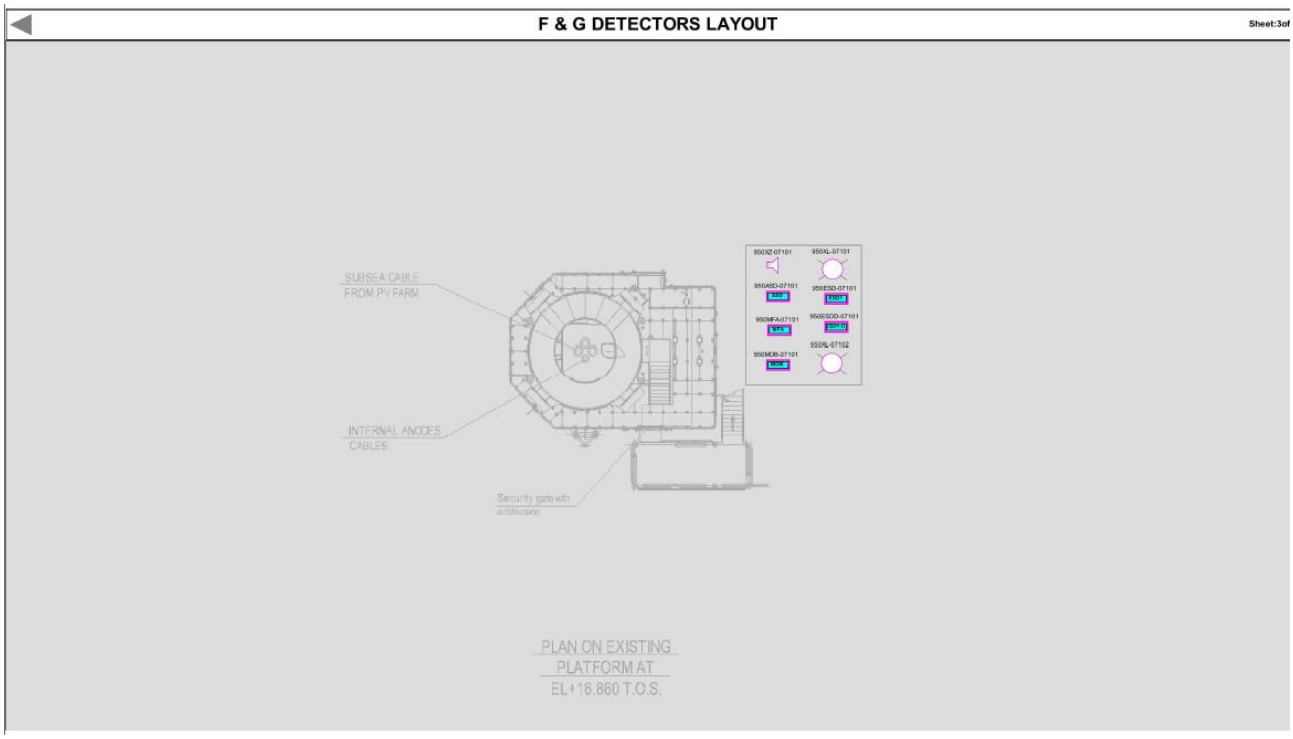
- FG_DETECTOR_LAYOUT_1



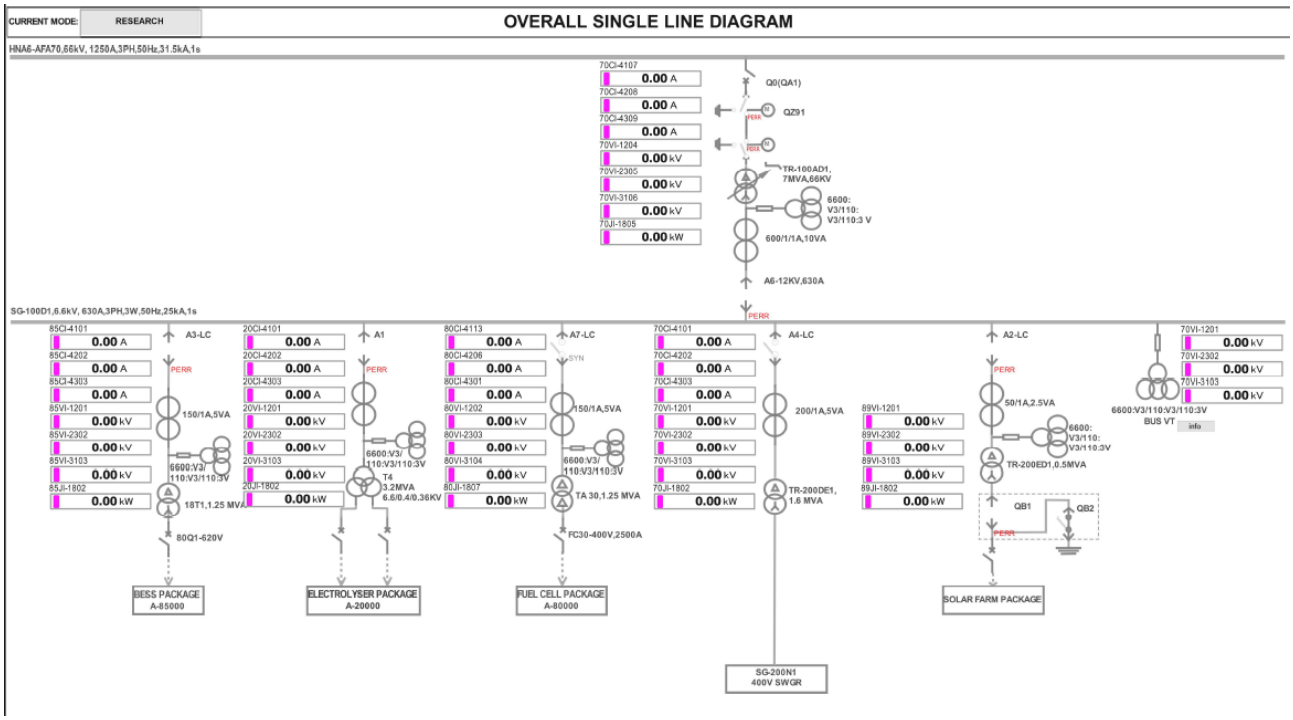
- FG_DETECTOR_LAYOUT_2



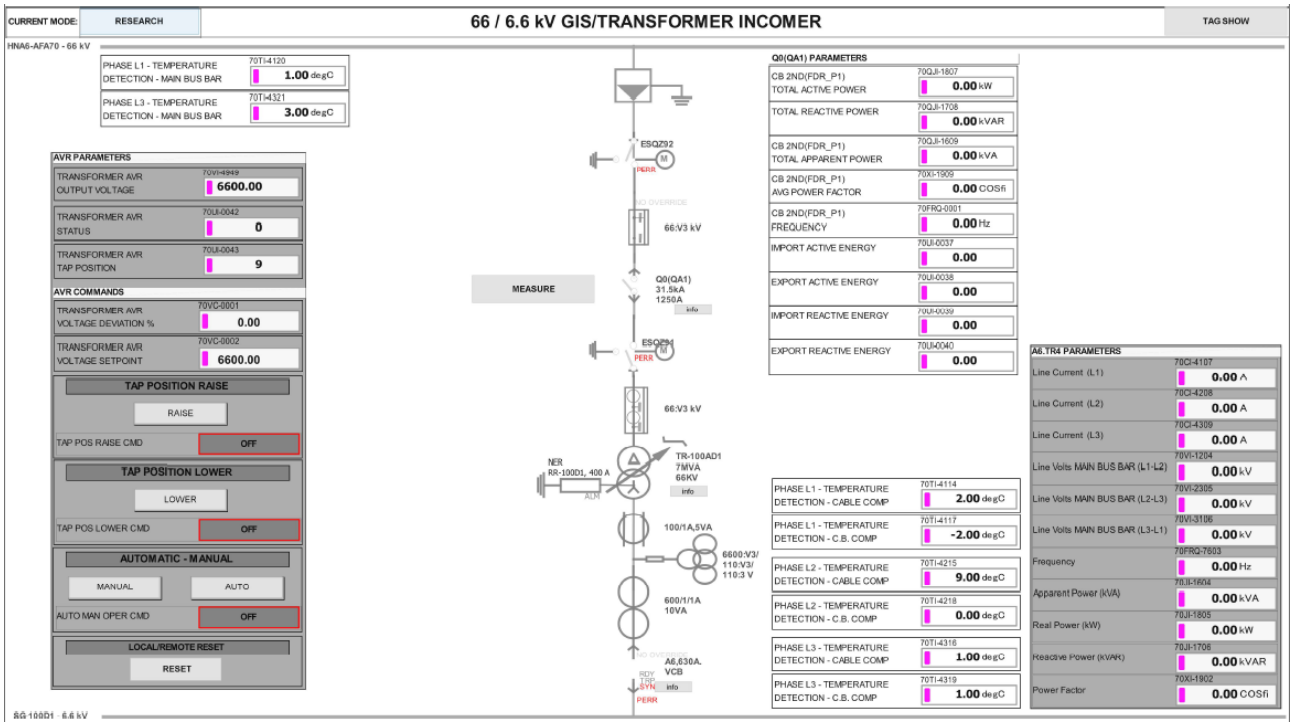
- FG_DETECTOR_LAYOUT_5



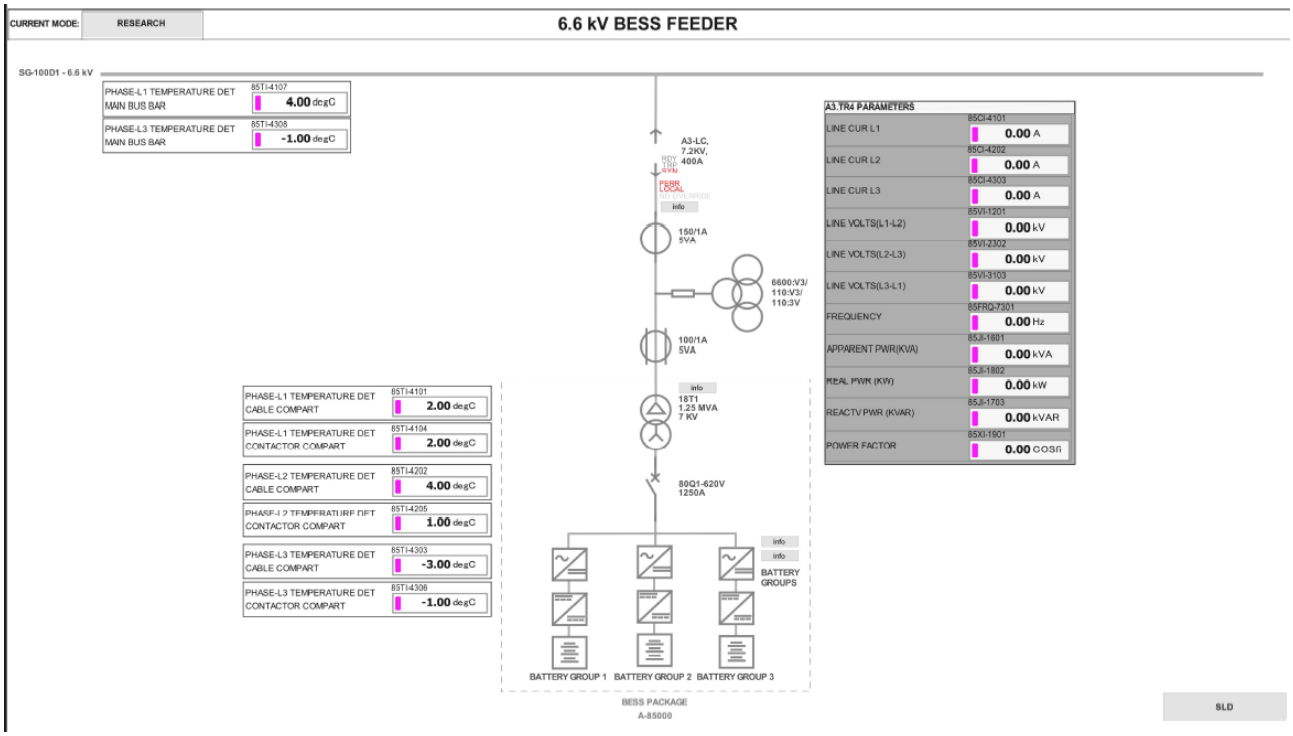
- OVERALL_SINGLE_LINE_DIAGRAM



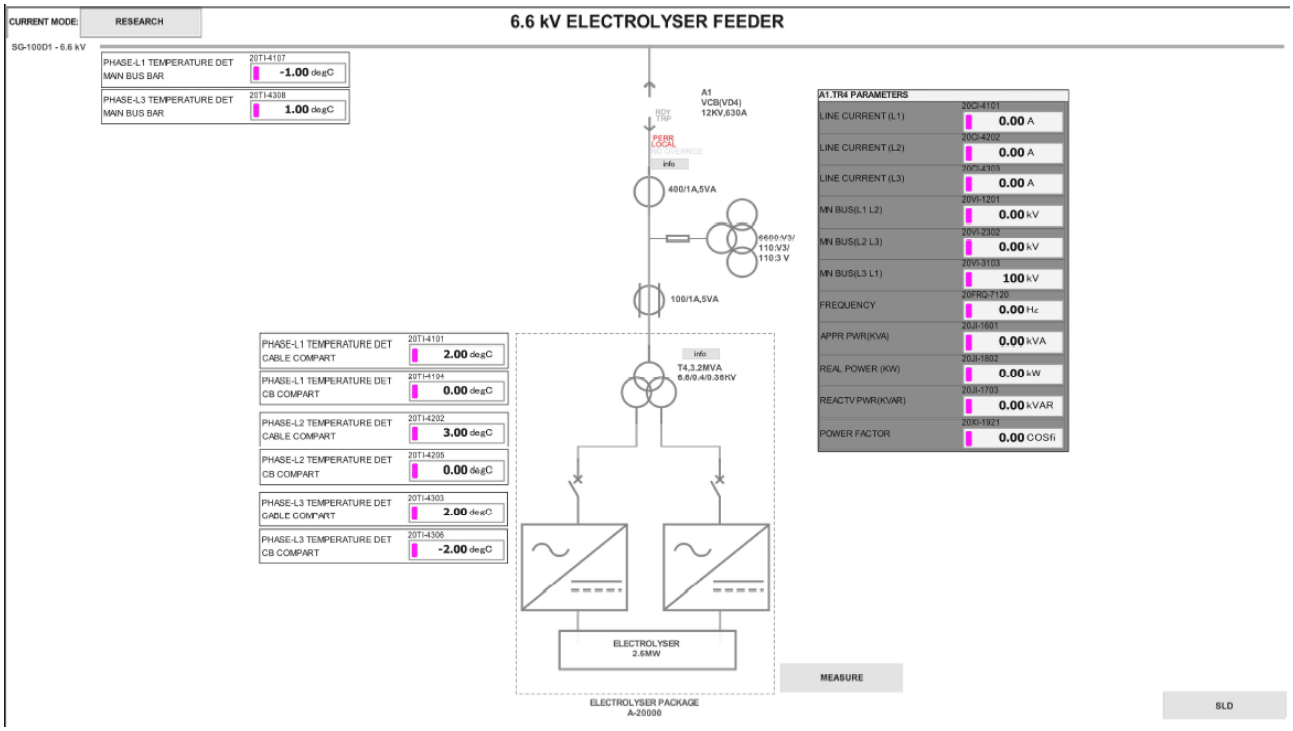
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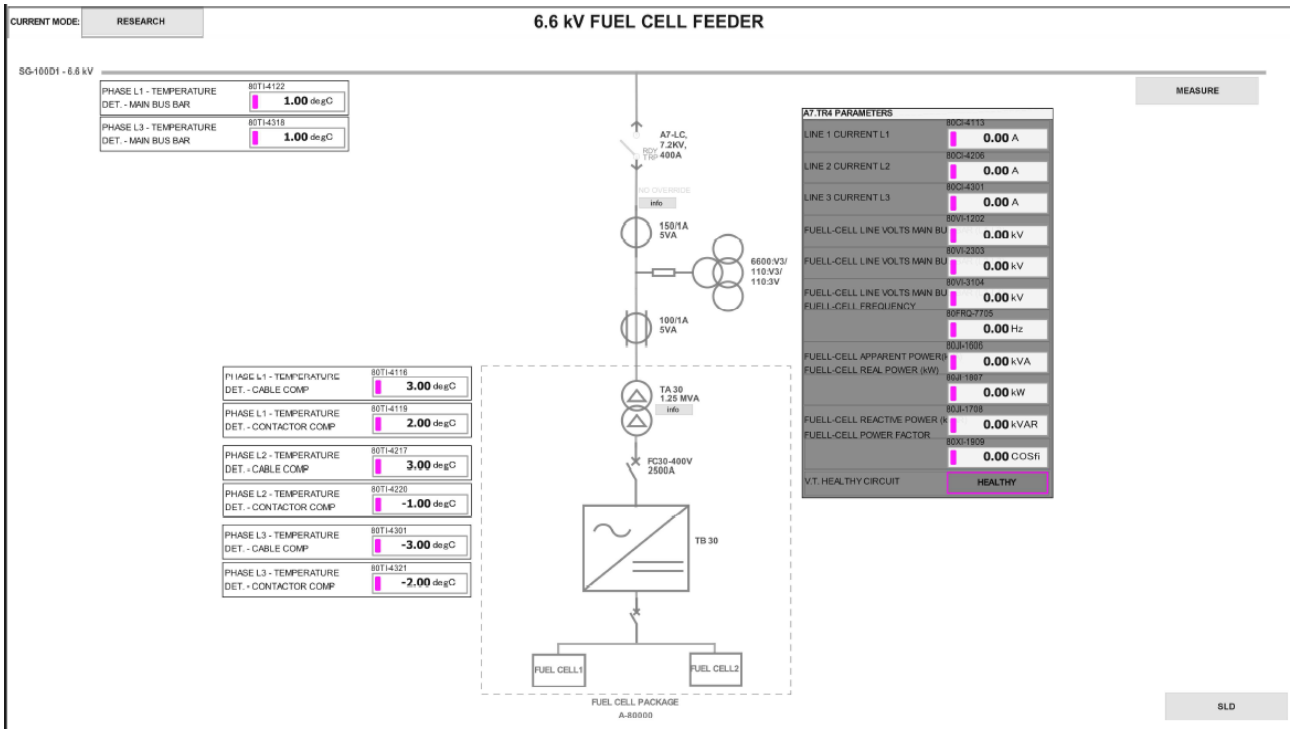
- BESS_FEEDER



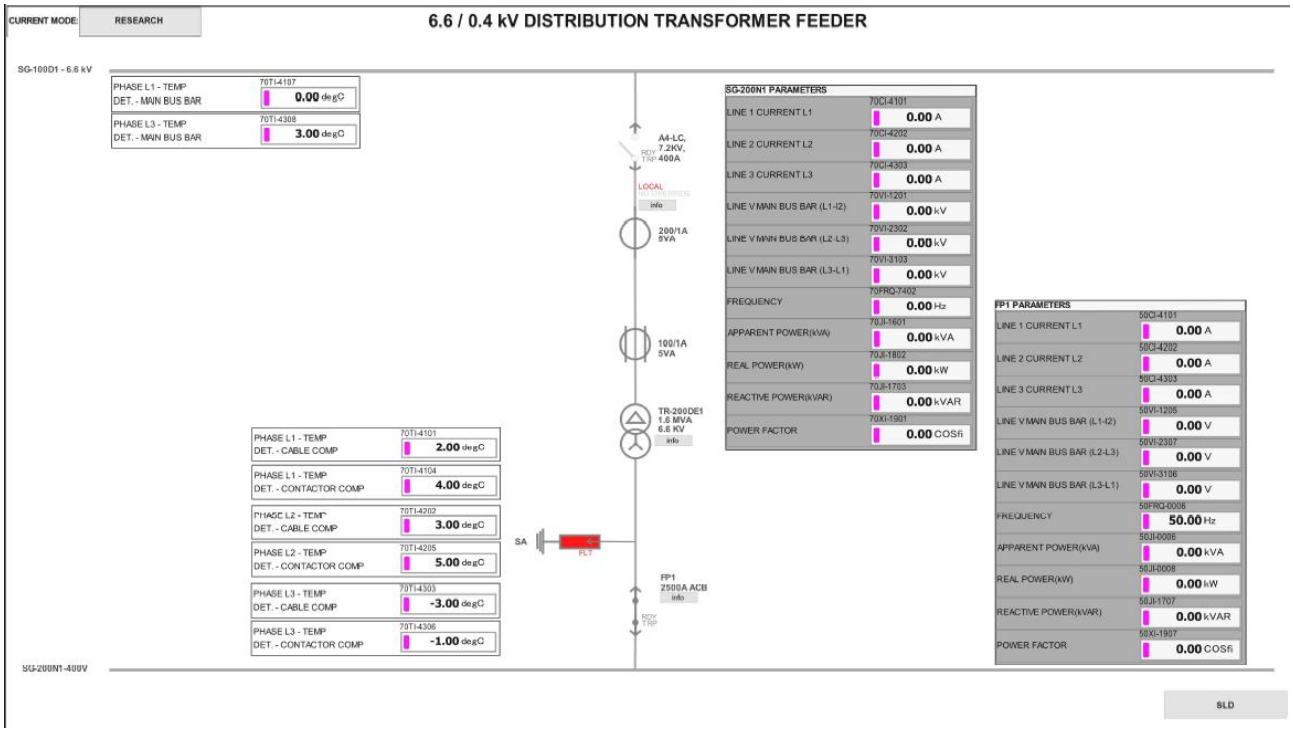
- ELECTROLYSER_FEEDER



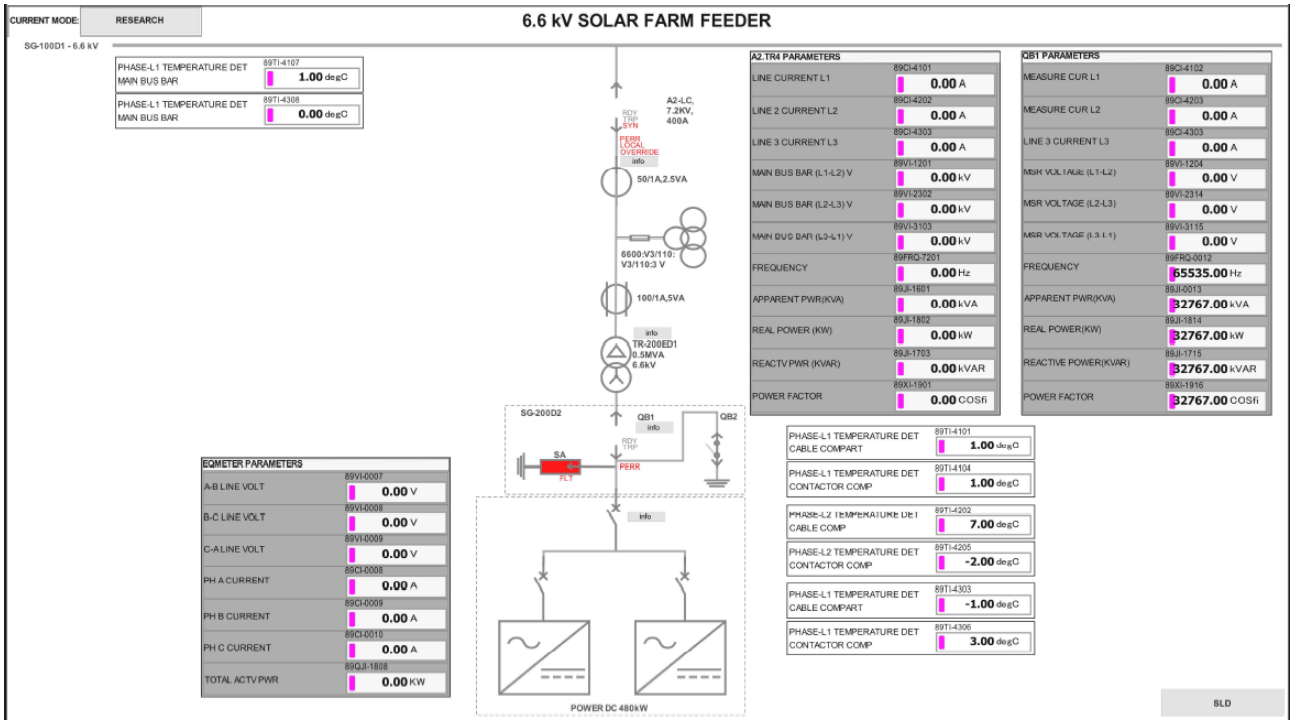
- FUEL_CELL_FEEDER



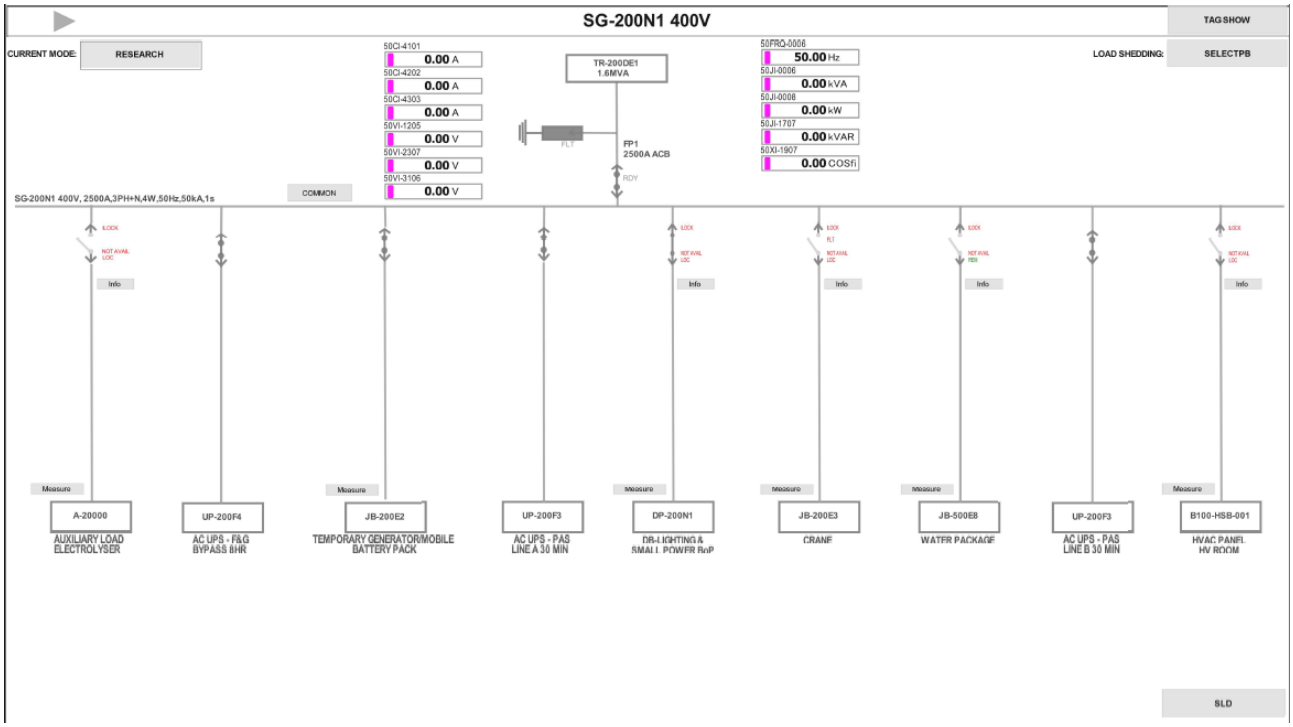
- DISTRIBUTION_TRANSFORMER_FEEDER



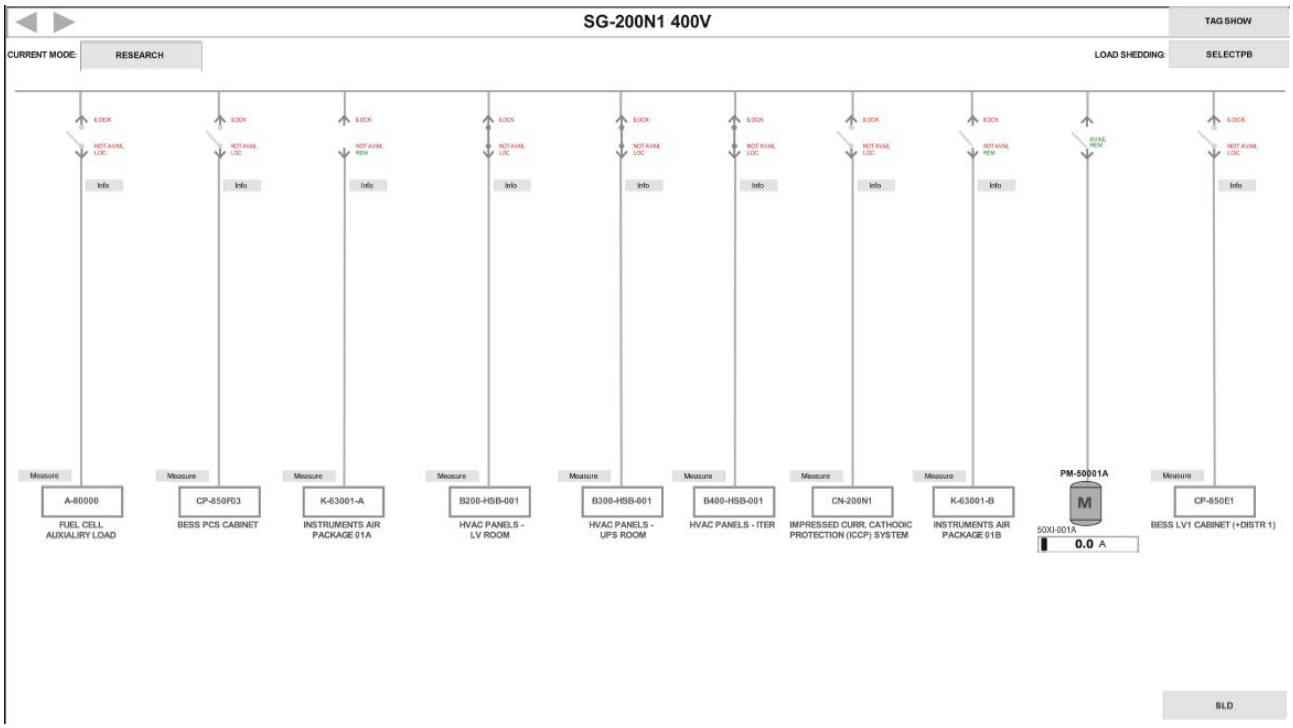
- SOLAR_FARM_FEEDER



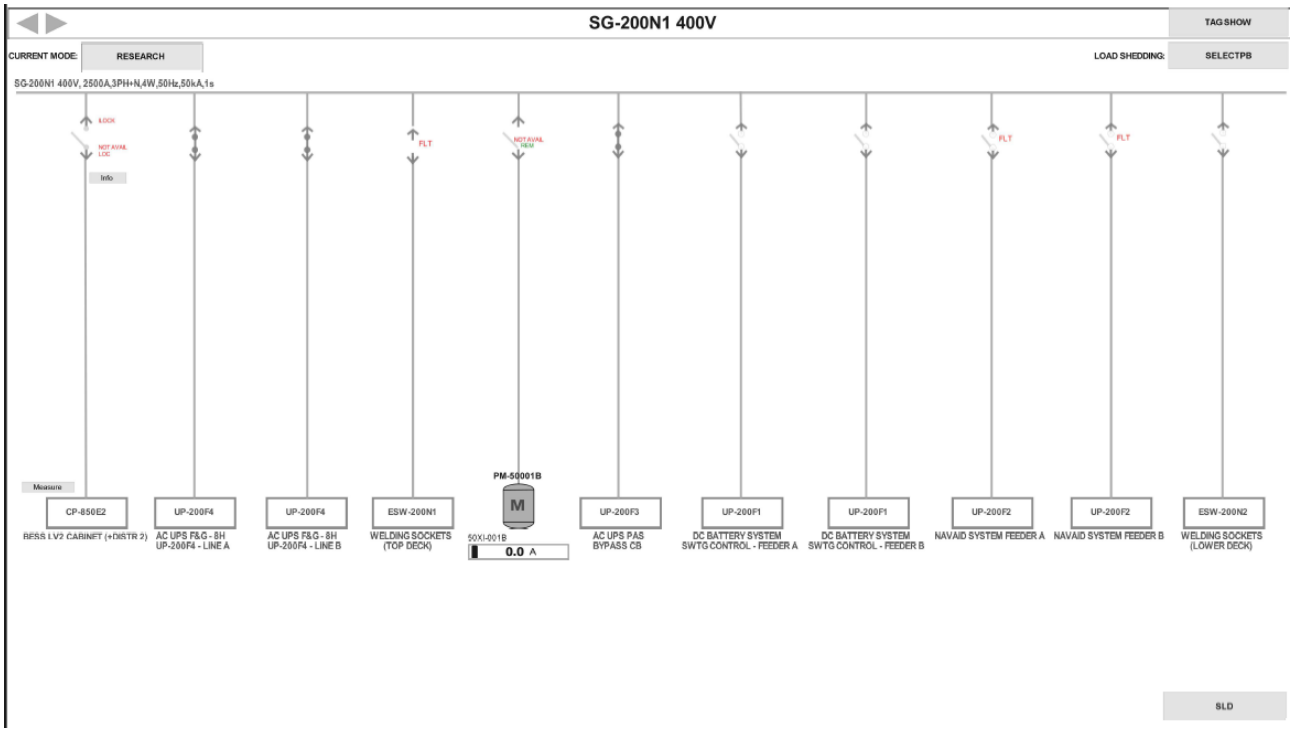
- SG_200N1_400_1



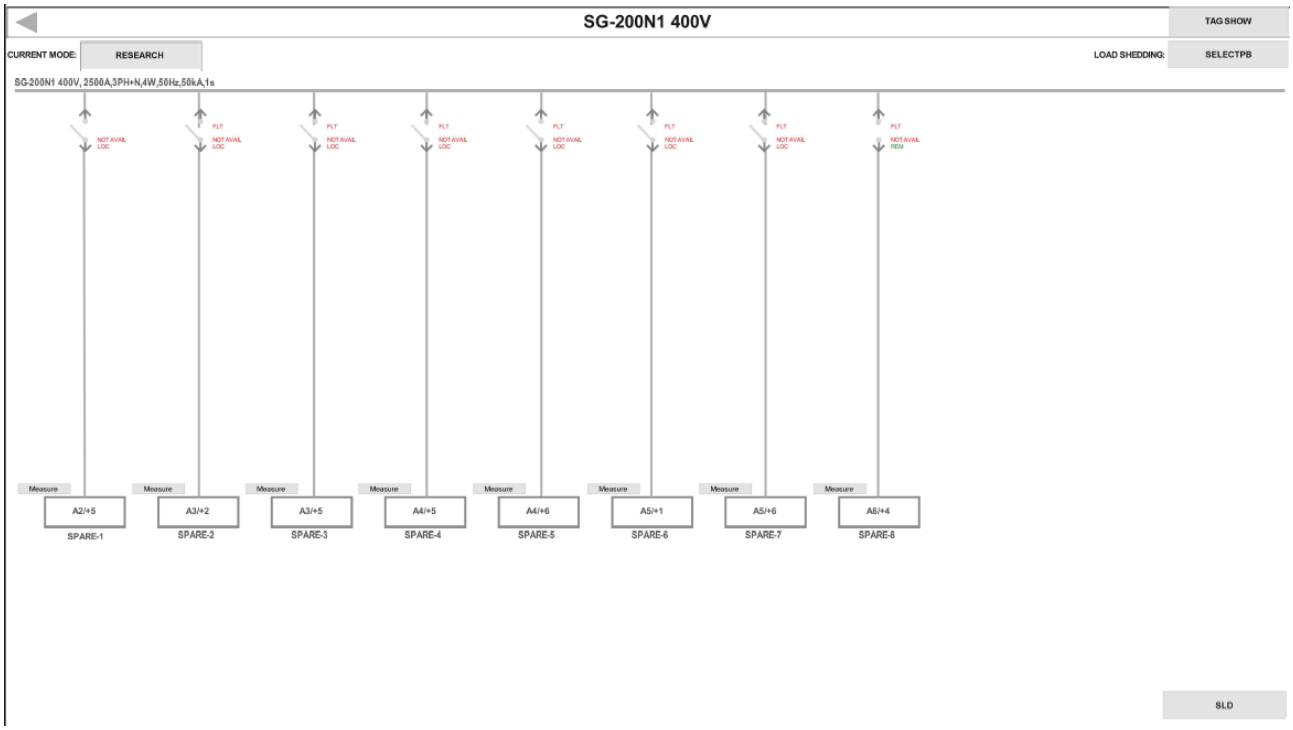
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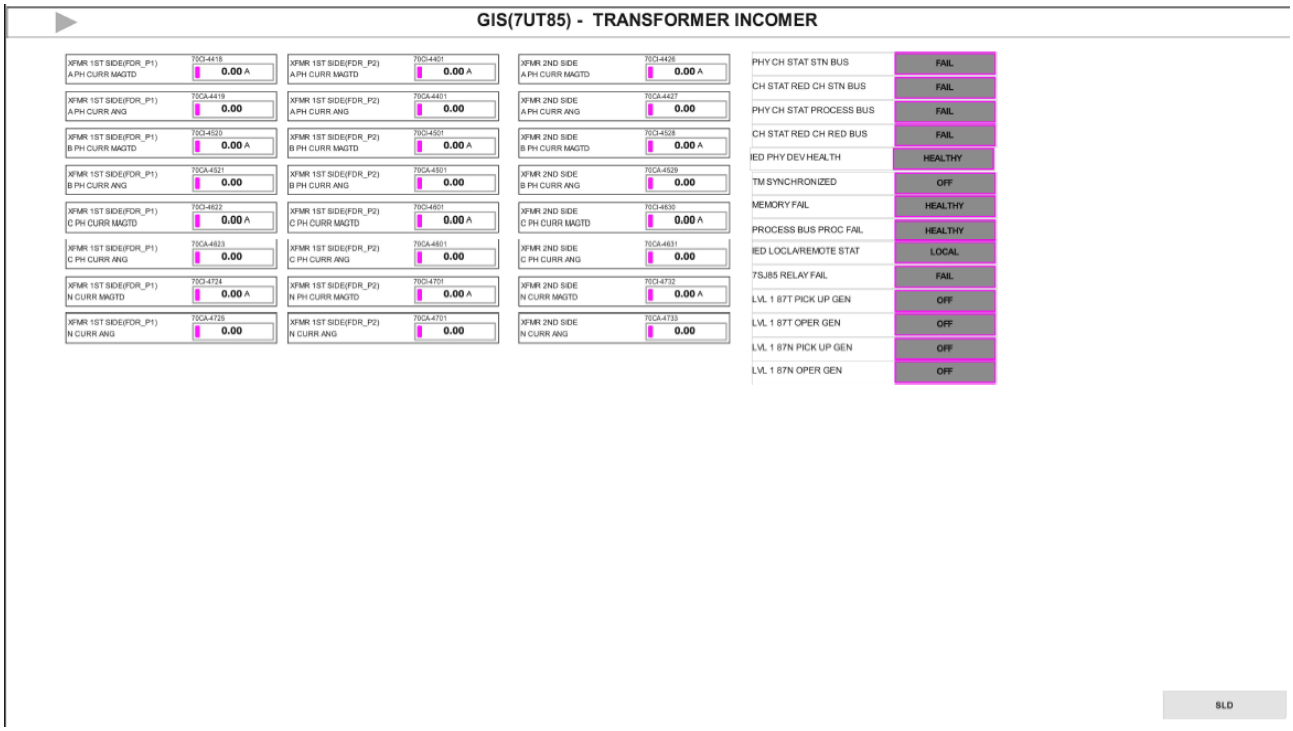
- SG_200N1_400_3



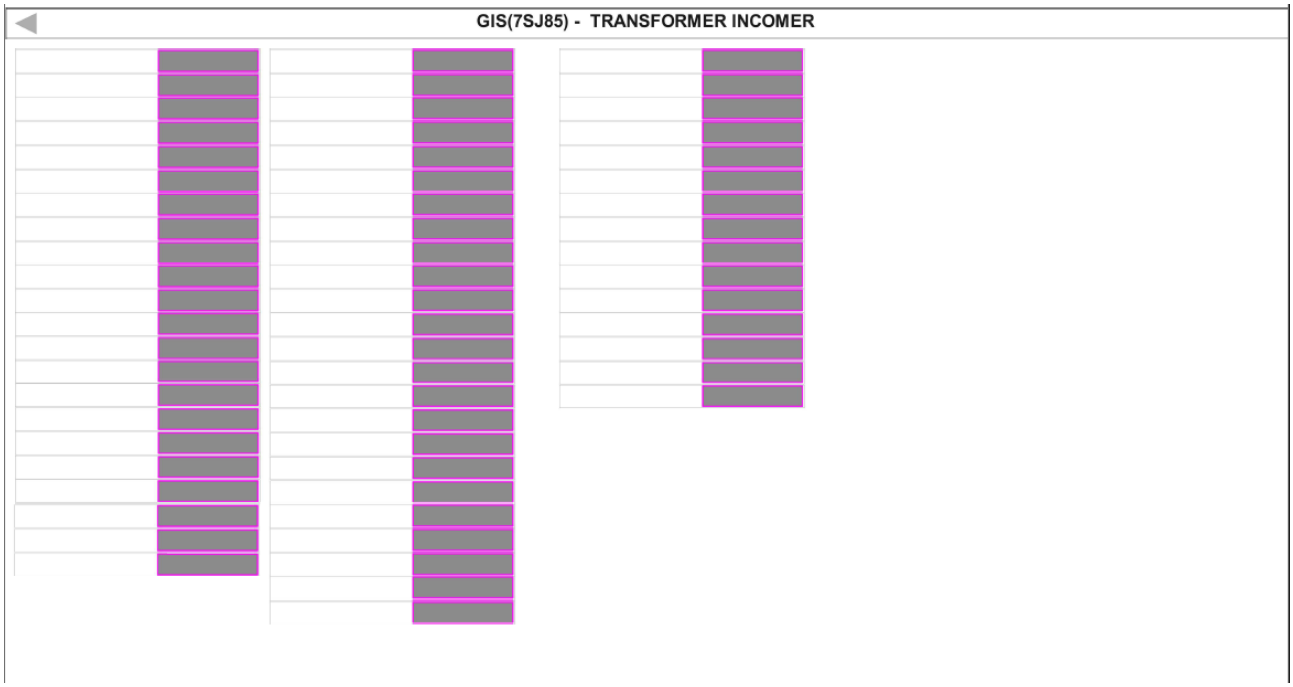
- SG_200N1_400_4



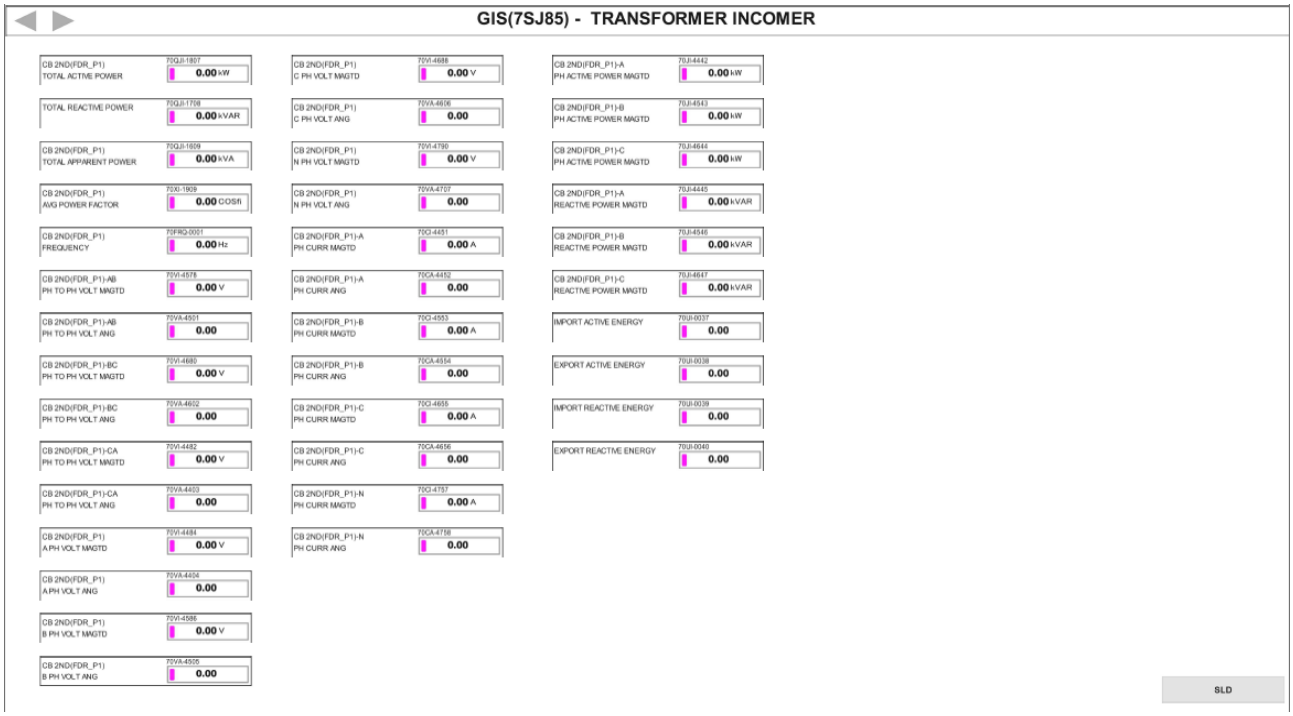
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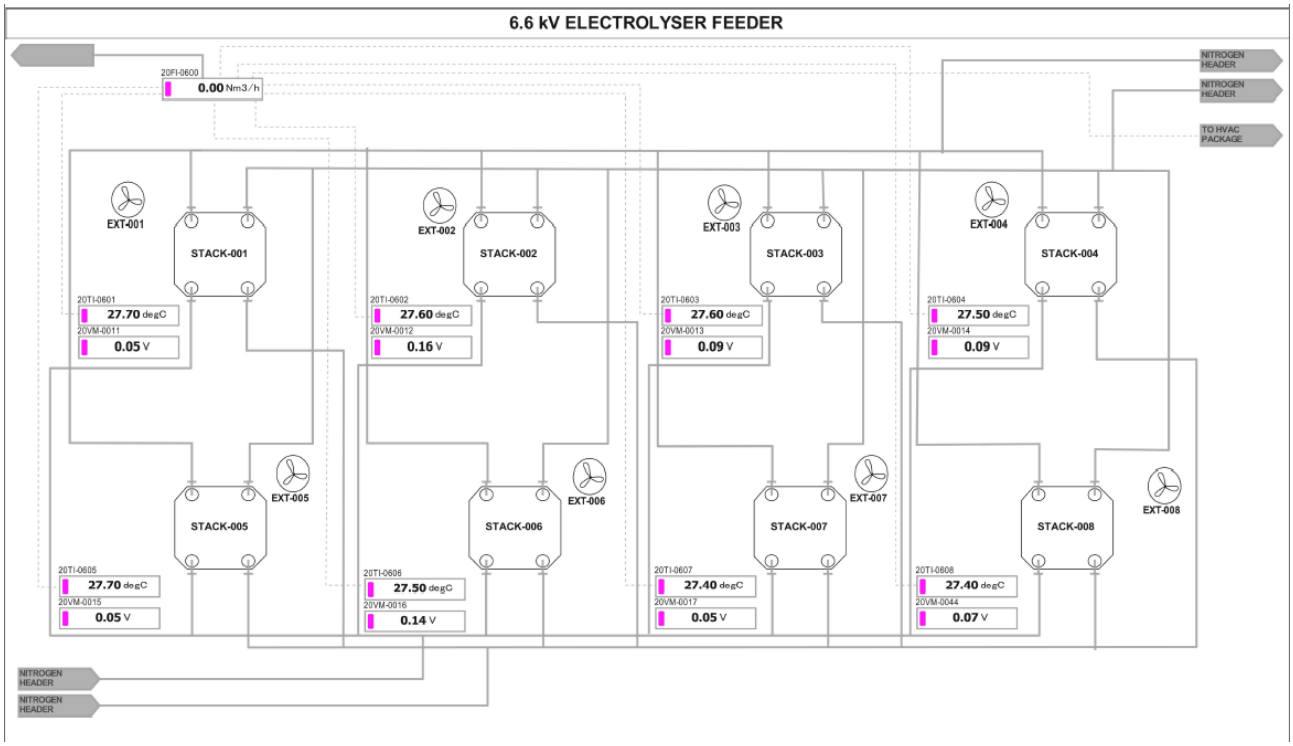
- GIS_7SJ85_DIGITAL



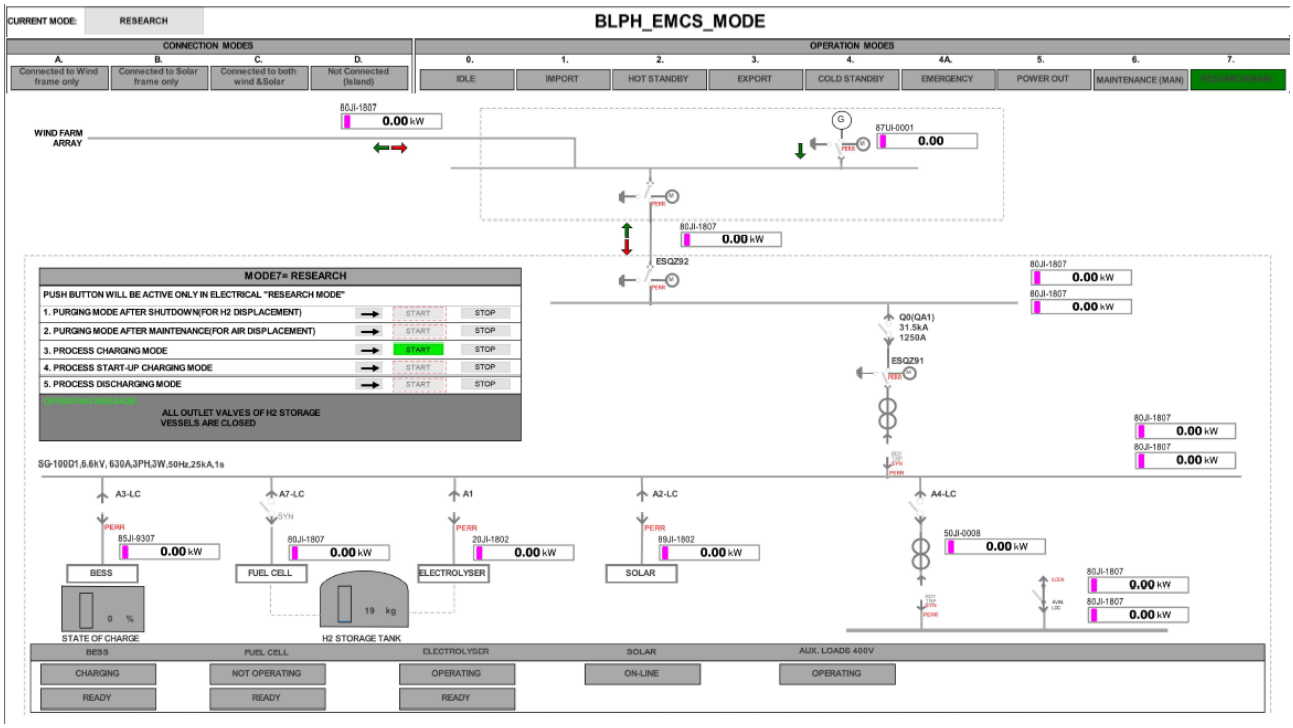
- GIS_7SJ85_ANALOG



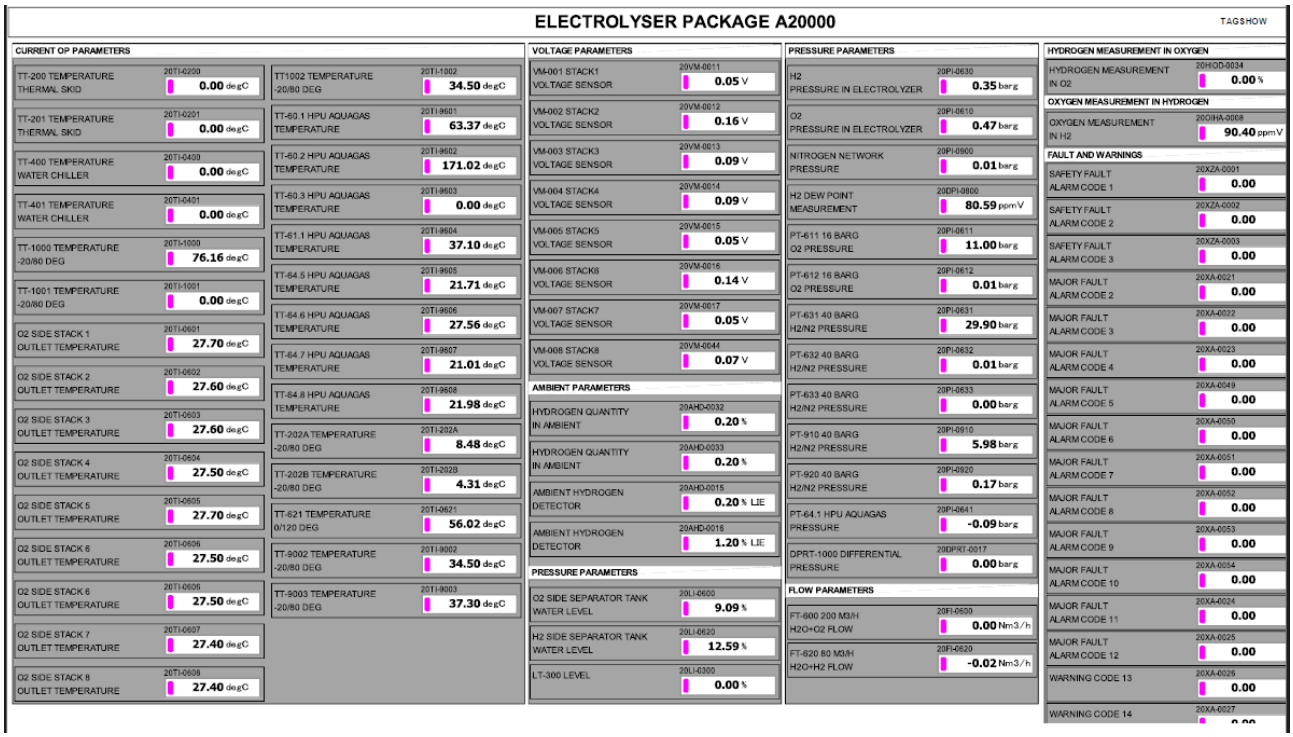
- ELECTROLYSER_STACK



- BLPH_EMCS_MODE



- ELECTROLYSER_PROCESS



- BLPH_ALARMSYSTEM

SYSTEM ALARM OVERVIEW

Alarm Time	Section	Tag	
16-09-2025 03:35:42:000	SCS_STATUS.0110_STATION	rPsuStatusHmi	RIGHT PSU stat
16-09-2025 03:35:42:000	SCS_STATUS.0110_STATION	lPsuStatusHmi	LEFT PSU statu
16-09-2025 03:35:42:000	SCS_STATUS.0110_STATION	rCpuStatusHmi	RIGHT CPU stat
16-09-2025 03:35:42:000	SCS_STATUS.0110_STATION	lCpuStatusHmi	LEFT CPU statu
16-09-2025 03:35:42:000	SCS_STATUS.0120_STATION	rPsuStatusHmi	RIGHT PSU stat
16-09-2025 03:35:42:000	SCS_STATUS.0120_STATION	lPsuStatusHmi	LEFT PSU statu
16-09-2025 03:35:42:000	SCS_STATUS.0120_STATION	rCpuStatusHmi	RIGHT CPU stat
16-09-2025 03:35:42:000	SCS_STATUS.0120_STATION	lCpuStatusHmi	LEFT CPU statu
16-09-2025 03:35:40:000	VNET_IP_STATUS.NETWORK	VnetIP_2	Vnet/IP bus 2 st
16-09-2025 03:35:40:000	VNET_IP_STATUS.NETWORK	VnetIP_1	Vnet/IP bus 1 st
16-09-2025 03:35:40:000	SCS_STATUS.0120_STATION	cpuCtrlTrans	CPU Control Tra
16-09-2025 03:35:40:000	SCS_STATUS.0110_STATION	cpuCtrlTrans	CPU Control Tra
21-07-2025 08:18:28:525	SCS_STATUS.0110_NODE.N1	CS1_ERR	Card status FIC
21-07-2025 08:18:28:525	SCS_STATUS.0110_NODE.N1	CS2_ERR	Card status FIC
21-07-2025 07:05:27:048	SCS_STATUS.0120_STATION	fcuFan2Status	FAN FCU N2 sta
21-07-2025 07:05:27:048	SCS_STATUS.0120_STATION	n1RPSU	Node 1 R PSU s
21-07-2025 07:05:27:048	SCS_STATUS.0120_STATION	n2RPSU	Node 2 R PSU s
21-07-2025 07:05:27:048	SCS_STATUS.0120_STATION	n3RPSU	Node 3 R PSU s
21-07-2025 07:05:27:048	SCS_STATUS.0120_STATION	n4RPSU	Node 4 R PSU s
21-07-2025 07:05:27:048	SCS_STATUS.0120_STATION	n5RPSU	Node 5 R PSU s
21-07-2025 07:05:27:048	SCS_STATUS.0120_STATION	n6RPSU	Node 6 R PSU s

63 alarms found : 0 alarms shelved : 0 alarms expire | Stop | More | Before | Sep 16, 2025 | Last minute | Since

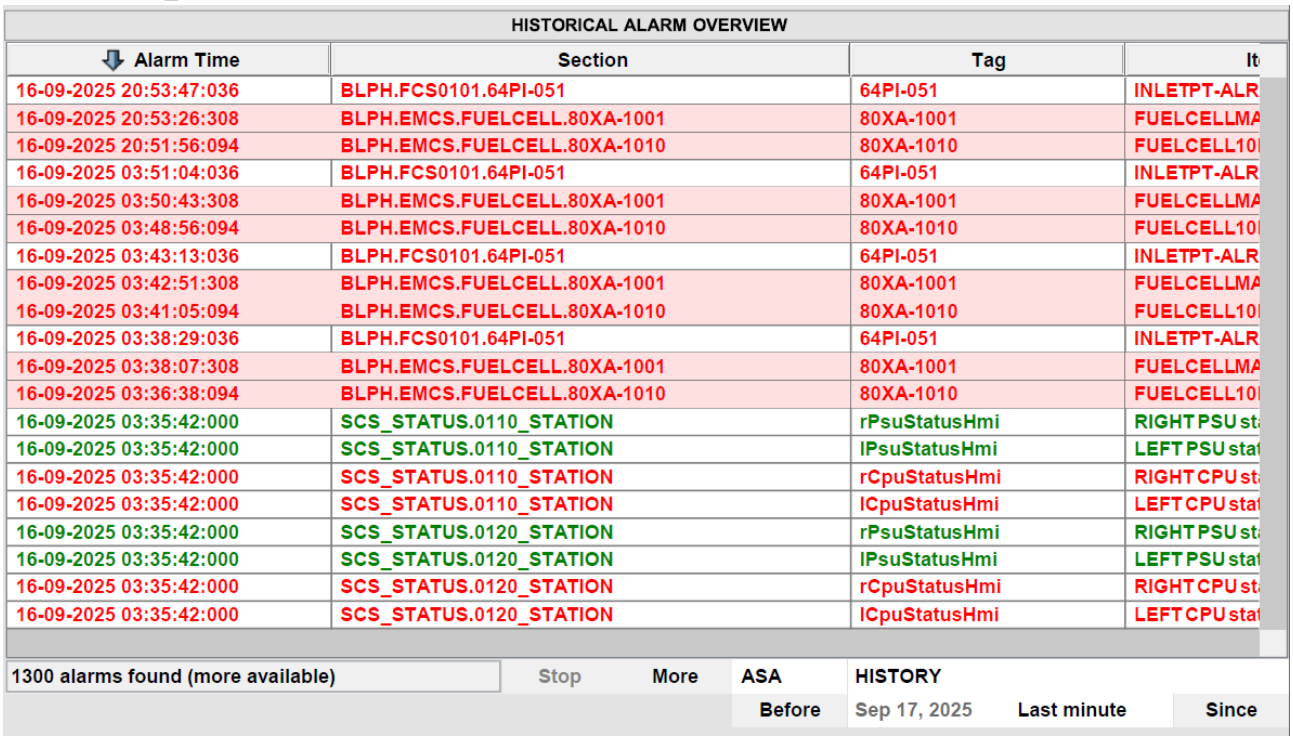
- BLPH_ALARMCURRENT

CURRENT ALARM OVERVIEW

Alarm Time	Item Name	Section	
16-09-2025 20:53:47:036	BLPH.FCS0101.64PI-051.64PI-0...	BLPH.FCS0101.64PI-051	64PI-051
16-09-2025 20:53:26:308	BLPH.EMCS.FUELCELL.80XA-10..	BLPH.EMCS.FUELCELL.80XA-1001	80XA-10
16-09-2025 20:51:56:094	BLPH.EMCS.FUELCELL.80XA-10..	BLPH.EMCS.FUELCELL.80XA-1010	80XA-10
27-07-2025 00:36:26:542	BLPH.FCS0101.B300TIR01AN.B...	BLPH.FCS0101.B300TIR01AN	B300TIR
27-07-2025 00:36:00:926	BLPH.EMCS.INTERNAL.89HS-00...	BLPH.EMCS.INTERNAL.89HS-0001	89HS-00
27-07-2025 00:35:40:391	BLPH.FCS0101.B200TIR01AN.B...	BLPH.FCS0101.B200TIR01AN	B200TIR
27-07-2025 00:35:21:892	BLPH.SCS0120.950GDZ-01102.A	BLPH.SCS0120.950GDZ-01102	A
27-07-2025 00:34:32:029	BLPH.FCS0101.B200TDC01AN.B..	BLPH.FCS0101.B200TDC01AN	B200TD
27-07-2025 00:33:57:539	BLPH.FCS0101.B400TIR01AN.B...	BLPH.FCS0101.B400TIR01AN	B400TIR
27-07-2025 00:24:29:520	BLPH.FCS0101.43FAH-001.43FA...	BLPH.FCS0101.43FAH-001	43FAH-0
27-07-2025 00:15:17:059	BLPH.FCS0101.43PAH-001.43P...	BLPH.FCS0101.43PAH-001	43PAH-0
27-07-2025 00:08:05:787	BLPH.FCS0101.77PTXA-401AN....	BLPH.FCS0101.77PTXA-401AN	77PTXA-
27-07-2025 00:07:44:081	BLPH.FCS0101.B400TDC01AN.B..	BLPH.FCS0101.B400TDC01AN	B400TD
26-07-2025 23:56:03:980	BLPH.SCS0120.950GDZ-02119.A	BLPH.SCS0120.950GDZ-02119	A
26-07-2025 23:56:02:821	BLPH.SCS0120.T950GDZ0202V...	BLPH.SCS0120.T950GDZ0202V2N	T950GD
26-07-2025 23:32:29:989	BLPH.SCS0120.950GDZ-02117.A	BLPH.SCS0120.950GDZ-02117	A
26-07-2025 23:05:27:468	BLPH.FCS0101.B100TDC01AN.B..	BLPH.FCS0101.B100TDC01AN	B100TD
26-07-2025 22:56:23:246	BLPH.FCS0101.B300TDC01AN.B..	BLPH.FCS0101.B300TDC01AN	B300TD
26-07-2025 22:01:14:569	BLPH.FCS0101.25PI008_040.25...	BLPH.FCS0101.25PI008_040	25PI008
26-07-2025 20:00:46:099	BLPH.FCS0101.63PAL-003.63P...	BLPH.FCS0101.63PAL-003	63PAL-0
26-07-2025 15:13:19:101	BLPH.FCS0101.82CI-4412.82CI-...	BLPH.FCS0101.82CI-4412	82CI-441

1300 alarms found (more available) : 0 alarms shelved : | Stop | More | Before | Sep 16, 2025 | Last minute | Since

- BLPH_ALARMHISTORY



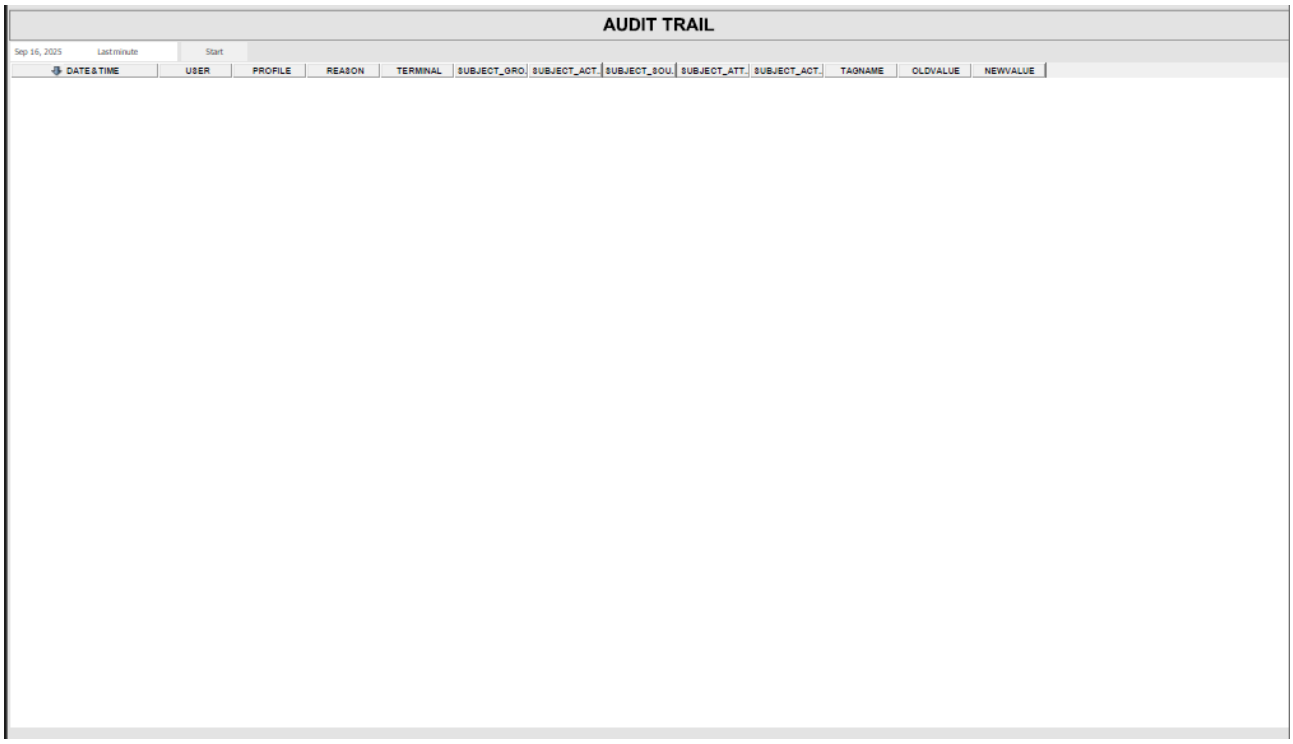
HISTORICAL ALARM OVERVIEW

Alarm Time	Section	Tag	It
16-09-2025 20:53:47:036	BLPH.FCS0101.64PI-051	64PI-051	INLETPT-ALR
16-09-2025 20:53:26:308	BLPH.EMCS.FUELCELL.80XA-1001	80XA-1001	FUELCELLMA
16-09-2025 20:51:56:094	BLPH.EMCS.FUELCELL.80XA-1010	80XA-1010	FUELCELL10
16-09-2025 03:51:04:036	BLPH.FCS0101.64PI-051	64PI-051	INLETPT-ALR
16-09-2025 03:50:43:308	BLPH.EMCS.FUELCELL.80XA-1001	80XA-1001	FUELCELLMA
16-09-2025 03:48:56:094	BLPH.EMCS.FUELCELL.80XA-1010	80XA-1010	FUELCELL10
16-09-2025 03:43:13:036	BLPH.FCS0101.64PI-051	64PI-051	INLETPT-ALR
16-09-2025 03:42:51:308	BLPH.EMCS.FUELCELL.80XA-1001	80XA-1001	FUELCELLMA
16-09-2025 03:41:05:094	BLPH.EMCS.FUELCELL.80XA-1010	80XA-1010	FUELCELL10
16-09-2025 03:38:29:036	BLPH.FCS0101.64PI-051	64PI-051	INLETPT-ALR
16-09-2025 03:38:07:308	BLPH.EMCS.FUELCELL.80XA-1001	80XA-1001	FUELCELLMA
16-09-2025 03:36:38:094	BLPH.EMCS.FUELCELL.80XA-1010	80XA-1010	FUELCELL10
16-09-2025 03:35:42:000	SCS_STATUS.0110_STATION	rPsuStatusHmi	RIGHT PSU st
16-09-2025 03:35:42:000	SCS_STATUS.0110_STATION	lPsuStatusHmi	LEFT PSU stat
16-09-2025 03:35:42:000	SCS_STATUS.0110_STATION	rCpuStatusHmi	RIGHT CPU st
16-09-2025 03:35:42:000	SCS_STATUS.0110_STATION	lCpuStatusHmi	LEFT CPU stat
16-09-2025 03:35:42:000	SCS_STATUS.0120_STATION	rPsuStatusHmi	RIGHT PSU st
16-09-2025 03:35:42:000	SCS_STATUS.0120_STATION	lPsuStatusHmi	LEFT PSU stat
16-09-2025 03:35:42:000	SCS_STATUS.0120_STATION	rCpuStatusHmi	RIGHT CPU st
16-09-2025 03:35:42:000	SCS_STATUS.0120_STATION	lCpuStatusHmi	LEFT CPU stat

1300 alarms found (more available) Stop More ASA HISTORY

Before Sep 17, 2025 Last minute Since

- BLPH_AUDITTRAIL



AUDIT TRAIL

Sep 16, 2025 Last minute Start

DATE&TIME	USER	PROFILE	REASON	TERMINAL	SUBJECT_GRO	SUBJECT_ACT	SUBJECT_SOU	SUBJECT_ATT	SUBJECT_ACT	TAGNAME	OLDVALUE	NEWVALUE