

INSTRUMENT NUMBERING
EACH INSTRUMENT HAS BEEN NAMED AS SHOWN BELOW IN THE DOCUMENTATION:
TAG: RU0001KAA
VENDOR: X
X: ONE DIGIT, WHICH IDENTIFY THE REFRIGERANT PACKAGE TRAIN (A OR B)
TAG: INSTRUMENT TAG (ATTACHMENT: P&ID SYMBOLS)
AA: TWO DIGITS, WHICH IS THE PROGRAMME ITEM NUMBER IN THE UNIT FROM 01 TO 99

MOTOR INSTRUMENT NUMBERING
IF AN INSTRUMENT OR A FUNCTION IS INSTALLED ON A ELECTRIC DRIVER OF A MACHINERY WHICH NAME IS TAG:RU0001KAA, THE INSTRUMENT NAME IS TAG:RU0001KAA

PIPE LINE NUMBERING
DN: NOMINAL DIAMETER IN INCH
MP: FLUID CODE
RU0001: PACKAGE NAME
Y: PACKAGE TRAIN (A OR B)
XX: LETTER WHICH IDENTIFIES THE LINE NUMBER



FLANGE TYPE
R = RIMMED FACE
F = FLAT FACE
J = RING TYPE JOINT
K = LARGE MALE/FEMALE
S = SMALL L TONGUE GROOVE

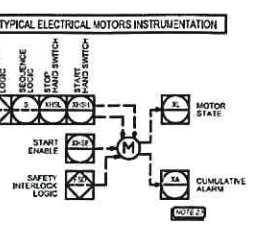
CORROSION ALLOWANCE:
0 = 0 mm
1 = 1.5 mm
2 = 2.0 mm

FLUID CODE	DESCRIPTION
AV	Aeromagnetic Vent
CVS	Cooling Water Supply
CMR	Cooling Water Return
FWG	Flare/Waste Gas
IA	Instrument Air
CI	Hydro. Oil
ST	Steam
PR	Pressure

HARDWARE		SOFTWARE	
Symbol	Denomination	Symbol	Denomination
	Locally mounted		Field mounted control device, wired control
	Mounted on back panel		Function normally accessible to operator and installed in main control room
	Mounted on main control room		Function normally accessible to operator and installed in auxiliary control room or on local panel
	Mounted on back panel in auxiliary control room or on local panel		Function normally accessible to operator and installed in auxiliary control room or on local panel
	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
	Field relay		Software logic normally accessible to operator and installed in main control room
	Back panel relay in auxiliary control room or on local panel		Sequential logic function
	Mounted on back panel		Safety interface logic
	Star indicates that the instrument is supplied by package manufacturer		Package Control System PLC
	SIGNAL LIGHT		MULTIPLY FUNCTION
	Foundation Flashed		DMING FUNCTION
	Differential between two value		High selecting function
	Upper value		Low selecting function

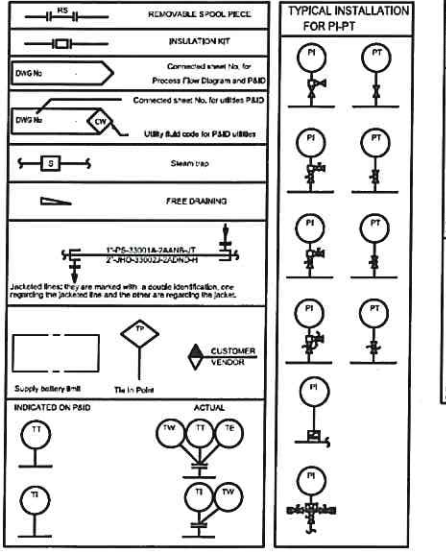
INSULATION AND TRACING CODES

A : ACOUSTIC INSULATION
H : HOT INSULATION
C : COLD INSULATION
P : PERSONAL PROTECTION (FROM 40°C AND ABOVE)
F : FIRE SAFE PROTECTION
T : STEAM TRACING
TW : HOT OIL TRACING
TC : HOT WATER TRACING
JW : REDUCED JACKETED LINE
JP : PARTIAL JACKETED LINE
F : ANTI-FREEZING
B : SOLAR PROTECTION
K : ANTI-CONDENSATION
AC : CO. D AND ACOUSTIC INSULATION
AH : HOT AND ACOUSTIC INSULATION
N : NOT INSULATED
W : TAPE WRAPPED (UNDERGROUND LINES)



FLOW INSTRUMENTS

Symbol	Denomination	Abbreviation
	RIGHT FLOW GLASS	FT
	ORIFICE PLATE WITH TRANSMITTER	FT
	METER RUN	FT
	BOTAMETER	FT
	VENTURE	FT
	FLOW NOZZLE	FT
	PISTON OR ANNUBAR WITH TRANSMITTER	FT
	FLOW RESTRICTION ORIFICE	FT
	TRANSMITTER	FT
	MAGNETIC	FT
	VORTEX	FT
	COROUSION	FT
	ULTRASONIC	FT
	THERMAL FLOWMETER	FT
	THERMAL FLOWMETER	FT



Symbol	Denomination	Abbreviation
	CARTRIDGE FILTER	FT
	Basket Filter	FT
	Section Element	TST
	Coalescer	D
	Decanter	D
	Compressor Screw	C
	Vertical Shell & Tube Exchanger	E
	Pump Recirculator	P
	Ejector	EJ
	Aerator	AE

Piping and relevant components

Symbol	Denomination	Symbol	Denomination
	Main process		Female Connection
	Secondary process		Male Connection
	Utility		Flange Connection
	Jacket		Manhole
	Electrical Heat Tracing/Tracer		Female Nitrogen Flange
	Hydraulic System Tubing (10T SS)		Male Nitrogen Flange
	Electrical Heat Tracing Tubing (10T SS)		Cone Type Strainer
	Blind flange		Tea strainer
	Cap (butt weld)		Y-strainer
	Reducer (Bottom fit)		Ring scale
	Reducer (Top fit)		Scotchdye blind - normally closed
	Reducer (Concentric)		Scotchdye blind - normally open
	Sample connection		Ring spacer
	Sample Point		Process vent and drains
	Flare or generic fibre valve		Able to open or generic valve
	Check Valve		All process vents and drains must be provided with flyvalve or blind flange according to piping specification
	Globe or disc Valve		With flare into
	Ball Valve		With quarter or submer
	Butterfly Valve		Discharge to atmosphere
	Needle Valve		Downward
	Plug Valve		Upward
	Ball Valve (FULL DOSE)		Lateral
	Ball Valve (REDUCED DOSE)		Expansion joint
	Throttle Valve		Locked Close Valve
	Sizing Valve		Locked Open Valve
			Normally open valve
			Normally closed valve
			Car seal open valve
			Car seal closed valve
			High Shut Off Valve
			Sight glass
			Flow the class change

Instrument Identification

Symbol	Denomination
	Instrument tag on the
	Pressure tap with manual valve
	Pressure tap with automatic valve
	Pressure tap with diaphragm type
	Flared restriction orifice
	Primary flow element with integral flow indicator
	Handheld for automatic valves (valve with actuator)
	Diaphragm spring-assisted
	Spring-assisted self-venting
	Cylinder spring-assisted
	Honey comb
	Solenoid
	Solenoid valve with manual reset
	Hand actuator
	Diaphragm Valve
	Pressure relief or safety valve
	Temperature relief or safety valve
	Two-Way Valve Full Open
	Two-Way Valve Full Close
	Two-Way Valve Full Locked
	Temporary valve full open/close
	Normally open valve full open to part 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 IT IS STRICTLY REQUIRED ONLY FOR CONTROL LOOPS, PROCESS INTERLOCKS AND SAFETY INTERLOCKS, IN CASE OF TEMPERATURE INDICATOR.
- 3- IN ALL THE PANEL PACKAGES ARE REPRESENTED IN A SIMPLIFIED WAY, IN GENERAL, WHAT IS REPRESENTED IS LICENSOR MINIMUM REQUIREMENT, 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:
 - EO (ETHYLENEOXIDE)
 - AN (ACRYLONITRILE)
 - CO (ORGANIC LIQUID CONDENSATE)
 - ST (STEAM)
 - SO (SULFONIC ACID)
- 5- INSTALL DRAINS ON THE PIPING CIRCUITS (OR SINGLE LINES) LOWEST POINTS AND VENTS IN THE PIPING CIRCUITS (OR SINGLE LINES) HIGHEST POINTS.
- 6- MINIMIZE FLANGED COUPLINGS ON HOT/THERMAL OIL (HO) MAIN DISTRIBUTION HEADER LINES, FOR THERMAL OIL (HO, CO) LINES INSTALLED ON PIPE RACKS, FLANGED COUPLINGS SHALL BE EQUIPPED WITH SAFE-RING OR EQUIVALENT FLANGED 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, THIS HAS TO BE CONSIDERED AS STANDARD INSTALLATION AND IS NOT REPRESENTED ON P&ID.
- 8- IN GENERAL ON P&ID SEQUENCES CHECK PHASE IS NOT REPRESENTED EXCEPT FOR:
 - ABS PLANTS RUBBER DISSOLUTION SECTION
 - RUBBER PLANTS 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 DRIP RING IS INDICATED ON P&ID, IT SHALL BE SUPPLIED BY PIPING VENDOR, FOR DRIP RING TYPICAL SEE DOC. J-MS/05/06-IN-STD-1500-0001 "DRIP 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-DRAINING)
- 13- ALL SIGNALS FROM UNIT 08 INSTRUMENTS SHALL BE CONNECTED TO DCS /TCS /ESD OF RUBBER PLANT.
- 14- ALL VALVES ON PSV INLET /OUTLET LINES SHALL BE FULL BORE TYPE, GATE VALVE ON FLARE LINE TO BE INSTALLED WITH STEM IN HORIZONTAL POSITION.
- 15- FOR SPECIAL PIPING FROM LIST REFER TO DOC. J-MS-05-06-PI-150-0001.
- 16- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- 17- ELEVATION SHOWN ARE ABOVE THE HIGHEST POINT OF PAVING.
- 18- ALL VALVES ARE LINE SIZE UNLESS OTHERWISE SHOWN.
- 19- THIS FLOW DIAGRAM IS DETAILED 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 ALL VALVES, FLANGES AND INSTRUMENTS INCLUDING THERMOCOUPLES ETC.
- 20- ALL ELECTRIC INSTRUMENTATION SHALL BE INSTALLED AWAY FROM STEAM LINES AND HIGH TEMPERATURE HEAT SOURCE.
- 21- SAMPLE TAPPING FOR GAS SAMPLES 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- CABLEING BETWEEN DCS REMOTE I/O CARDS IN MCC CABLE CABINET AND MAIN CONTROL ROOM WILL BE VIA SOFT LINK EXCEPT FOR ESD SIGNALS TO MCC THAT WOULD BE HARD WIRED.
- 24- ESD MEANS EMERGENCY SWITCH LOW.
- 25- SIGNALS OF CURRENT TRANSMITTERS 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 DESIGNED FOR THE MAXIMUM PURGING CONDITION MENTIONED IN THE LICENSOR POP DATA.

HOLDS:

EQUIPMENT LIST:

KEY PLAN:

REV.	ISSUE DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
00		ISSUED FOR APPROVAL (IFA)	A.K.	F.S.H.	A.M.

CLIENT

CONSULTING ENGINEER

PROJECT:

DRAWING TITLE:

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

DRAWING NO.	REV.	SIZE	SCALE	SHEET
EI027-HSE-VD-PR-PID-002	00	A3	NTC	1 of 7

REV.	ISSUE DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
00		ISSUED FOR APPROVAL (IFA)	A.K.	F.S.H.	A.M.

REV.	SIZE	SCALE	SHEET
00	A3	NTC	2 of 7

NOTES:

- 1- OPENING DEGREE TO BE SET DURING COMMISSIONING AND LOGGED.
- 2- SIGNALS ROUT TO DCS.
- 3- SET TEMPERATURE FOR ELECTRICAL TRACING IS 30C.

HOLDE:

EQUIPMENT LIST:

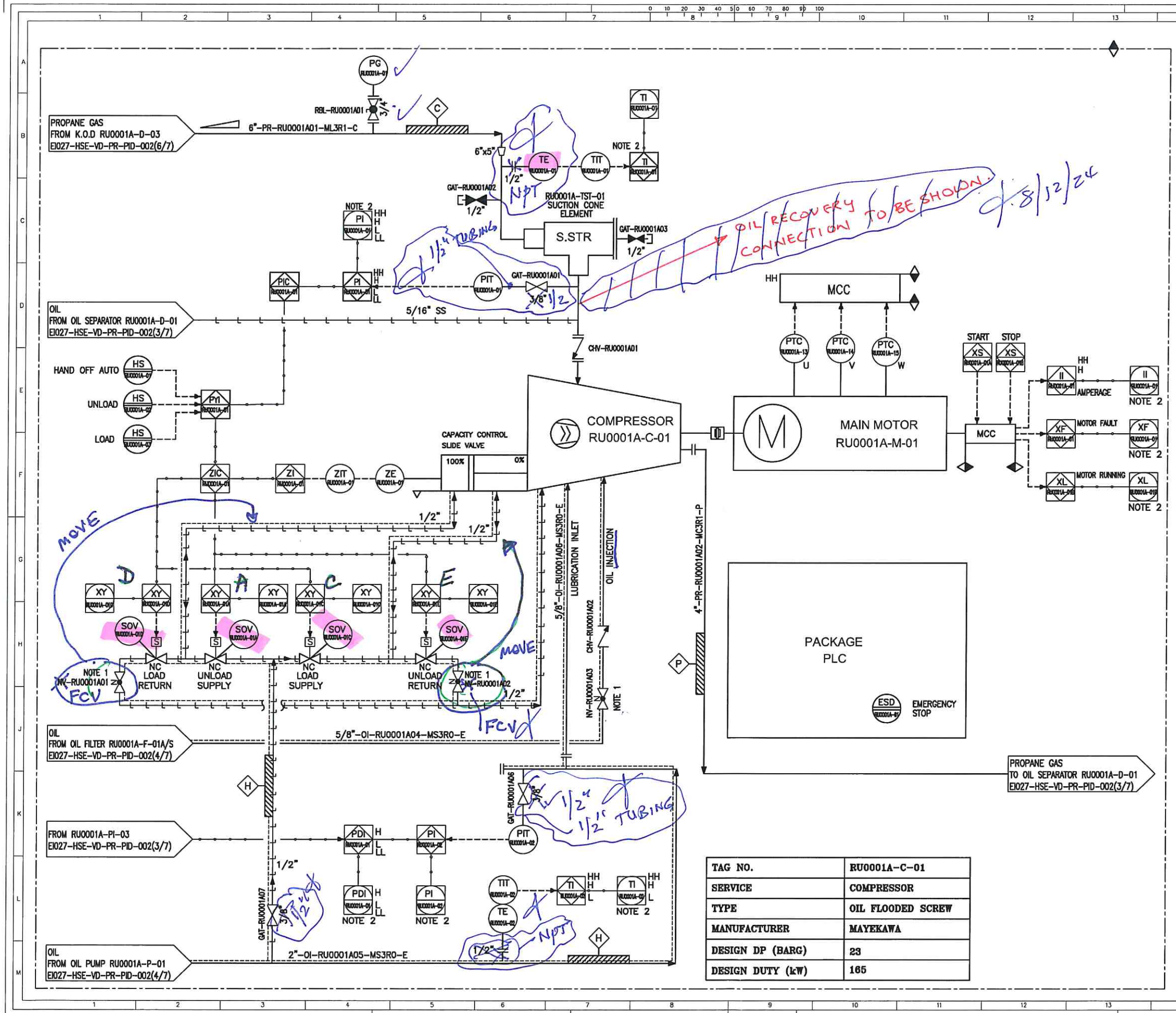
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CLIENT:

CONSULTING ENGINEER:

PROJECT:

DRAWING TITLE:
PROCESS & INSTRUMENTATION DIAGRAM (P&ID)-RU

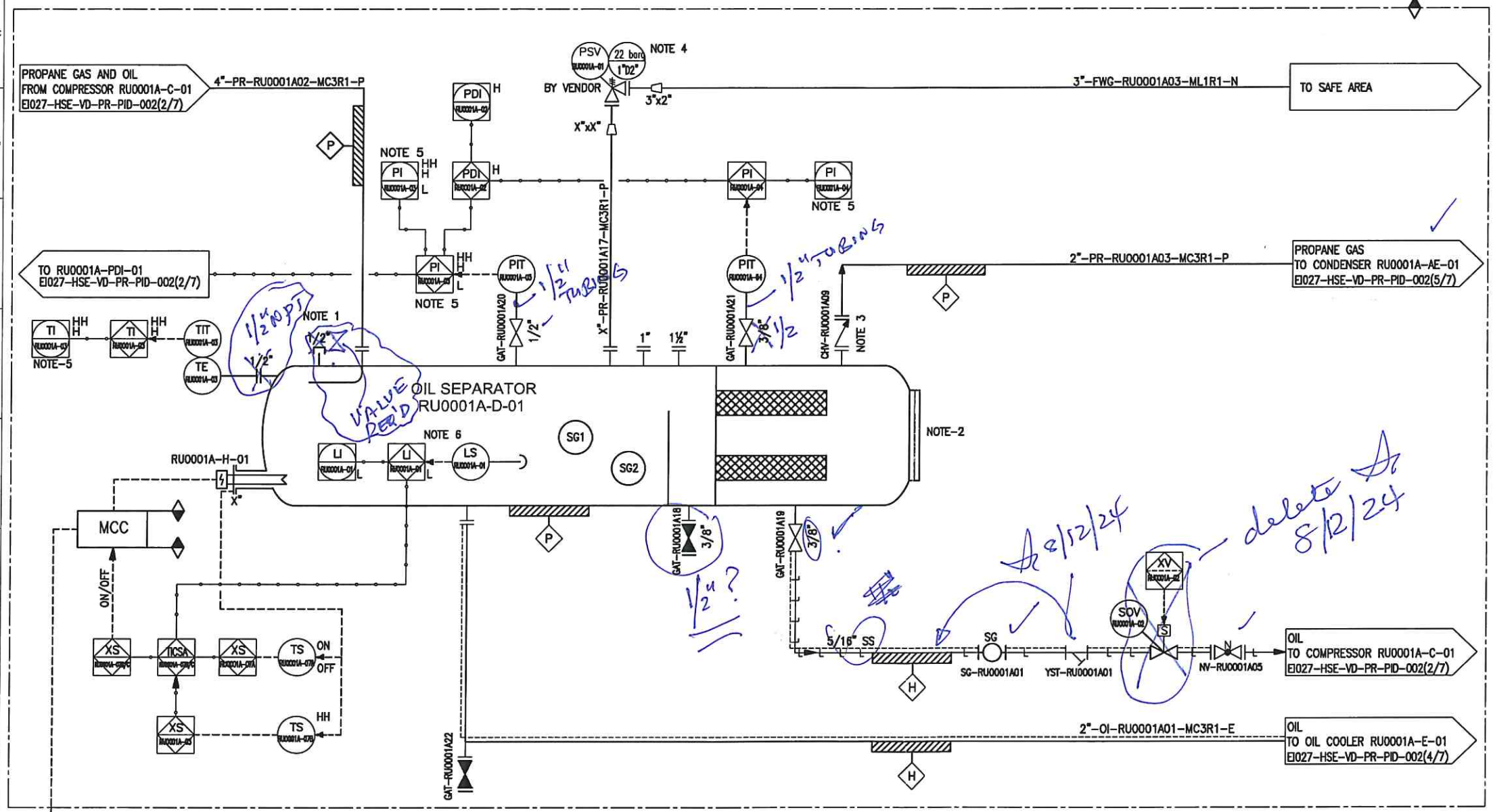


TAG NO.	RU0001A-C-01
SERVICE	COMPRESSOR
TYPE	OIL FLOODED SCREW
MANUFACTURER	MAYEKAWA
DESIGN DP (BARG)	23
DESIGN DUTY (kW)	165

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:
- OIL TOP UP & VACUUM CONNECTION.
 - INSPECTION HOLE.
 - STOP CHECK VALVE FOR PREVENT SPIN BACK.
 - SIZE OF PSV WILL BE FINALIZED ON NEXT STAGE.
 - SIGNAL ROUT TO DCS.
 - IN CASE OF LOW OIL LEVEL, THE OIL HEATER TO BE TRIPPED.
 - SET TEMPERATURE FOR ELECTRICAL TRACING IS 30°C.



HOLDE:

EQUIPMENT LIST:

KEY PLAN:

	ISSUED FOR APPROVAL (IFA)	A.M.	F.SH.	A.M.
REV.	ISSUE DATE	DESCRIPTION	PREPARED	CHECKED

CLIENT

CONSULTING ENGINEER

PROJECT:

DRAWING TITLE:
PROCESS & INSTRUMENTATION DIAGRAM (P&ID)-RU

DRAWING NO.	REV	SIZE	SCALE	SHEET
EI027-HSE-VD-PR-PID-002	00	A3	NTC	3 of 7

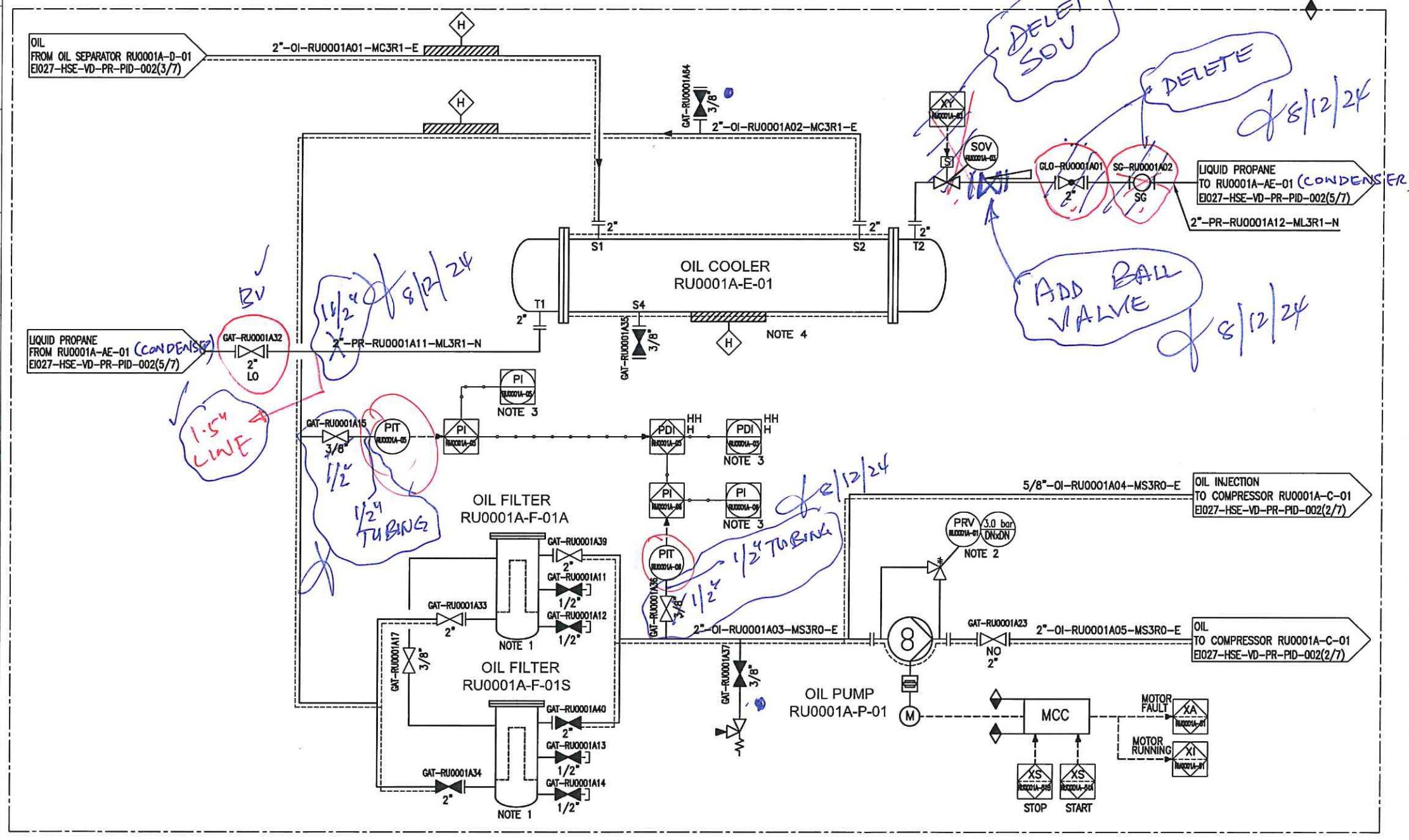
TAG NO.	RU0001A-E-01
SERVICE	OIL COOLER
DESIGN PRESS. (BARG)	S: 30, T:30
DESIGN TEMP. (°C)	S:5/100, T:-45/100
DESIGN DUTY (kW)	24.7
ID x L (mm)	139.7 x 2200
TYPE	AEH

TAG NO.	RU0001A-P-01
SERVICE	OIL PUMP
TYPE	SCREW PUMP
DESIGN PRESS. (BARG)	23
DESIGN TEMP. (°C)	5 / 100
RATED POWER (kW)	2.5

TAG NO.	RU0001A-F-01A/S
SERVICE	OIL FILTER
DESIGN PRESS. (BARG)	23
DESIGN TEMP. (°C)	5/100
ID x L (mm)	MAYEKAWA

REFERENCE DRAWING	DWG NO.	REV.

- NOTES:
- ONE OPERATING / ONE STAND-BY.
 - DP=3 BAR.
 - SIGNAL ROUT TO DCS.
 - HEAT TRACING TO BE TURNED OFF DURING COMPRESSOR START.
 - SET TEMPERATURE FOR ELECTRICAL TRACING IS 30°C.



HOLDE:

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KEY PLAN:

REV.	ISSUE DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
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DRAWING TITLE:
PROCESS & INSTRUMENTATION DIAGRAM (P&ID)-RU

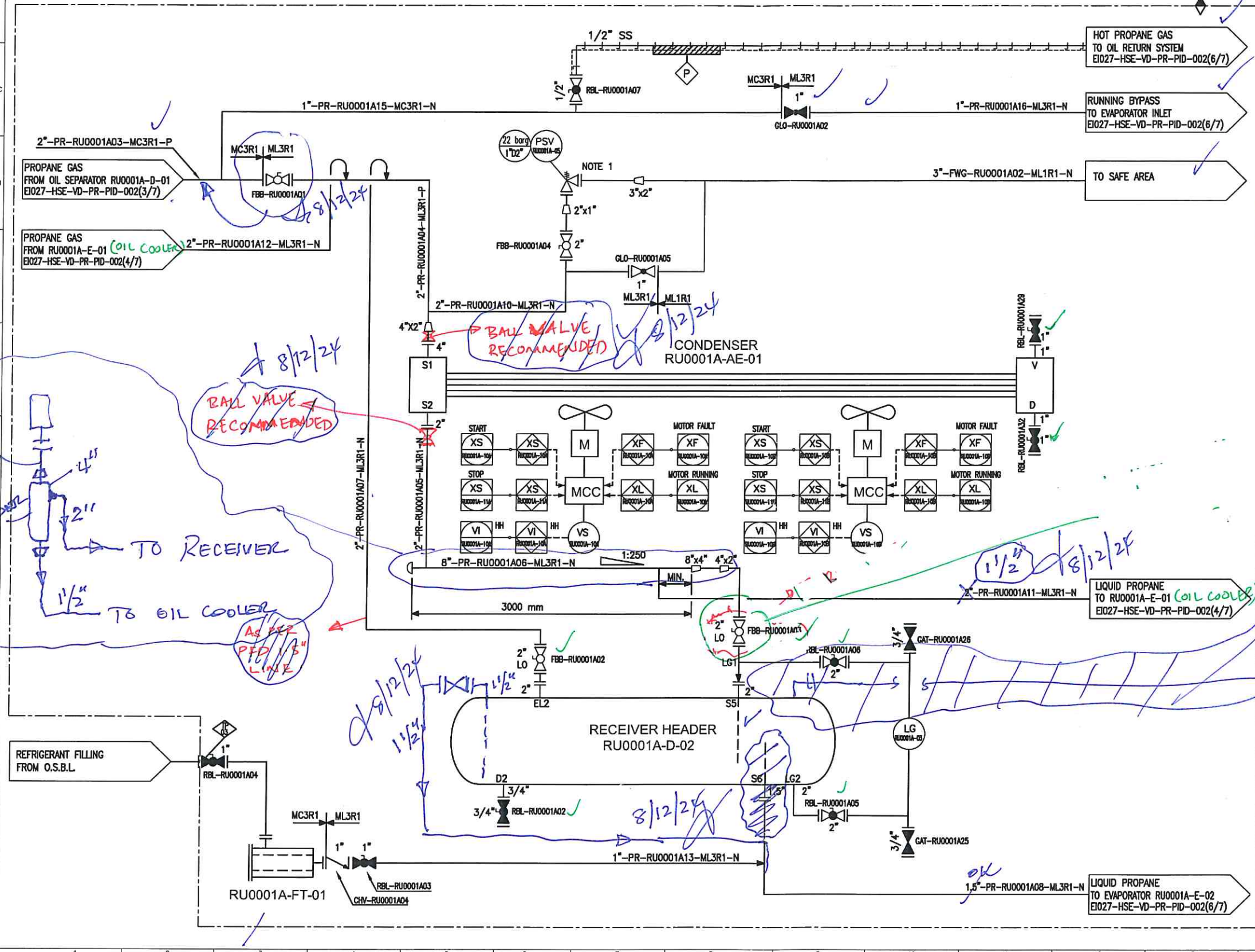
DRAWING NO.	REV.	SIZE	SCALE	SHEET
EI027-HSE-VD-PR-PID-002	00	A3	NTC	4 of 7

TAG NO.	RU0001A-E-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)	335x5050

REFERENCE DRAWING	DWG NO.	REV.

NOTES:
 1- SIZE OF PSV WILL BE FINALIZED ON NEXT STAGE.
 2- MANUAL FAN PITCH HAS BEEN CONSIDERED FOR EACH FAN.
 3- SET TEMPERATURE FOR ELECTRICAL INSULATIONS IS 30°C.



AG REED TO DELETE. IGNORE COMMENT NOZZLE ON RECEIVER WILL BE DELETED
 8/12/24

EQUIPMENT LIST:

KEY PLAN:

REV.	ISSUE DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
00		ISSUED FOR APPROVAL (IFA)	A.K.	F.SH.	A.M.

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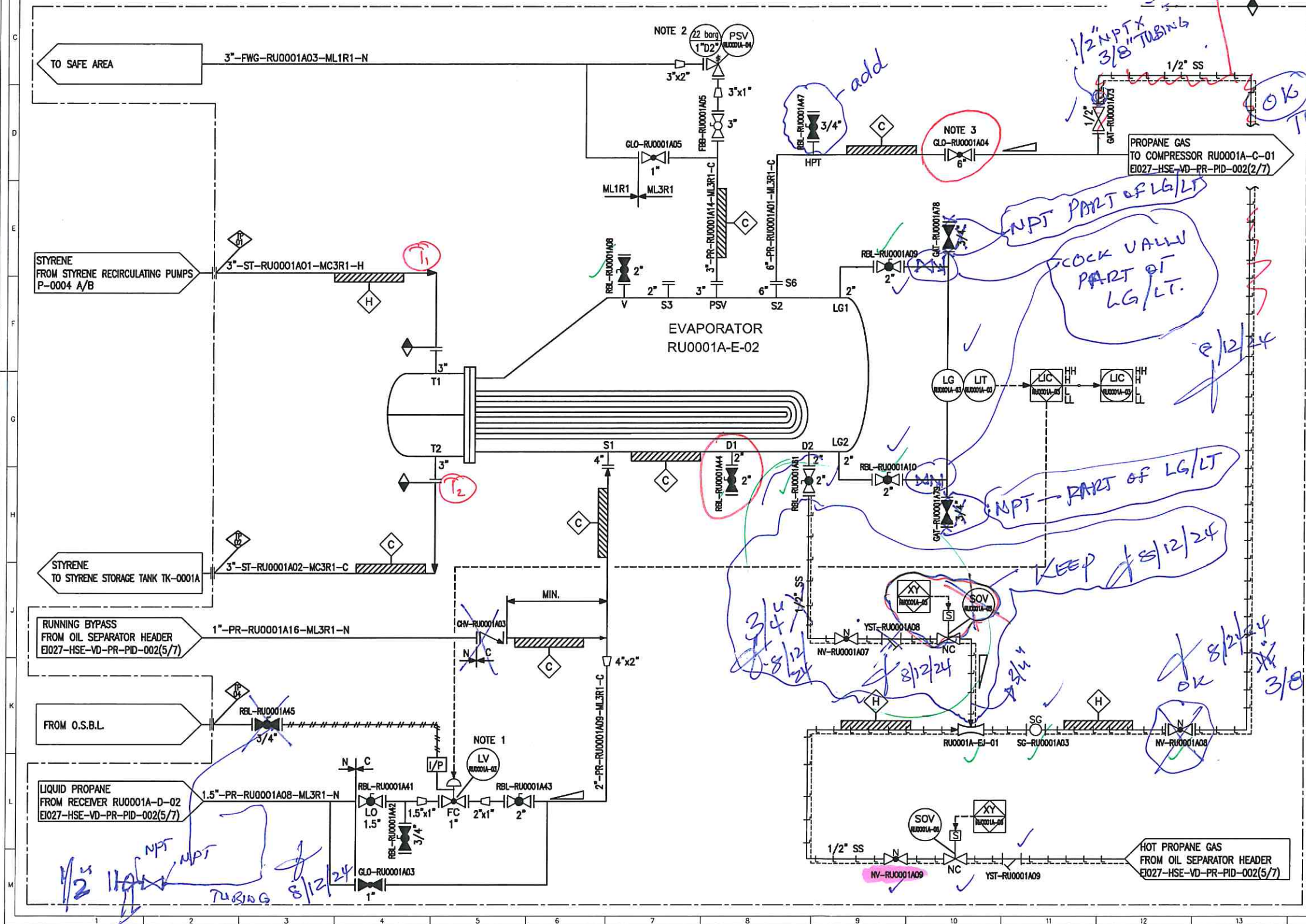
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 PROCESS & INSTRUMENTATION DIAGRAM (P&ID)-RU

DRAWING NO.	REV.	SIZE	SCALE	SHEET
EI027-HSE-VD-PR-PID-002	00	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)	166.6
SHELL ID x TUBE L (mm)	600-925 x 2300
TEMA TYPE	BKU

REFERENCE DRAWING	DWG NO.	REV.

- NOTES:
- 1- TRAVEL DOWN BLOCK TO BE SET AND LOCKED AT MINIMUM OPENING DURING COMMISSIONING (2 ~ 6%).
 - 2- SIZE OF PSV WILL BE FINALIZED ON NEXT STAGE.
 - 3- AT STAND STILL CONDITION, VALVE NEEDS TO BE CLOSED COMPLETELY. DURING START-UP VALVE TO BE OPENED SMOOTHLY.
 - 4- SET TEMPERATURE FOR ELECTRICAL INSULATIONS IS 30°C.



HOLDE:

EQUIPMENT LIST:

KEY PLAN:

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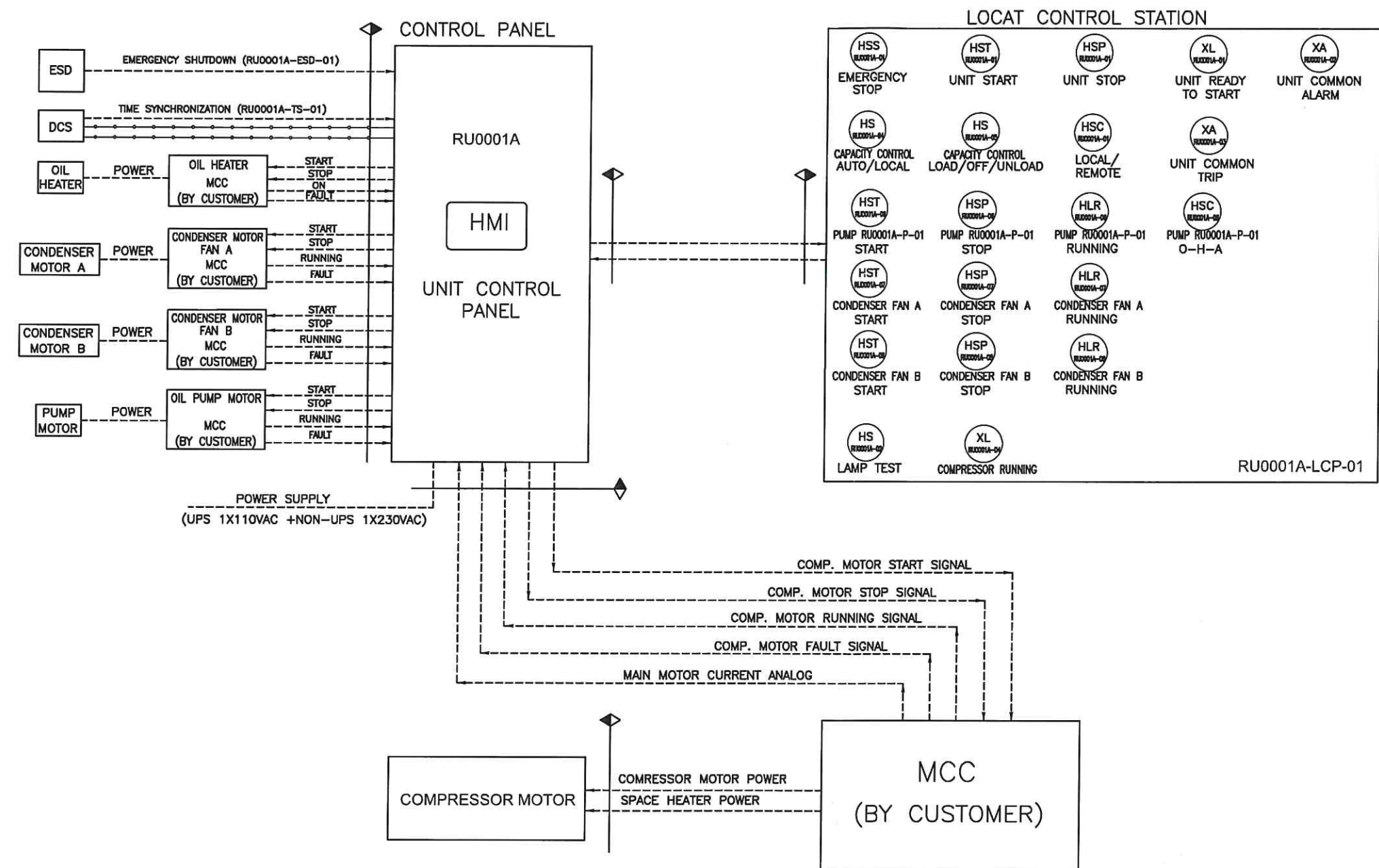
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DRAWING TITLE:

DRAWING NO.	REV.	SIZE	SCALE	SHEET
EI027-HSE-VD-PR-PID-002	00	A3	NTC	6 of 7



CONNECTION LIST			
NO.	LOCATION	DESCRIPTION	SIZE
TP-01	PACKAGE	CHILLER INLET	3"-300 ANSI RF
TP-02	PACKAGE	CHILLER OUTLET	3"-300 ANSI RF
TP-03	PACKAGE	FILTER DRYER PROPYLENE INLET	1"-300
TP-04	PACKAGE	INSTRUMENT AIR SUPPLY	3/4"-150

REFERENCE DRAWING	DWG NO	REV
NOTES :		
HOLDE:		
EQUIPMENT LIST:		
KEY PLAN :		
00	ISSUED FOR APPROVAL (IFA)	A.K. F.S.H. 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 SHEET
E1027-HSE-YD-PR-PID-002	00 A3	NTC 7 of 7