DOC.-NO.	DOC.-TITLE	ISSUE / STATUS DATE
PFA01	LIST OF DOCUMENTS	01 / C 15.02.08
PFA02	SYMBOLS AND ABBREVIATIONS	01 / C 15.02.08
PFD01	BLOCK DIAGRAM	01 / C 15.02.08
PFF01	FEED DESULPHURISATION / SHIFT REACTOR	01 / C 15.02.08
PFF02	PROCESS GAS GENERAION AND WASTE HEAT RECOVERY	01 / C 15.02.08
PFF03	PROCESS GAS COOLING	01 / C 15.02.08
PFF04	H2 PURIFICATION	01 / C 15.02.08
PFF05	BFW PREPARATION	01 / C 15.02.08

DOC.-NO.	DOC.-TITLE	ISSUE / STATUS DATE

GENERAL REMARK:

DIMENSIONS AND PROCESS RELEVANT CALCULATIONS AND FIGURES ARE GUIDELINES FOR OFFER CACULATION.
THE FINAL VALUES HAVE TO BE DETERMINED BY SUCCESSFUL BIDDER DURING DETAIL ENGINEERING.

DATE	ORIGIN.	CHECKED	APPROVED	DESCRIPTION	STATUS	ISSUE
15.02.08	RE	SCHR	SE	CAPACITY 25.000 Nm 3	C	01

PROCESS FLOW DIAGRAM
HYDROGEN PLANT
LIST OF DOCUMENTS

PROJ.-NO. 2921A1C6
MILAZZO 2
DOC.-NO. PFA01
00211307.dgn

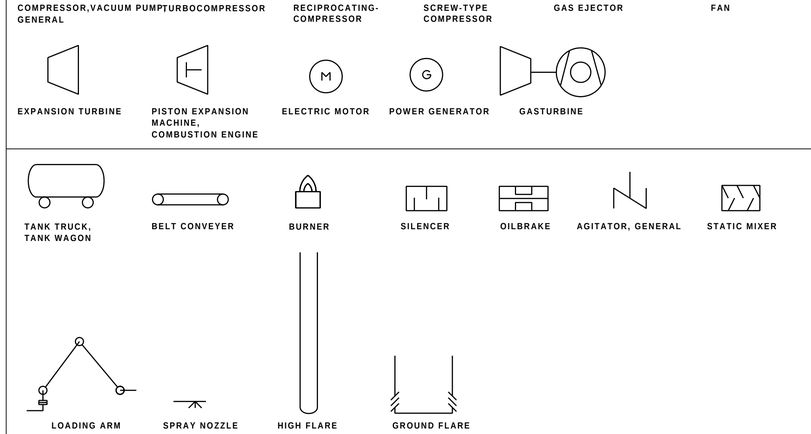
EQUIPMENT (DIN 28004)

DESIGNATION OF EQUIPMENT:

018P01A
- 018 — PROCESS UNIT
- P — IDENTIFICATION LETTER
- 01 — SEQUENTIAL NUMBER
- A — OPTIONAL SUFFIX

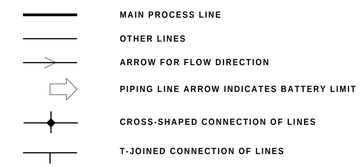
IDENTIFICATION LETTER:

C	VACUUM PUMP
D	VESSEL, SEPARATOR, MIXING VESSEL, TANK, KNOCK OUT DRUM, SILO
E	HEAT EXCHANGER, COOLING TOWER
EA	AIR BLOWER
F	FURNACE, WASTE HEAT BOILER, FLARE
G	GENERATOR
H	LIFTING DEVICE, CONVEYING SYSTEM, TRANSPORT SYSTEM
J	STEAM EJECTOR
K	COMPRESSOR
M	ELECTRIC MOTOR
P	PUMP (CENTRIFUGAL, RECIPROCATING, ROTARY)
R	REACTOR
S	FILTER
T	COLUMN
VR	BLOWER
W	SCALE
X	TURBINE
Y	PACKAGE
Z	CENTRIFUGE



MISCELLANEOUS

PIPING AND PIPING COMPONENTS (DIN 28004)



MATERIAL BALANCE POINT:

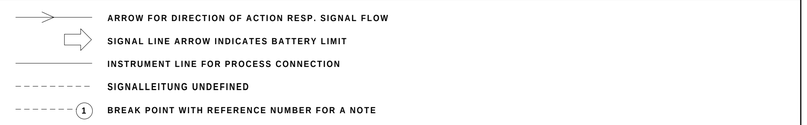
ABBREVIATIONS

ATM	=	ATMOSPHERE
BL	=	BATTERY LIMIT
BMS	=	BURNER MANAGEMENT SYSTEM
ESD	=	EMERGENCY SHUT DOWN
HP	=	HIGH PRESSURE
LP	=	LOW PRESSURE
MP	=	MEDIUM PRESSURE
PU	=	PACKAGE UNIT
S	=	SHELL
T	=	TUBE

INSTRUMENTATION (ISA S5.1)

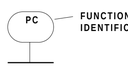
MEANINGS OF IDENTIFICATION LETTERS:

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	
D	USER'S CHOICE	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	



SYMBOL FOR LOGIC AND COMPUTER FUNCTIONS:

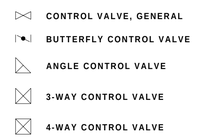
INSTRUMENT IDENTIFICATION:



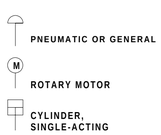
INSTRUMENT FUNCTION:

CH4	MEASURED COMPONENT (E.G. CH4)
C	CONDUCTIVITY
pH	pH-VALUE
H	CALORIFIC VALUE
WO	WOBBE INDEX
SPH	SET POINT HIGH
SPL	SET POINT LOW

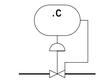
CONTROL VALVES:



ACTUATORS:

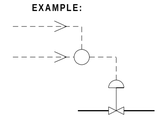


SELF-ACTUATING REGULATORS:



SYMBOL FOR LOGIC AND COMPUTER FUNCTIONS:

EXAMPLE:



15.02.08	RE	SCHR	SE	CAPACITY 25.000 Nm 3		C	01
DATE	ORIGIN.	CHECKED	APPROVED	DESCRIPTION		STATUS	ISSUE

LINDE AG - LINDE ENGINEERING DIVISION
82049 PULLACH

PROJ.-NO. 2921A1C6

MILAZZO 2

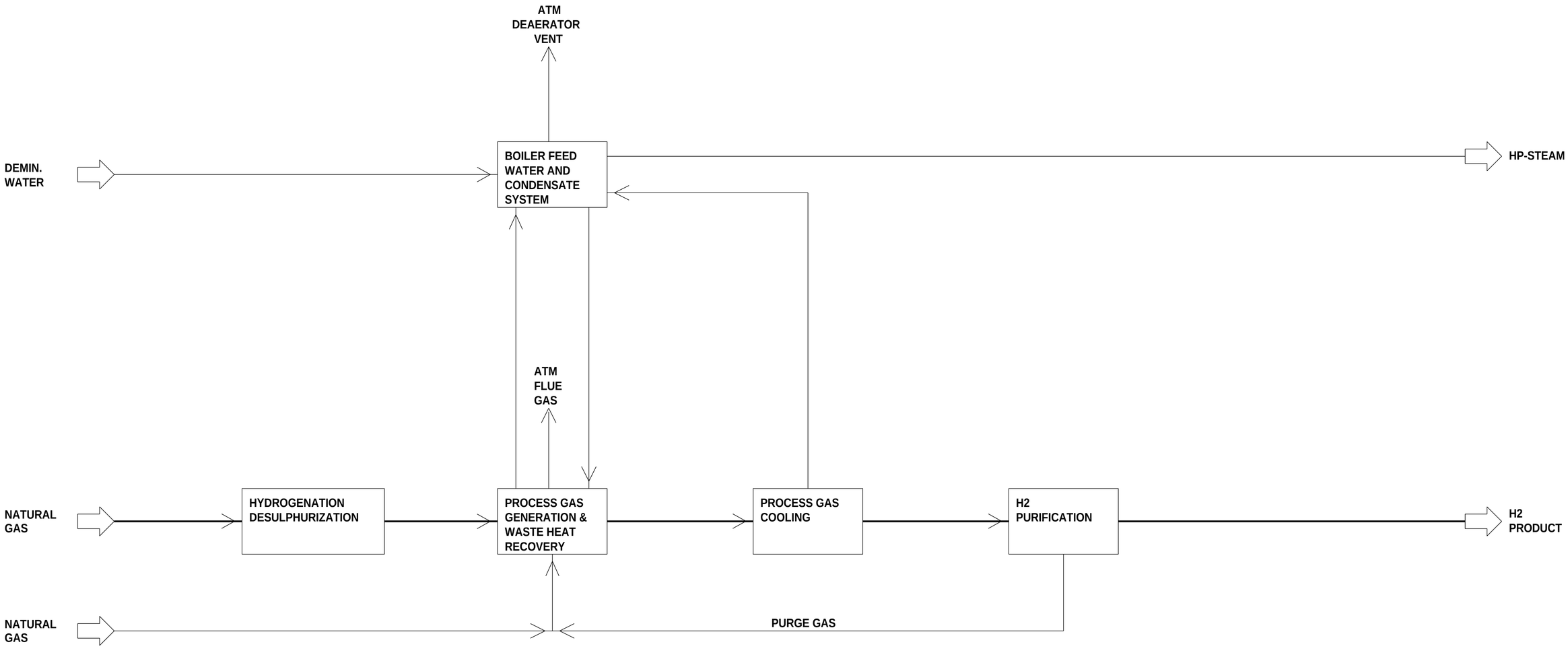
PROCESS FLOW DIAGRAM
HYDROGEN PLANT
SYMBOLS AND ABBREVIATIONS

DOC.-NO. PFA02

00211308.dgn

rfedina1-e.bor.K

18.02.2008



15.02.08	RE	SCHR	SE	CAPACITY 25.000 Nm ^{3}	C	01
DATE	ORIGIN.	CHECKED	APPROVED	DESCRIPTION	STATUS	ISSUE

LINDE AG - LINDE ENGINEERING DIVISION
82049 PULLACH

BLOCK DIAGRAM
HYDROGEN PLANT

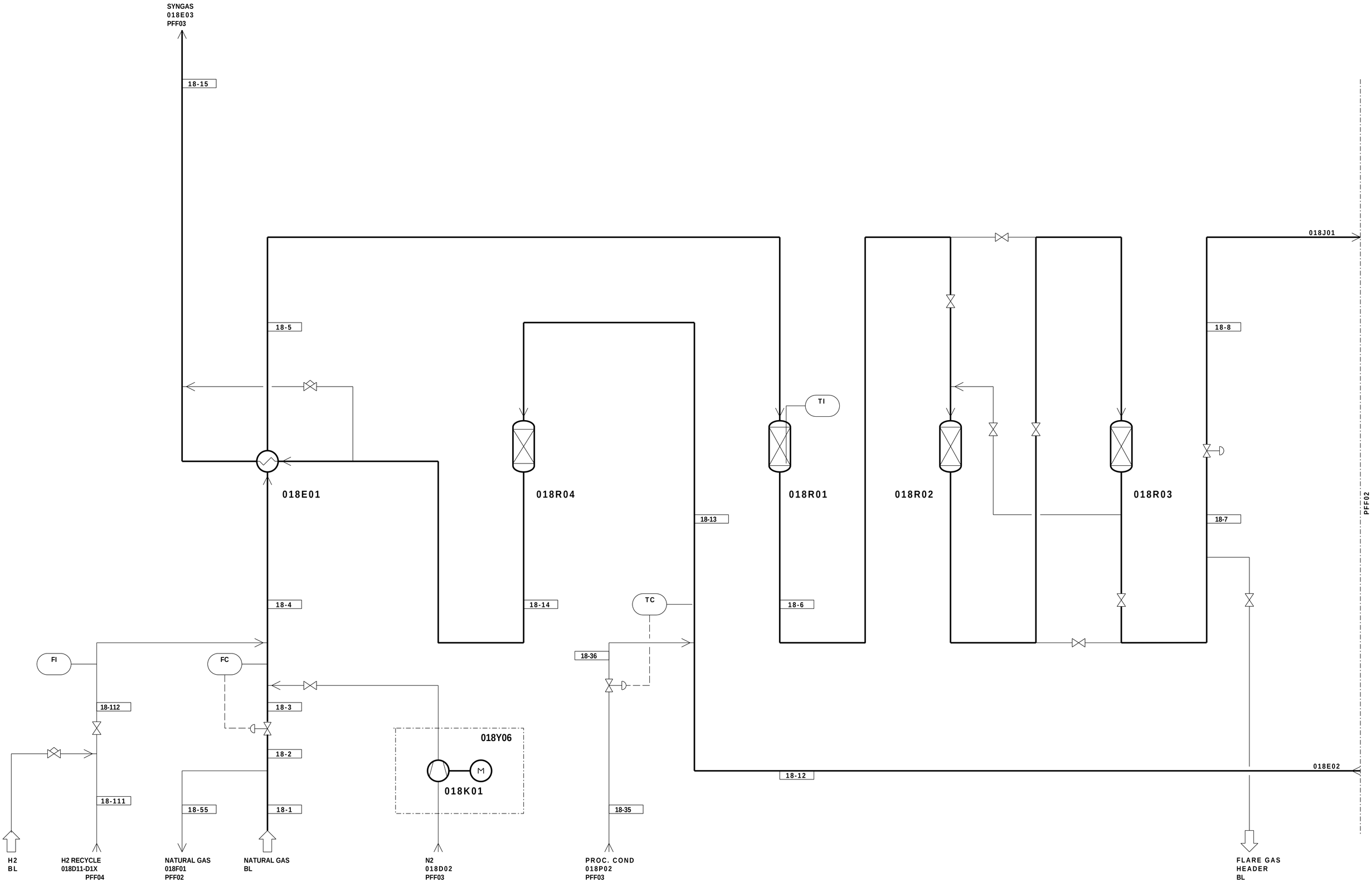
PROJ.-NO. 2921A1C6

MILAZZO 2

DOC.-NO. PFD01

00211309.dgn

rf=dina2-e.bor,K



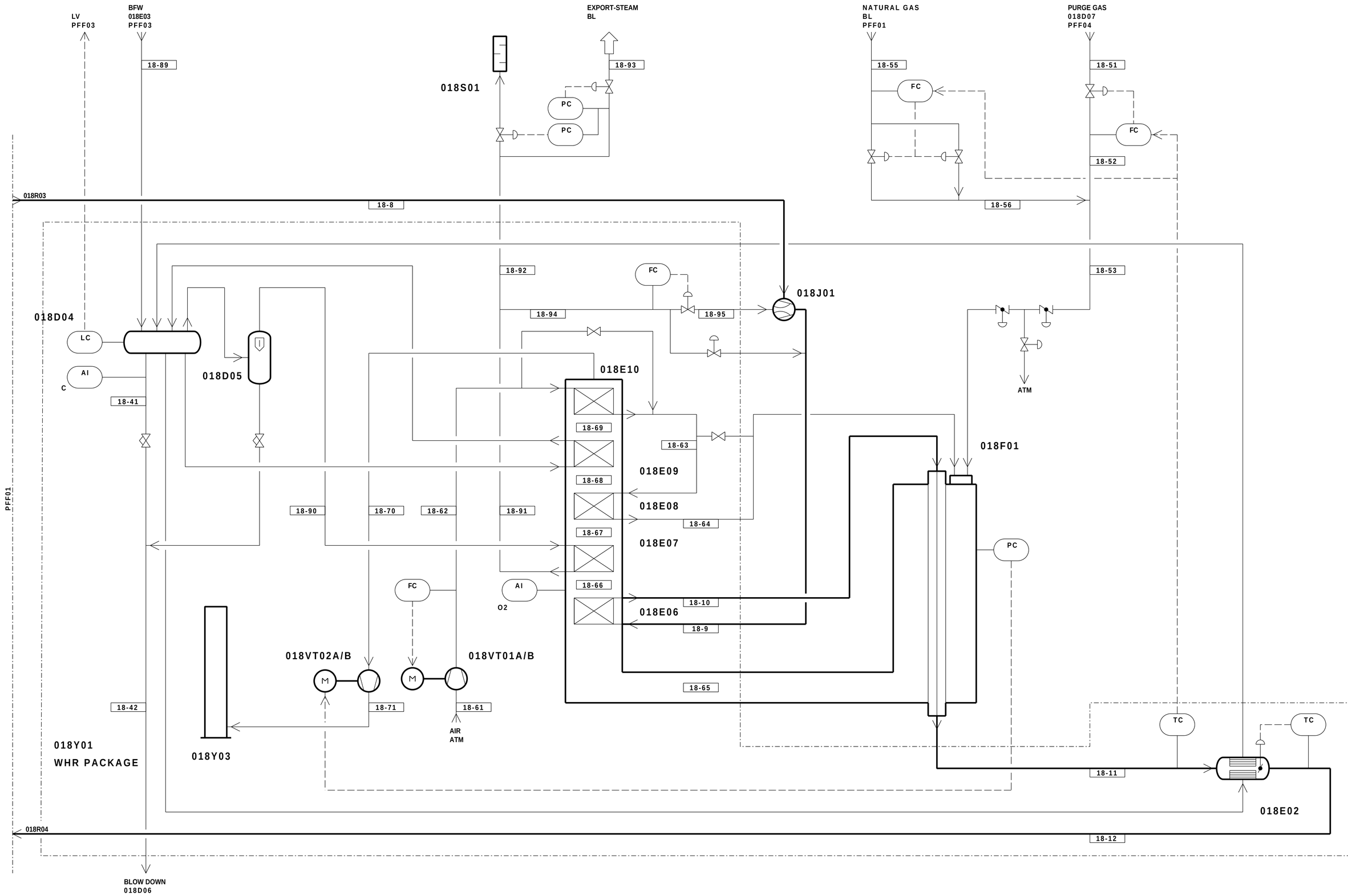
DATE	ORIGIN.	CHECKED	APPROVED	DESCRIPTION	STATUS	ISSUE
15.02.08	RE	SCHR	SE	CAPACITY 25.000 Nm ^{3}	C	01

LINDE AG - LINDE ENGINEERING DIVISION
82049 PULLACH

PROCESS FLOW DIAGRAM
HYDROGEN PLANT
PROCESS GAS GENERATION AND WASTE HEAT RECOVERY

PROJ.-NO. 2921A1C6
MILAZZO 2
DOC.-NO. PFF01
00211310.dgn

18.02.2008



DATE	ORIGIN.	CHECKED	APPROVED	DESCRIPTION	STATUS	ISSUE
15.02.08	RE	SCHR	SE	CAPACITY 25.000 Nm 3	C	01

LINDE AG - LINDE ENGINEERING DIVISION
82049 PULLACH

PROJ.-NO. 2921A1C6

MILAZZO 2

PROCESS FLOW DIAGRAM

HYDROGEN PLANT

PROCESS GAS GENERATION AND WASTE HEAT RECOVERY

DOC.-NO. PFF02

00211311.dgn

rf=dina1-e.borK

18.02.2008

SYNGAS
018E01
PFF01

BFW
018D04
PFF02

DEMIN WATER
018D03
PFF05

FLARE GAS
HEADER
BL

18-15

18-89

18-84

TC

HC

018E03A/B

018E04

18-16

018EA01

M

TC

AI

CH4

PC

FC

018D11-018D1X

18-22

PFF04

18-19

018E05

18-17

18-18

18-20

18-21

LC

018D01

018D02

18-31

18-32

18-37

18-83

18-34

18-38

18-88

18-82

M

018P02A/B

PCV

START UP LINE

18-87

18-81

18-35

18-33

18-74

18-73

HC

LC
018D04
PFF02

BFW
018P01.1/2
PFF05

DEMIN WATER
BL

LC
018D03
PFF05

PROC.COND.
018R04
PFF01

PROC.COND.
018D03
PFF05

CW
BL

CW
BL

N2
018K01
PFF01

N2
BL

NOTES :

DATE	ORIGIN.	CHECKED	APPROVED	DESCRIPTION	STATUS	ISSUE
15.02.08	RE	SCHR	SE	CAPACITY 25.000 Nm 3	C	01

LINDE AG - LINDE ENGINEERING DIVISION
82049 PULLACH

PROJ.-NO. 2921A1C6

MILAZZO 2

PROCESS FLOW DIAGRAM

HYDROGEN PLANT

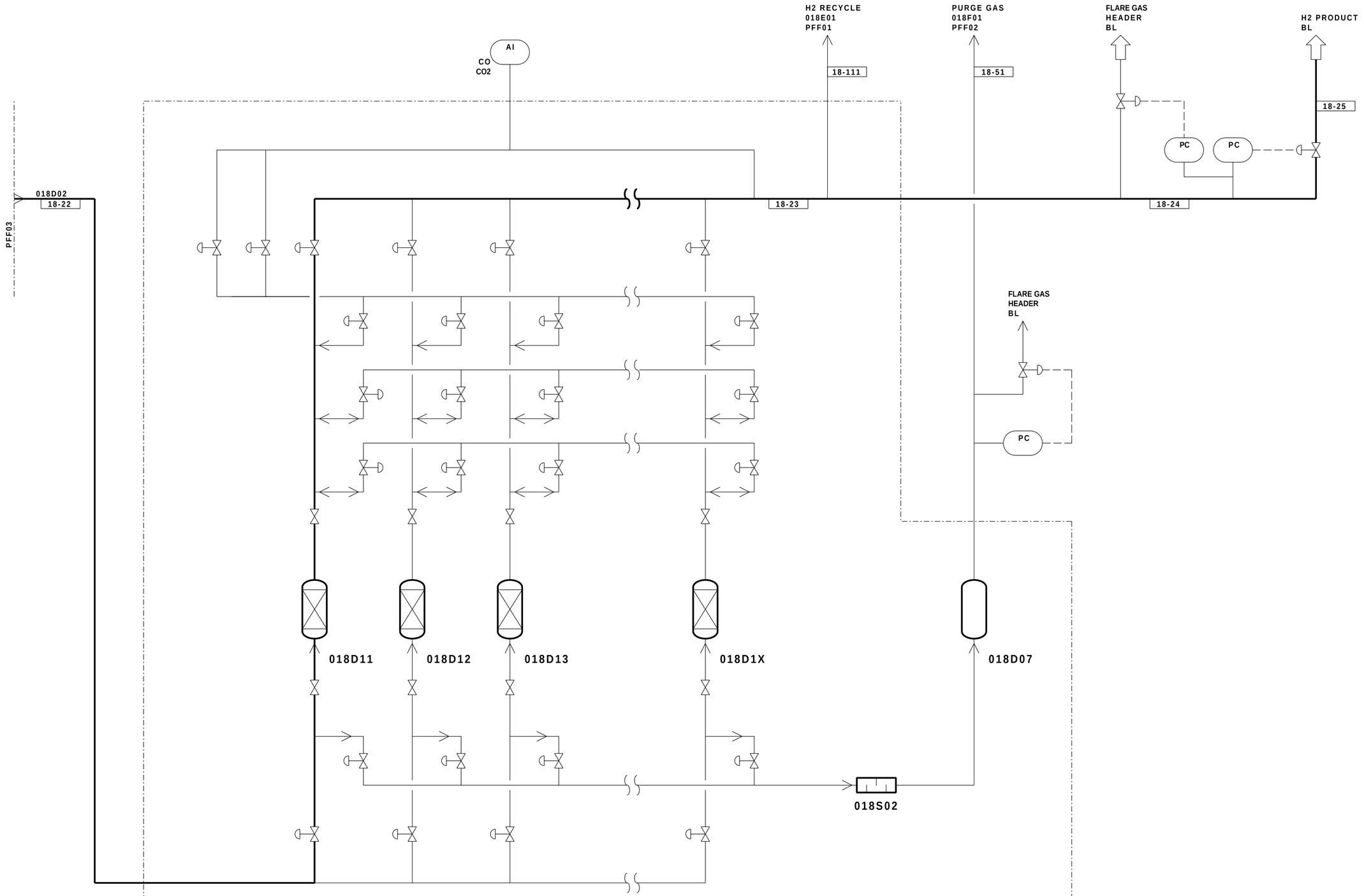
PROCESS GAS COOLING

DOC.-NO. PFF03

00211312.dgn

rfedina1-e:bor.K

18.02.2008



DATE	ORIGIN.	CHECKED	APPROVED	DESCRIPTION	STATUS	ISSUE
15.02.08	RE	SCHR	SE	CAPACITY 25.000 Nm 3	C	01

LINDE AG - LINDE ENGINEERING DIVISION
82049 PULLACH

PROCESS FLOW DIAGRAM
HYDROGEN PLANT
H2 PURIFICATION

PROJ.-NO. 2421A169
MILAZZO 2
DOC.-NO. PFF04
00211313.dgn

rf=dina1-e.bor,K

18.02.2008

BLOW DOWN
018D04
PFF02

18-42

LP-STEAM
BL

18-47

DEMIN. WATER
018E04
PFF03

18-84

PROC.COND.
018D01
PFF03

18-33

ATM

018S03

ATM

PC

PC

18-48

18-46

18-45

18-49

18-86

CHEMICAL DOSING

PC

LC

018D06

018D03

LC

18-43

18-85

AI

PH

M

M

018P01A/B

18-44

18-87

018Y04 PACKAGE UNIT

BLOW DOWN
BL

REC. BFW
018E03
PFF03

LV
DEMIN WATER
PFF03

15.02.08	RE	SCHR	SE	CAPACITY 25.000 Nm 3	C	01
DATE	ORIGIN.	CHECKED	APPROVED	DESCRIPTION	STATUS	ISSUE

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82049 PULLACH

PROCESS FLOW DIAGRAM
HYDROGEN PLANT
BFW PREPARATION

PROJ.-NO. 2921A1C6

MILAZZO 2

DOC.-NO. PFF05

00211314.dgn

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