




































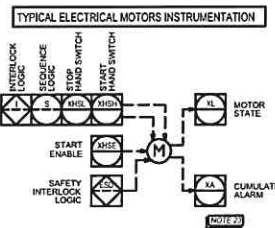


FLUID CODE:	DESCRIPTION:
AV	Atmospheric Vent
CVS	Cooling Water Supply
CWR	Cooling Water Return
FWG	Flare/Vent gas
IA	Instrument Air
OI	Hydraulic Oil
ST	Steam
PR	Propane

HARDWARE		Instrument line and function symbols			
Symbol	Denomination	Symbol	Denomination	Symbol	Denomination
	Locally mounted		Field mounted, shared display, shared control		Connection to process
	Mounted on back panel		Function normally inaccessible to operator and installed in main control room		Pneumatic signal
	Mounted in main control room		Function normally accessible to operator and installed in main control room		Electric signal
	Mounted on back panel in auxiliary control room or on local panel		Function normally inaccessible to operator and installed in auxiliary control room or on local panel		Coillary tubing (FILED SYSTEM)
	Mounted on panel in auxiliary control room or on local panel		Function normally accessible to operator and installed in auxiliary control room or on local panel		Internal system bus (SOFTWARE / DATA LINK)
	Filed relay		Software for logic normally inaccessible to operator and installed in main control room		Electromagnetic or sonic signal
	Back panel relay in auxiliary control room or on local panel		Sequential logic functions		ELECTRICAL SIGNAL TECHNOLOGY
	Mounted on back panel		Safety Interlock logic		Summing function
	Star indicated that the instrument is supplied by package manufacturer		Package Control System PLC		Difference function
	SIGNAL LIGHT				Proportional function
	FOUNDATION FIELDS				Multiplying function
	Differential between two value + Upper Value - Lower value				Dividing function
					High selecting function
					Low selecting function

INSULATION AND TRACING CODES	
A	ACUSTIC INSULATION
H	HOT INSULATION
C	COLD INSULATION
P	PERSONNEL PROTECTION (FROM 60°C AND ABOVE)
F	FIRE SAFE PROTECTION
T	STEAM TRACING
TH	HOT OIL TRACING
TC	HOT WATER TRACING
E	ELECTRICAL TRACING
JT	TOTAL JACKETED LINE
JR	REDUCED JACKETED LINE
JP	PARTIAL JACKETED LINE
F	ANTI FREEZING
D	DUAL INSULATION
B	SOLAR PROTECTION
K	ANTI CONDENSATION
AC	COLD AND ACUSTIC INSULATION
AH	HOT AND ACUSTIC INSULATION
HU	UNDERGROUNDED
W	TAPE WRAPPED (UNDERGROUND LINES)



Piping and relevant components					
Symbol	Denomination	Symbol	Denomination		
	Main process		Female Connection		
	Secondary process		Male Connection		
	Utility		Flange Connection		
	Jacket		Manhole		
	Electrical Heat Tracing/Insulator		Female nitrogen service		
			Male nitrogen service		
			Cone Type strainer		
			Temporary strainer		
		Y-Strainer			
		T-Strainer			
		Ring space			
		Spectacle blind - normally closed			
		Spectacle blind - normally open			
		Ring spacer			
	Sample connection	Process vent and drains			
	Sample Point		With gate or generic valve		
	Gate or generic inline valve	All process vents and drains must be provided with plug or blind flange according to piping specification.			
	Check Valve		With flame trap		
	Stop Check Valve		With dumper or silencer		
	Globe or disc Valve		Downward		
	Ballow Valve		Upward		
	Butterfly Valve		Lateral		
	Needle Valve		Expansion joint		
	Plug Valve		Locked Close Valve		
	Ball Valve (FULL BORE)		Locked Open Valve		
	Ball Valve (REDUCED BORE)		Normally open valve		
			Normally closed valve		
			Car seal open valve		
		Car seal closed valve			
		Tight Shut Off Valve			
		Sight glass			
		Pipe line class change			

Instrument Identification	
Symbol	Denomination
	Instrument tap on line
	Pressure tap with manifold valve
	Pressure tap with generic valves
	Pressure tap diaphragm type
	Fixed restriction orifice
	Primary flow element with transmitter
	Automatic regulator with integral flow indication
	Handwheel for automatic valves (valve with actuators)
	Diaphragm, spring-opposed
	Spring-opposed single-acting
	Cylinder, spring-opposed double-acting
	Rotary motor
	Solenoid
	Solenoid valve with manual reset
	Hand actuator
	Butterfly Valve
	Pressure relief or safety valve
	Temperature relief or safety valve
	Two-Way Valve Fail Open
	Two-Way Valve Fail Close
	Two-Way valve fail locked
	Two-way valve fail inoperative
	Three-way valve fail open to path A-C
	MAGNETIC LEVEL GAUGE
	LEVEL TRANSMITTER WITH DIAPHRAGM SEPARATOR WITH EXTENSION
	Open
	Close

NOTES :

- 1- AN ADDITIONAL "X" AFTER THE INSTRUMENT CODE MEANS THAT INSTRUMENT BELONGS TO ESD SYSTEM.
- 2- FOR TEMPERATURE MEASURING INSTRUMENTS WHOSE SIGNAL HAS TO BE ROUTED TO A REMOTE SYSTEM (DCS, PLC), THE TRANSMITTER HAS BEEN ALWAYS INDICATED EVEN IF NOT DIRECTLY REQUIRED. ONLY FOR CONTROL LOOPS, PROCESS INTERLOCKS AND SAFETY INTERLOCKS, IN CASE OF TEMPERATURE INDICATOR.
- 3- IN ALL THE P&ID, PACKAGES ARE REPRESENTED IN A SIMPLIFIED WAY. IN GENERAL, VALVES REPRESENTED IS LIQUID AND/OR VAPOR. THE CHARACTERISTICS OF EACH PACKAGE ARE DESCRIBED IN THE RELEVANT DATA SHEET. IN ANY CASE, PACKAGES VENDORS SHALL SUPPLY FINAL P&ID.
- 4- FOR PIPES CARRYING THE FOLLOWING FLUIDS :
 - CB (ETHYLENEGLICOL)
 - AN (ACRYLONITRILE)
 - CO (ORGANIC LIQUID CONDENSATE)
 - ST (STYRENE)
 - BD (BUTADIENE)
- 5- THE NUMBER OF FLANGES SHALL BE MINIMIZED.
- 6- INSTALL DRAINS ON THE PIPING CIRCUITS (OR SINGLE LINES) LOWEST POINTS AND VENTS IN THE PIPING CIRCUITS (OR SINGLE LINES) HIGHEST POINTS.
- 7- MINIMIZE FLANGED COUPLINGS ON HOT/THERMAL OIL (HO) MAIN DISTRIBUTION HEADER LINES. FOR THERMAL OIL (HO, CO) LINES INSTALLED ON PIPE RACKS, EACH COUPLING SHALL BE EQUIPPED WITH SAFE-RING OR EQUIVALENT FLANGES JOINTS SPRAY PROTECTION.
- 7- WHEN AN INTERLOCK OR A SEQUENCE REQUIRES TO PERFORM AN ACTION, THE INTERLOCK OR SEQUENCE ITSELF SHALL VERIFY IF THE ACTION HAS BEEN DONE. THE ACTION TO BE CONSIDERED AS STANDARD INSTALLATION AND IS NOT REPRESENTED ON P&ID.
- 8- IN GENERAL ON P&ID SEQUENCES CHECKER PHASE IS NOT REPRESENTED EXCEPT FOR:
 - ADD PLANT; RUBBER DISC VALVE SECTION
 - ADD PLANT; REACTION SECTION
- 9- THE SIZE OF CONTROL VALVES BY-PASS VALVES WILL BE DEFINED / CONFIRMED ACCORDING TO THE FINAL SIZE OF CONTROL VALVES.
- 10- IN CASE DROP RING IS INDICATED ON P&ID, IT SHALL BE SUPPLIED BY PIPING WITH A DROP RING TYPICAL (SEE DCC: J-40/45/50/-N-212-1500-0001 "DROP RING FOR DIAPHRAGM INSTRUMENT TYPICAL").
- 11- THE INSTALLATION OF ALL PI-PIT-TI REPRESENTED ON P&ID IS INDICATED IN THE TYPICAL.
- 12- ALL SIGNALS FROM PLC TO ESD SHALL BE HARD-WIRED (NON-DATANALOG).
- 13- ALL SIGNALS FROM UNIT 88 INSTRUMENTS SHALL BE CONNECTED TO DCS /FC5 /FC6 OF RUBBER PLANT.
- 14- ALL VALVES ON PSV INLET /OUTLET LINES SHALL BE FULL BORE TYPE. GATE VALVE ON INLET LINE TO BE INSTALLED WITH STEM IN HORIZONTAL POSITION.
- 15- FOR SPECIAL PIPING ITEMS LIST REFER TO DCC-J-35/-PI-LSO-45001.
- 16- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- 17- ELEVATION SHOWN ARE ABOVE THE HIGHEST POINT OF PAVING.
- 18- VALVE ARE LINE SIZE LINE WITH THE FOLLOWING TOLERANCES ETC.
- 19- THIS FLOW DIAGRAM IS DIAGRAMATIC ONLY. DESIGN OF PIPE LINE MUST BE INVESTIGATED FOR VENTING OF GAS AND VAPOR POCKETS IN PIPING AND EQUIPMENT, LOW POINTS IN PIPING, PUMPS AND EQUIPMENT FOR DRAINING AND ACCESSIBILITY OF VALVES, FLANGES AND INSTRUMENTS.
- 20- ALL ELECTRONIC INSTRUMENTATION SHALL BE INSTALLED AWAY FROM STEAM LINES AND HIGH TEMPERATURE HEAT SOURCE.
- 21- SAMPLE TAPPS FOR ANALYSIS SHALL BE FROM THE TOP OF THE MAIN LINE. FOR LIQUID SAMPLES TAPPING SHALL BE DONE FROM THE SIDE.
- 22- EXCEPT FOR PROCESS REASONS, LOW POINT DRAINS AND HIGH POINT VENT ARE NOT SHOWN.
- 23- CABLES BETWEEN DCS REMOTE I/O CARDS IN MCC CUBICLE CABINET AND MAIN CONTROL ROOM WILL BE VIA SPLIT CABLE EXCEPT FOR ESD SIGNALS TO MCC THAT SHOULD BE HARD WIRED.
- 24- EDSL MEANS EARTHING SWITCH LOW.
- 25- SIGNALS OF CURRENT TRANSDUCERS ARE TAKEN FROM MCC.
- 26- WHILE PURGING THE EQUIPMENTS, VENTS SHALL BE PROPERLY KEPT OPEN IN ORDER TO AVOID EQUIPMENT PRESSURIZATION ABOVE EQUIPMENT DESIGN/PSV SET PRESSURE BY MAINTAINING PROPER ADMINISTRATIVE CONTROL, PRESSURE SAFETY VALVES AND RUPTURE DISCS ARE NOT DESIGN FOR THE MAXIMUM PURGING CONDITION MENTIONED IN THE LICENSOR P&ID DATA.

HOLDE:

EQUIPMENT LIST:

KEY PLAN :

02	OCT-2024	ISSUED FOR APPROVAL (IFA)	A.K	F.SH	A.M
01	AUG-2024	ISSUED FOR APPROVAL (IFA)	A.K	F.SH	A.M
00	JUL-2024	ISSUED FOR APPROVAL (IFA)	A.K	F.SH	A.M
REV	ISSUE DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED

CLIENT

CONSULTING ENGINEER

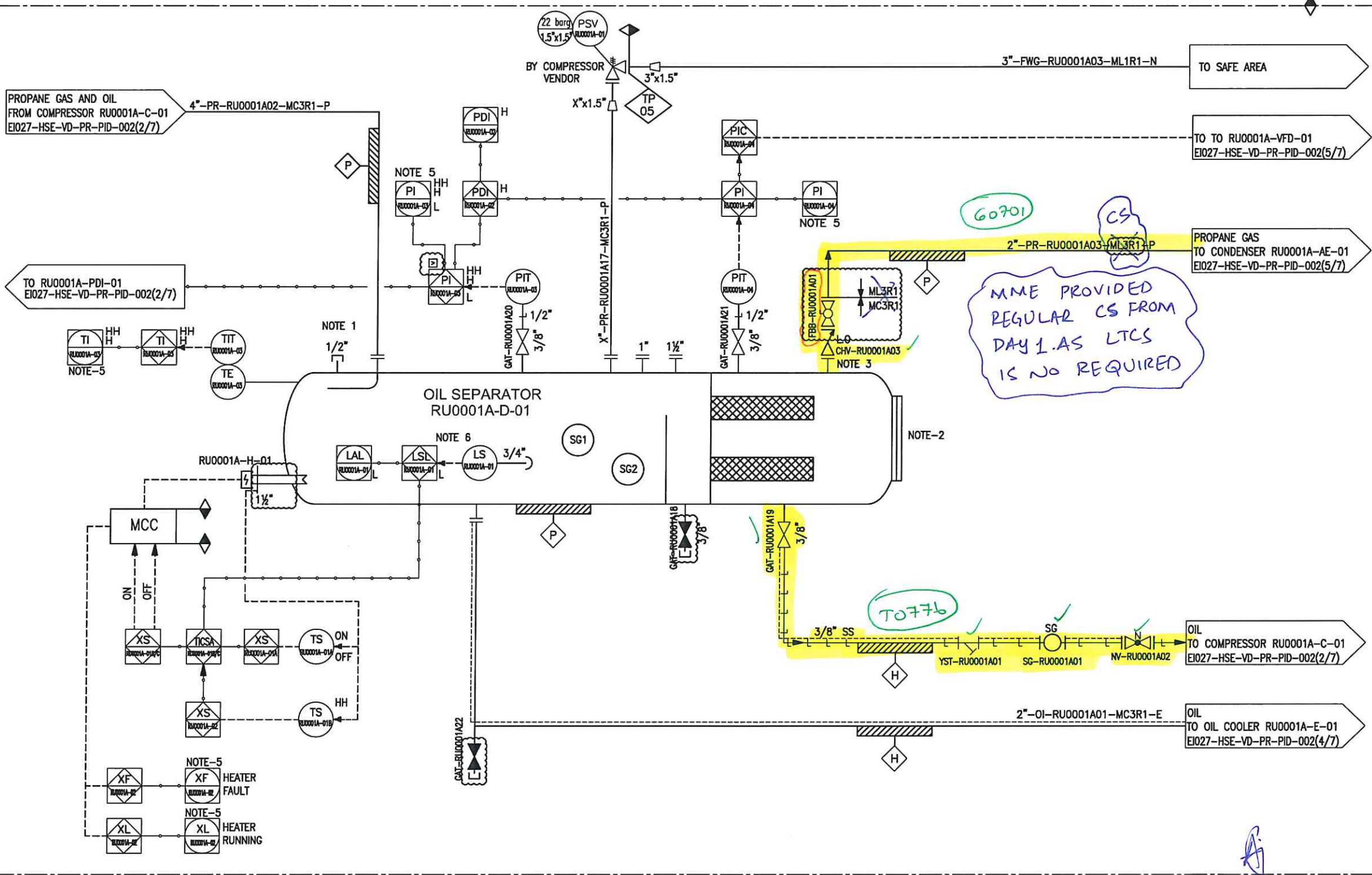
PROJECT:

DRAWING TITLE:

PROCESS & INSTRUMENTATION DIAGRAM (P&ID)-RU
SYMBOL, ABBREVIATION AND GENERAL NOTES

DRAWING NO.	REV.	SIZE	SCALE	SHEET
E1027-HSE-VD-PR-PID-002	02	A3	NTC	1 of 7

TAG NO.	RU0001A-D-01
SERVICE	OIL SEPARATOR
DESIGN PRESS. (BARG)	22
DESIGN TEMP. (°C)	-29/100
ID x L (mm)	590 x 2250



REFERENCE DRAWING		DWG NO.	REV.
NOTES :			
1- OIL TOP UP & VACUUM CONNECTION.			
2- INSPECTION HOLE.			
3- STOP CHECK VALVE FOR PREVENT SPIN BACK.			
4- DELETED.			
5- SIGNAL ROUT TO DCS.			
6- IN CASE OF LOW LEVEL, THE OIL HEATER TO BE TRIPPED.			
7- MAINTAIN TEMPERATURE FOR ELECTRICAL INSULATIONS IS 30°C.			
LEGEND:			
VENDOR CUSTOMER			
HOLDE:			
EQUIPMENT LIST:			
KEY PLAN :			
02	OCT-2024	ISSUED FOR APPROVAL (IFA)	A.K F.SH A.M
01	AUG-2024	ISSUED FOR APPROVAL (IFA)	A.K F.SH A.M
00	JUL-2024	ISSUED FOR APPROVAL (IFA)	A.K F.SH A.M
REV.	ISSUE DATE	DESCRIPTION	PREPARED CHECKED APPROVED
CLIENT			
CONSULTING ENGINEER			
PROJECT:			
DRAWING TITLE:			
PROCESS & INSTRUMENTATION DIAGRAM (P&ID)-RU			
DRAWING NO.	REV.	SIZE	SCALE
EI027-HSE-VD-PR-PID-002	02	A3	NTC
		SHEET	3 of 7

TAG NO.	RU0001A-AE-01
SERVICE	CONDENSER
DESIGN PRESS. (BARG)	22.0+FV
DESIGN TEMP. (°C)	-45/120
DESIGN DUTY (kW)	257

TAG NO.	RU0001A-D-02
SERVICE	RECEIVER HEADER
DESIGN PRESS. (BARG)	22.0+FV
DESIGN TEMP. (°C)	-45/120
ID x L (mm)	437 x 4000

REFERENCE DRAWING	DWG NO.	REV.

NOTES :

- 1- DELETED.
- 2- MANUAL FAN PITCH HAS BEEN CONSIDERED FOR EACH FAN.
- 3- MAINTAIN TEMPERATURE FOR ELECTRICAL INSULATIONS IS 30°C.
- 4- VARIABLE FREQUENCY DRIVE IS INSTALLED IN MOTOR CONTROL CENTER.
- 5- MOTOR HARDWARE CONNECTED TO VARIABLE FREQUENCY DRIVE.

LEGEND:



HOLDE:

EQUIPMENT LIST:

KEY PLAN :

REV.	ISSUE DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
02	OCT-2024	ISSUED FOR APPROVAL (IFA)	A.K	F.SH	A.M
01	AUG-2024	ISSUED FOR APPROVAL (IFA)	A.K	F.SH	A.M
00	JUL-2024	ISSUED FOR APPROVAL (IFA)	A.K	F.SH	A.M

CLIENT

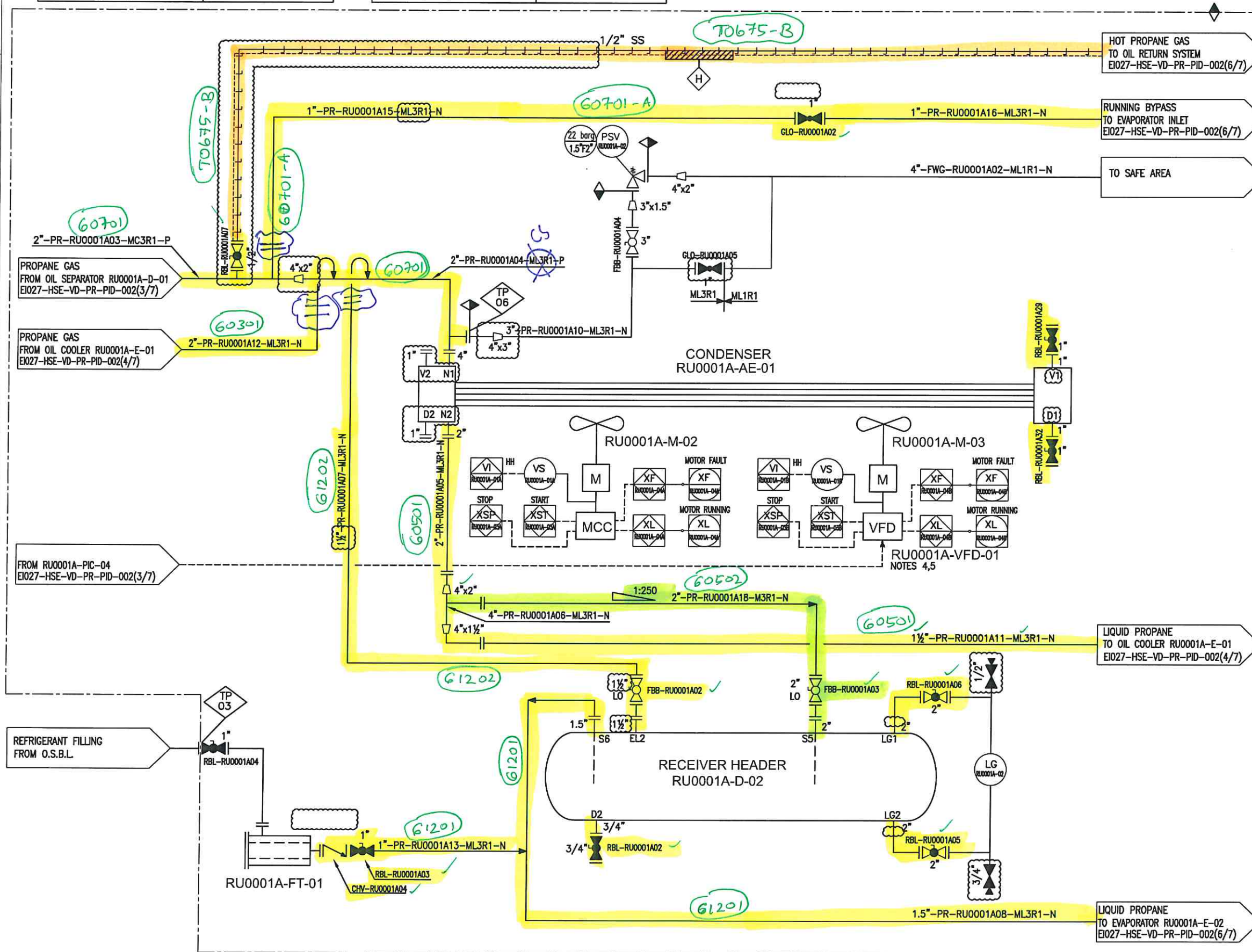
CONSULTING ENGINEER

PROJECT:

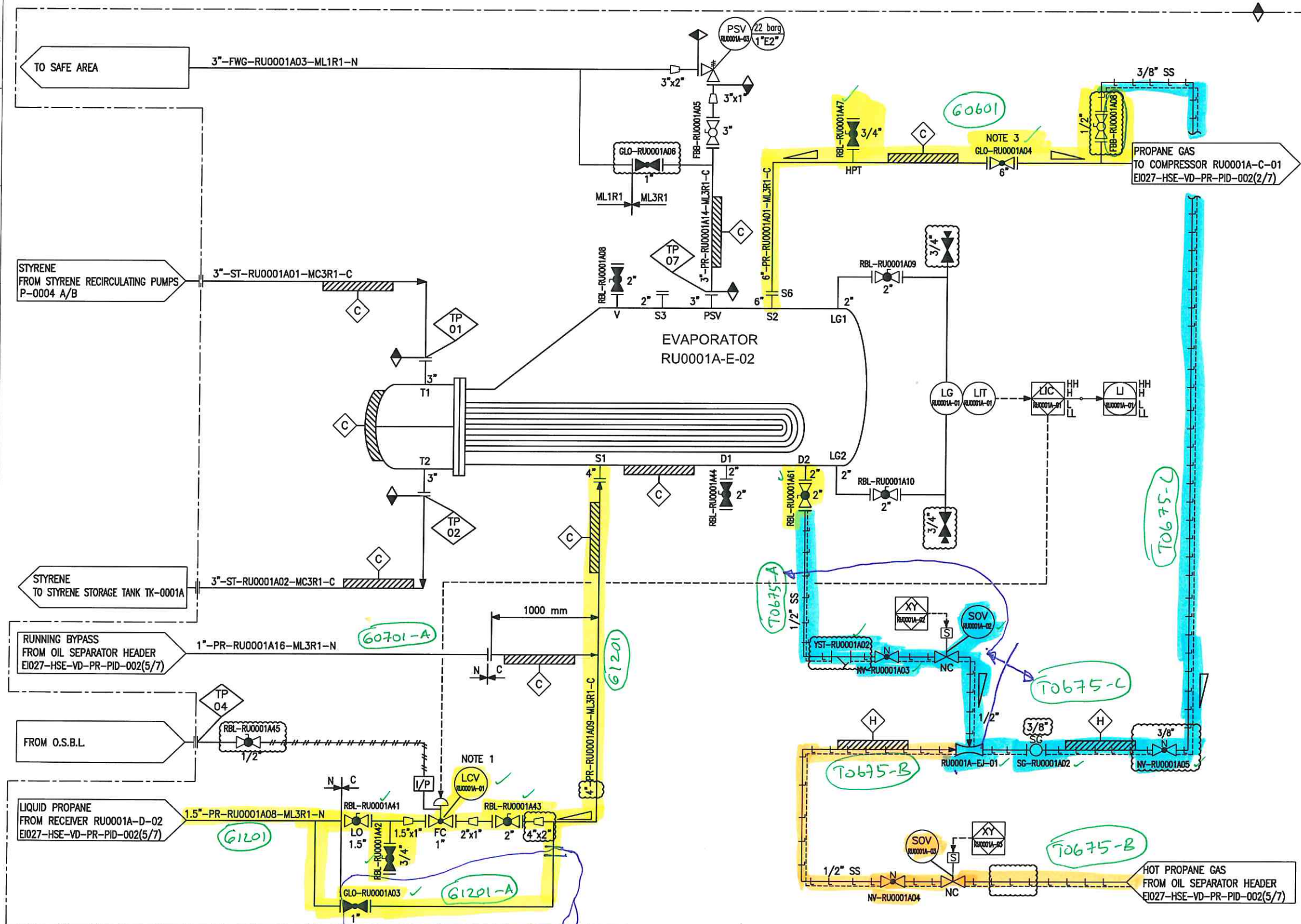
DRAWING TITLE:

PROCESS & INSTRUMENTATION DIAGRAM (P&ID)-RU

DRAWING NO.	REV.	SIZE	SCALE	SHEET
EI027-HSE-VD-PR-PID-002	02	A3	NTC	5 of 7



TAG NO.	RU0001A-E-02
SERVICE	EVAPORATOR
DESIGN PRESS. (barg)	S: 22.0+FV, T: 6.8+FV
DESIGN TEMP. (°C)	S: -45/120, T: 85
DESIGN DUTY (kW)	188.6
SHELL ID x TUBE L (mm)	600-925 x 2300
TEMA TYPE	BKU



14		15		16	
REFERENCE DRAWING				DWG NO.	
				REV.	
NOTES :					
1- TRAVEL DOWN BLOCK TO BE SET AND LOCKED AT MINIMUM OPENING DURING COMMISSIONING (2 ~ 5%).					
2- DELETED.					
3- AT STAND STILL CONDITION, VALVE NEEDS TO BE CLOSED COMPLETELY. DURING START-UP VALVE TO BE OPENED SMOOTHLY.					
4- MAINTAIN TEMPERATURE FOR ELECTRICAL INSULATIONS IS 30°C.					
LEGEND:					
<div>VENDOR<div><div></div></div>CUSTOMER</div>					
HOLDE:					
EQUIPMENT LIST:					
KEY PLAN :					
02	OCT-2024	ISSUED FOR APPROVAL (IFA)	A.K	F.SH	A.M
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CLIENT					
CONSULTING ENGINEER					
PROJECT:					
DRAWING TITLE:					
PROCESS & INSTRUMENTATION DIAGRAM (P&ID)-RU					
DRAWING NO.			REV.	SIZE	SCALE
EI027-HSE-VD-PR-PID-002			02	A3	NTC
					SHEET
					6 of 7

