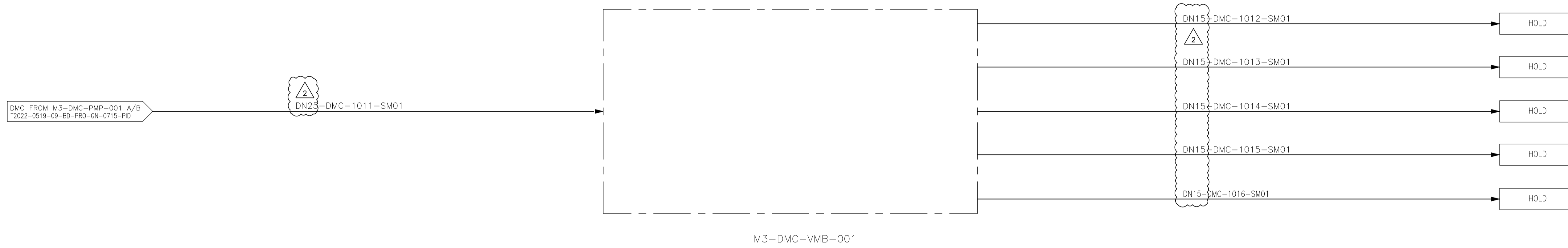
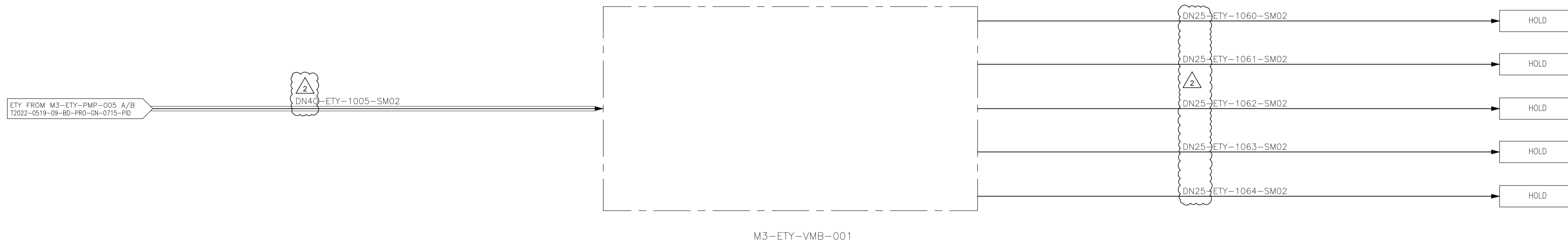


M3-DMC-VMB-001
DMC VALVE MANIFOLD
BOX - 1ST INJECTION

M3-ETY-VMB-001
ELECTROLYTE VALVE MANIFOLD
BOX - 1ST INJECTION



M3-DMC-VMB-001



M3-ETY-VMB-001

NOTES

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	29/09/23	APMA	MJCP	MJCP	JLSE
A	07/07/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-064

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	29/09/23	REISSUE FOR COMMENTS	MJCP
0	07/07/23	ISSUE FOR COMMENTS	JLSE



Ciente / Client

CALB

PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

ETY SYSTEM - M3 FIRST INJECTION ROOM

Escalas / Scales :	S/E	Projeto / Designed :	APMA
Data / Date :	31/10/23	Desenhou / Drawn :	CSAL
Processo / Process :	T2022-519	Verificou / Checked :	JLSE
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0713-PID	Aprovou / Approved :	JLSE

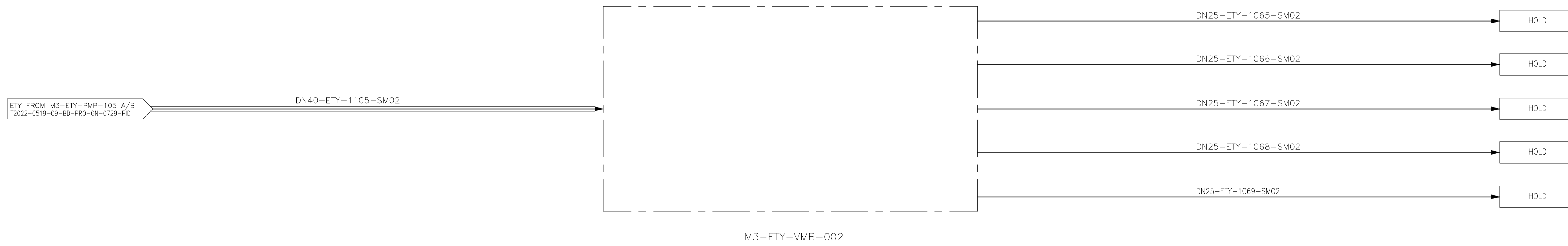
Desenho / Drawing :

BD-PRO-GN-0713-PID 02

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M3-DMC-VMB-002
DMC VALVE MANIFOLD
BOX - 2ND INJECTION

M3-ETY-VMB-002
ELECTROLYTE VALVE MANIFOLD
BOX - 2ND INJECTION



NOTES

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	29/09/23	APMA	MJCP	MJCP	JLSE
A	07/07/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-065

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	29/09/23	REISSUE FOR COMMENTS	MJCP
0	07/07/23	ISSUE FOR COMMENTS	JLSE



Ciente / Client

CALB

PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

ETY SYSTEM - M3 SECOND INJECTION ROOM

Escalas / Scales :	S/E	Projetou / Designed :	APMA
Data / Date :	31/10/23	Desenhou / Drawn :	CSAL
Processo / Process :	T2022-519	Verificou / Checked :	JLSE
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0714-PID	Aprovou / Approved :	JLSE

Desenho / Drawing :

BD-PRO-GN-0714-PID 02

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M3-DMC-PMP-001 A/B
DMC DRUM TRANSFER PUMP

M3-ETY-PMP-005 A/B
ELECTROLYTE DRUM TRANSFER PUMP

DN20-PN2-0512-SK02

DN20-CDA-0502-SK02

PN2 SUPPLY
T2022-0519-09-BD-PRO-GN-0420-PID

CDA SUPPLY
T2022-0519-09-BD-PRO-GN-0320-PID

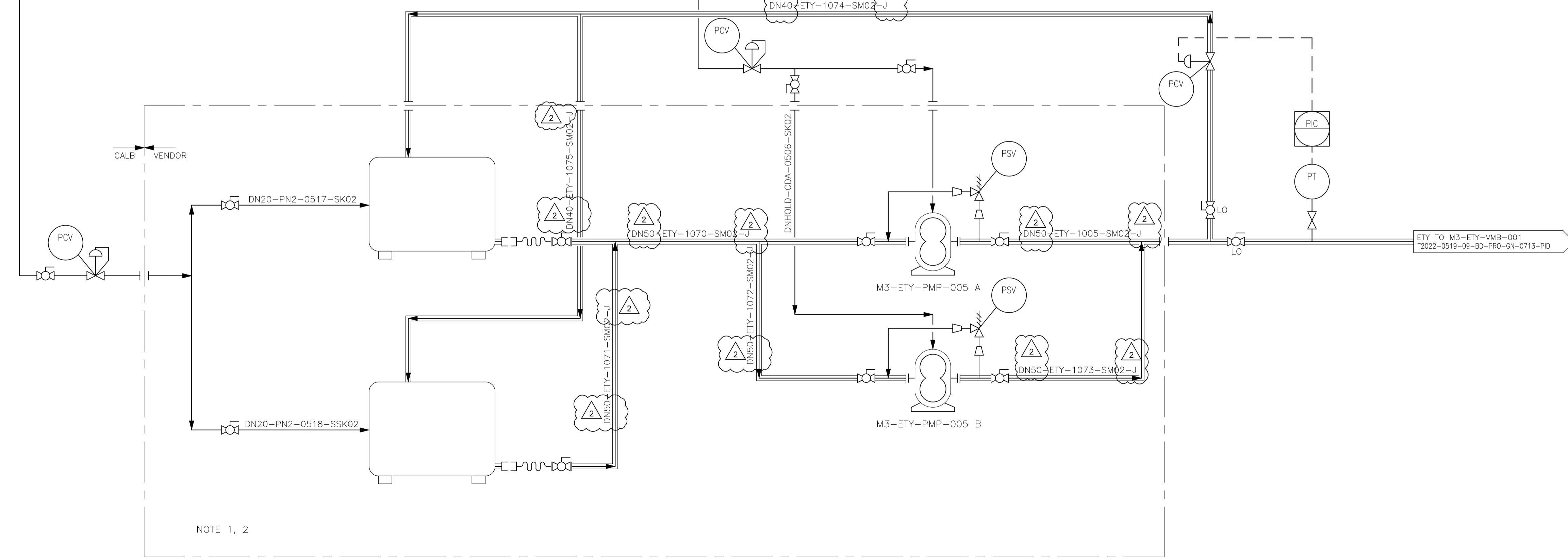
DN20-PN2-0513-SK02

CALB VENDOR

DN20-PN2-0514-SK02

NOTE 1, 2

NOTE 1, 2



NOTES

- 1- THE DRUM TRANSFER PUMP SHOULD BE INSTALLED IN A CABINET TO AVOID LEAKAGE AND INJURING THE OPERATOR.
- 2- DIAPHRAGM PUMPS SHALL BE INSTALLED WITH A PULSATION DAMPENER.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	29/09/23	APMA	MJCP	MJCP	JLSE
A	07/07/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-066

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	29/09/23	REISSUE FOR COMMENTS	MJCP
0	07/07/23	ISSUE FOR COMMENTS	JLSE



Ciente / Client

CALB

PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

ETY SYSTEM - STORAGE ROOM (FIRST INJECTION)

Escalas / Scales :	S/E	Projeto / Designed :	APMA
Data / Date :	31/10/23	Desenho / Drawn :	CSAL
Processo / Process :	T2022-519	Verificado / Checked :	JLSE
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0715-PID	Aprovado / Approved :	JLSE

Desenho / Drawing :

BD-PRO-GN-0715-PID 02

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M3-DMC-PMP-101 A/B
DMC DRUM TRANSFER PUMP

M3-ETY-PMP-105 A/B
ELECTROLYTE DRUM TRANSFER PUMP

DN20-PN2-0529-SK02

DN20-CDA-0508-SK02

PN2 SUPPLY
T2022-0519-09-BD-PRO-GN-0420-PID

CDA SUPPLY
T2022-0519-09-BD-PRO-GN-0320-PID

DN20-PN2-0530-SK02

CALB VENDOR

DN20-PN2-0531-SK02

NOTE 1,2

NOTE 1,2

DN20-PN2-0532-SK02

DN20-PN2-0534-SK02

DN20-PN2-0533-SK02

DN20-PN2-0535-SSK02

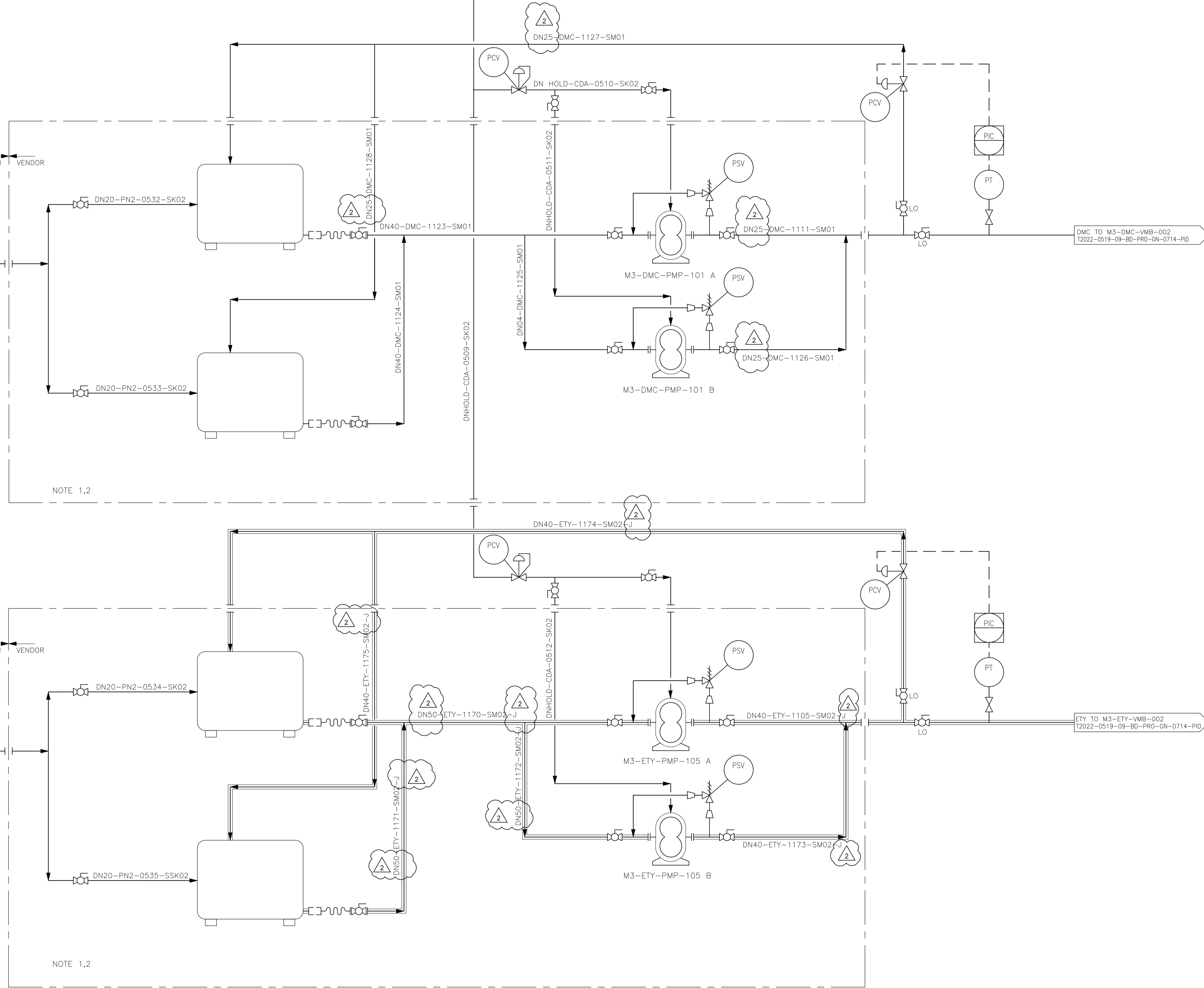
CALB VENDOR

DN20-PN2-0534-SK02

DN20-PN2-0535-SSK02

DN20-PN2-0533-SK02

DN20-PN2-0531-SK02



NOTES

- 1- THE DRUM TRANSFER PUMP SHOULD BE INSTALLED IN A CABINET TO AVOID LEAKAGE AND INJURING THE OPERATOR.
- 2- DIAPHRAGM PUMPS SHALL BE INSTALLED WITH A PULSATION DAMPENER.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	29/09/23	APMA	MJCP	MJCP	JLSE
A	07/07/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	29/09/23	REISSUE FOR COMMENTS	MJCP
0	07/07/23	ISSUE FOR COMMENTS	JLSE



Ciente / Client
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PROJETO / Project
LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

ETY SYSTEM - STORAGE ROOM (SECOND INJECTION)

Escalas / Scales :	S/E	Projeto / Designed :	APMA
Data / Date :	31/10/23	Desenho / Drawn :	CSAL
Processo / Process :	T2022-519	Verificado / Checked :	JLSE
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0729-PID	Aprovado / Approved :	JLSE

Desenho / Drawing :
T2022-0519-09-BD-PRO-GN-0729-PID

Revisão / Revision :
02

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C1-CDA-CMP-001
ROTARY SCREW
COMPRESSOR PACKAGE

C1-CDA-CMP-002
ROTARY SCREW
COMPRESSOR PACKAGE

C1-CDA-CMP-101
CENTRIFUGAL COMPRESSOR
PACKAGE

C1-CDA-CMP-201/2/3/4/5/6
CENTRIFUGAL COMPRESSORS
PACKAGE

NOTES

- 1- COMPRESSOR WITH VARIABLE FREQUENCY DRIVER (VFD).
- 2- 5 COMPRESSORS IN OPERATION, 1 COMPRESSOR SPARE.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-001

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
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PROJETO / Project
LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase
BASIC DESIGN

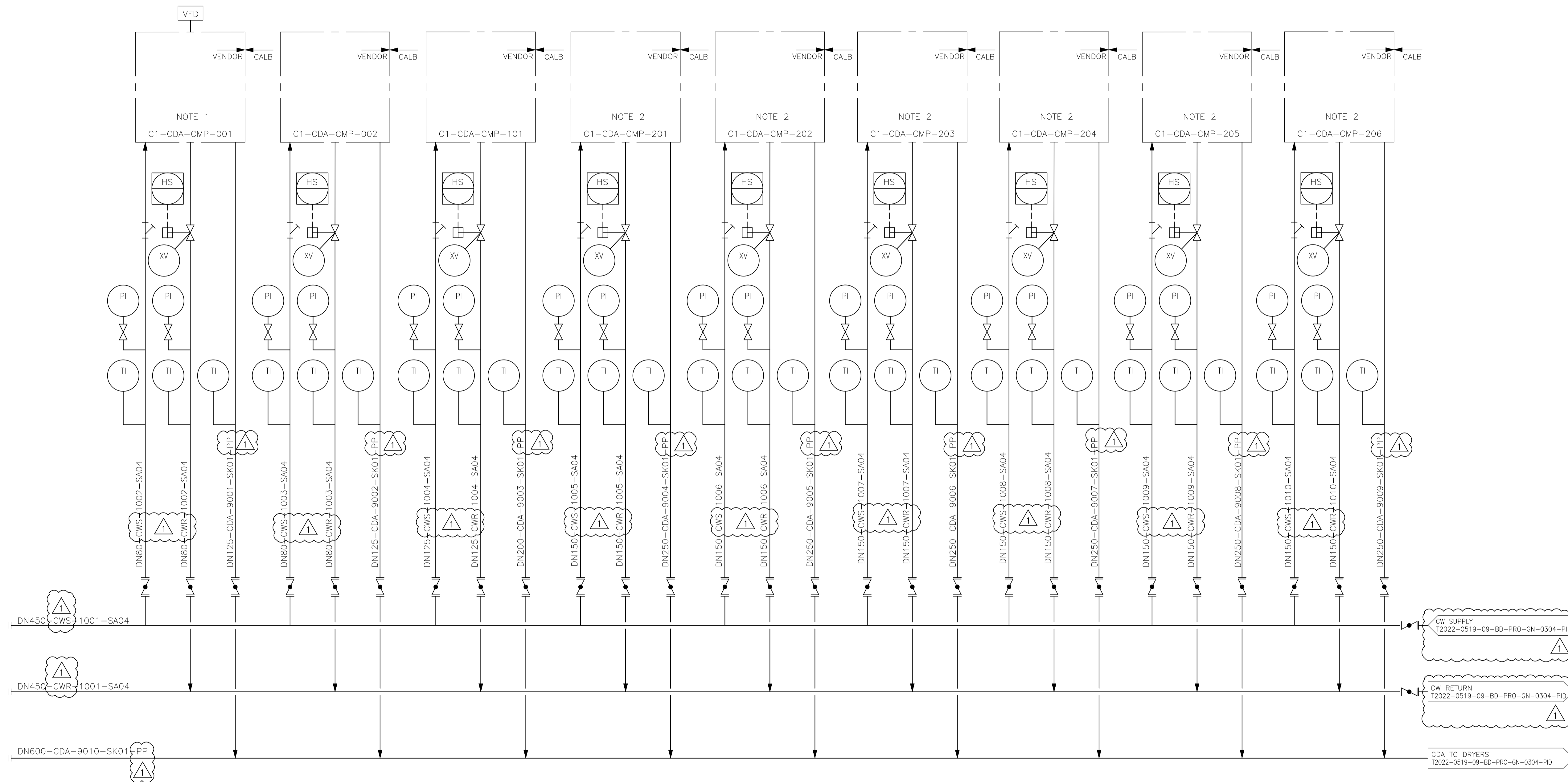
Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

**CDA SYSTEM
C1 - AIR COMPRESSORS**

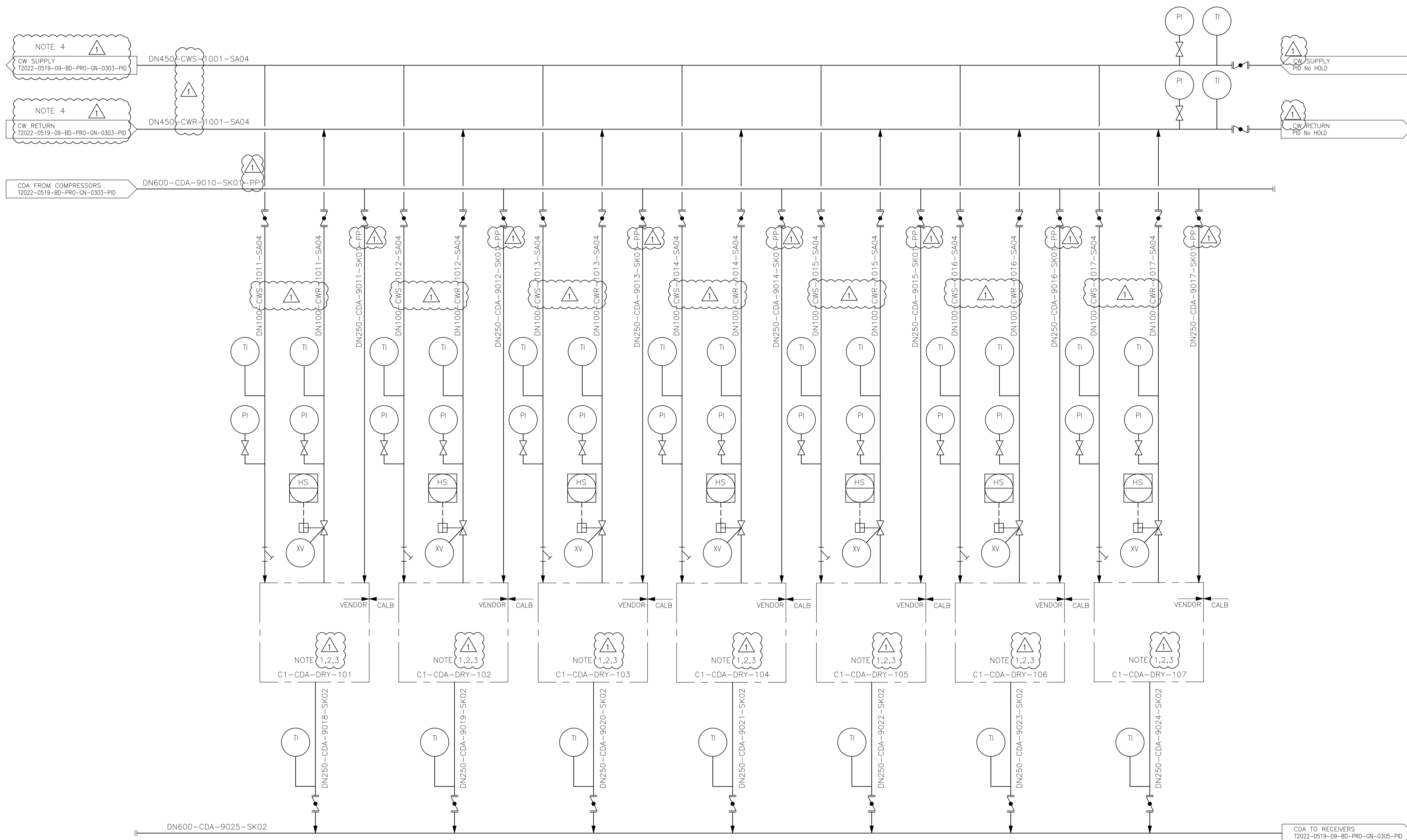
Escalas / Scales :	S/E	Projeto / Designed :	APMA
Data / Date :	XXXXX23	Desenhou / Drawn :	CSAL
Processo / Process :	T2022-519	Verificou / Checked :	MJCP
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0303-PID	Aprovou / Approved :	MJCP

Desenho / Drawing :
BD-PRO-GN-0303-PID 01

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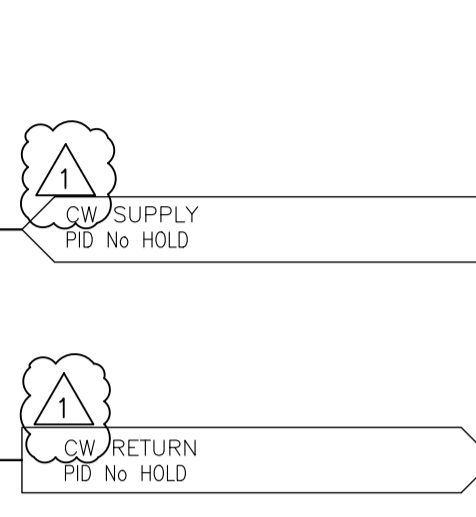
C1-CDA-DRY-101/2/3/4/5/6/7
AIR DESICCANT DRYER
PACKAGE



NOTE 4
CW SUPPLY
T2022-0519-09-B0-PRO-GN-0303-PID

NOTE 4
CW RETURN
T2022-0519-09-B0-PRO-GN-0303-PID

CDA FROM COMPRESSORS
T2022-0519-09-B0-PRO-GN-0303-PID



NOTE 1,2,3
C1-CDA-DRY-101

NOTE 1,2,3
C1-CDA-DRY-102

NOTE 1,2,3
C1-CDA-DRY-103

NOTE 1,2,3
C1-CDA-DRY-104

NOTE 1,2,3
C1-CDA-DRY-105

NOTE 1,2,3
C1-CDA-DRY-106

NOTE 1,2,3
C1-CDA-DRY-107

NOTES

- 1- 6 DRYERS IN OPERATION, 1 DRYER SPARE.
- 2- THE AIR DESICCANT DRYER PACKAGES INCLUDE TWO AFTER FILTERS:
 - C1-CDA-DRY-101: C1-CDA-FLT-101, C1-CDA-FLT-201;
 - C1-CDA-DRY-102: C1-CDA-FLT-102, C1-CDA-FLT-202;
 - C1-CDA-DRY-103: C1-CDA-FLT-103, C1-CDA-FLT-203;
 - C1-CDA-DRY-104: C1-CDA-FLT-104, C1-CDA-FLT-204;
 - C1-CDA-DRY-105: C1-CDA-FLT-105, C1-CDA-FLT-205;
 - C1-CDA-DRY-106: C1-CDA-FLT-106, C1-CDA-FLT-206;
 - C1-CDA-DRY-107: C1-CDA-FLT-107, C1-CDA-FLT-207;
- 3- DRYER TYPE IS COMPRESSION HEAT REGENERATION.
- 4- THE NEED FOR CHILLED WATER AS A BACKUP FOR THE DRYER, IN SUMMER, SHALL BE EVALUATED, DUE TO THE REDUCED COOLING EFFICIENCY OF THE COOLING TOWER.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-002

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
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PROJETO / Project
LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase
BASIC DESIGN

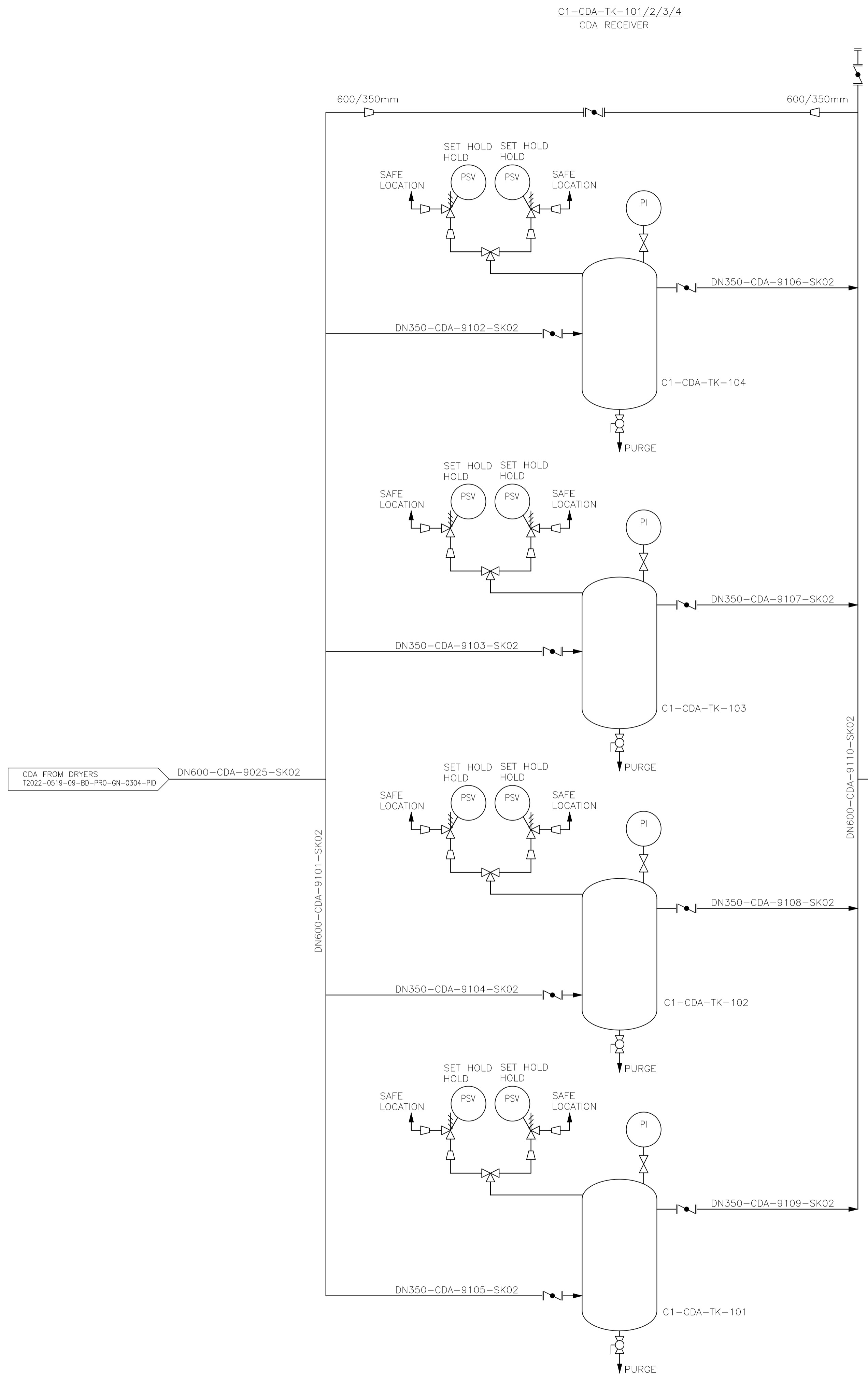
Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

**CDA SYSTEM
C1 - AIR DESICCANT DRYERS**

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XXXXXX23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verifico / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-B0-PRO-GN-0304-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0304-PID 01

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NOTES

1- DEW POINT ANALYZER TO BE CONFIRMED.

2- SEE PID No T2022-0519-BD-GN-0320-PID.

GENERAL NOTES

A- DIAMETERS TO BE CONFIRMED.

B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.

C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-003

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



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LITHIUM BATTERY GIGAFABRIY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

CDA SYSTEM
C1 - CDA RECEIVERS

Escalas / Scales :	S/E	Projeto / Designed :	APMA
Data / Date :	31/10/23	Desenho / Drawn :	CSAL
Processo / Process :	T2022-519	Verifico / Checked :	JLSE
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0305-PID	Aprovou / Approved :	JLSE

Desenho / Drawing :

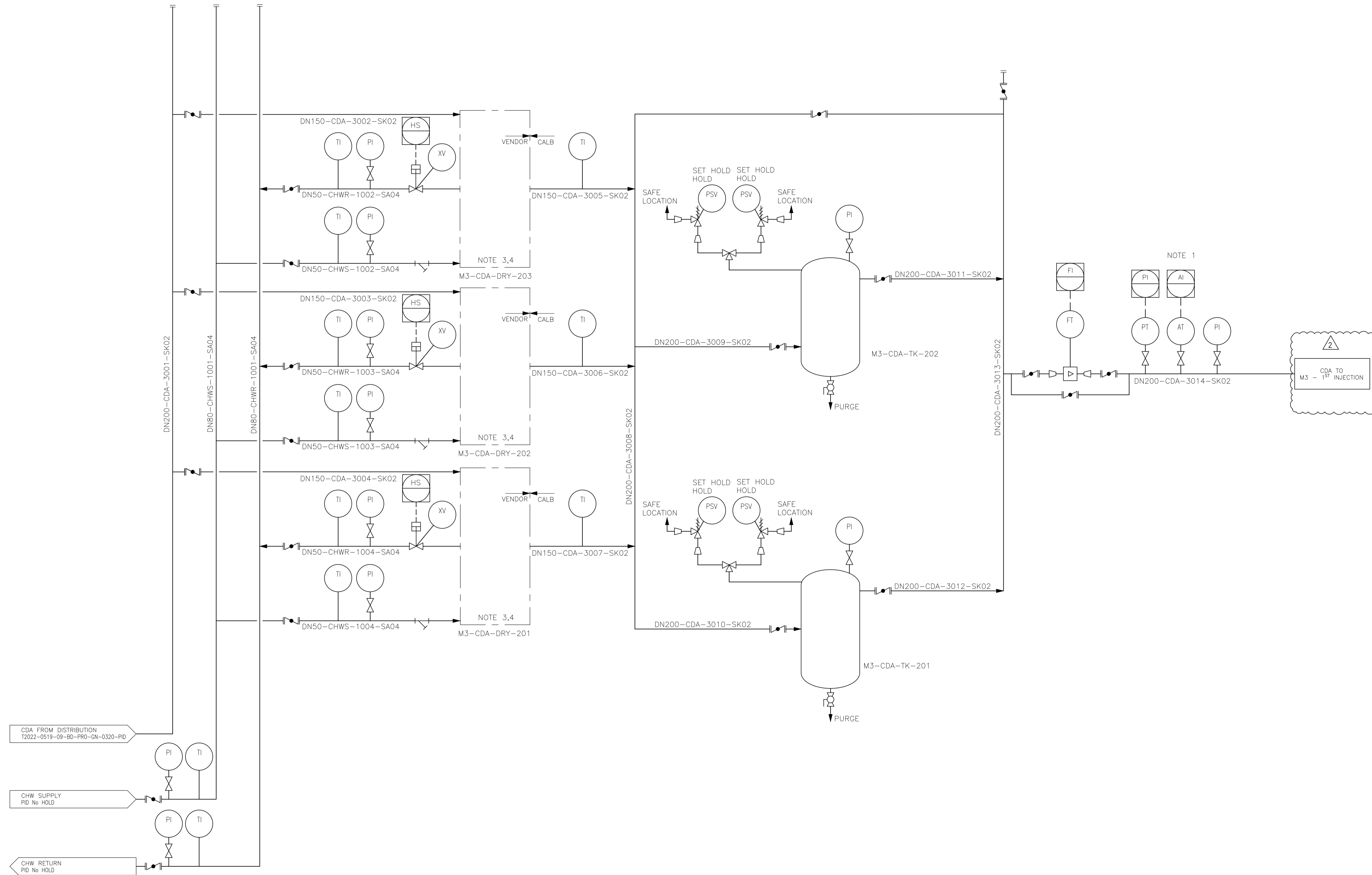
BD-PRO-GN-0305-PID 02

Revisão / Revision :

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M3-CDA-DRY-201/2/3
AIR DESICCANT DRYER
PACKAGE

M3-CDA-TK-201/2
CDA RECEIVER



NOTES

- 1- DEW POINT ANALYZER TO BE CONFIRMED.
- 2- DELETED.
- 3- THE AIR DESICCANT DRYER PACKAGES INCLUDE TWO AFTER FILTER:

 - M3-CDA-DRY-201: M3-CDA-FLT-301, M3-CDA-FLT-401;
 - M3-CDA-DRY-202: M3-CDA-FLT-302, M3-CDA-FLT-402;
 - M3-CDA-DRY-203: M3-CDA-FLT-303, M3-CDA-FLT-403;

- 4- DRYER TYPE IS BLOWER PURGE REGENERATION.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Monitor
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-004

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client

CALB

PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

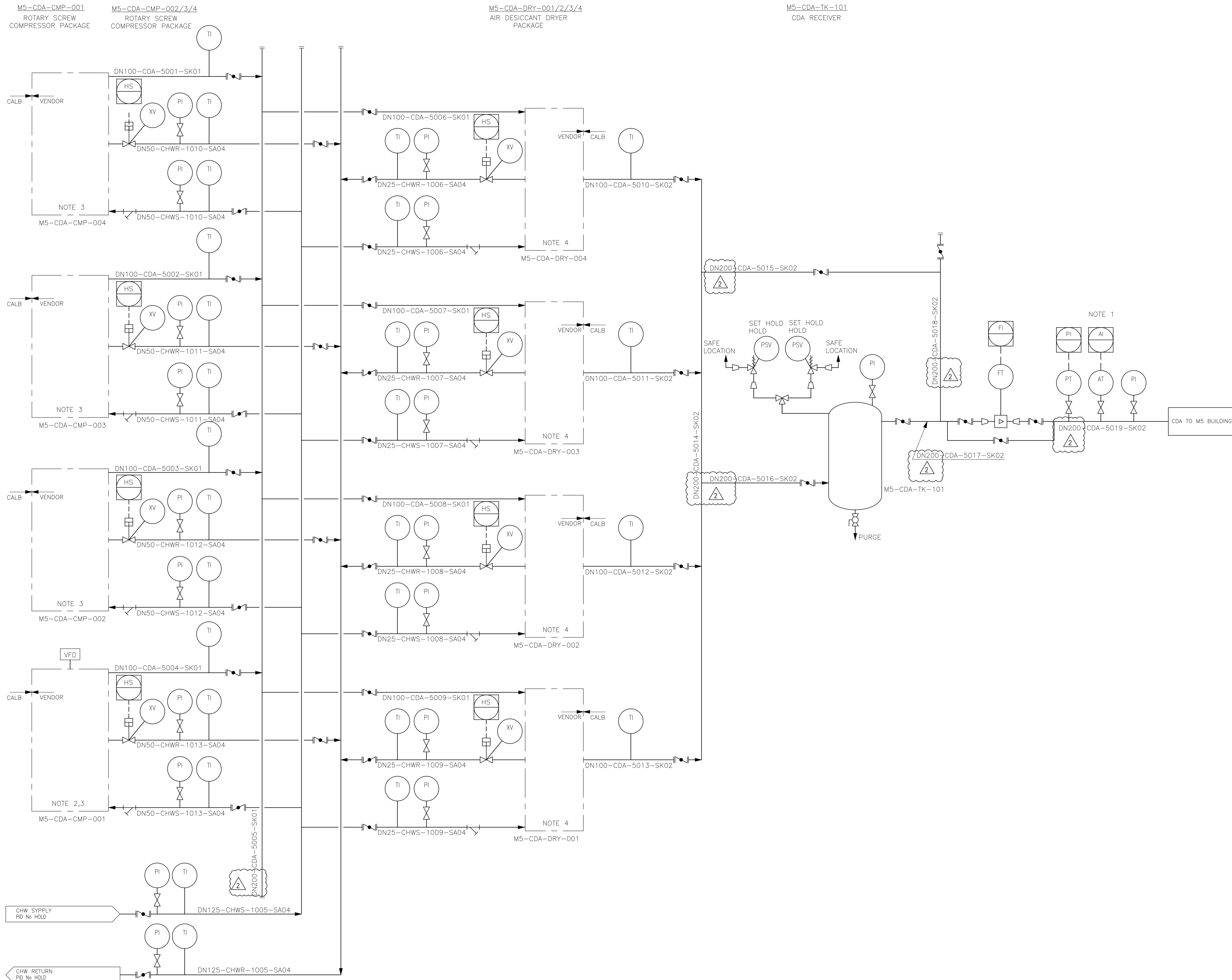
CDA SYSTEM - M3 BUILDING

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	31/10/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificado / Checked:	JLSE
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0306-PID	Aprovado / Approved:	JLSE

Desenho / Drawing: **BD-PRO-GN-0306-PID** 02

Revisão / Revision: 02

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- NOTES**
- 1- DEW POINT ANALYZER TO BE CONFIRMED.
 - 2- COMPRESSOR WITH VARIABLE FREQUENCY DRIVER (VFD).
 - 3- THE AIR DESICCANT DRYER PACKAGES INCLUDE THE AFTER FILTER:
 - M5-CDA-DRY-001: M5-CDA-FLT-001;
 - M5-CDA-DRY-002: M5-CDA-FLT-002;
 - M5-CDA-DRY-003: M5-CDA-FLT-003;
 - M5-CDA-DRY-004: M5-CDA-FLT-004;
 - 4- DRYER TYPE IS REFRIGERATION.

- GENERAL NOTES**
- A- DIAMETERS TO BE CONFIRMED.
 - B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
 - C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-005

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
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LITHIUM BATTERY GIGAFACTORY PLANT

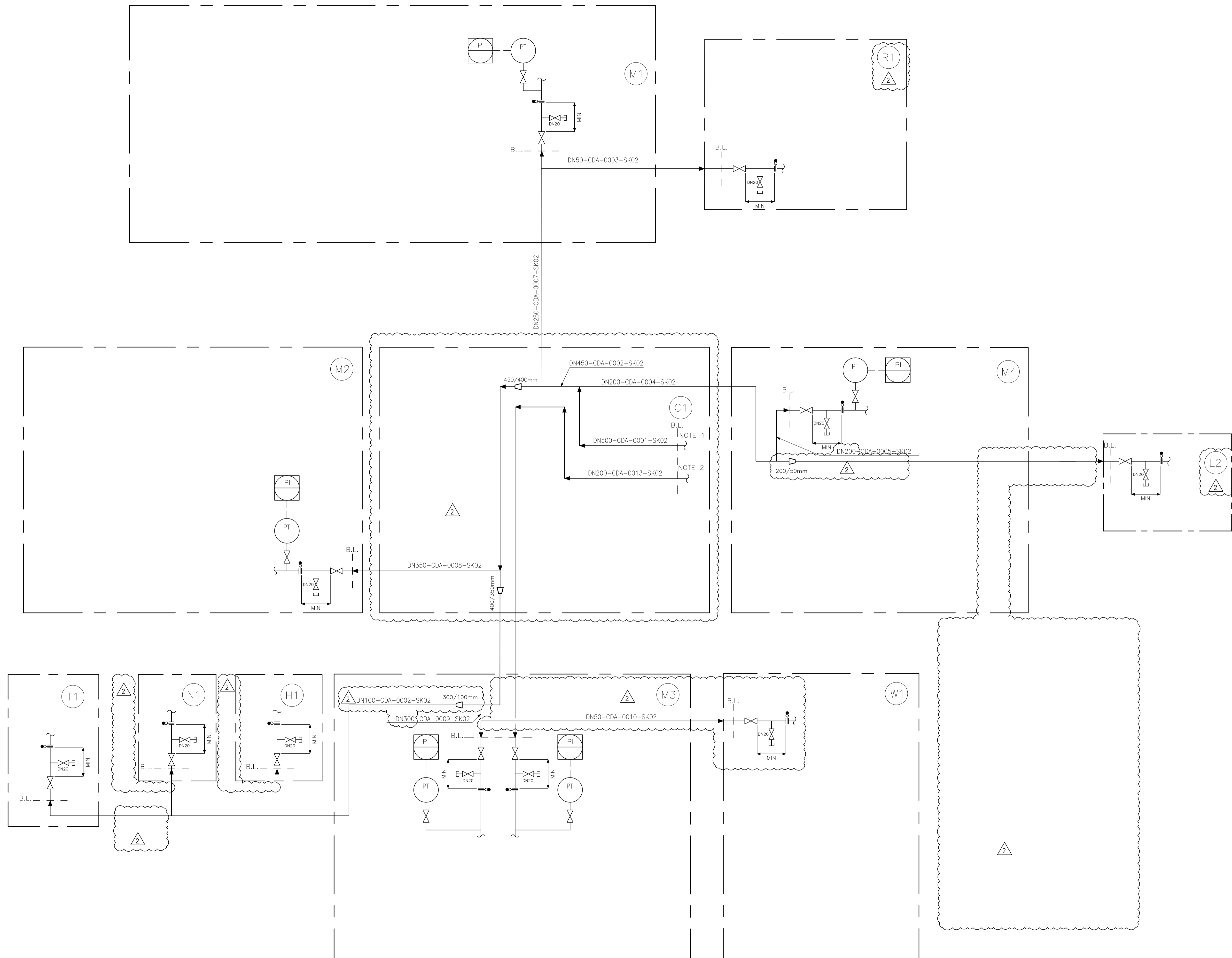
Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
CDA SYSTEM - M5 BUILDING

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	31/10/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificado / Checked:	JLSE
Ficheiro / File:	T2022-519-08-BD-PRO-GN-0307-PID	Aprovado / Approved:	JLSE

Desenho / Drawing:
BD-PRO-GN-0307-PID 02

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- NOTES**
- 1- SEE PID No T2022-0519-09-BD-PRO-GN-0305-PID.
 - 2- SEE PID No T2022-0519-09-BD-PRO-GN-0306-PID.

- GENERAL NOTES**
- A- DIAMETERS TO BE CONFIRMED.
 - B- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

Rev.	Data	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFACTORY PLANT

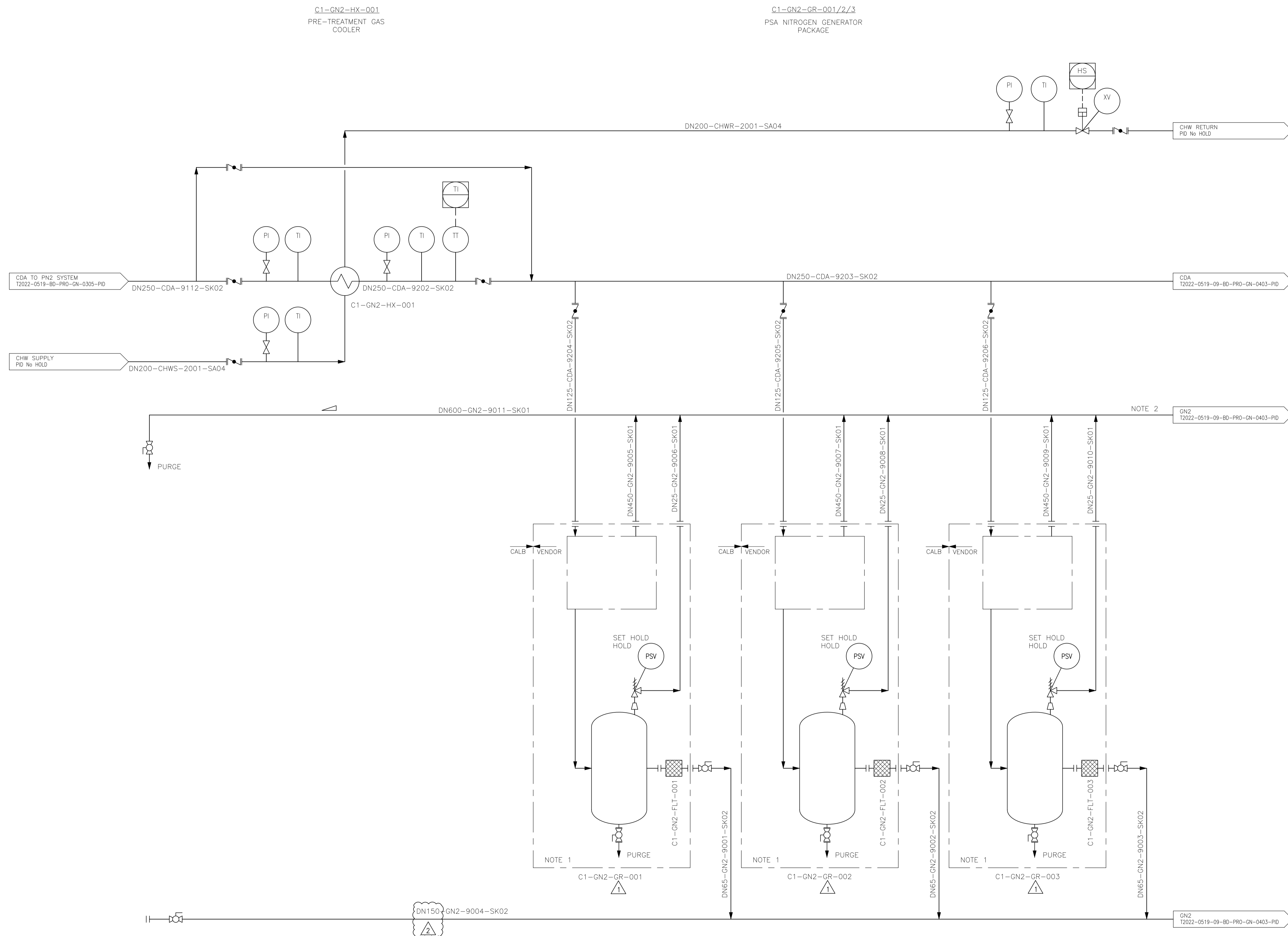
Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
CDA SYSTEM - DISTRIBUTION

Escalas / Scales : S/E	Projeto / Designed : APMA
Data / Date : 31/10/23	Desenhado / Drawn : CSAL
Processo / Process : T2022-519	Verificado / Checked : JLSE
Ficheiro / File : T2022-0519-09-BD-PRO-GN-0320-PID	Aprovado / Approved : JLSE

Desenho / Drawing : **BD-PRO-GN-0320-PID 02**

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NOTES

- 1- 4 GENERATORS IN OPERATION, 1 SPARE AND 1 RESERVED FOR FUTURE.
- 2- VENT PIPE 45° PENETRATING INTO EXHAUST DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approv. by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

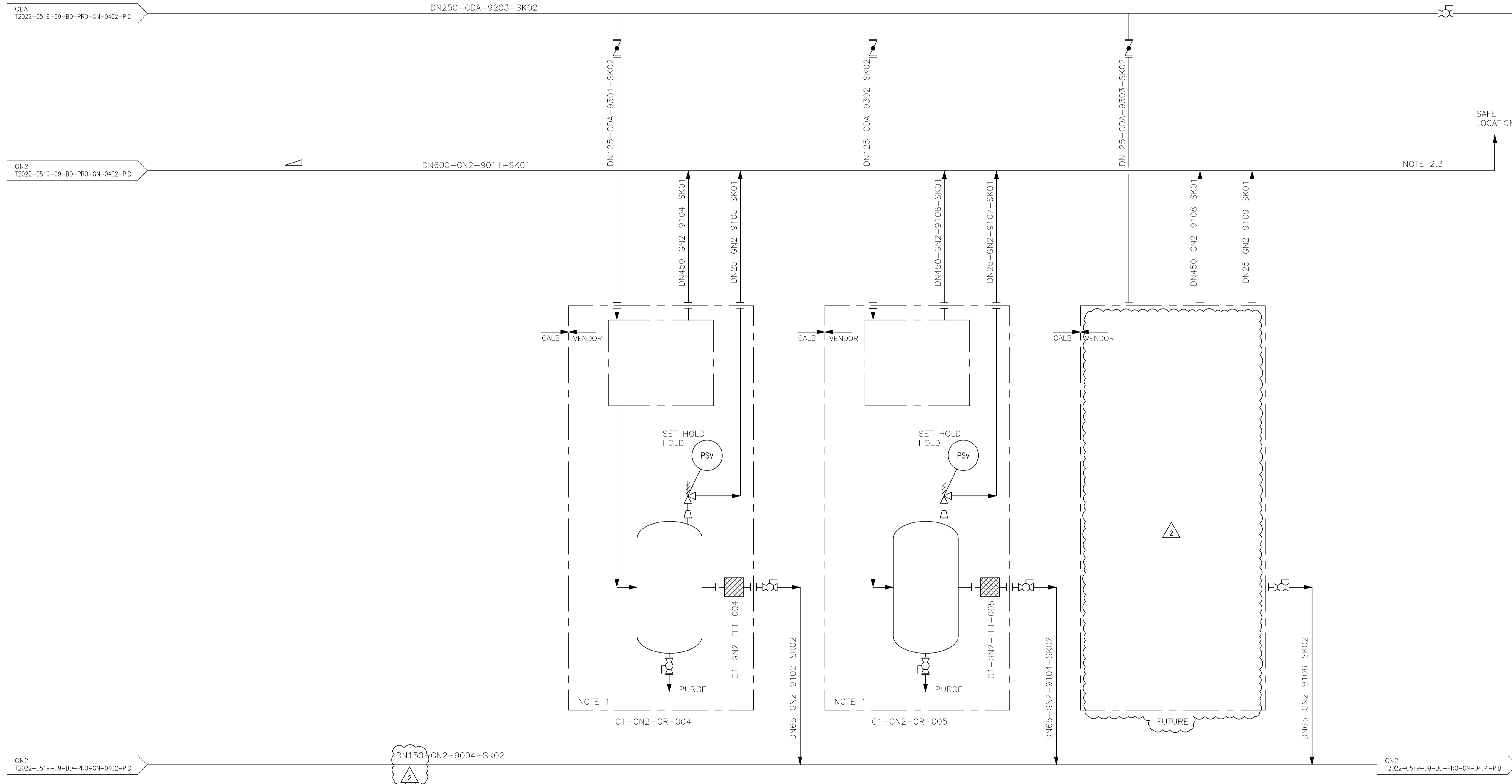
PN2 SYSTEM - NITROGEN GENERATORS

Escalas / Scales	S/E	Projeto / Designed	APMA
Data / Date	31/10/23	Desenhou / Drawn	CSAL
Processo / Process	T2022-519	Verificou / Checked	JLSE
Ficheiro / File	T2022-0519-09-B0-PRO-GN-0402-PID	Aprovou / Approved	JLSE

Desenho / Drawing
BD-PRO-GN-0402-PID 02

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C1-GN2-GR-004/5
PSA NITROGEN GENERATOR
PACKAGE



NOTES

- 1- 4 GENERATORS IN OPERATION, 1 SPARE AND 1 RESERVED FOR FUTURE.
- 2- VENT PIPE 45° PENETRATING INTO EXHAUST DUCT.
- 3- VENT WILL BE DISCHARGED TO OUTDOOR, AT SAFE LOCATION.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase
BASIC DESIGN

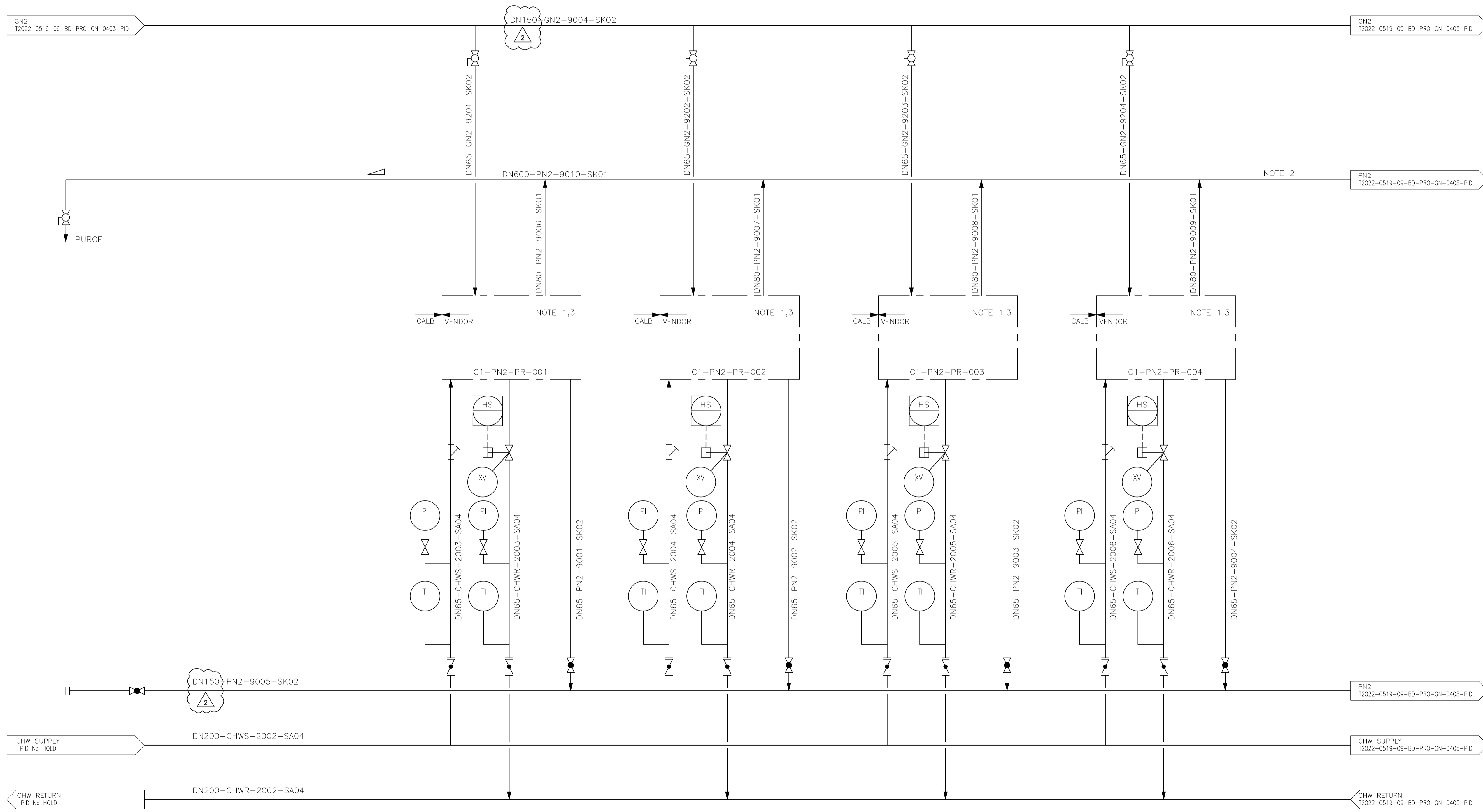
Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
PN2 SYSTEM - NITROGEN GENERATORS

Escalas / Scales :	S/E	Projeto / Designed :	APMA
Data / Date :	31/10/23	Desenho / Drawn :	CSAL
Processo / Process :	T2022-519	Verifico / Checked :	JLSE
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0403-PID	Aprova / Approved :	JLSE

Desenho / Drawing :
BD-PRO-GN-0403-PID 02

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C1-PN2-PR-001/2/3/4
NITROGEN PURIFIER
PACKAGE



- NOTES**
- 1- 4 PURIFIERS IN OPERATION, 1 SPARE AND 1 RESERVED FOR FUTURE.
 - 2- VENT PIPE 45° PENETRATING INTO EXHAUST DUCT.
 - 3- THE NITROGEN PURIFIER PACKAGES INCLUDE THE PN2 AFTER FILTERS AND FINAL FILTERS:
- C1-PN2-PR-001: C1-PN2-FLT-001, C1-PN2-FLT-011;
 - C1-PN2-PR-002: C1-PN2-FLT-002, C1-PN2-FLT-012;
 - C1-PN2-PR-003: C1-PN2-FLT-003, C1-PN2-FLT-013;
 - C1-PN2-PR-004: C1-PN2-FLT-004, C1-PN2-FLT-014.

- GENERAL NOTES**
- A- DIAMETERS TO BE CONFIRMED.
 - B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
 - C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-011

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase
BASIC DESIGN

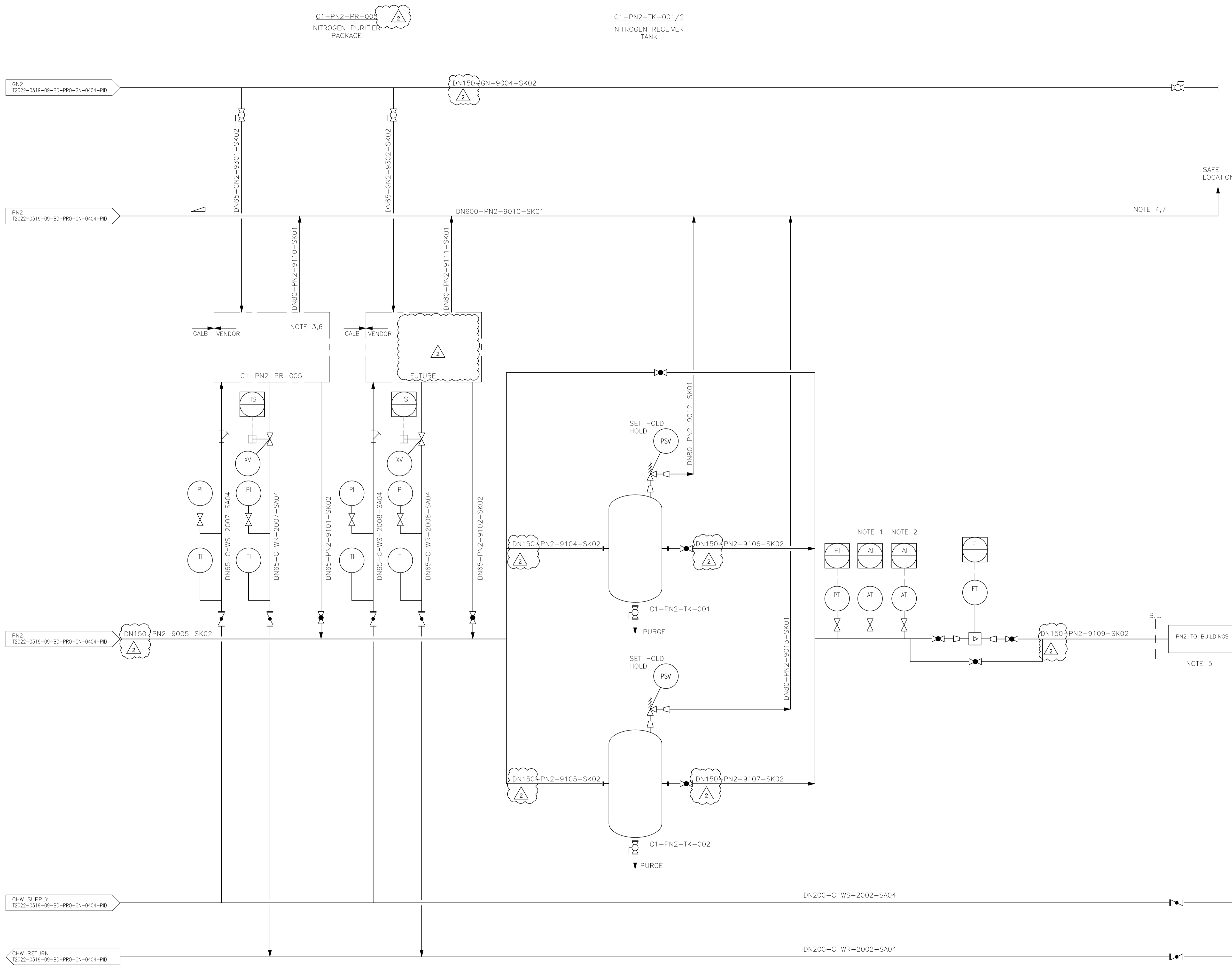
Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

PN2 SYSTEM - NITROGEN PURIFIERS

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	31/10/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verifico / Checked:	JLSE
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0404-PID	Aprovou / Approved:	JLSE

Desenho / Drawing:
BD-PRO-GN-0404-PID 02

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- NOTES**
- 1- DEW POINT ANALYZER TO BE CONFIRMED.
 - 2- PARTICLES ANALYZER TO BE CONFIRMED.
 - 3- 4 PURIFIERS IN OPERATION, 1 SPARE AND 1 RESERVED FOR FUTURE.
 - 4- VENT PIPE 45° PENETRATING INTO EXHAUST DUCT.
 - 5- SEE PID No. T2022-0519-09-BD-PRO-GN-0420-PID.
 - 6- THE NITROGEN PURIFIER PACKAGES INCLUDE THE PN2 AFTER FILTERS AND FINAL FILTERS:
 - C1-PN2-PR-005: C1-PN2-FLT-005, C1-PN2-FLT-015;
 - 7- VENT WILL BE DISCHARGED TO OUTDOOR, AT SAFE LOCATION.

- GENERAL NOTES**
- A- DIAMETERS TO BE CONFIRMED.
 - B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
 - C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-012

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
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PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

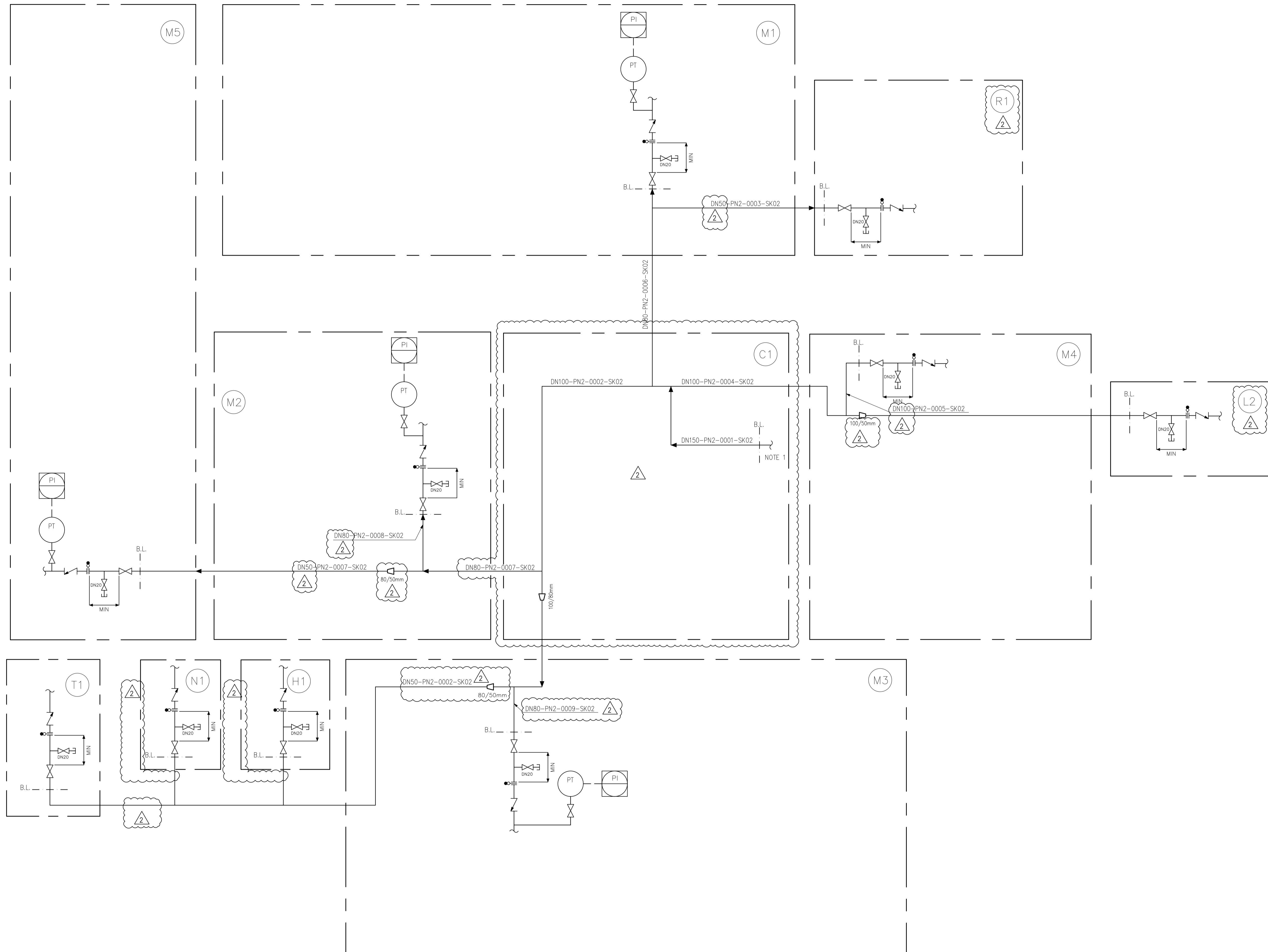
Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

PN2 SYSTEM - NITROGEN PURIFIERS AND RECEIVERS

Escalas / Scales:	S/E	Projetou / Designed:	APMA
Data / Date:	31/10/23	Desenhou / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	JLSE
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0405-PID	Aprovou / Approved:	JLSE

Desenho / Drawing:
BD-PRO-GN-0405-PID 02

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NOTES
 1- SEE PID No T2022-0519-09-BD-PRO-GN-0405-PID.

GENERAL NOTES
 A- DIAMETERS TO BE CONFIRMED.
 B- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia **DRAWING NUMBER 3024-PID-0021-013**

2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH

Rev. Date Descrição das alterações Aprov. / Rev. Date Description of changes Aprov.



Ciente / Client
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PROJETO / Project
LITHIUM BATTERY GIGAFACTORY PLANT

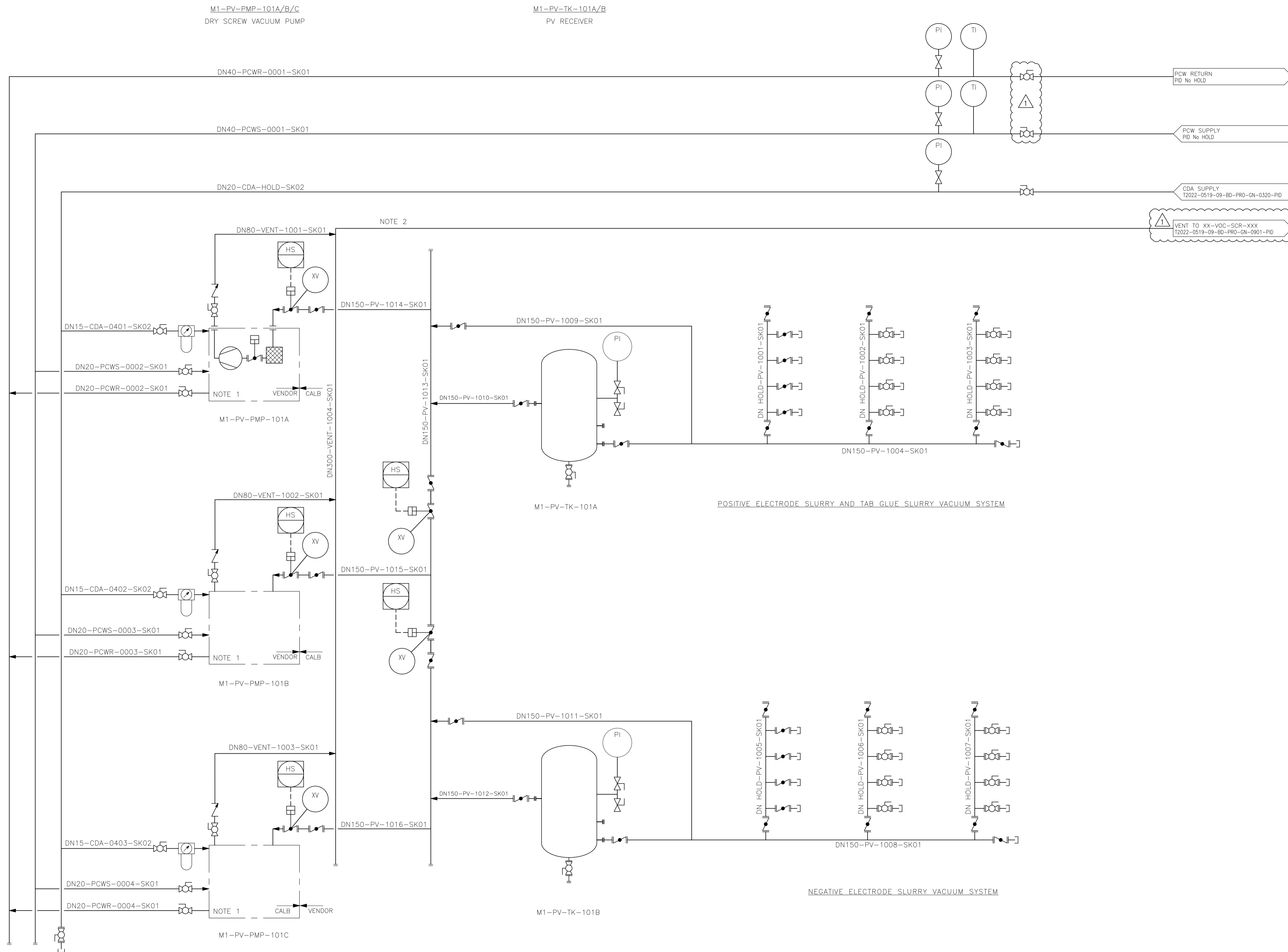
Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
PN2 SYSTEM - DISTRIBUTION

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	31/10/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verifico / Checked:	JLSE
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0420-PID	Aprovou / Approved:	JLSE

Desenho / Drawing:
BD-PRO-GN-0420-PID 02

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NOTES

1- 1+1+1 STANDBY.

2- 30° PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

A- DIAMETERS TO BE CONFIRMED.

B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.

C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-014

1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH
Rev.	Date	Descrição das alterações	Aprov.



Ciente / Client

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PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (A)

Escalas / Scales :	S/E	Projeto / Designed :	APMA
Data / Date :	XXXXX23	Desenho / Drawn :	CSAL
Processo / Process :	T2022-519	Verifico / Checked :	MJCP
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0501-PID	Aprovou / Approved :	MJCP

Desenho / Drawing :

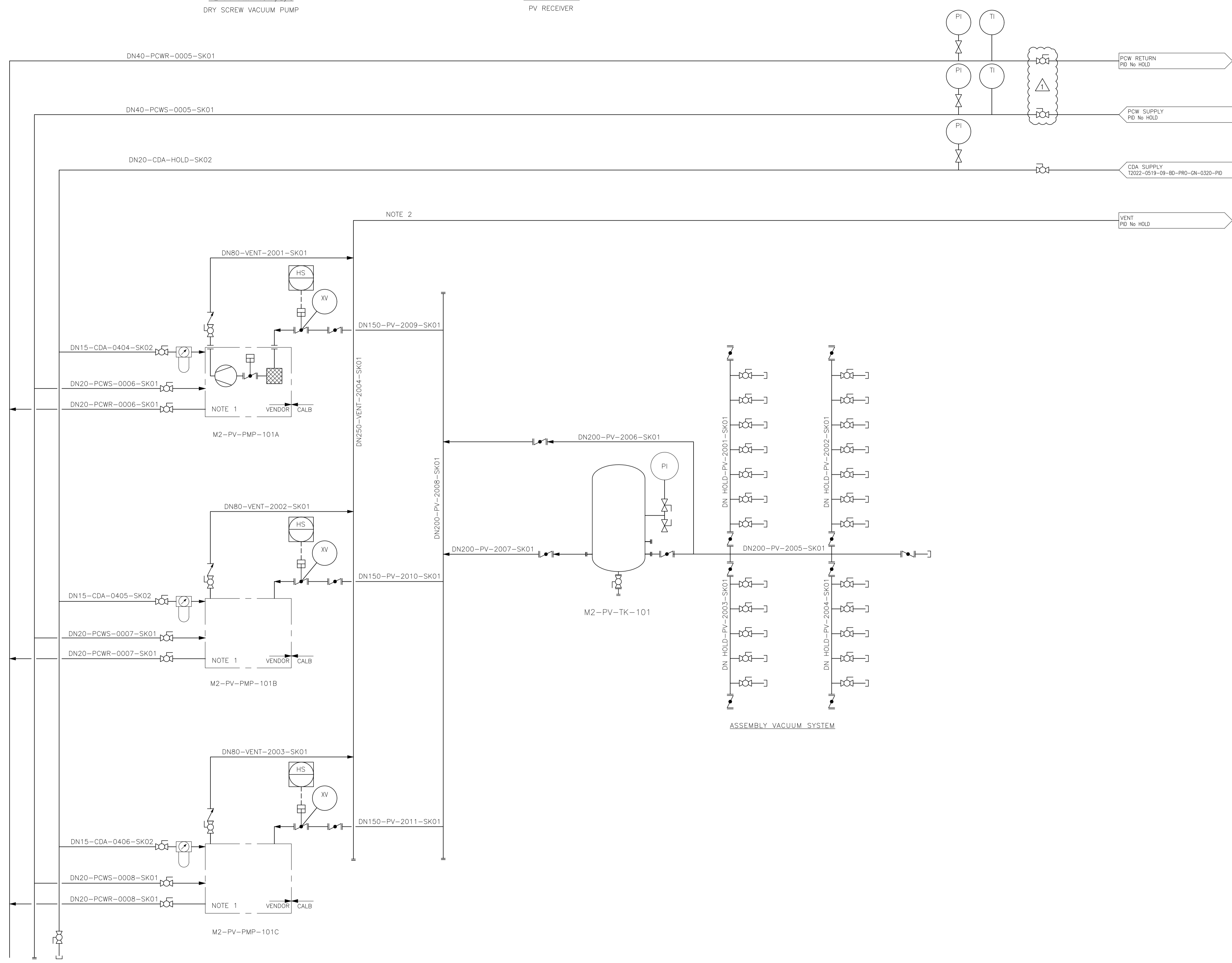
BD-PRO-GN-0501-PID 01

Revisão / Revisão :

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M2-PV-PMP-101A/B/C
DRY SCREW VACUUM PUMP

M2-PV-TK-101
PV RECEIVER



NOTES

- 1- 2 PUMPS IN OPERATION, 1 SPARE.
- 2- 30" PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Revisão / Description of changes	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	21/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
**PROCESS AND INSTRUMENTATION DIAGRAM
PROCESS VACUUM SYSTEM (B)**

Escalas / Scales :	S/E	Projeto / Designed :	APMA
Data / Date :	XXXXX23	Desenho / Drawn :	CSAL
Processo / Process :	T2022-519	Verificado / Checked :	MJCP
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0502-PID	Aprovado / Approved :	MJCP

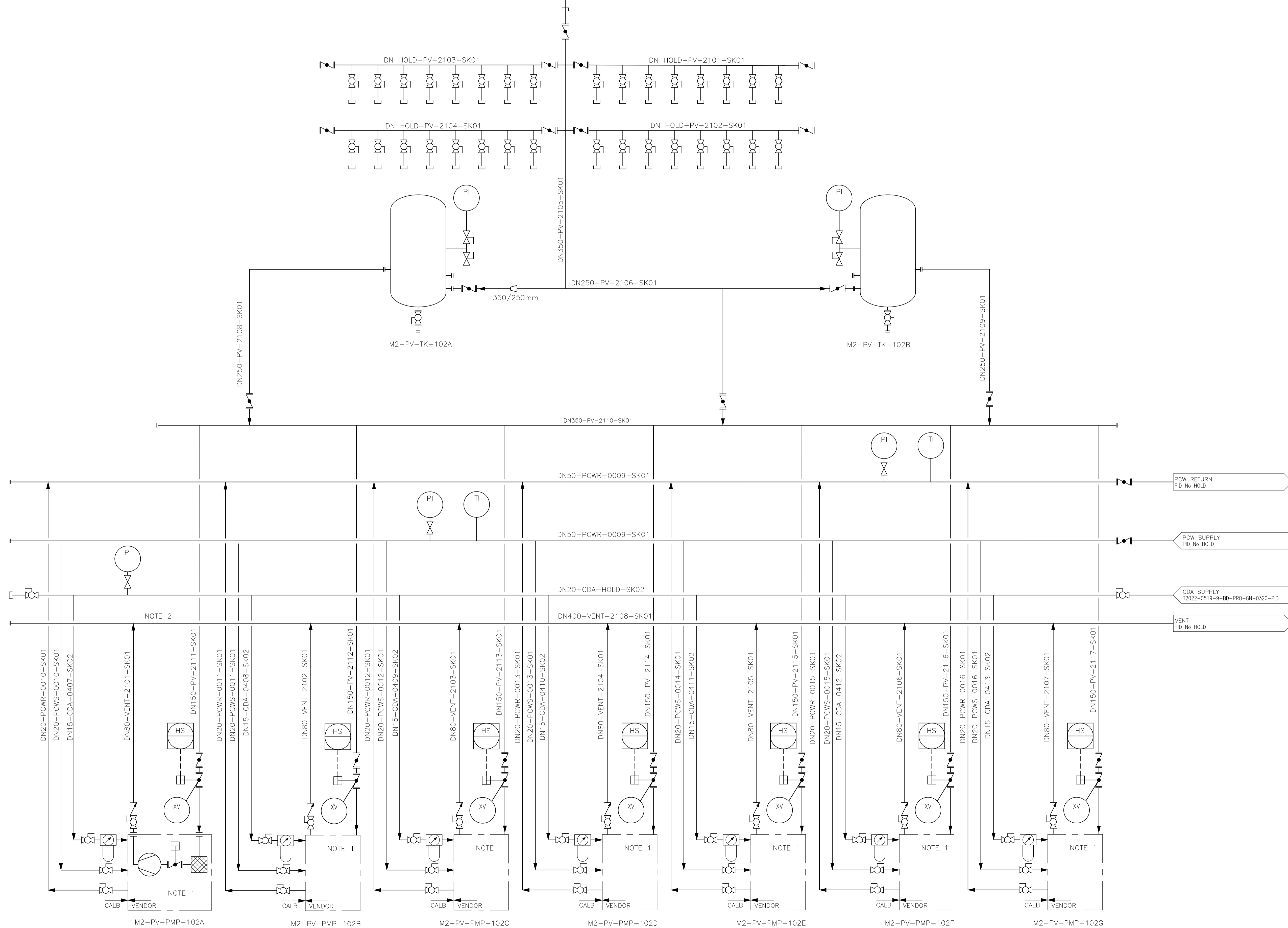
Desenho / Drawing :
BD-PRO-GN-0502-PID 01

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M2-PV-PMP-102A/B/C/D/E/F/G
DRY SCREW VACUUM PUMP

M2-PV-TK-102A/B
PV RECEIVER

CUTTING AND STACKING VACUUM SYSTEM



NOTES

- 1- 6 PUMPS IN OPERATION, 1 SPARE.
- 2- 30° PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-016

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Cliente / Client

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Projeto / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (C)

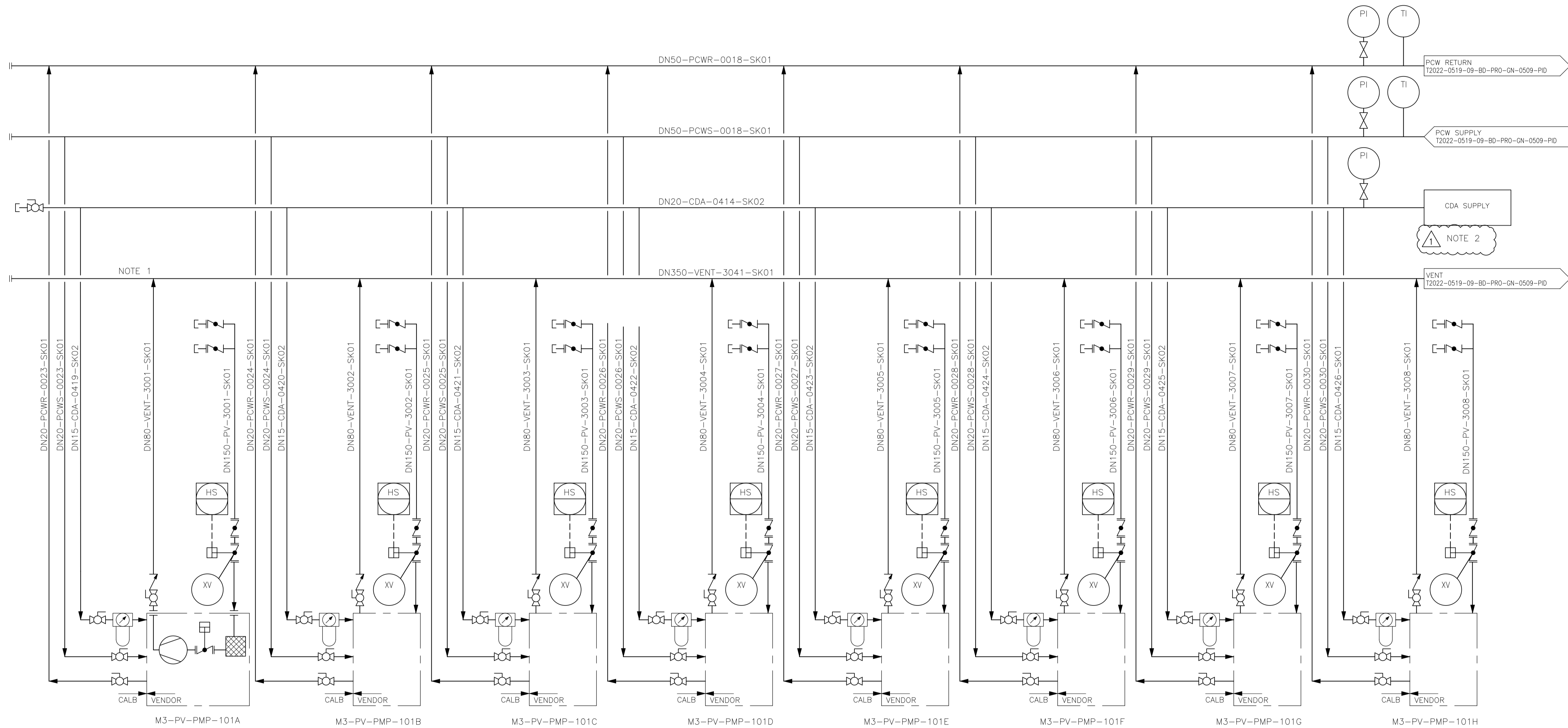
Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XXXXX23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificado / Checked:	MJCP
Ficheiro / File:	T2022-0519-08-BD-PRO-GN-0503-PID	Aprovado / Approved:	MJCP

Desenho / Drawing: **BD-PRO-GN-0503-PID 01**

Revisão / Revision: **01**

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M3-PV-PMP-101A/B/C/D/E/F/G/H
 DRY SCREW VACUUM PUMP



DRY VACUUM SYSTEM

NOTES

- 1- 30° PENETRATING INTO EXHAUST AIR DUCT.
- 2- CDA FOR PROCESS VACUUM PUMPS OF DRY AREA IS TAKEN FROM RESERVE POINTS (POU) OF THE CDA DISTRIBUTION LOOP SYSTEM IN M3 BUILDING.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
 DRAWING NUMBER 3024-PID-0021-017

Rev.	Date	Revisão / Description of changes	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Cliente / Client

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PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (D)

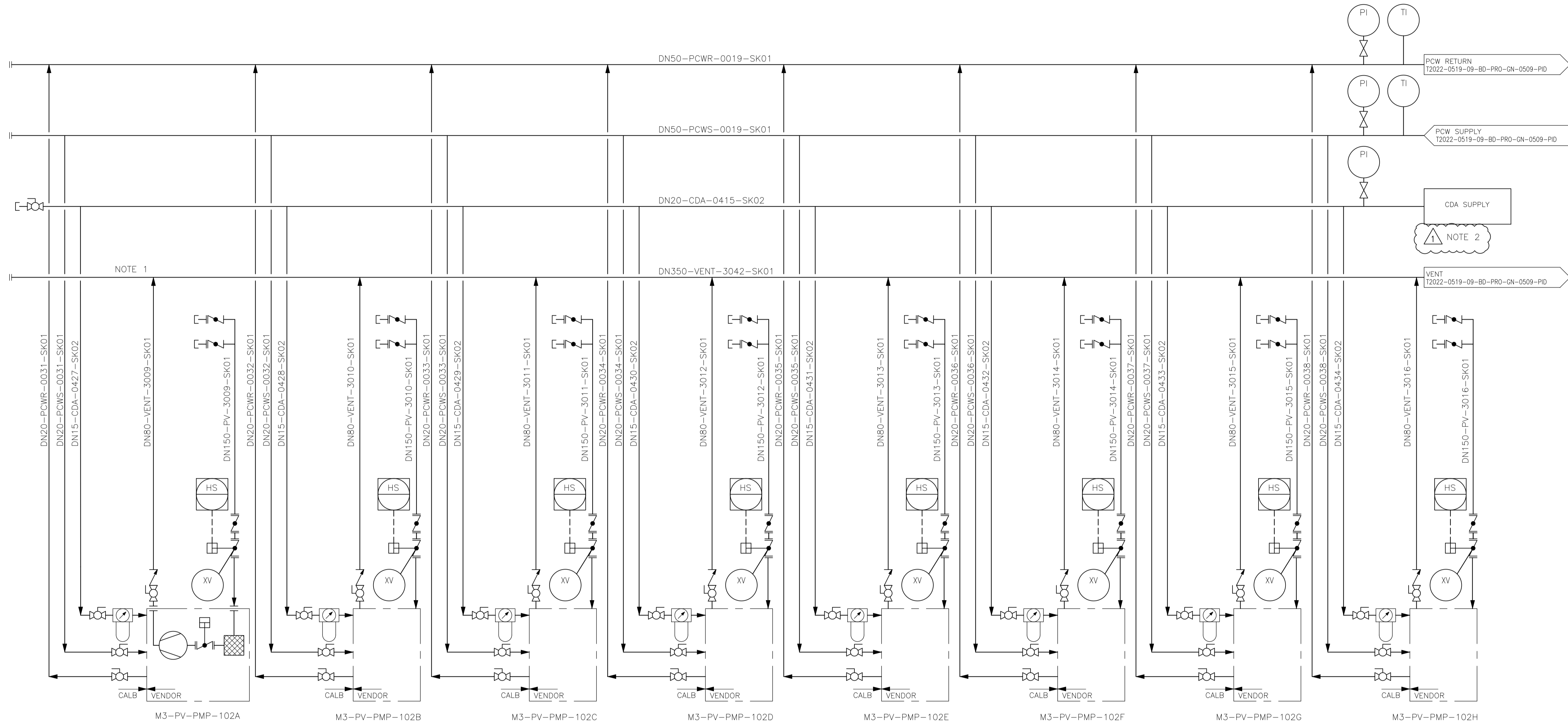
Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XXXXX23	Desenho / Drawn:	CSAL
Process / Process:	T2022-519	Verificado / Checked:	MJCP
Ficheiro / File:	T2022-519-09-BD-PRO-GN-0504-PID	Aprovado / Approved:	MJCP

Desenho / Drawing

BD-PRO-GN-0504-PID 01

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M3-PV-PMP-102A/B/C/D/E/F/G/H
 DRY SCREW VACUUM PUMP



DRY VACUUM SYSTEM

NOTES

- 1- 30° PENETRATING INTO EXHAUST AIR DUCT.
- 2- CDA FOR PROCESS VACUUM PUMPS OF DRY AREA IS TAKEN FROM RESERVE POINTS (POU) OF THE CDA DISTRIBUTION LOOP SYSTEM IN M3 BUILDING.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Monitor
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
 DRAWING NUMBER 3024-PID-0021-018

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Cliente / Client

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PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (D)

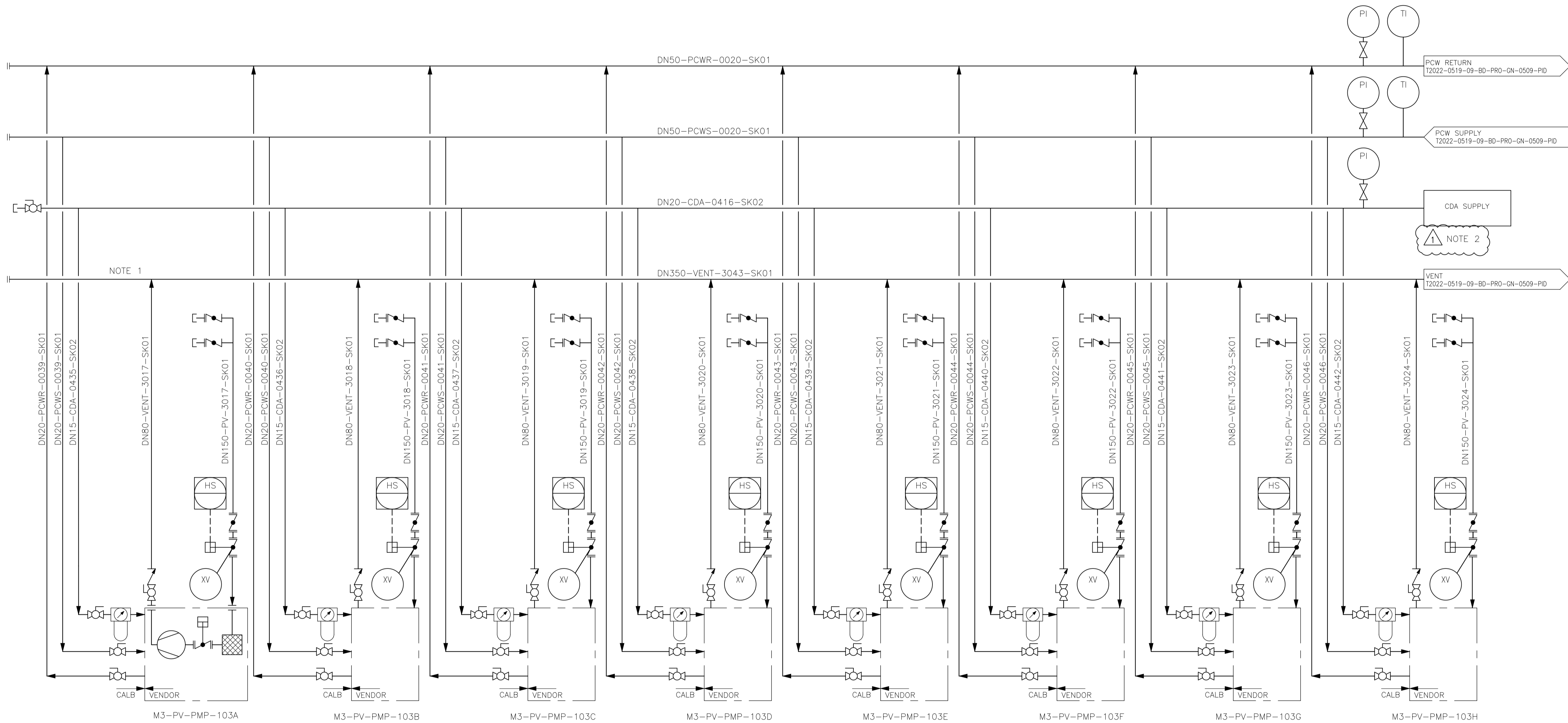
Escalas / Scales :	S/E	Projeto / Designed :	APMA
Data / Date :	XXXXX23	Desenho / Drawn :	CSAL
Processo / Process :	T2022-519	Verificado / Checked :	MJCP
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0505-PID	Aprovado / Approved :	MJCP

Desenho / Drawing :

BD-PRO-GN-0505-PID 01

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M3-PV-PMP-103A/B/C/D/E/F/G/H
 DRY SCREW VACUUM PUMP



NOTE 1

NOTE 2

NOTES

- 1- 30° PENETRATING INTO EXHAUST AIR DUCT.
- 2- CDA FOR PROCESS VACUUM PUMPS OF DRY AREA IS TAKEN FROM RESERVE POINTS (POU) OF THE CDA DISTRIBUTION LOOP SYSTEM IN M3 BUILDING.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE
Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager

TECHNOEDIF Engenharia
 DRAWING NUMBER 3024-PID-0021-019

1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH
Rev.	Date	Descrição das alterações	Aprov.
Rev.	Date	Description of changes	Approv.



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CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
PROCESS VACUUM SYSTEM (D)

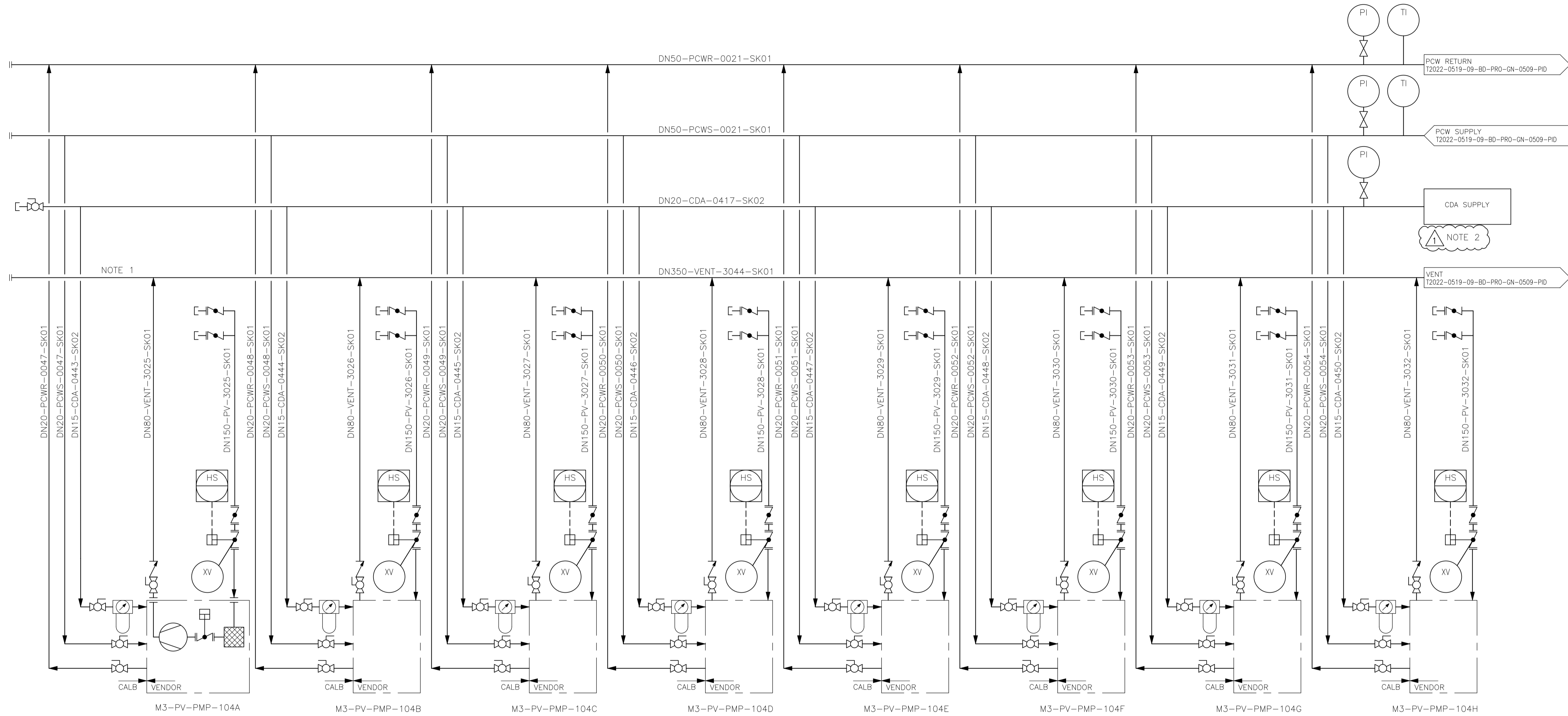
Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XXXXX23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificado / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0506-PID	Aprovado / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0506-PID 01

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DRY VACUUM SYSTEM

M3-PV-PMP-104A/B/C/D/E/F/G/H
 DRY SCREW VACUUM PUMP



DRY VACUUM SYSTEM

NOTES

- 1- 30° PENETRATING INTO EXHAUST AIR DUCT.
- 2- CDA FOR PROCESS VACUUM PUMPS OF DRY AREA IS TAKEN FROM RESERVE POINTS (POU) OF THE CDA DISTRIBUTION LOOP SYSTEM IN M3 BUILDING.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Monitor
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
 DRAWING NUMBER 3024-PID-0021-020

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



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PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

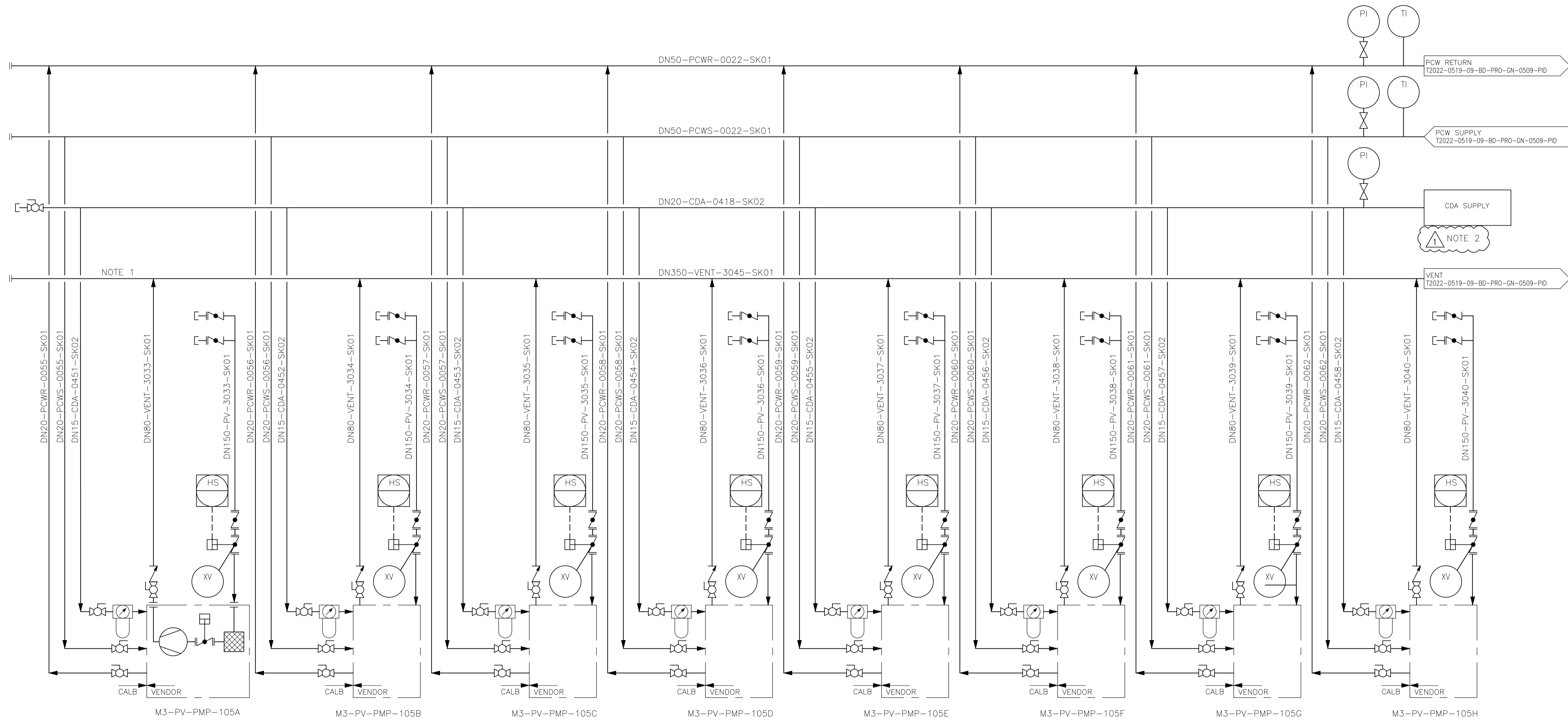
PROCESS VACUUM SYSTEM (D)

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XXXXX23	Desenhou / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0507-PID	Aprovou / Approved:	MJCP

Desenho / Drawing: **BD-PRO-GN-0507-PID 01**

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M3-PV-PMP-105A/B/C/D/E/F/G/H
 DRY SCREW VACUUM PUMP



DRY VACUUM SYSTEM

NOTES

- 1- 30° PENETRATING INTO EXHAUST AIR DUCT.
- 2- CDA FOR PROCESS VACUUM PUMPS OF DRY AREA IS TAKEN FROM RESERVE POINTS (POU) OF THE CDA DISTRIBUTION LOOP SYSTEM IN M3 BUILDING.

NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE
Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager

TECHNOEDIF Engenharia
 DRAWING NUMBER 3024-PID-0021-021

1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH
Rev.	Data	Descrição das alterações	Aprov.
Rev.	Date	Description of changes	Approv.



Ciente / Client

CALB

PROJETO / Project

LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

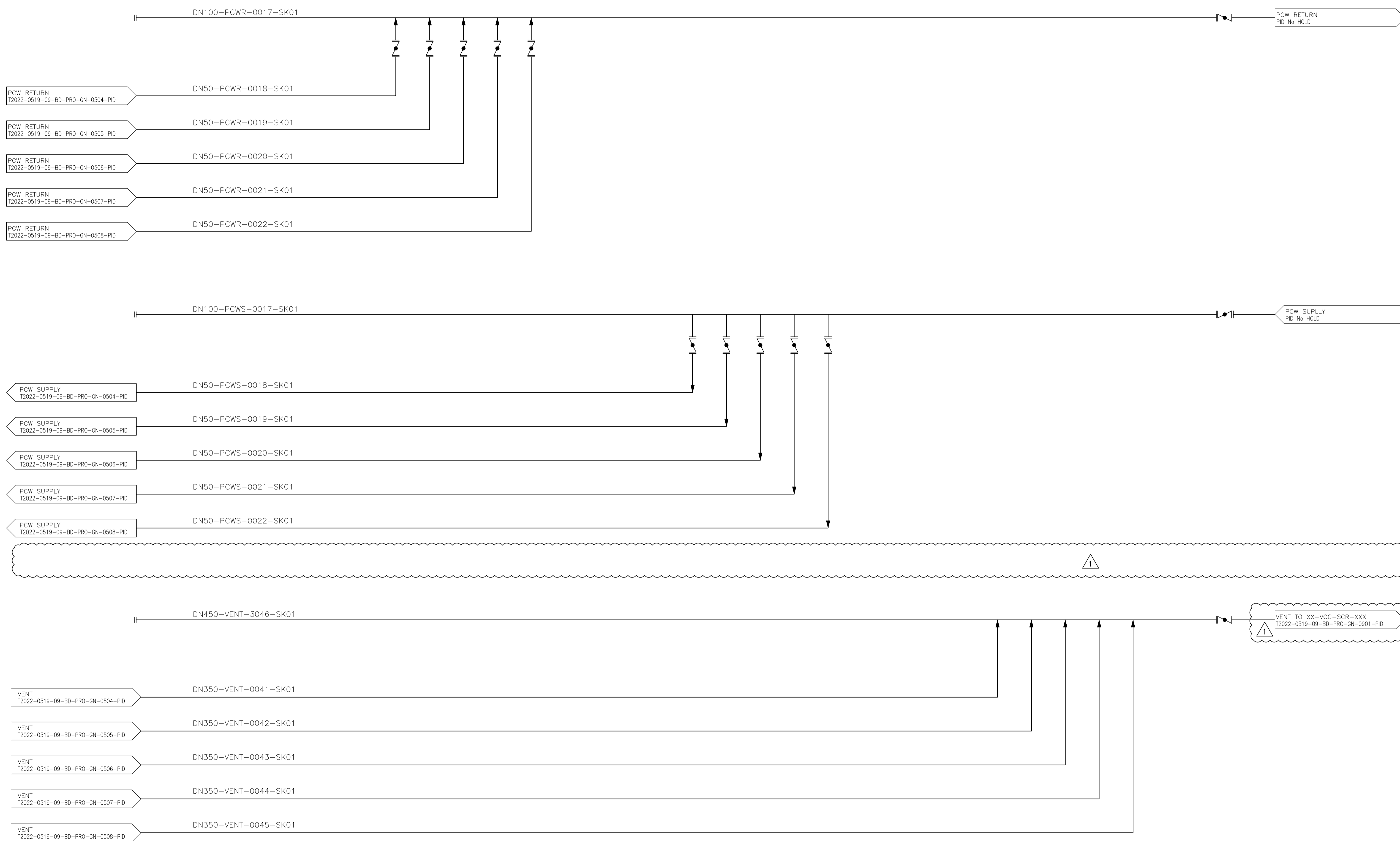
PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (D)

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XXXXX23	Desenhou / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-80-PRO-GN-0508-PID	Aprovou / Approved:	MJCP

Desenho / Drawing: **BD-PRO-GN-0508-PID 01**

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NOTES

1- SEE PID No
T2022-0519-09-BD-PRO-GN-0320-PID.

NOTES

A- DIAMETERS TO BE CONFIRMED.
B- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE
Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-022

1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	21/05/23	ISSUE FOR COMMENTS	JSAH
Rev.	Date	Descrição das alterações	Aprov.
Rev.	Date	Description of changes	Approv.



Ciente / Client

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PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (D)

Escalas / Scales :	S/E	Projetou / Designed :	APMA
Data / Date :	XXXXX23	Desenhou / Drawn :	CSAL
Processo / Process :	T2022-519	Verificou / Checked :	MJCP
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0509-PID	Aprovou / Approved :	MJCP

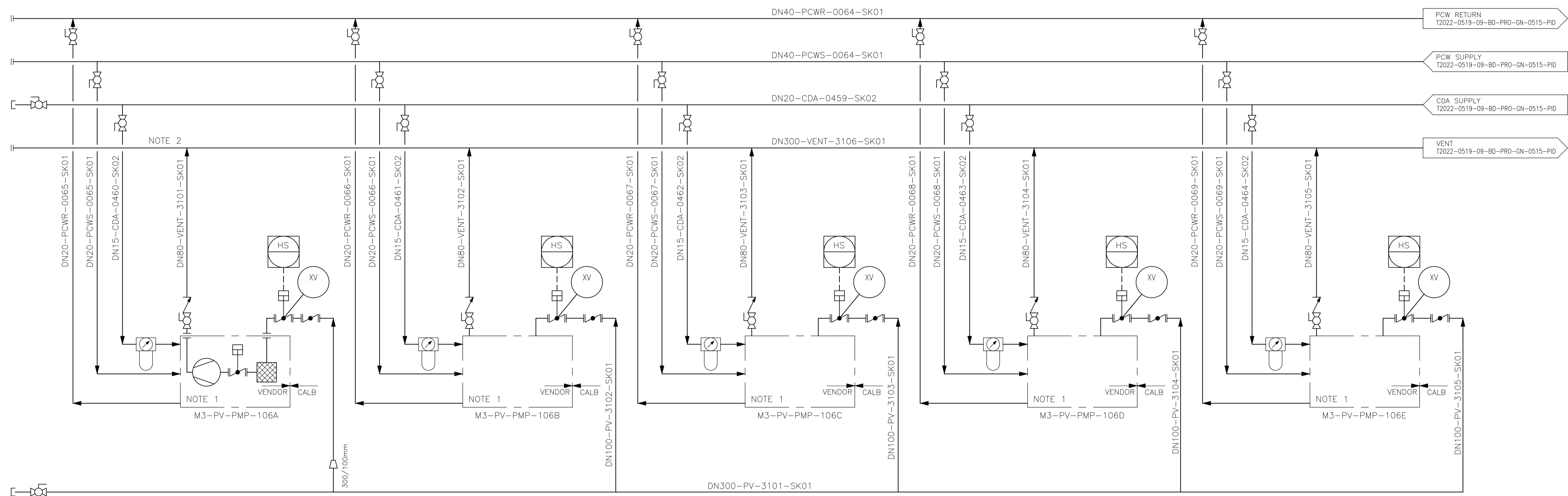
Desenho / Drawing :

BD-PRO-GN-0509-PID 01

Revisão / Revision :

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M3-PV-PMP-106A/B/C/D/E
 DRY SCREW VACUUM PUMP



FIRST INJECTION TOOLS

FIRST INJECTION LOW VACUUM SYSTEM

NOTES

- 1- 4 PUMPS IN OPERATION, 1 SPARE.
- 2- 30° PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE
TECHNODIF Engenharia DRAWING NUMBER 3024-PID-0021-023					

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH
Rev.	Date	Description of changes	Approval



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

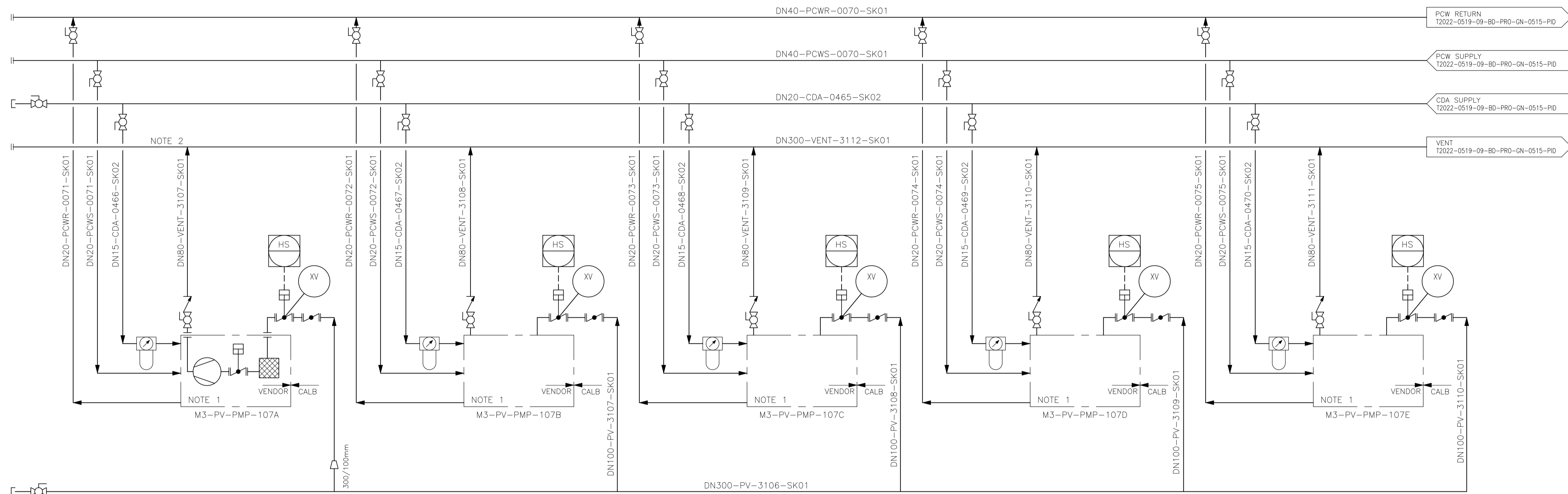
Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
PROCESS VACUUM SYSTEM (E)

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XXXXX23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificado / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0510-PID	Aprovado / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0510-PID 01

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M3-PV-PMP-107A/B/C/D/E
 DRY SCREW VACUUM PUMP



FIRST INJECTION TOOLS

FIRST INJECTION LOW VACUUM SYSTEM

NOTES

- 1- 4 PUMPS IN OPERATION, 1 SPARE.
- 2- 30° PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
 DRAWING NUMBER 3024-PID-0021-024

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	21/05/23	ISSUE FOR COMMENTS	JSAH



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LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (E)

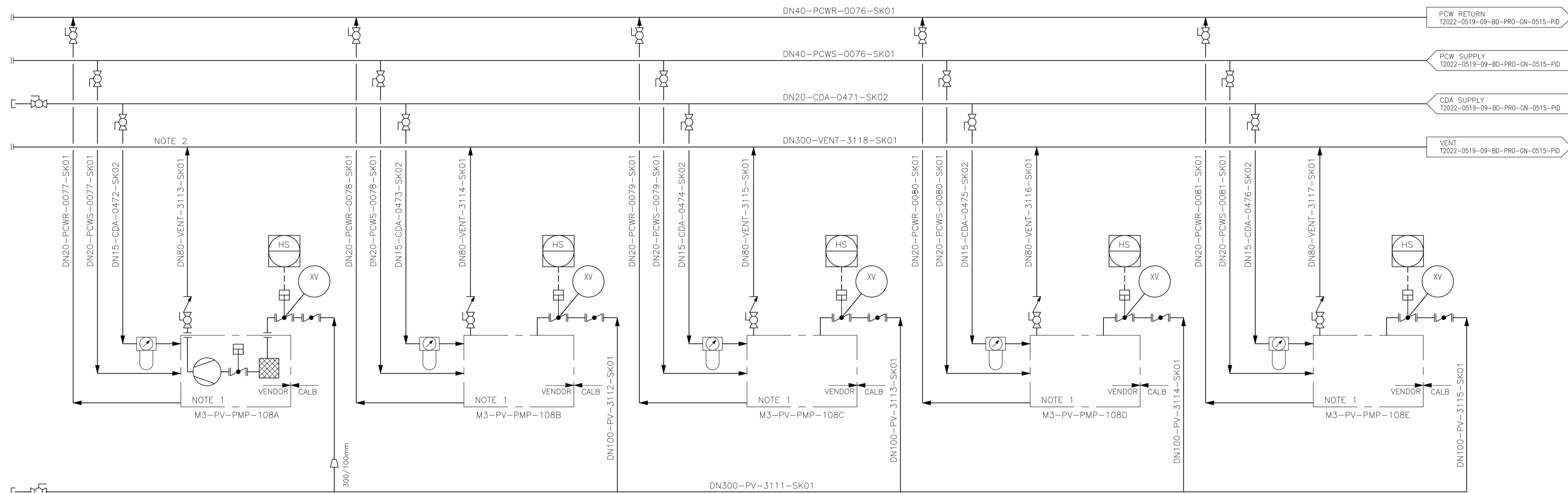
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Data / Date:	XXXXX23	Desenhou / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-08-BD-PRO-GN-0511-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:

BD-PRO-GN-0511-PID 01

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M3-PV-PMP-108A/B/C/D/E
 DRY SCREW VACUUM PUMP



FIRST INJECTION TOOLS


FIRST INJECTION LOW VACUUM SYSTEM

NOTES

- 1- 4 PUMPS IN OPERATION, 1 SPARE.
- 2- 30° PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE
 DRAWING NUMBER 3024-PID-0021-025					

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	21/05/23	ISSUE FOR COMMENTS	JSAH
Rev.	Date	Description of changes	Approval



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LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (E)

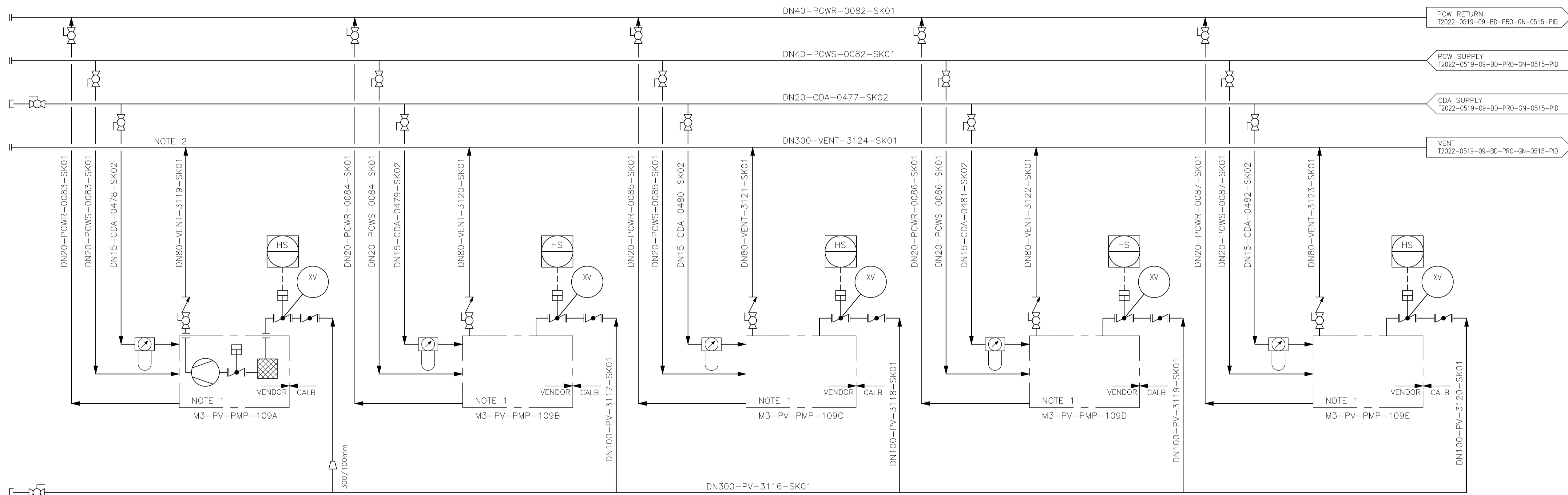
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Data / Date :	XXXXX23	Desenho / Drawn :	CSAL
Processo / Process :	T2022-519	Verifico / Checked :	MJCP
Ficheiro / File :	T2022-0519-08-BD-PRO-GN-0512-PID	Aprovou / Approved :	MJCP

Desenho / Drawing :

BD-PRO-GN-0512-PID 01

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M3-PV-PMP-109A/B/C/D/E
 DRY SCREW VACUUM PUMP



FIRST INJECTION TOOLS

FIRST INJECTION LOW VACUUM SYSTEM

NOTES

- 1- 4 PUMPS IN OPERATION, 1 SPARE.
- 2- 30° PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
 DRAWING NUMBER 3024-PID-0021-026

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	21/05/23	ISSUE FOR COMMENTS	JSAH



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LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

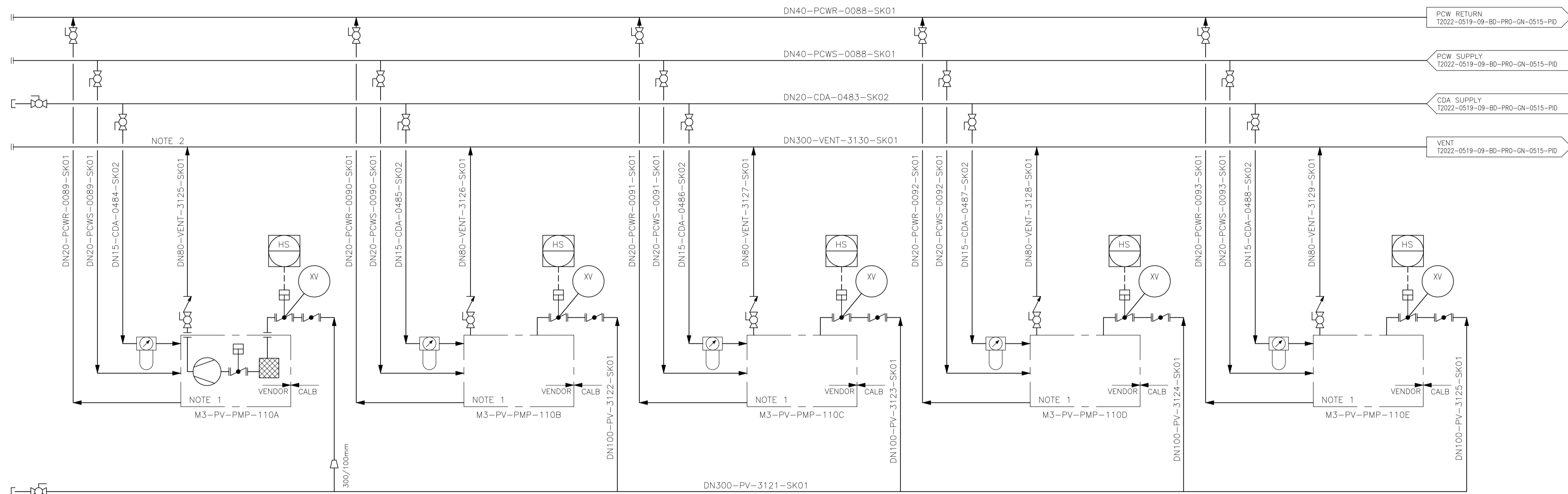
PROCESS VACUUM SYSTEM (E)

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XXXXX23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verifico / Checked:	MJCP
Ficheiro / File:	T2022-519-08-BD-PRO-GN-0513-PID	Aprovou / Approved:	MJCP

Desenho / Drawing: **BD-PRO-GN-0513-PID 01**

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M3-PV-PMP-110A/B/C/D/E
 DRY SCREW VACUUM PUMP



FIRST INJECTION TOOLS

FIRST INJECTION LOW VACUUM SYSTEM

NOTES

- 1- 4 PUMPS IN OPERATION, 1 SPARE.
- 2- 30° PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
 DRAWING NUMBER 3024-PID-0021-027

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	21/05/23	ISSUE FOR COMMENTS	JSAH



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LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

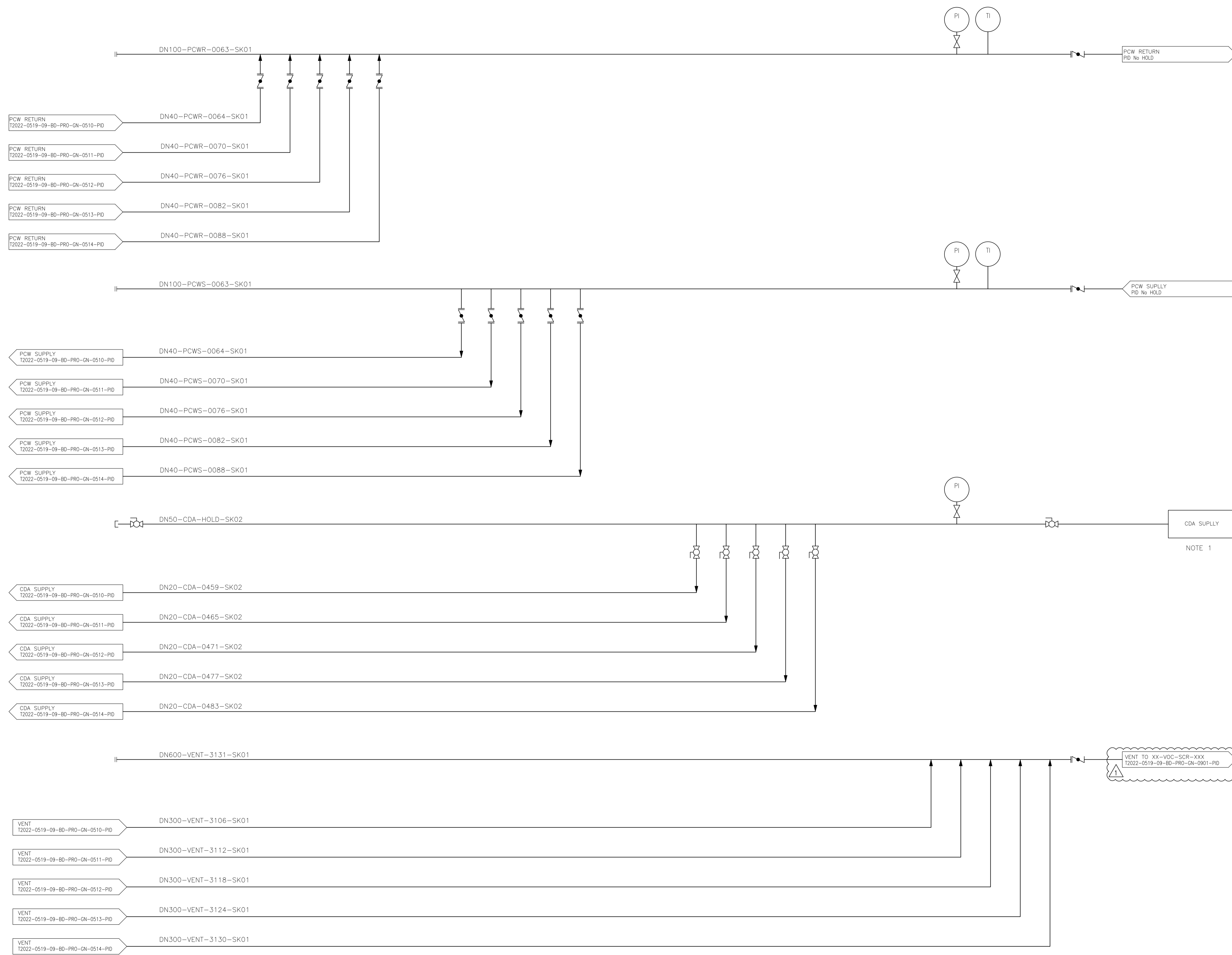
PROCESS VACUUM SYSTEM (E)

Escalas / Scales:	S/E	Projeto / Designed:	APMA
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Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-519-08-BD-PRO-GN-0514-PID	Aprovou / Approved:	MJCP

Desenho / Drawing

BD-PRO-GN-0514-PID 01

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NOTES

1- SEE PID No T2022-0519-09-BD-PRO-GN-0320-PID.

GENERAL NOTES

A- DIAMETERS TO BE CONFIRMED.

B- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-028

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



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LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (E)

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XXXXX23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificado / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0515-PID	Aprovado / Approved:	MJCP

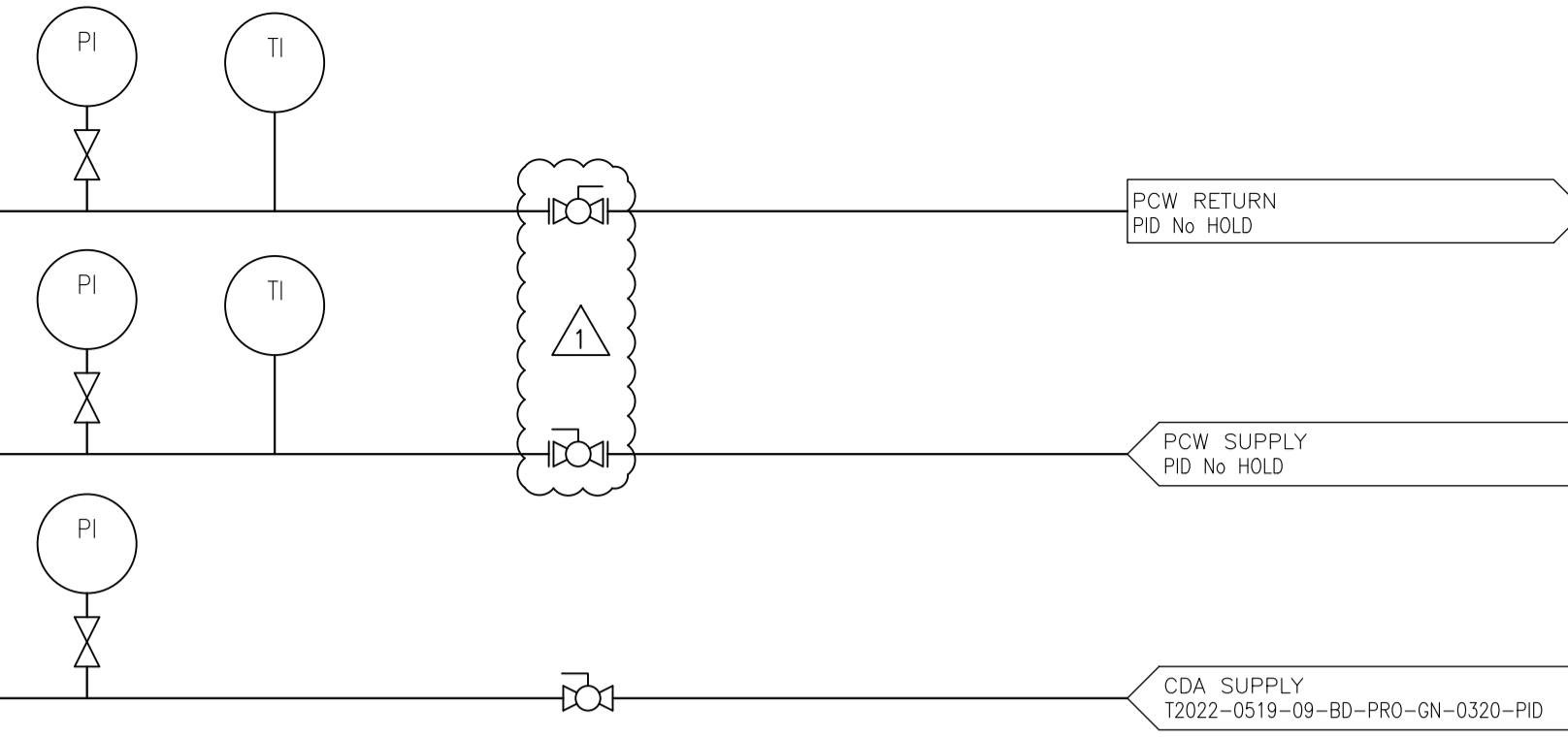
Desenho / Drawing:

BD-PRO-GN-0515-PID 01

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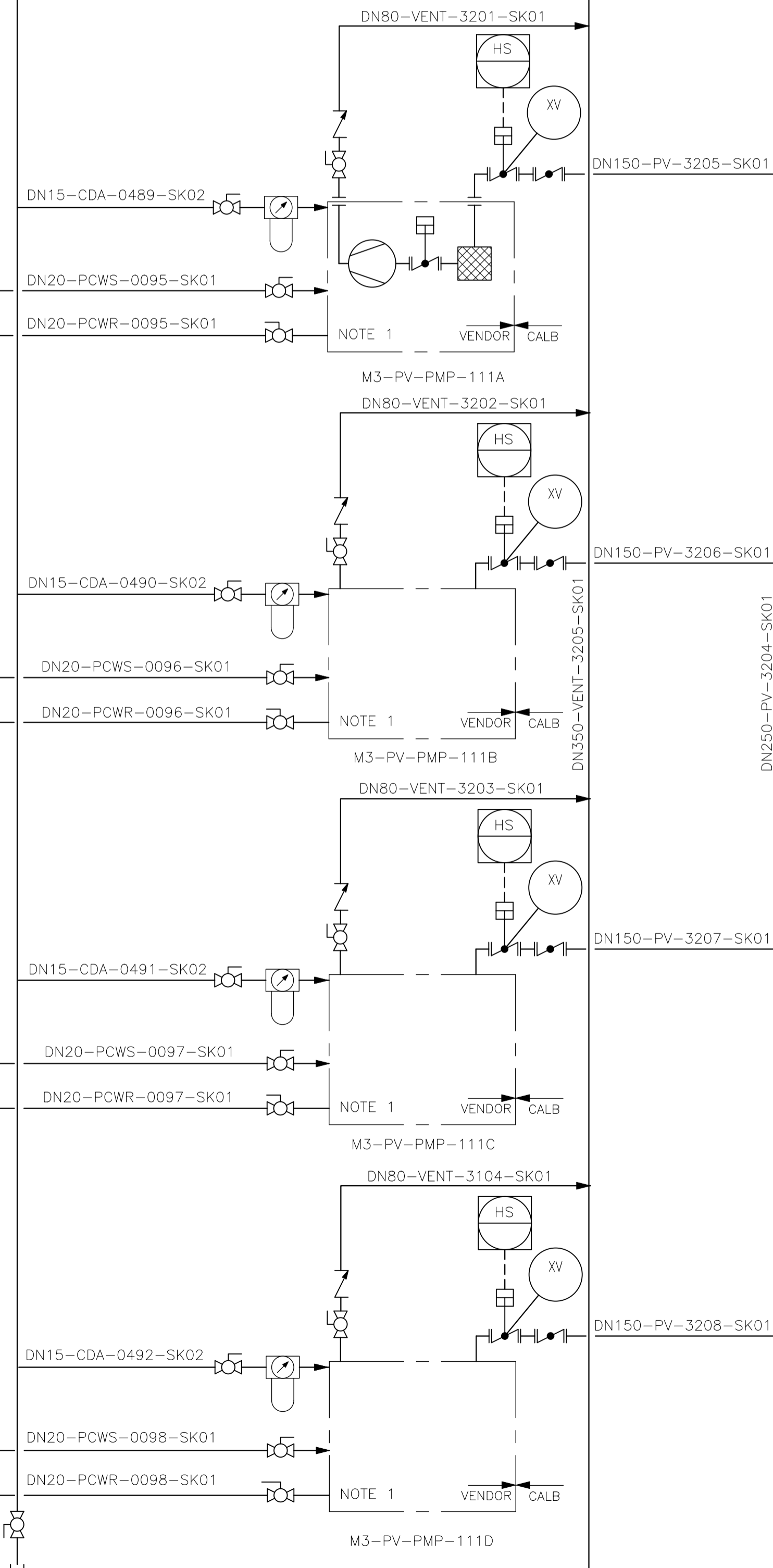
M3-PV-PMP-111A/B/C/D
DRY SCREW VACUUM PUMP

M3-PV-TK-111
PV RECEIVER

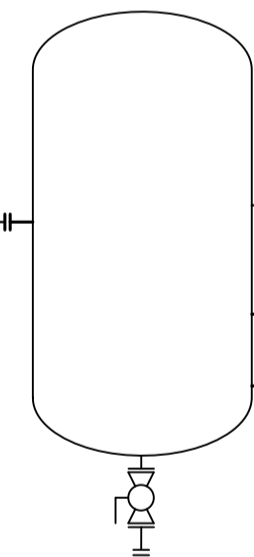


VENT TO XX-VOC-SCR-XXX
T2022-0519-09-B0-PRO-GN-0901-PID

NOTE 2



DN250-PV-3202-SK01



M1-PV-TK-111

FIRST INJECTION HIGH VACUUM SYSTEM

NOTES

- 1- 3 PUMPS IN OPERATION, 1 SPARE.
- 2- 30° PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE
Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-029

1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH
Rev.	Date	Descrição das alterações	Aprov.
Rev.	Date	Description of changes	Approv.



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LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (F)

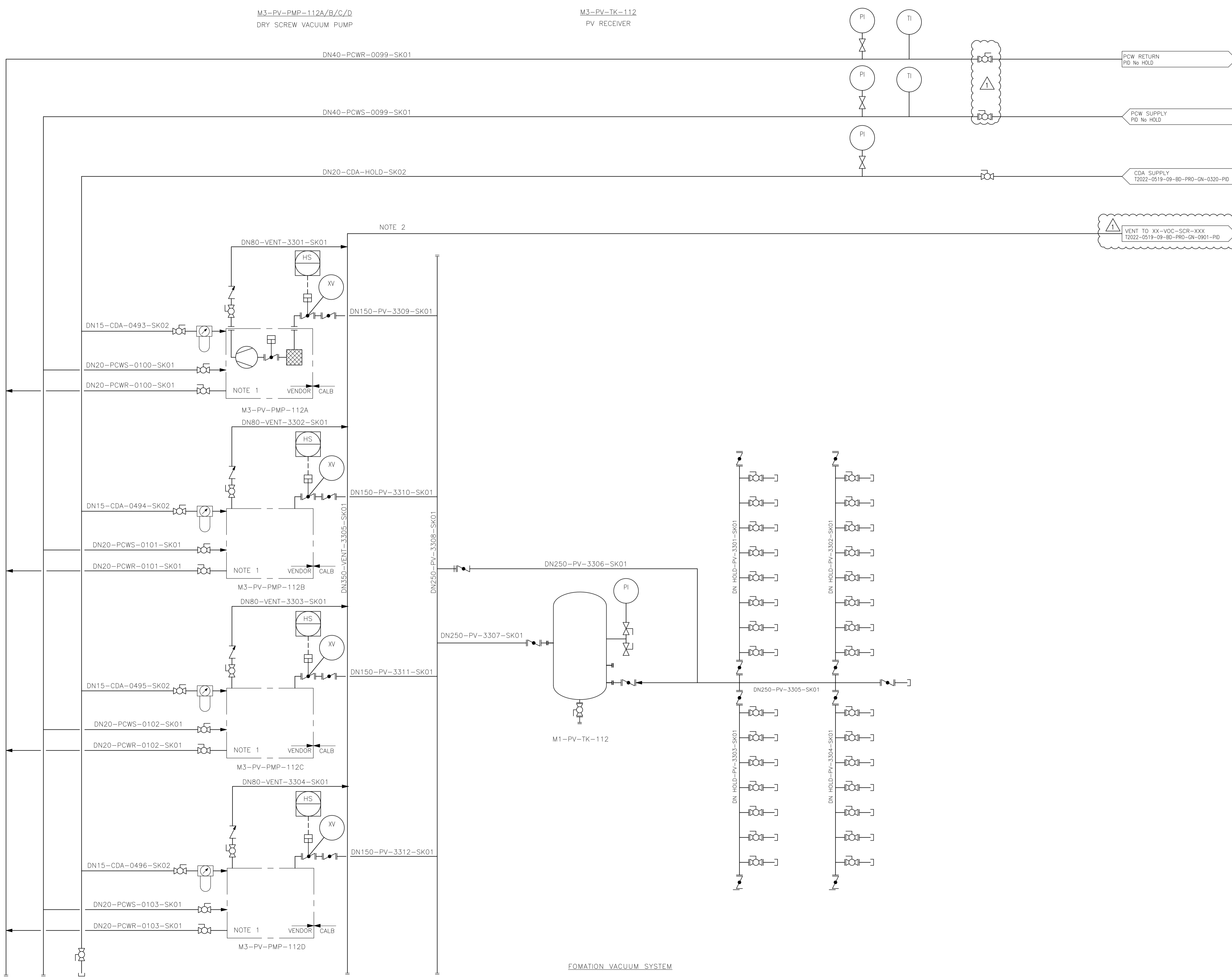
Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XXXXX23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificado / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-B0-PRO-GN-0516-PID	Aprovado / Approved:	MJCP

Desenho / Drawing: **BD-PRO-GN-0516-PID 01** Revisão / Revision:

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M3-PV-PMP-112A/B/C/D
DRY SCREW VACUUM PUMP

M3-PV-TK-112
PV RECEIVER



NOTE 2

NOTE 1

NOTE 1

NOTE 1

NOTE 1

VENT TO XX-VOC-SCR-XXX
T2022-0519-09-B0-PRO-GN-0901-PID

NOTES

- 1- 3 PUMPS IN OPERATION, 1 SPARE.
- 2- 30° PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Monitor
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-030

1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH
Rev.	Date	Descrição das alterações	Aprov.
		Description of changes	Approv.



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

PROCESS VACUUM SYSTEM (G)

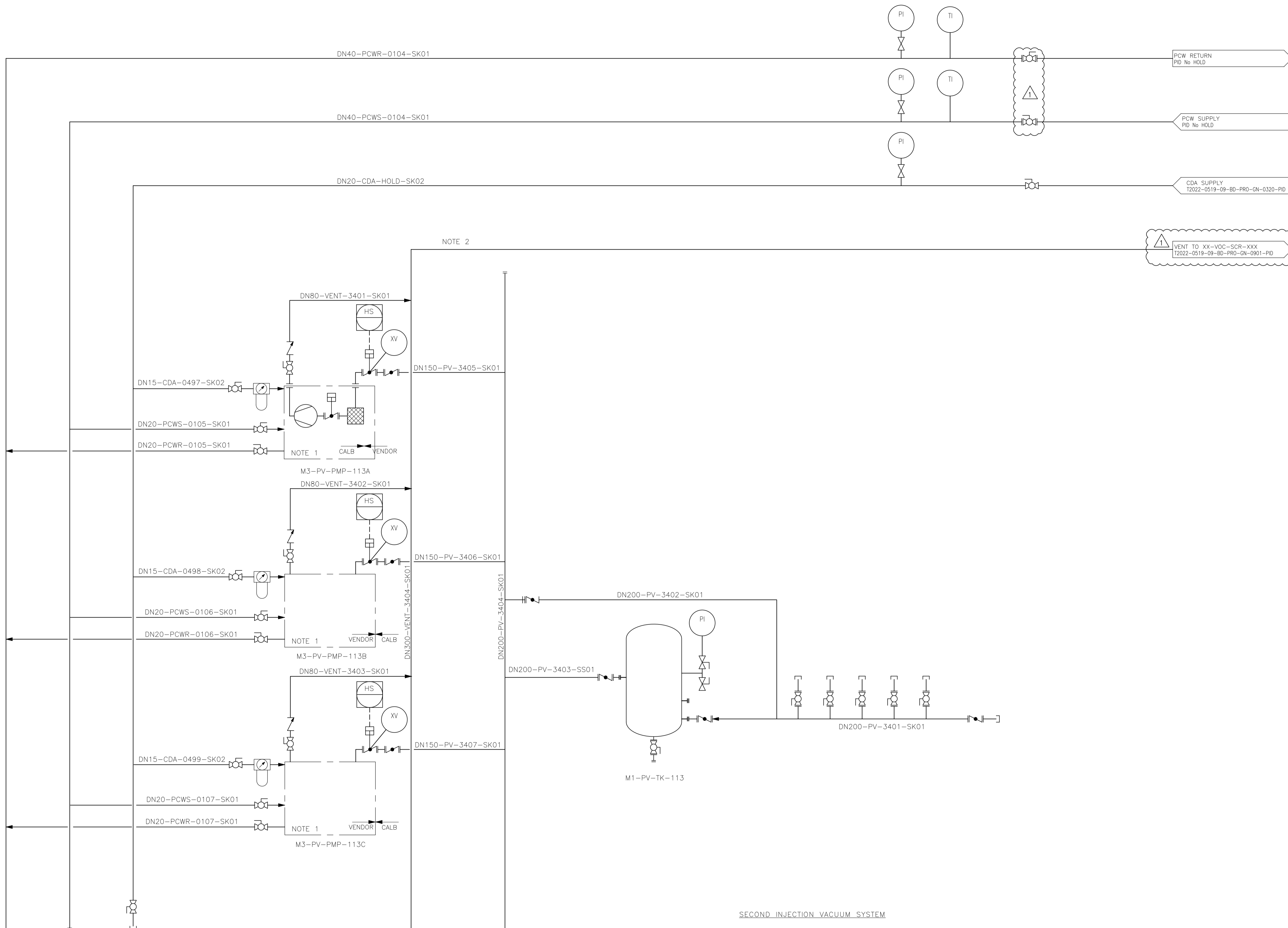
Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-B0-PRO-GN-0517-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0517-PID 01

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M3-PV-PMP-113A/B/C
DRY SCREW VACUUM PUMP

M3-PV-TK-113
PV RECEIVER



NOTES

- 1- 2 PUMPS IN OPERATION, 1 SPARE.
- 2- 30° PENETRATING INTO EXHAUST AIR DUCT.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-031

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

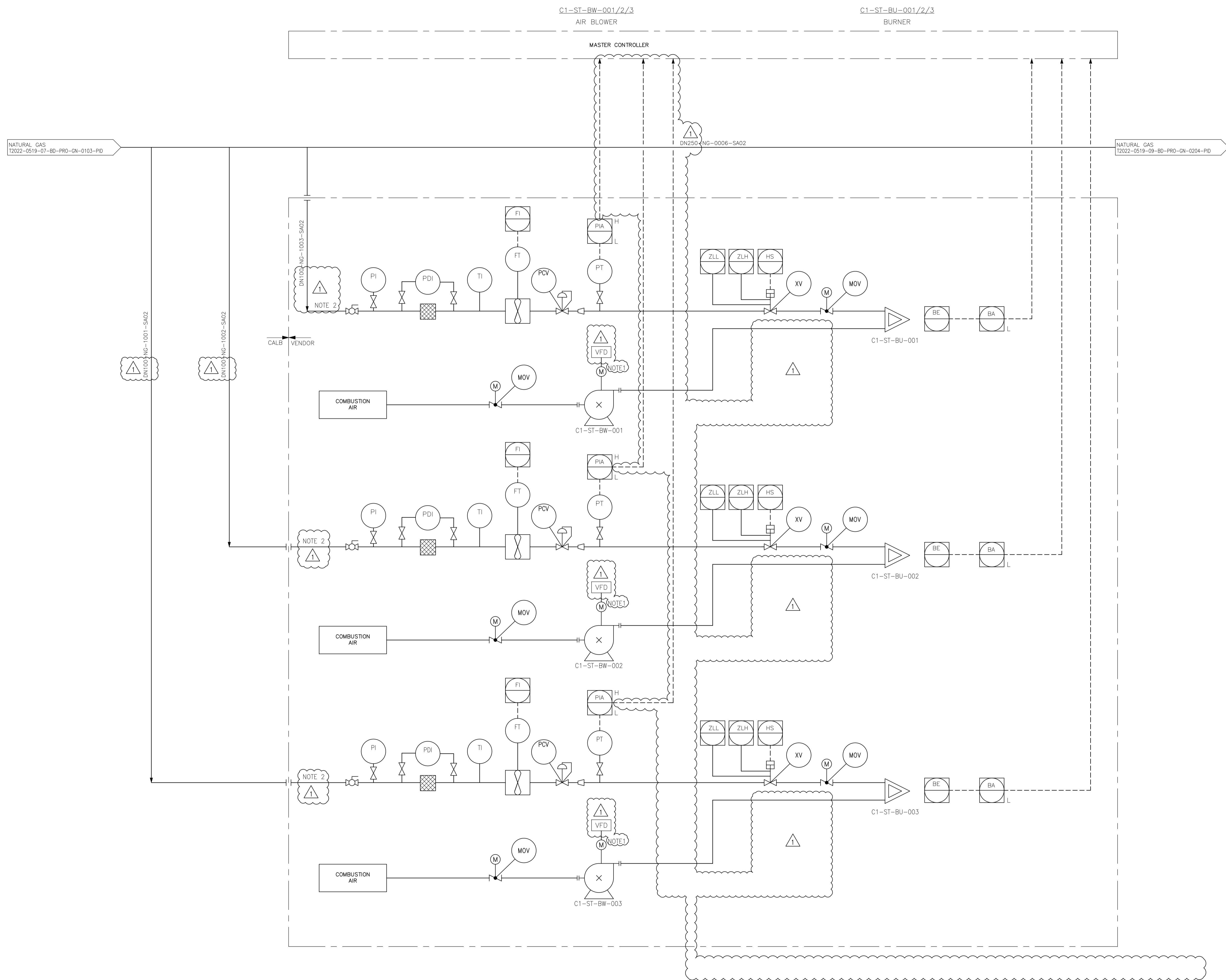
PROCESS VACUUM SYSTEM (H)

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	31-05-2023	Desenhado / Drawn:	CSAL
Processo / Process:	T2022-519	Verificado / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0518-PID	Aprovado / Approved:	MJCP

Desenho / Drawing:
T2022-0519-09-BD-PRO-GN-0518-PID

Revisão / Revision:
00

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NOTES

- 1- BLOWERS WITH VARIABLE FREQUENCY DRIVER (VFD).
- 2- IN CASE OF C1-NG-PRM-102 FAILURE, THIS CIRCUIT MUST BE ABLE TO WITHSTAND 3.5 BAR(G).

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Cliente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

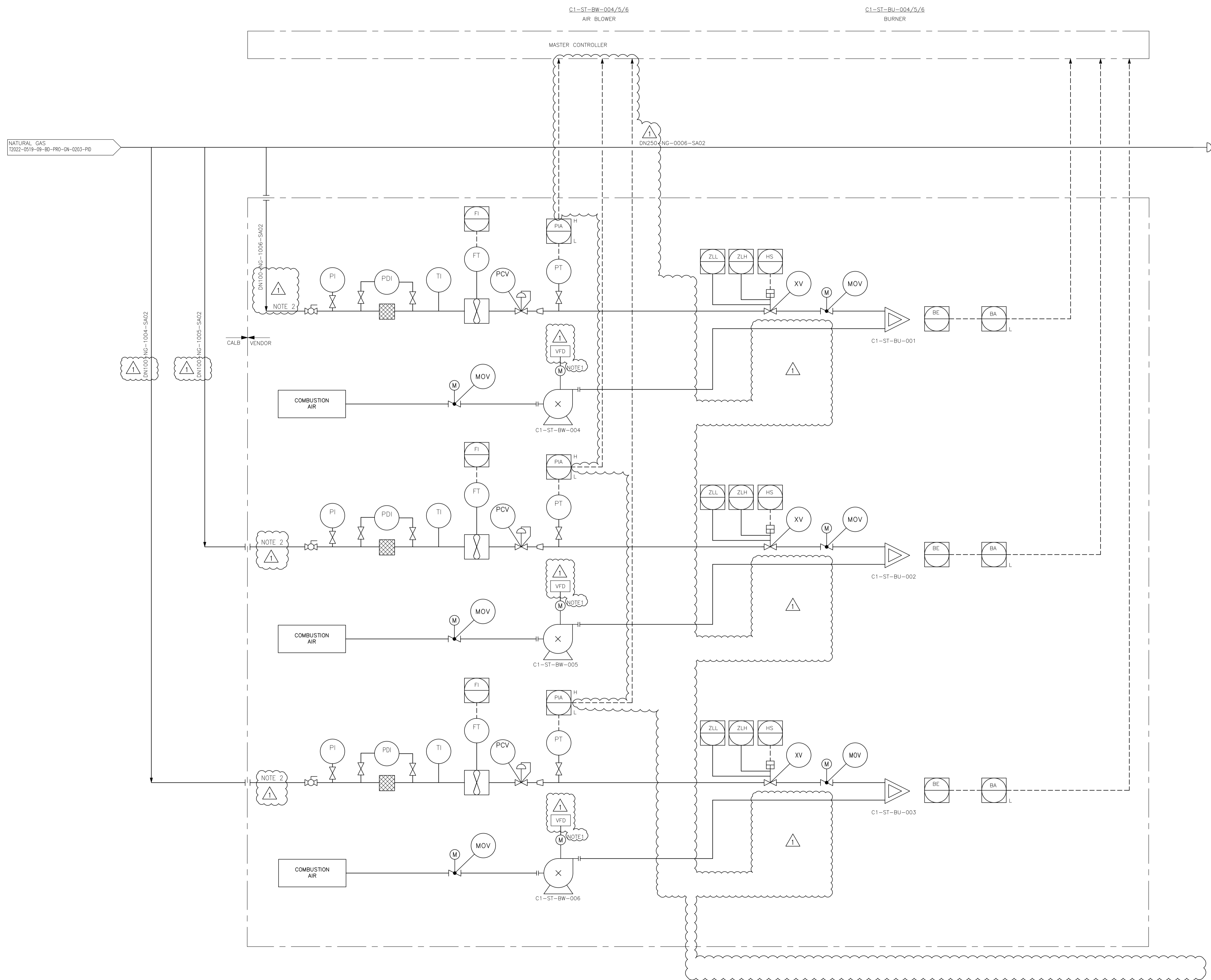
Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - BURNER SYSTEM

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0203-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0203-PID 01

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NOTES

- 1- BLOWERS WITH VARIABLE FREQUENCY DRIVER (VFD).
- 2- IN CASE OF C1-NG-PRM-102 FAILURE, THIS CIRCUIT MUST BE ABLE TO WITHSTAND 3.5 BAR(G).

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Descrição das alterações	Aprov.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

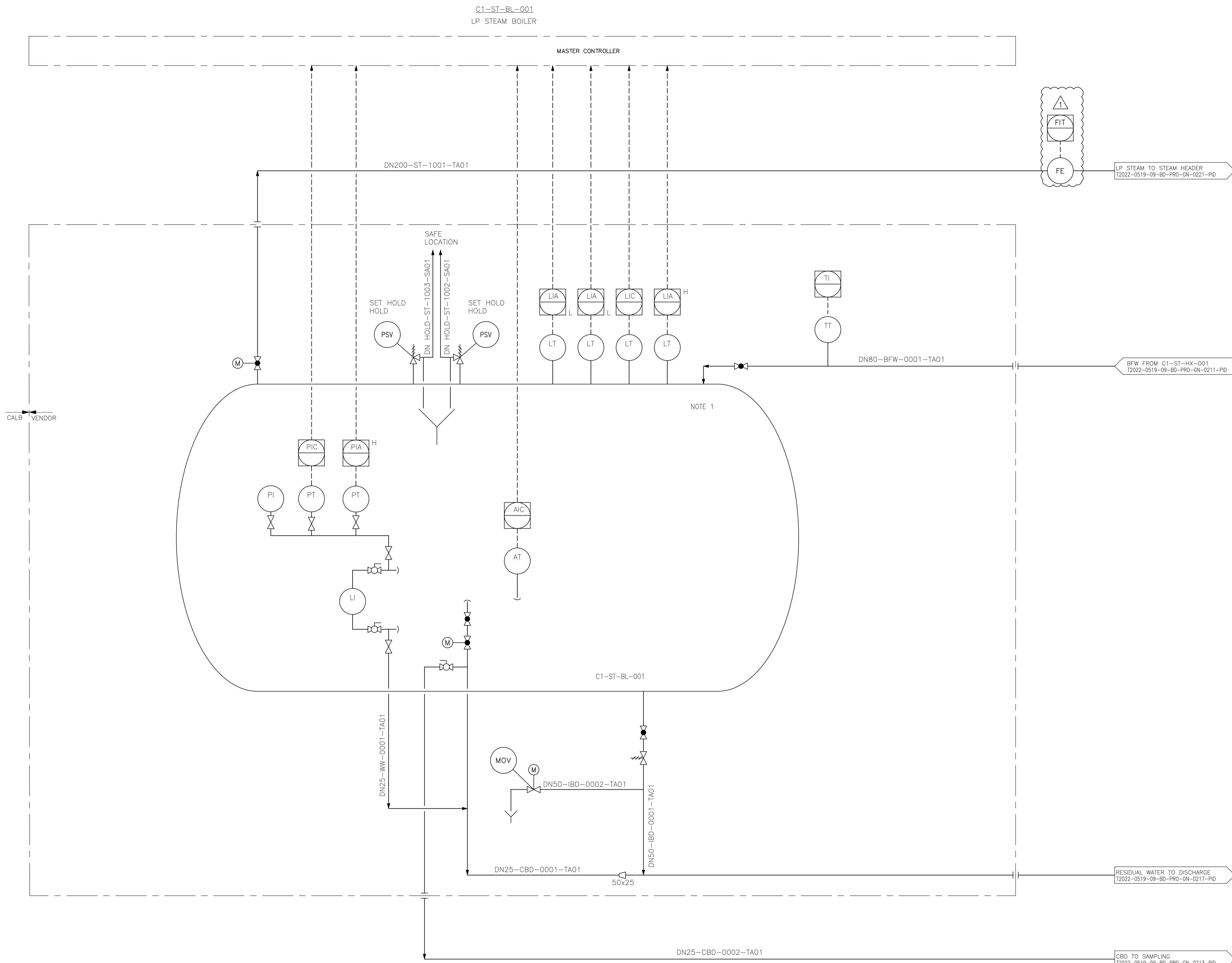
Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - BURNER SYSTEM

Escalas / Scales	S/E	Projeto / Designed	APMA
Data / Date	XX/XX/23	Desenho / Drawn	CSAL
Processo / Process	T2022-519	Verifica / Checked	MJCP
Ficheiro / File	T2022-0519-09-BD-PRO-GN-0204-PID	Aprovado / Approved	MJCP

Desenho / Drawing
BD-PRO-GN-0204-PID

Revisão / Revision
01

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NOTES

1- 5 BOILERS IN OPERATION, 1 SPARE.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

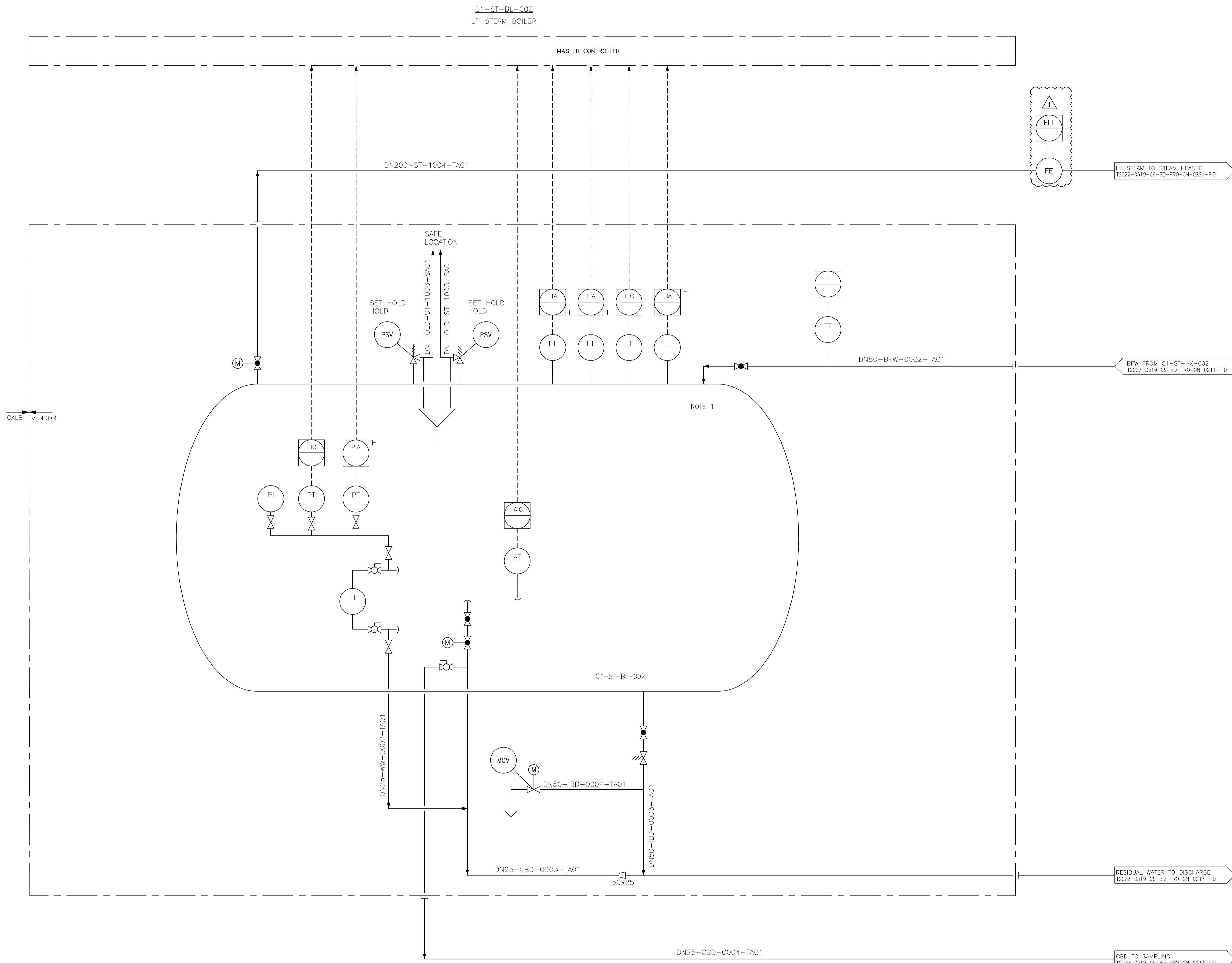
Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - BOILER

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0205-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0205-PID 01

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NOTES

1- 5 BOILERS IN OPERATION, 1 SPARE.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE
Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager

1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH
Rev.	Date	Descrição das alterações	Aprov.
Rev.	Date	Description of changes	Approv.



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

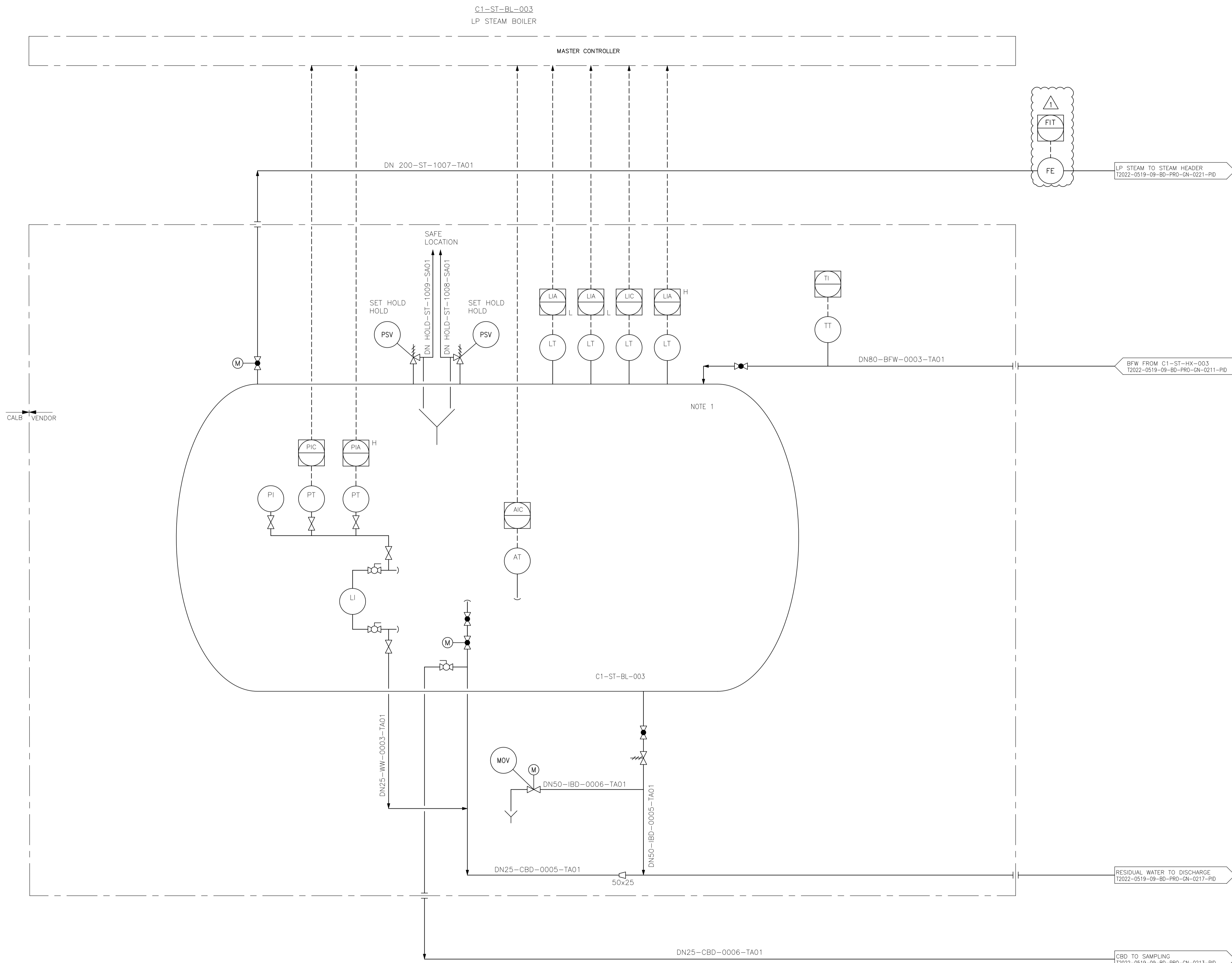
Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - BOILER

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0206-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0206-PID 01

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NOTES

1- 5 BOILERS IN OPERATION, 1 SPARE.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

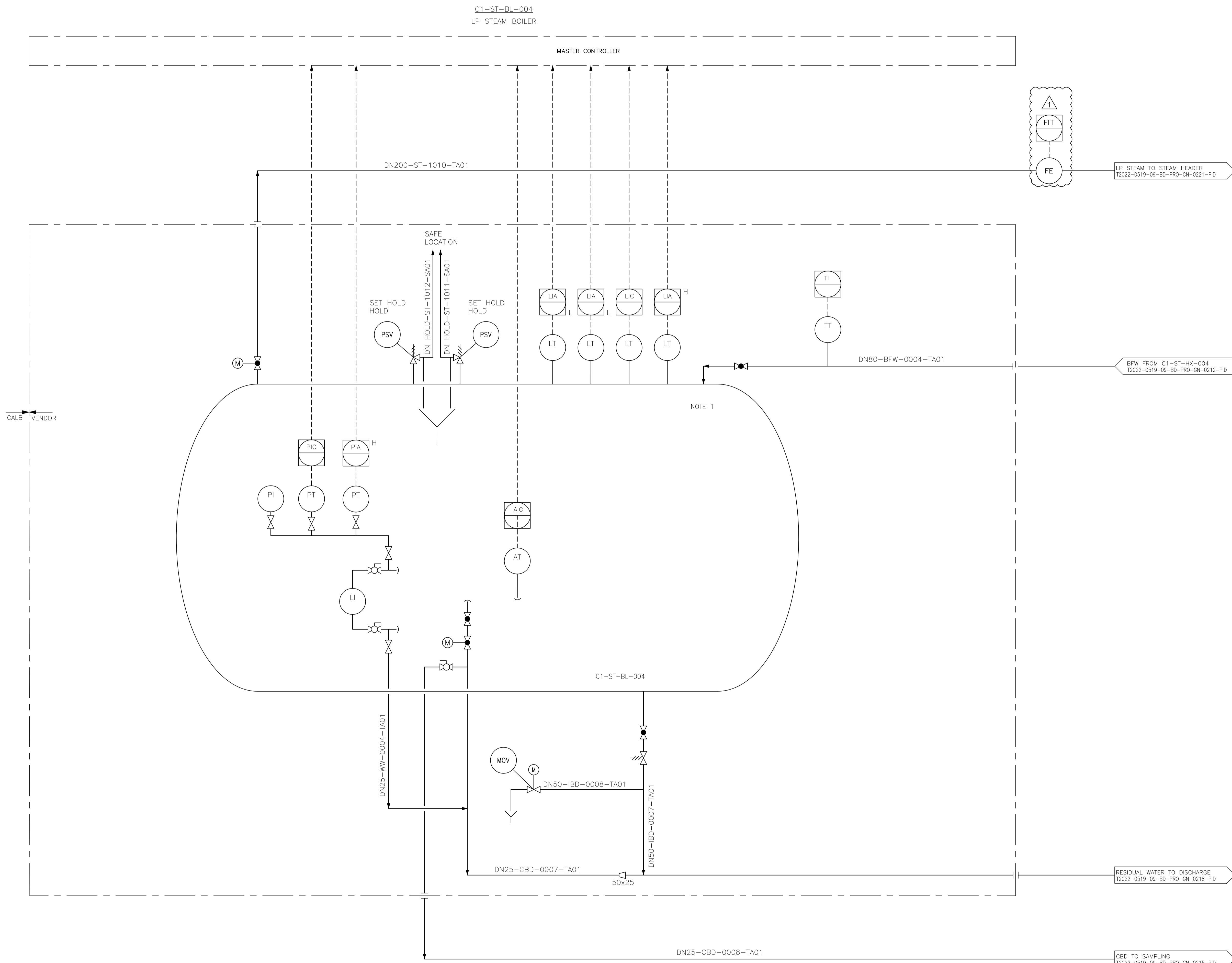
Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - BOILER

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0207-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0207-PID 01

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NOTES

1- 5 BOILERS IN OPERATION, 1 SPARE.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
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- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

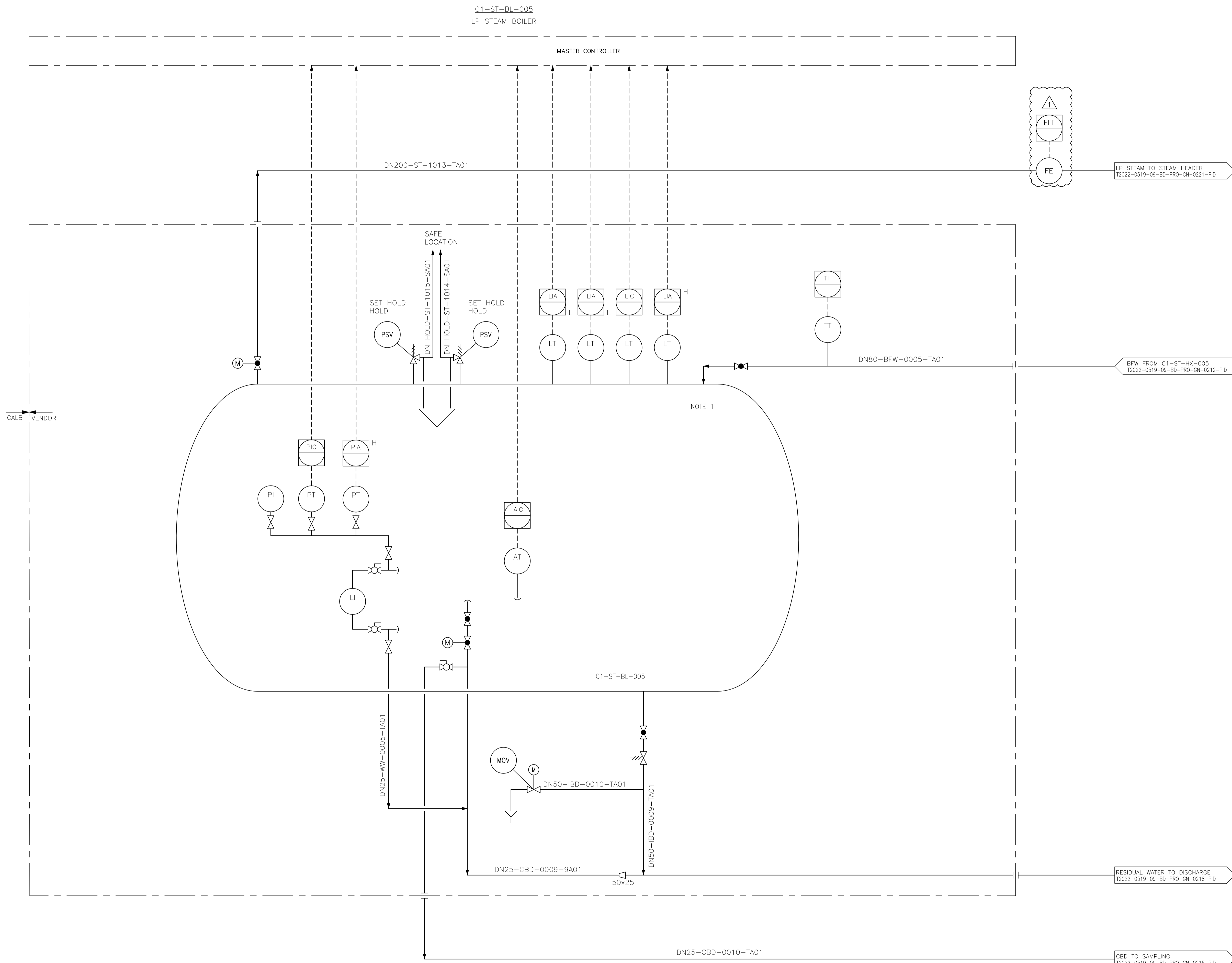
Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - BOILER

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0208-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0208-PID 01

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NOTES

1- 5 BOILERS IN OPERATION, 1 SPARE.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia **DRAWING NUMBER 3024-PID-0021-038**

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

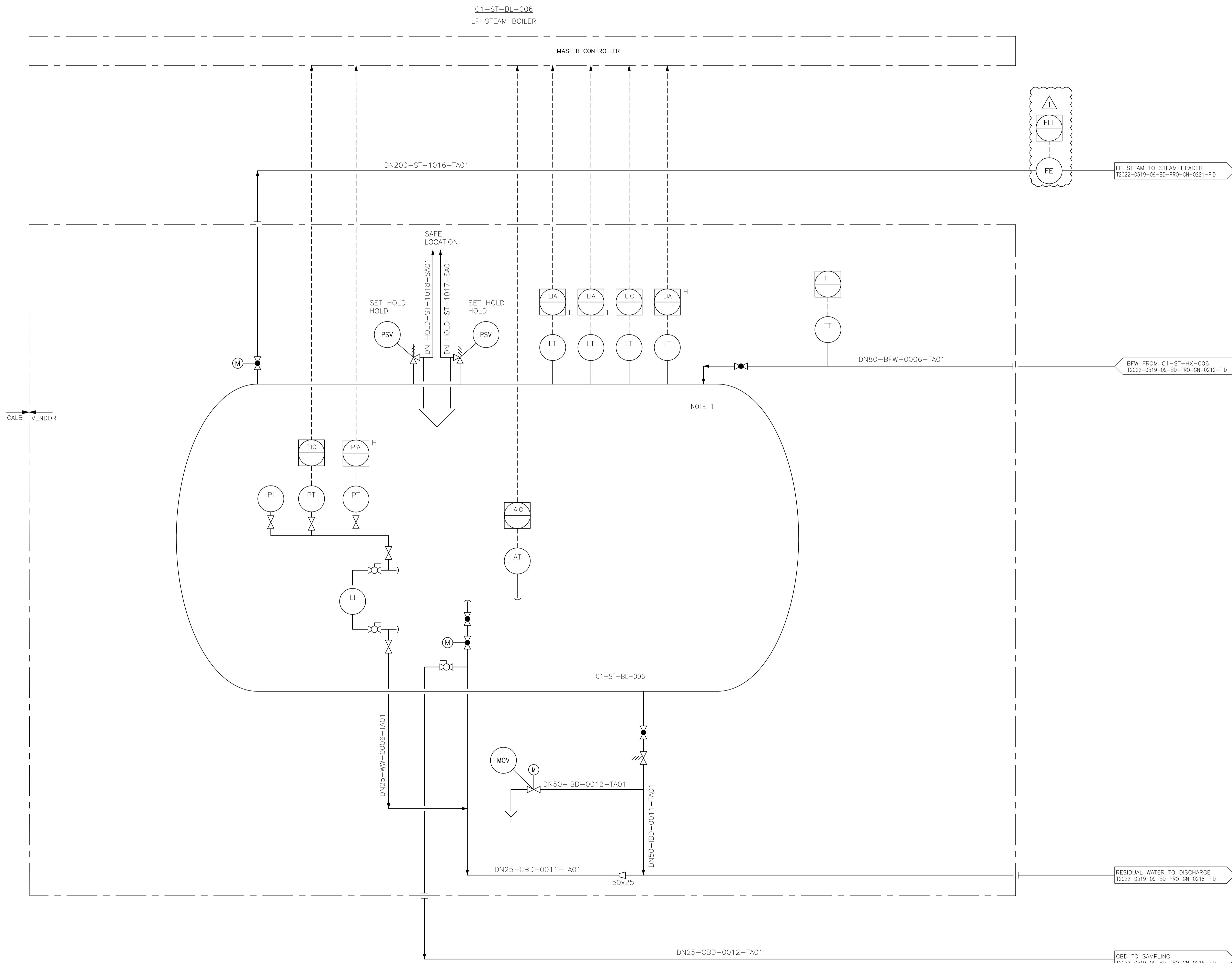
Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - BOILER

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0209-PID	Aprovou / Approved:	MJCP

Desenho / Drawing: **BD-PRO-GN-0209-PID** 01

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NOTES

1- 5 BOILERS IN OPERATION, 1 SPARE.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

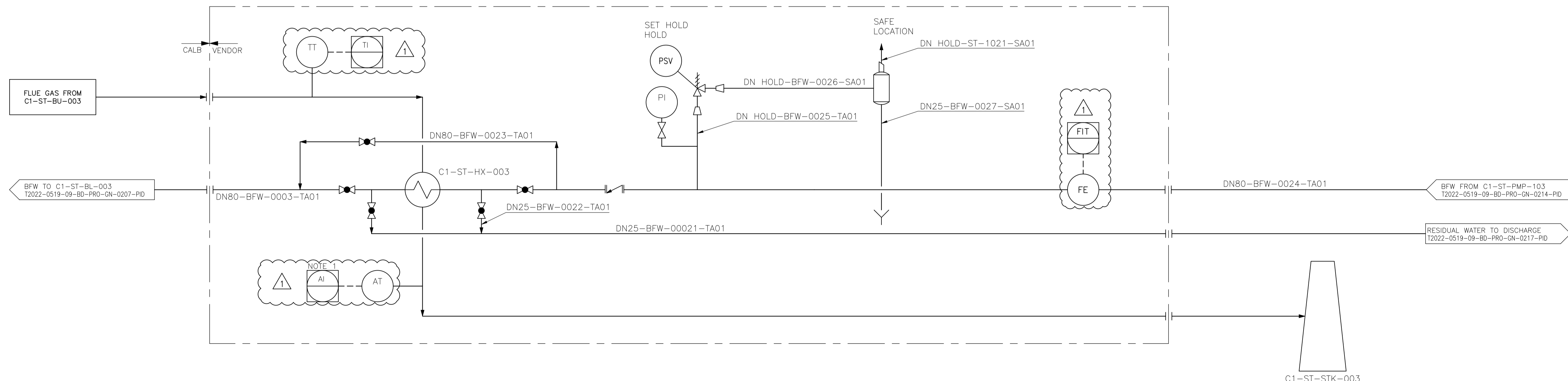
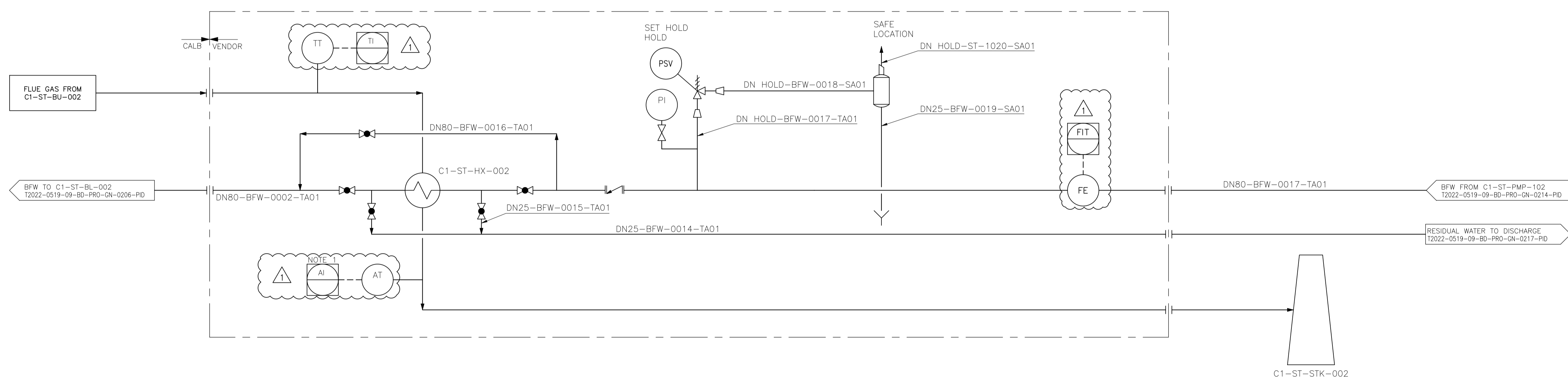
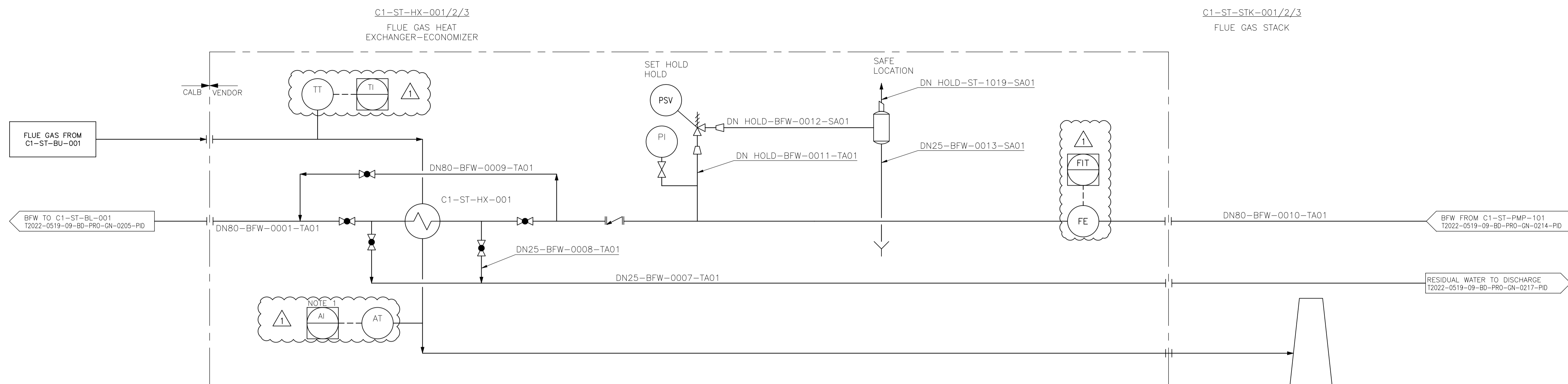
Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - BOILER

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0210-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0210-PID 01

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NOTES

1 - OXYGEN SENSOR.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Description of changes	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23		APMA	MJCP	MJCP	JLSE
A	22/06/23		APMA	JSAH	JSAH	JLSE

1	22/09/23	REISSUE FOR COMMENTS				MJCP
0	22/06/23	ISSUE FOR COMMENTS				JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

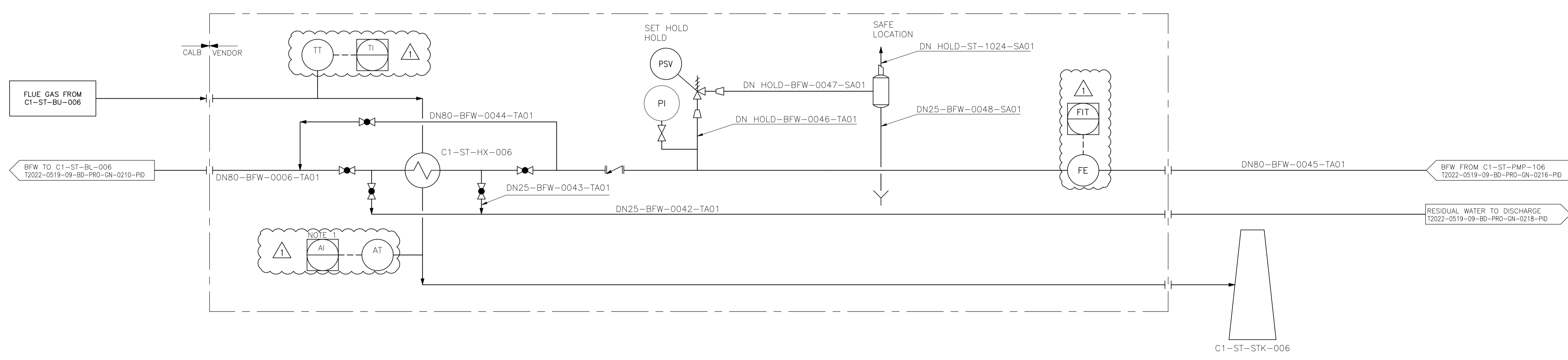
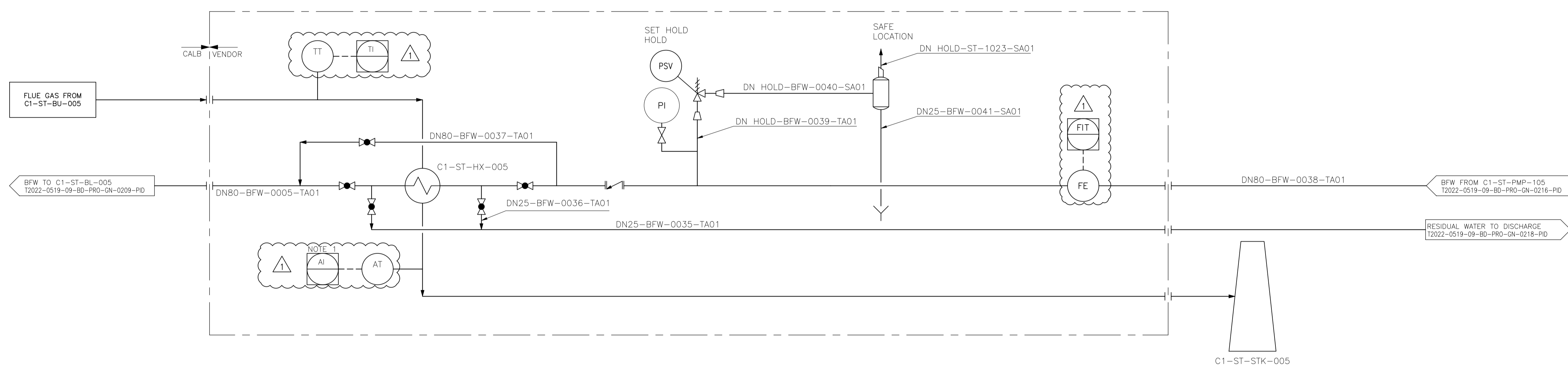
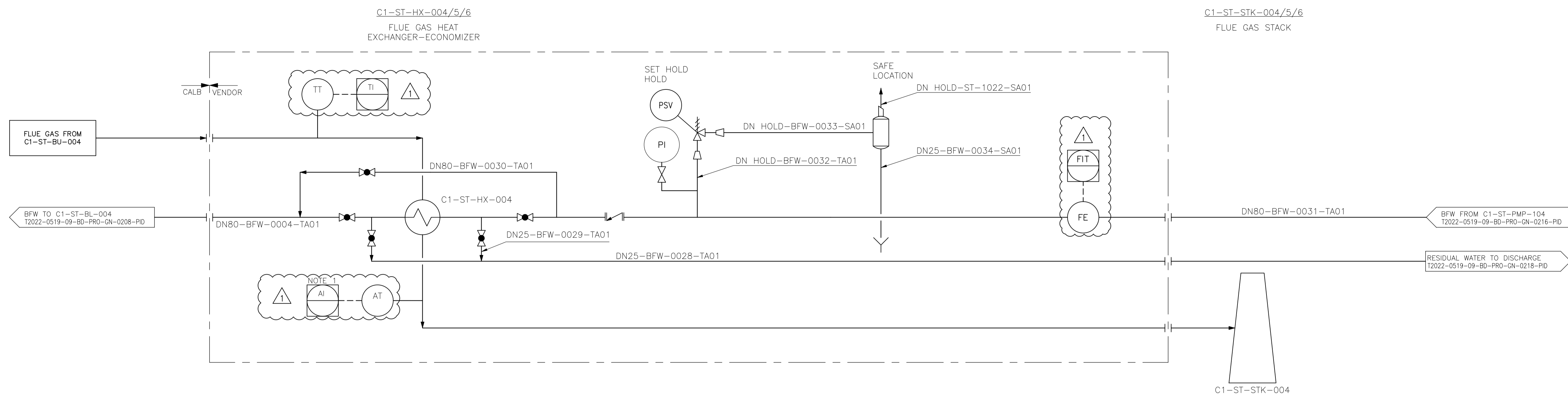
Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

ST SYSTEM - FLUE GAS AND ECONOMIZER

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0211-PID	Aprovou / Approved:	MJCP

Desenho / Drawing: **BD-PRO-GN-0211-PID** 01

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NOTES

1 - OXYGEN SENSOR.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

1	22/09/23	REISSUE FOR COMMENTS			MJCP
0	22/06/23	ISSUE FOR COMMENTS			JSAH
Rev.	Date	Descrição das alterações	Approv.	Approv.	
		Description of changes	Approv.	Approv.	



Cliente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

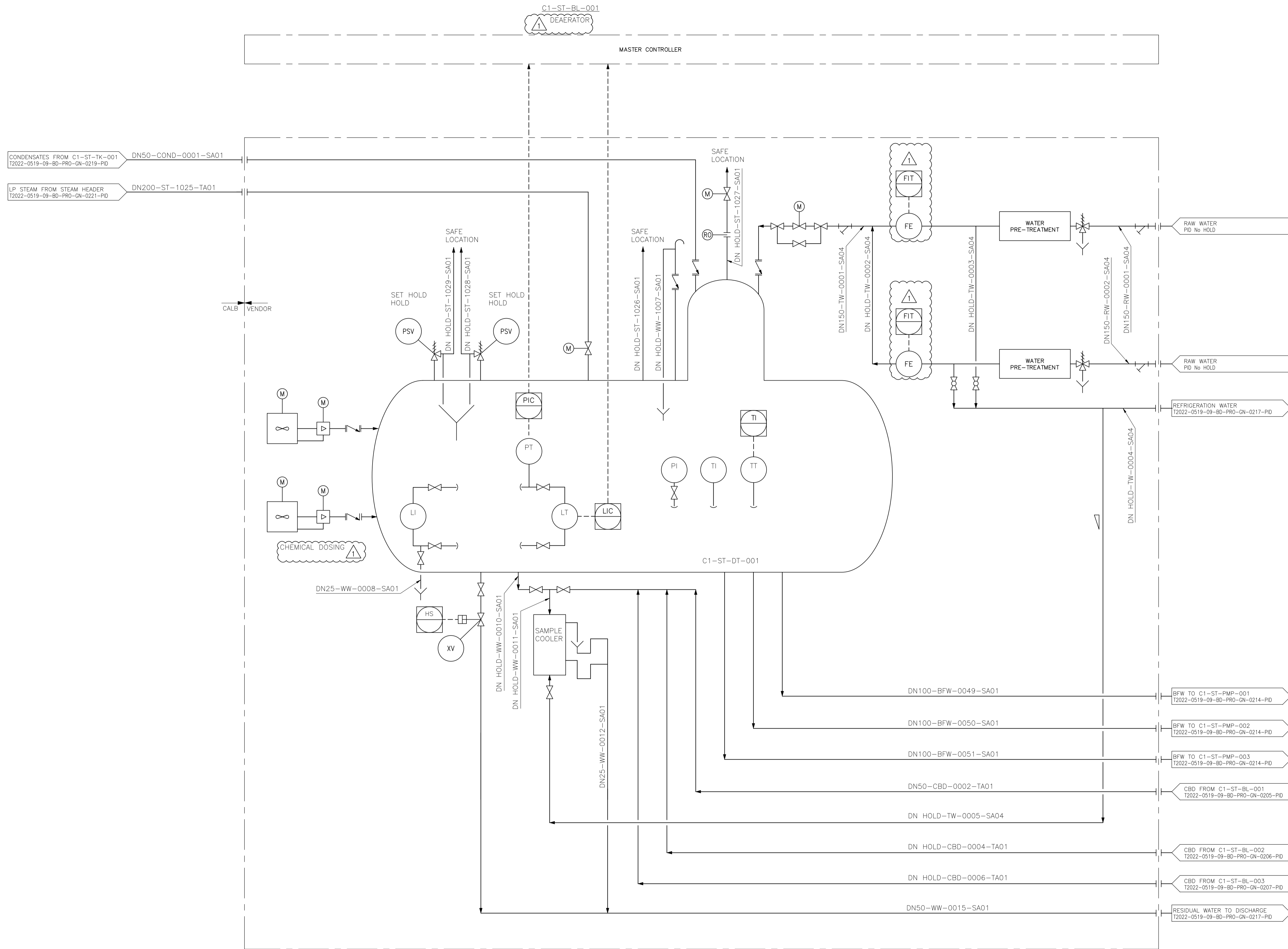
Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

ST SYSTEM - FLUE GAS AND ECONOMIZER

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0212-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0212-PID 01

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NOTES

GENERAL NOTES

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- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

1	22/09/23	REISSUE FOR COMMENTS			MJCP
0	22/06/23	ISSUE FOR COMMENTS			JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - DEAERATOR

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0213-PID	Aprovou / Approved:	MJCP

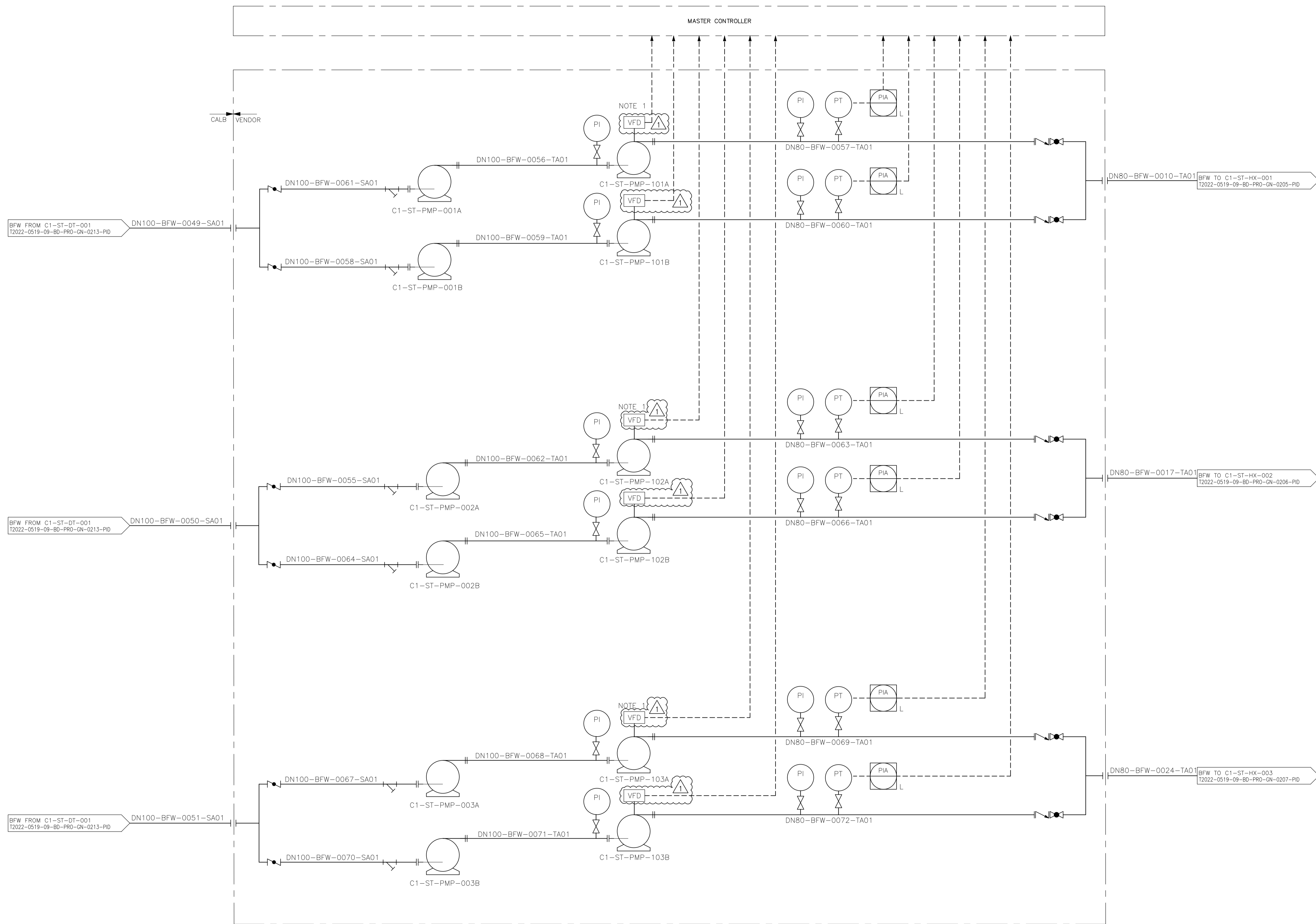
Desenho / Drawing:
BD-PRO-GN-0213-PID 01

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C1-ST-PMP-001/2/3 A/B
BFW PUMP

C1-ST-PMP-101/2/3 A/B
BFW BOOSTER PUMP

MASTER CONTROLLER



NOTES

1- PUMPS WITH VARIABLE FREQUENCY DRIVER (VFD).

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-043

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - BFW PUMPS

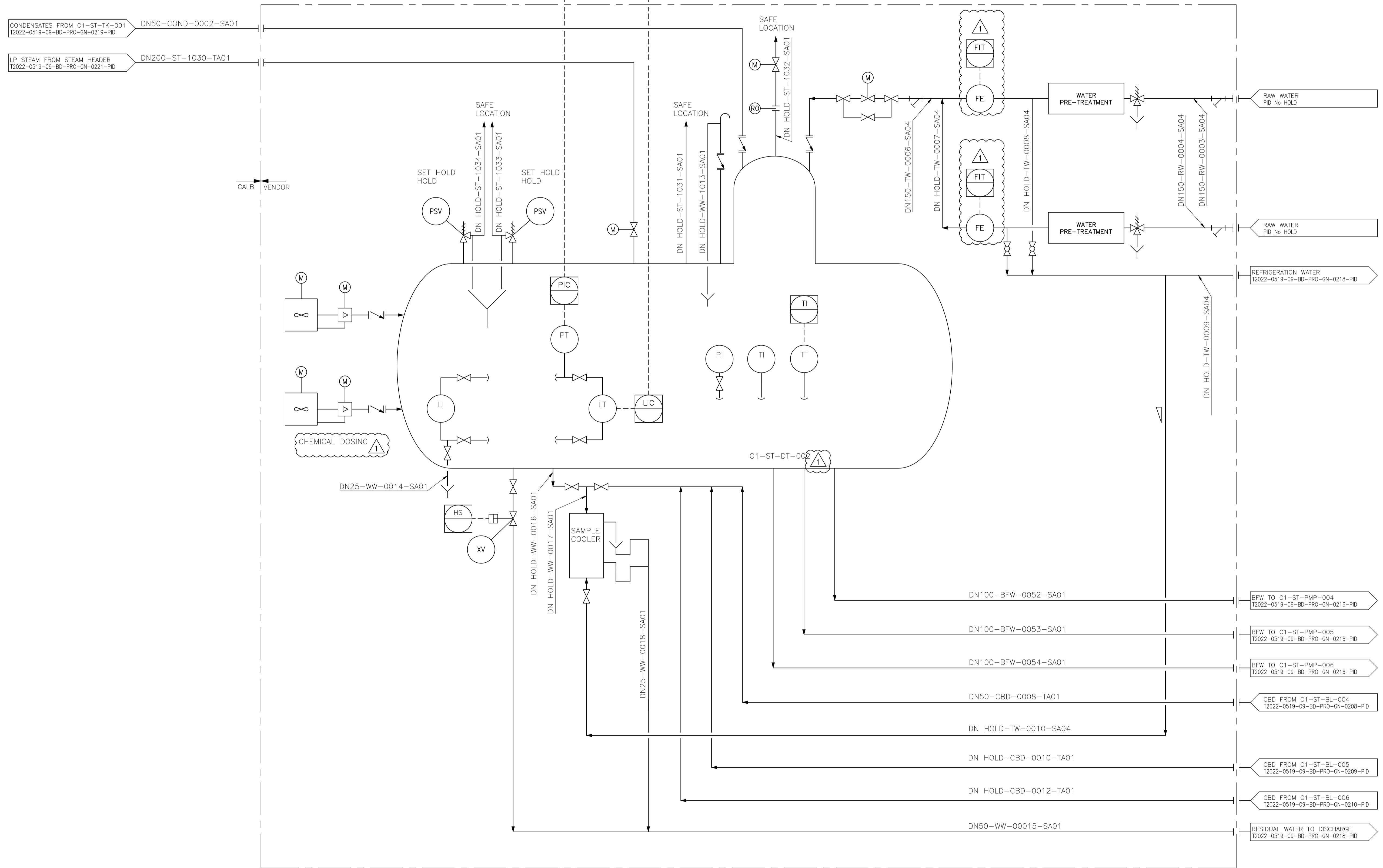
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Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0214-PID	Aprovou / Approved:	MJCP

Desenho / Drawing: **BD-PRO-GN-0214-PID** 01

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C1-ST-DT-002
DEAERATOR

MASTER CONTROLLER



GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH




Cliente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - DEAERATOR

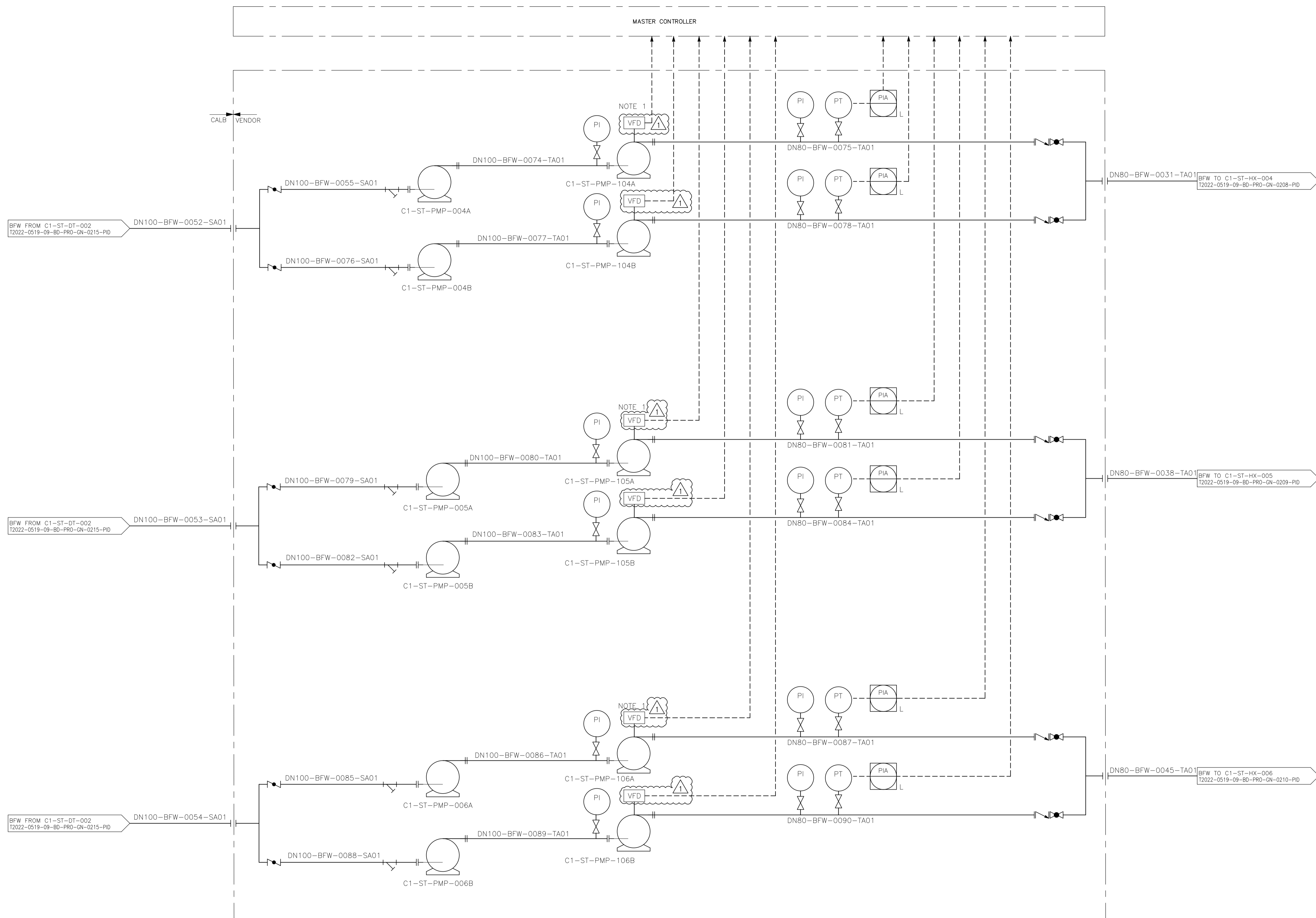
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Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0215-PID	Aprovou / Approved:	MJCP

Desenho / Drawing:
BD-PRO-GN-0215-PID 01

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C1-ST-PMP-004/5/6 A/B
BFW PUMP

C1-ST-PMP-104/5/6 A/B
BFW BOOSTER PUMP



NOTES

1- PUMPS WITH VARIABLE FREQUENCY DRIVER (VFD).

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

1	22/09/23	REISSUE FOR COMMENTS			MJCP
0	22/06/23	ISSUE FOR COMMENTS			JSAH

TECHNOEDIF Engenharia

DRAWING NUMBER 3024-PID-0021-045

Ciente / Client

CALB

PROJETO / Project

LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

ST SYSTEM - BFW PUMPS

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0216-PID	Aprovou / Approved:	MJCP

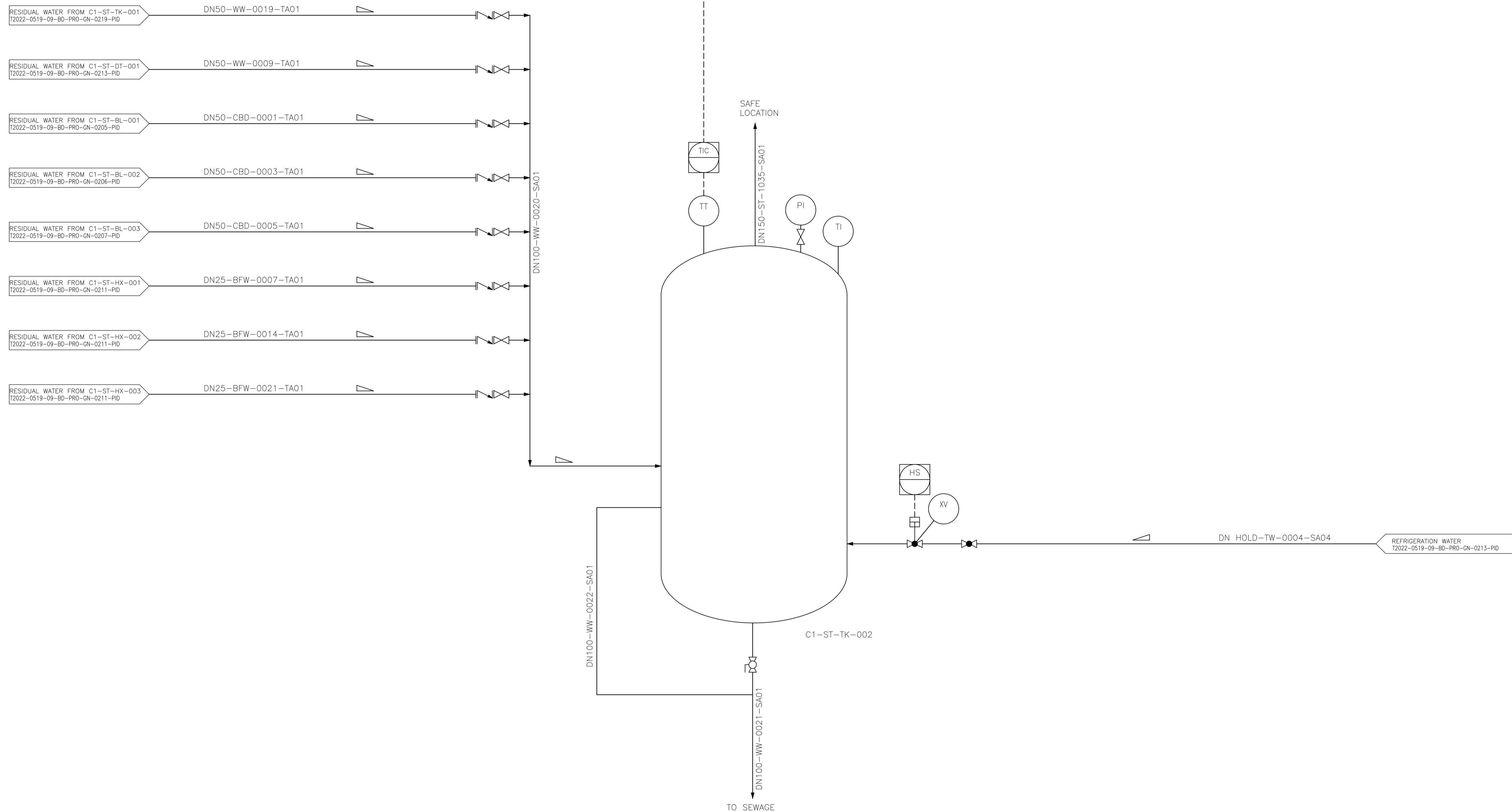
Desenho / Drawing: **BD-PRO-GN-0216-PID**

Revisão / Revision: **01**

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C1-ST-TK-002
FLASH DRUM

MASTER CONTROLLER



NOTES

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	JSAH	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia DRAWING NUMBER 3024-PID-0021-046

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client

CALB

PROJETO / Project

LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM

ST SYSTEM - RESIDUAL WATER DISCHARGE AND REFRIGERATION

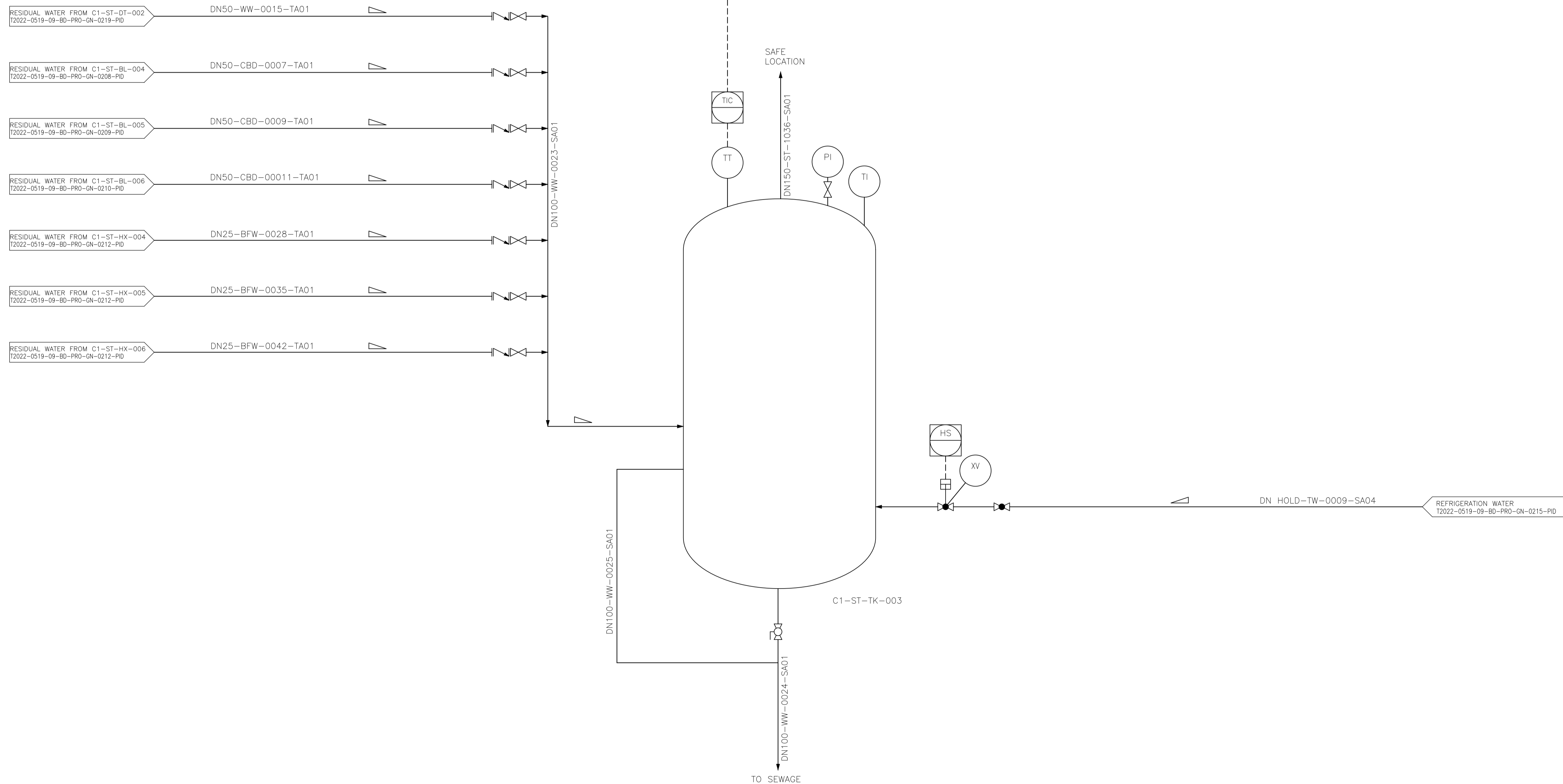
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Data / Date : XX/XX/23	Desenho / Drawn : CSAL
Processo / Process : T2022-519	Verificou / Checked : MJCP
Ficheiro / File : T2022-0519-09-B0-PRO-GN-0217-PID	Aprovou / Approved : MJCP

Desenho / Drawing : **BD-PRO-GN-0217-PID** Revisão / Revision : **01**

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C1-ST-TK-003
FLASH DRUM

MASTER CONTROLLER



NOTES

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	JSAH	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-051

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



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PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

PROCESS AND INSTRUMENTATION DIAGRAM

ST SYSTEM - RESIDUAL WATER DISCHARGE AND REFRIGERATION

Escalas / Scales :	S/E	Projeto / Designed :	APMA
Data / Date :	XX/XX/23	Desenho / Drawn :	CSAL
Processo / Process :	T2022-519	Verificou / Checked :	MJCP
Ficheiro / File :	T2022-0519-09-BD-PRO-GN-0218-PID	Aprovou / Approved :	MJCP

Desenho / Drawing :

BD-PRO-GN-0218-PID 01

Revisão / Revision :

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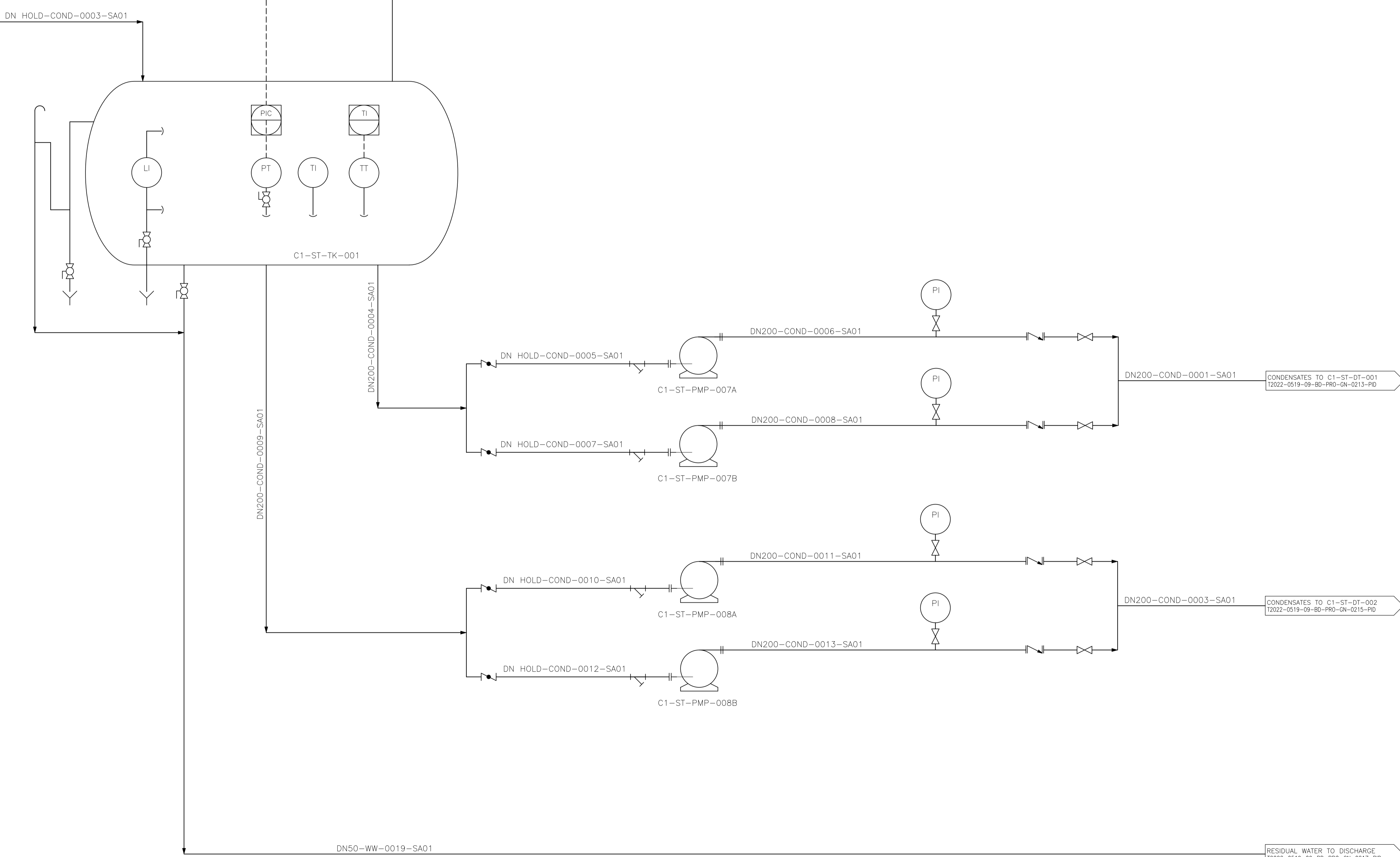
C1-ST-TK-001
CONDENSATES TANK

C1-ST-PMP-007/A/B
CONDENSATES PUMP

MASTER CONTROLLER

SAFE LOCATION

CONDENSATES FROM DISTRIBUTION NETWORK



NOTES

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-052

Rev.	Date	Descrição das alterações	Approv.
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Cliente / Client

CALB

PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

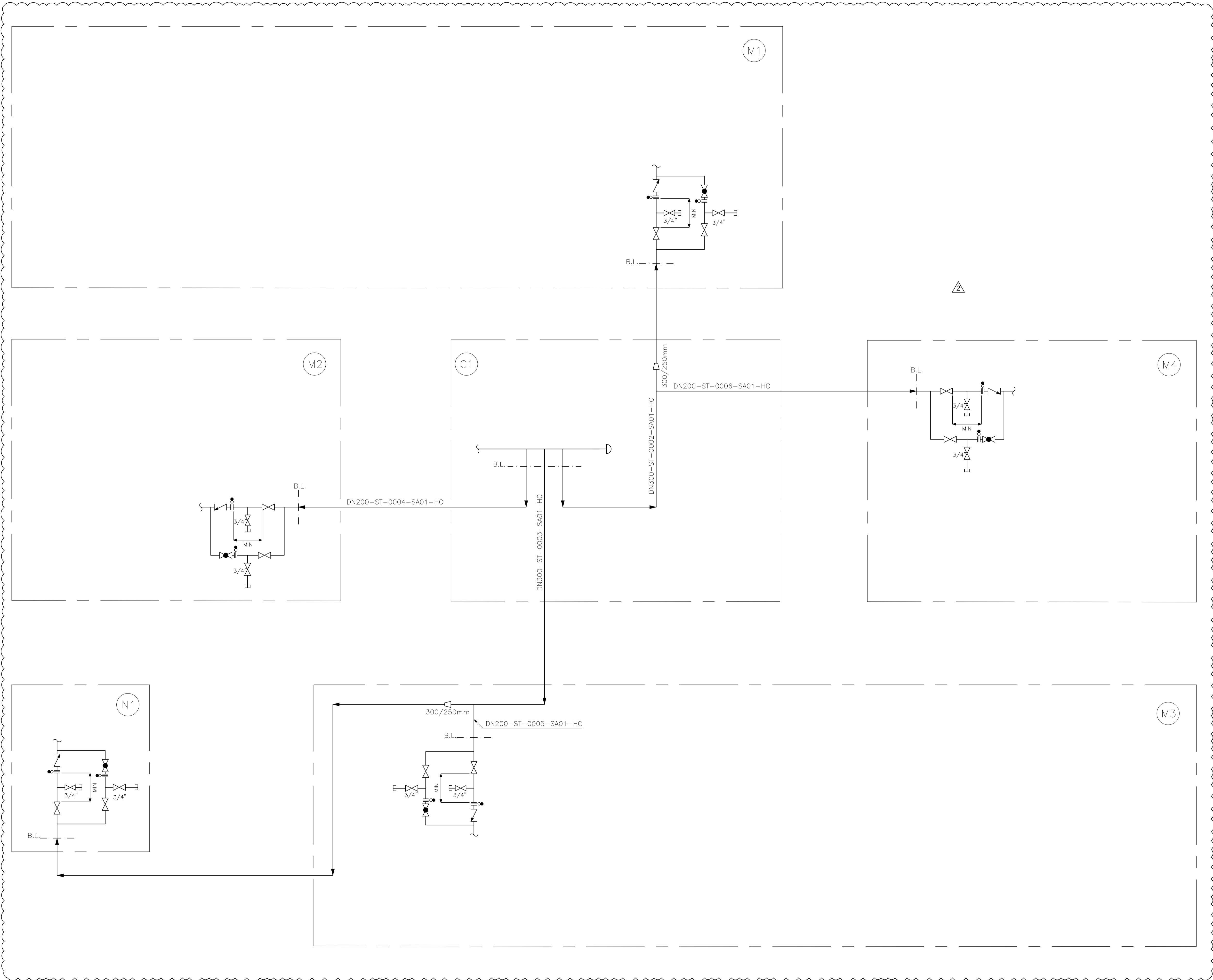
PROCESS AND INSTRUMENTATION DIAGRAM

ST SYSTEM - CONDENSATES TANK

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	XX/XX/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificou / Checked:	MJCP
Ficheiro / File:	T2022-0519-09-B0-PRO-GN-0219-PID	Aprovou / Approved:	MJCP

Desenho / Drawing: **BD-PRO-GN-0219-PID** 01

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NOTES

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Monitor
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	31/05/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia **DRAWING NUMBER** 3024-PID-0021-047

Rev.	Date	Descrição das alterações	Aprov.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	31/05/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client

CALB

PROJETO / Project

LITHIUM BATTERY GIGAFACTORY PLANT

Fase / Phase

BASIC DESIGN

Designação / Designation

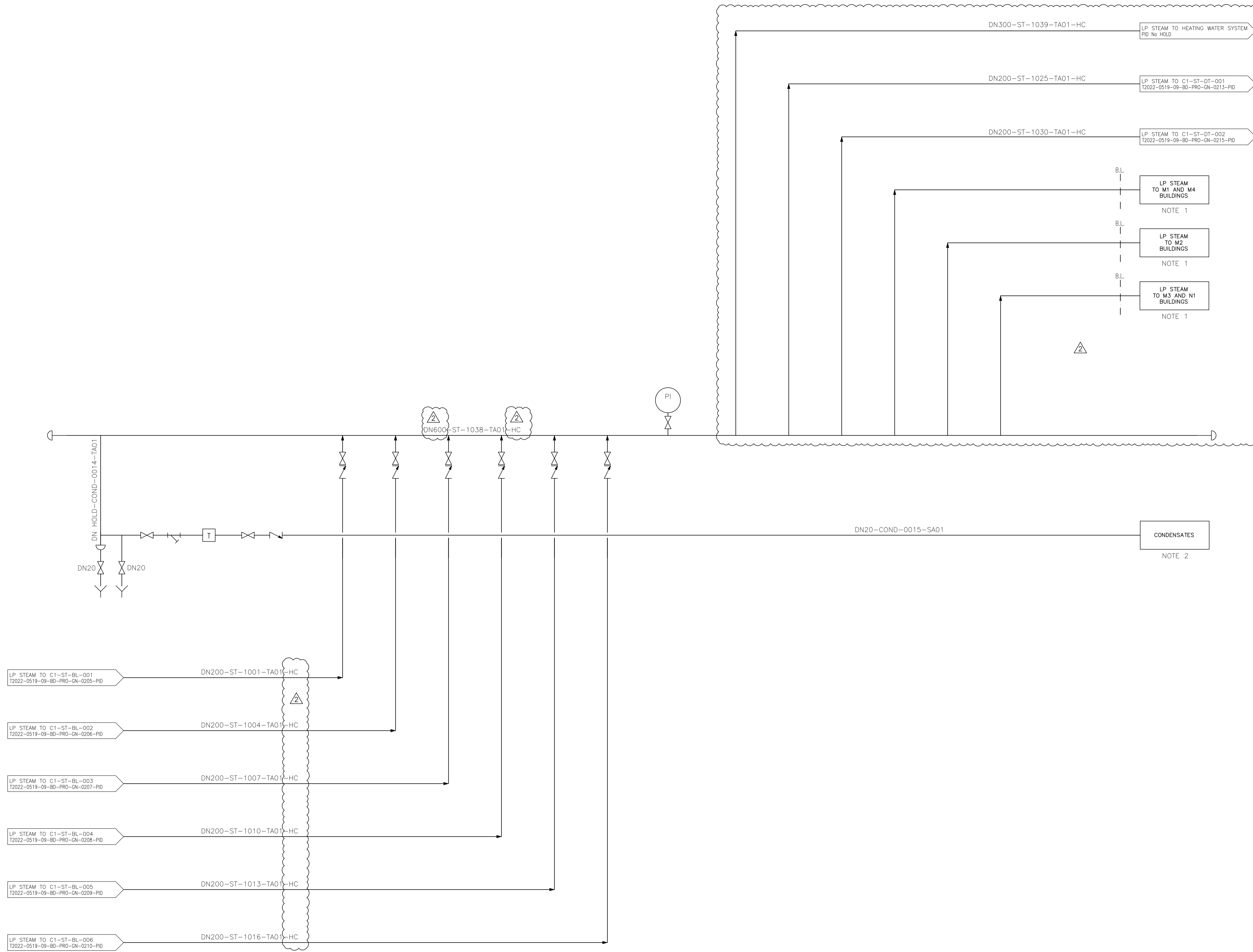
PROCESS AND INSTRUMENTATION DIAGRAM

ST SYSTEM - DISTRIBUTION

Escalas / Scales :	S/E	Projetou / Designed :	APMA
Data / Date :	31/10/23	Desenhou / Drawn :	CSAL
Processo / Process :	T2022-519	Verificou / Checked :	JLSE
Ficheiro / File :	T2022-519-08-80-PRO-GN-0220-PID	Aprovou / Approved :	JLSE

Desenho / Drawing : **BD-PRO-GN-0220-PID** 02

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NOTES

- 1- SEE PID No. T2022-0519-09-BD-PRO-GN-0220-PID.
- 2- STEAM CONDENSATES NETWORK TO BE DEFINED IN THE NEXT ENGINEERING PHASE.

GENERAL NOTES

- A- DIAMETERS TO BE CONFIRMED.
- B- EQUIPMENT PACKAGES TO BE CONFIRMED BY VENDOR.
- C- HYDRAULIC CALCULATION AND EQUIPMENT CAPACITY SHALL BE CONFIRMED DURING DETAILED ENGINEERING.
- D- CONTROL LOOPS TO BE CONFIRMED BY VENDOR.

Rev.	Date	Prepared by	Checked by	Technical Approval by	Project Manager
C	31/10/23	APMA	JLSE	JLSE	JLSE
B	22/09/23	APMA	MJCP	MJCP	JLSE
A	22/06/23	APMA	JSAH	JSAH	JLSE

TECHNOEDIF Engenharia
DRAWING NUMBER 3024-PID-0021-053

Rev.	Data	Descrição das alterações	Approv.
2	31/10/23	REISSUE FOR COMMENTS	JLSE
1	22/09/23	REISSUE FOR COMMENTS	MJCP
0	22/06/23	ISSUE FOR COMMENTS	JSAH



Ciente / Client
CALB

PROJETO / Project
LITHIUM BATTERY GIGAFABRY PLANT

Fase / Phase
BASIC DESIGN

Designação / Designation
PROCESS AND INSTRUMENTATION DIAGRAM
ST SYSTEM - STEAM HEADER

Escalas / Scales:	S/E	Projeto / Designed:	APMA
Data / Date:	31/10/23	Desenho / Drawn:	CSAL
Processo / Process:	T2022-519	Verificação / Checked:	JLSE
Ficheiro / File:	T2022-0519-09-BD-PRO-GN-0221-PID	Aprovação / Approved:	JLSE

Desenho / Drawing:
BD-PRO-GN-0221-PID 02

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