200 years of industrial progress
200 ans de progrès industriel

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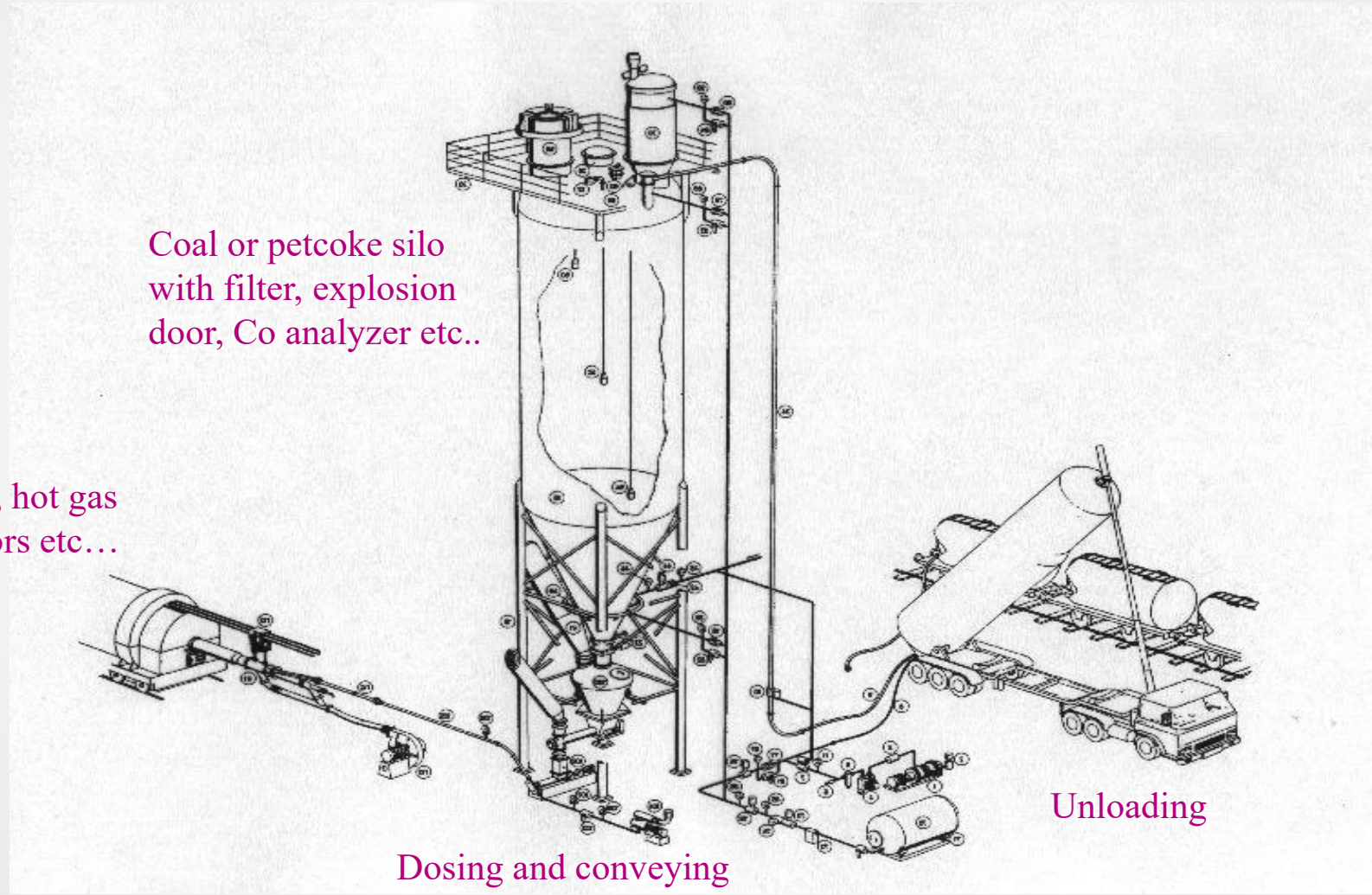
Pillard Fuel Handling System

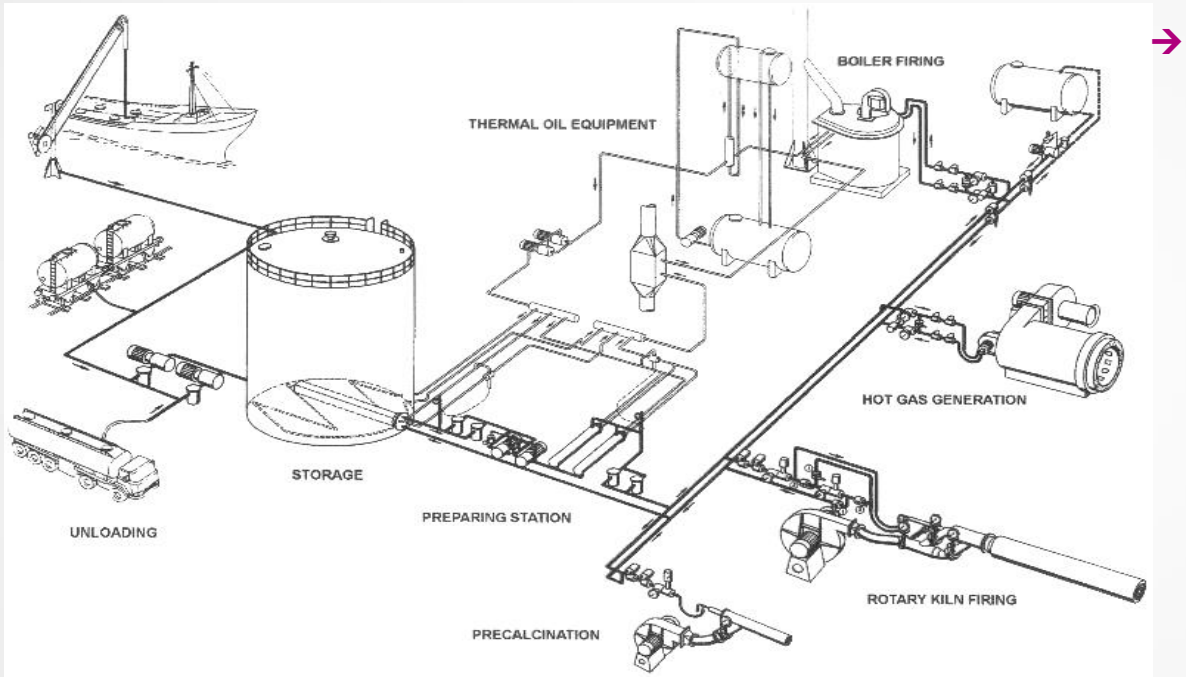
Pillard Fuel Handling System

Pulverized Fuel General Overview



Pillard Fuel Handling System

Heavy Oil General Overview



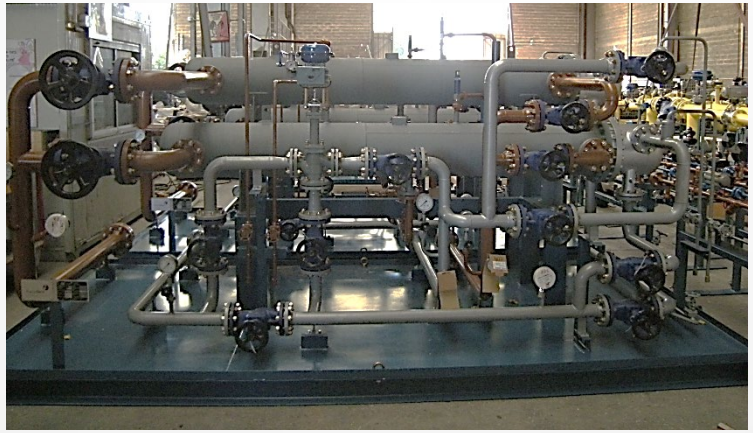
- Complete pre-mounted equipment from unloading to the burners :
  - Unloading station
  - Storage drawings
  - Circulating pumps station
  - High pressure pump station
  - Heating sets
  - Control and safety valve trains

Pillard Fuel Handling System

Example of Heavy Oil Equipment

High Pressure Pumping Set

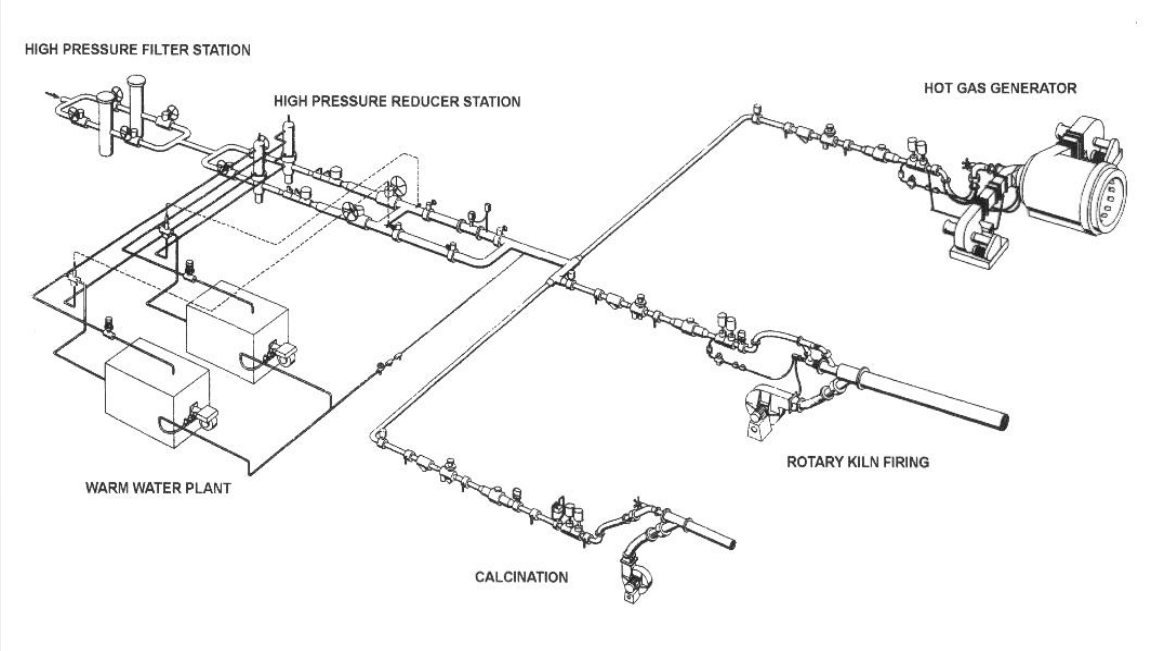
Flow control and shut off valve train



Steam Heating Set

Pillard Fuel Handling System

Natural Gas General Overview



- Complete pre-mounted equipment from pressure reducing station to the burners :
  - Filtering station
  - Heating sets
  - Pressure reducing station
  - Flow measuring valve train
  - Control and safety valve trains

Pillard Fuel Handling System

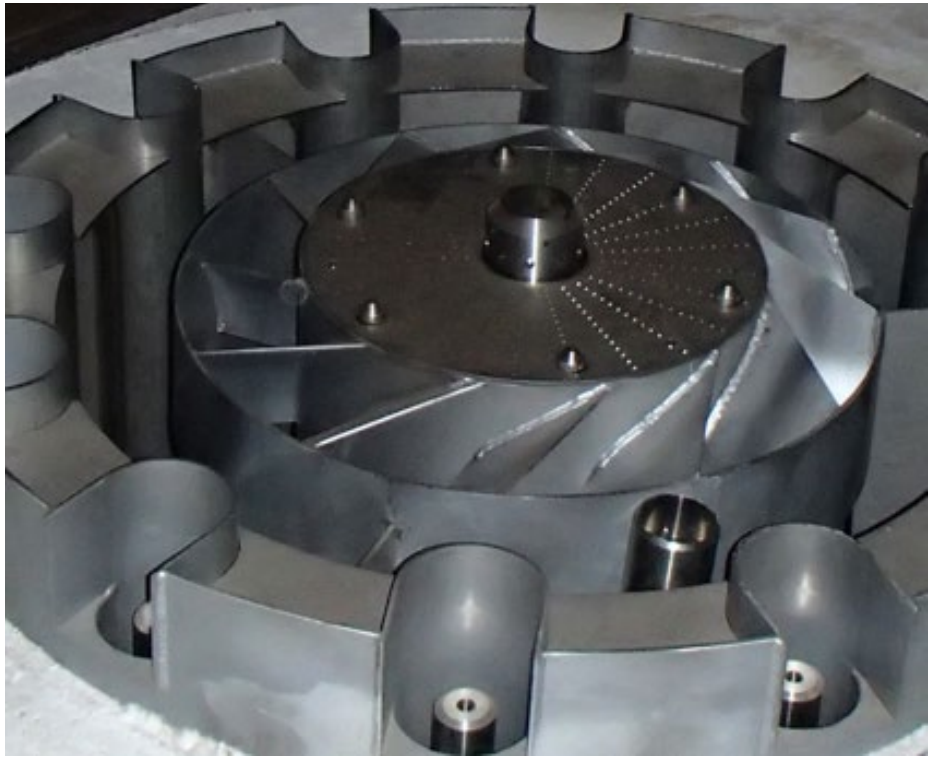
Example of Natural Gas Equipment

Filtering Station

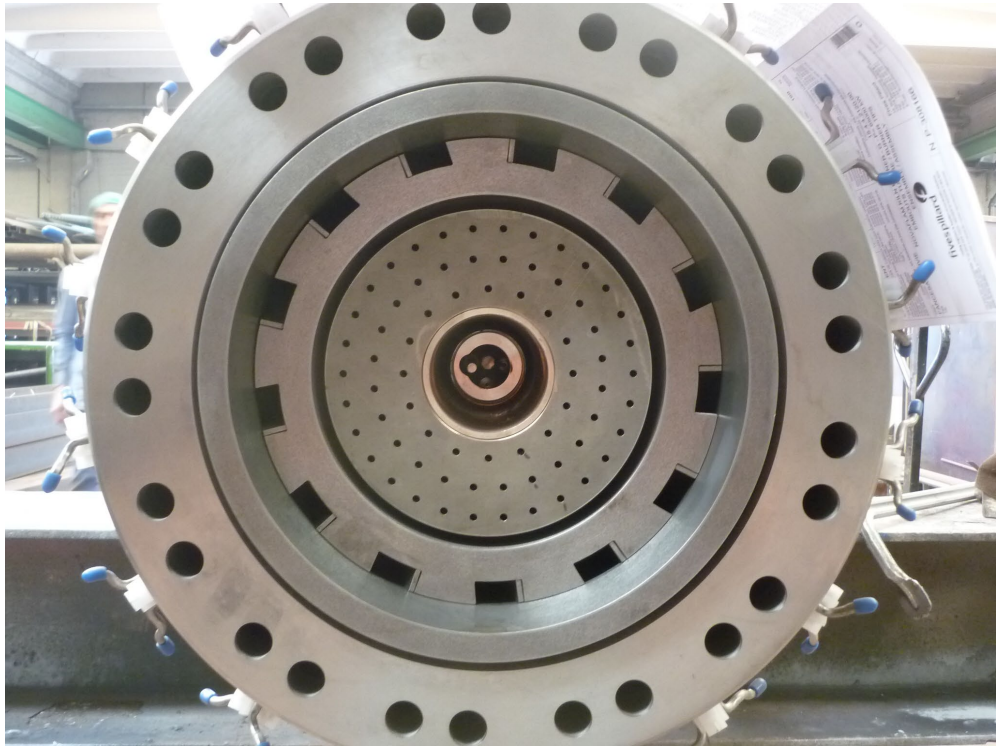
Flow control and shut off valve train

Pressure Reducing Station

EXAMPLE OF GAS BURNERS



Gas gun on existing burner



Gas kiln burner

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NATURAL GAS SYSTEM FOR BURNERS

Introduction to natural gas system design for cement plants

Date : March 8th, 2023

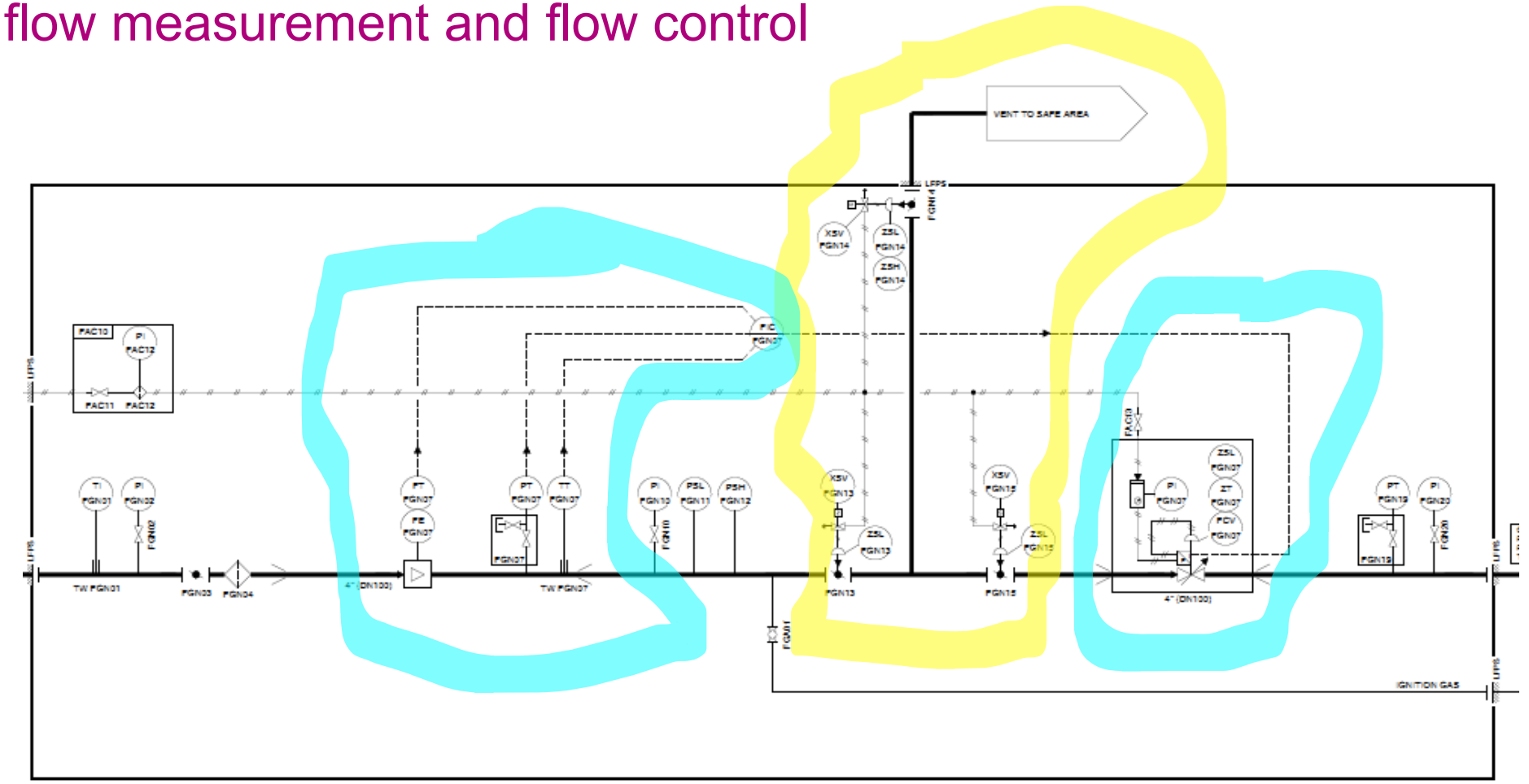
Prepared by H.Billig

VALVE TRAINS FOR BURNERS

2 functions:

Safety : shut off valves and vent

Control: flow measurement and flow control



VALVE TRAINS FOR BURNERS

BURNER MANAGEMENT SYSTEM

BMS AND LCP

Fives can supply the electrical cabinet for burner operation with all components for sequences and alarms, for gas flow control, visualization and supervision.

It can be installed in the electrical control room on close to the burner in a dedicated climatised shelter

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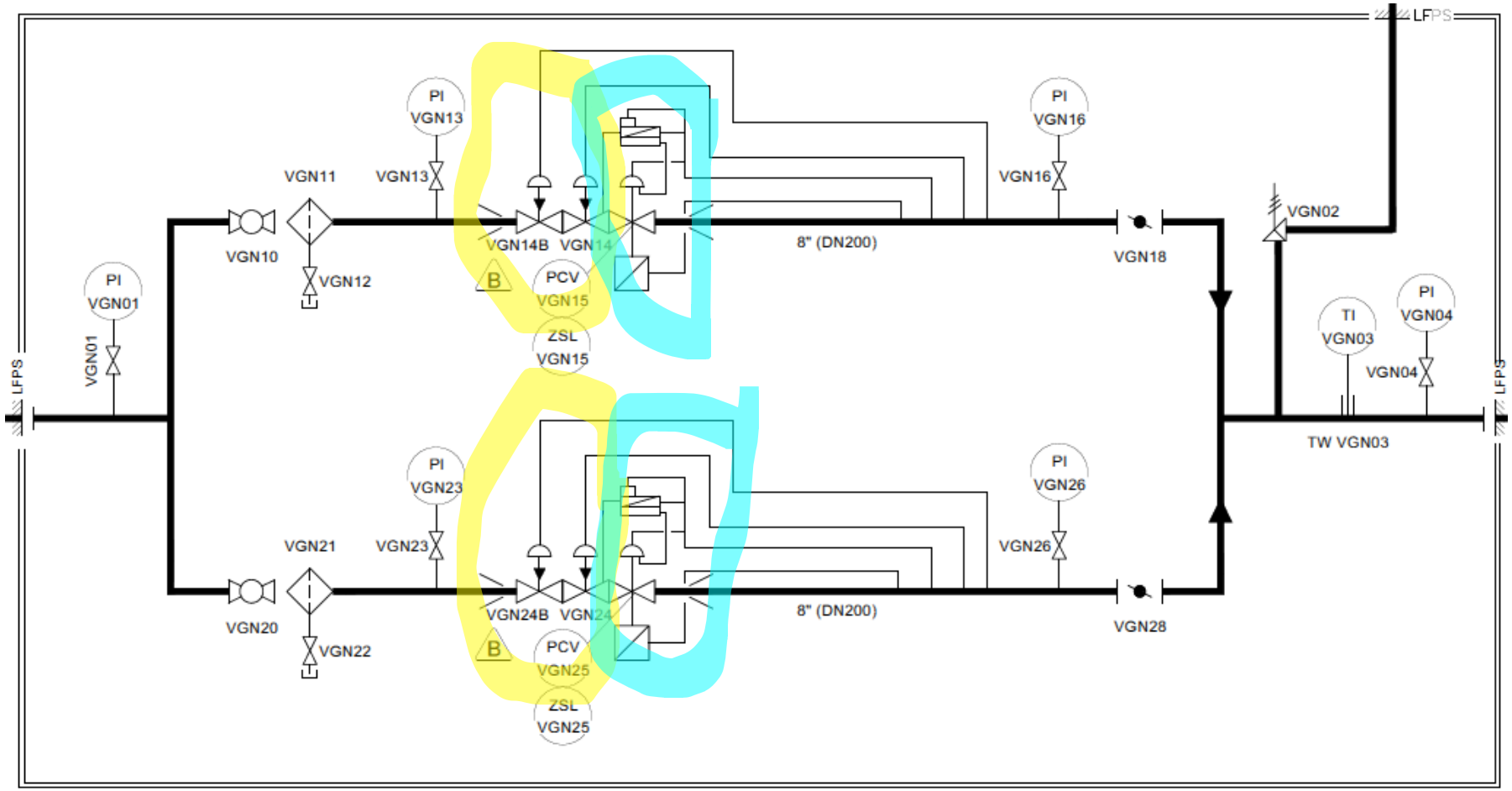
PROCESS
TECHNOLOGIES

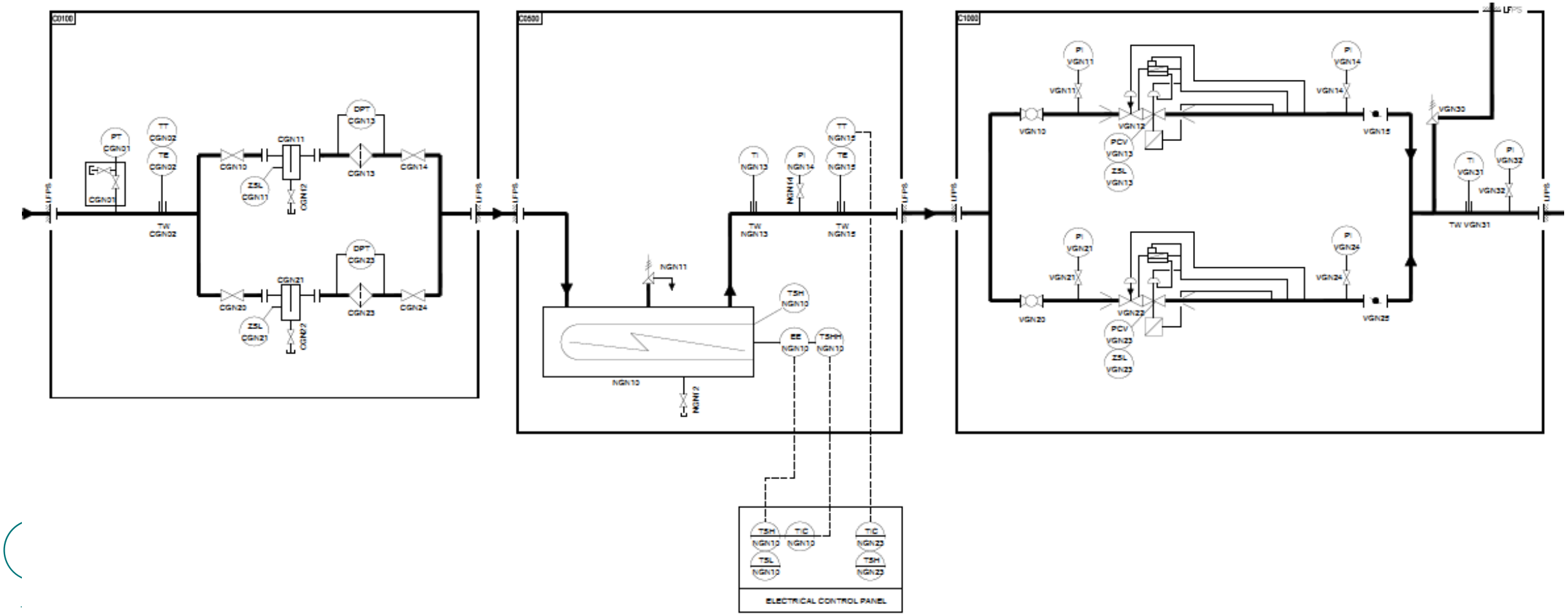
GAS PRESSURE REDUCING STATION (BASIC)

2 FUNCTIONS:
- SAFETY : SHUT OFF VALVES
- PRESSURE REDUCING : PRESSURE REDUCER VALVE



GAS PRESSURE REDUCING STATION

GAS PRESSURE REDUCING STATION
WITH EXTRA FILTRATION AND HEATER



NECESSARY INFORMATION FOR A SUCESSFUL DESIGN

GAS COMPOSITION

Sampling Conditions

Component		Mole %	NET Heat Value (BTU/CF)	GAS Specific Gravity PURE
N	Nitrogen	1.20	0	0.9672
CO_2	Carbon Dioxide	0.971	0	1.5195
H_2S	Hydrogen Sulfide	-	586.8	1.1767
C_1	Methane	81.733	909.4	0.5539
C_2	Ethane	13.613	1618.9	1.0382
C_3	Propane	2.646	2315.0	1.5225
iC_4	i-Butane	0.162	3000.6	2.0068
nC_4	n-Butane	0.154	3011.0	2.0068
C_5	Neo-Pentane	-	3682.9	2.4911
iC_5	i-Pentane	0.018	3699.1	2.4911
nC_5	n-Pentane	0.004	3706.9	2.4911
C_6	Hexanes		4394.9	2.9754
C_7	Heptanes		5091.0	3.4597
C_8	Octanes		5775.0	3.9440
C_9	Nonanes		6493.2	4.4283
C_{10}	Decanes +		7189.8	4.9126
Total		100.00		

Calculated Whole Gas Properties

Real Relative Density (Air=1 at 14.696 psia and 60°F) (Specific Gravity)	0.6648
Molecular Weight (g / mol)	19.255
DENSITY LBS/SCF	0.0506
Calculated Net Calorific Value, (B.T.U./CU.ft) (LHV)	1030.6894
Hydrogen Sulfide ppmv	-
Water content mg/l	-

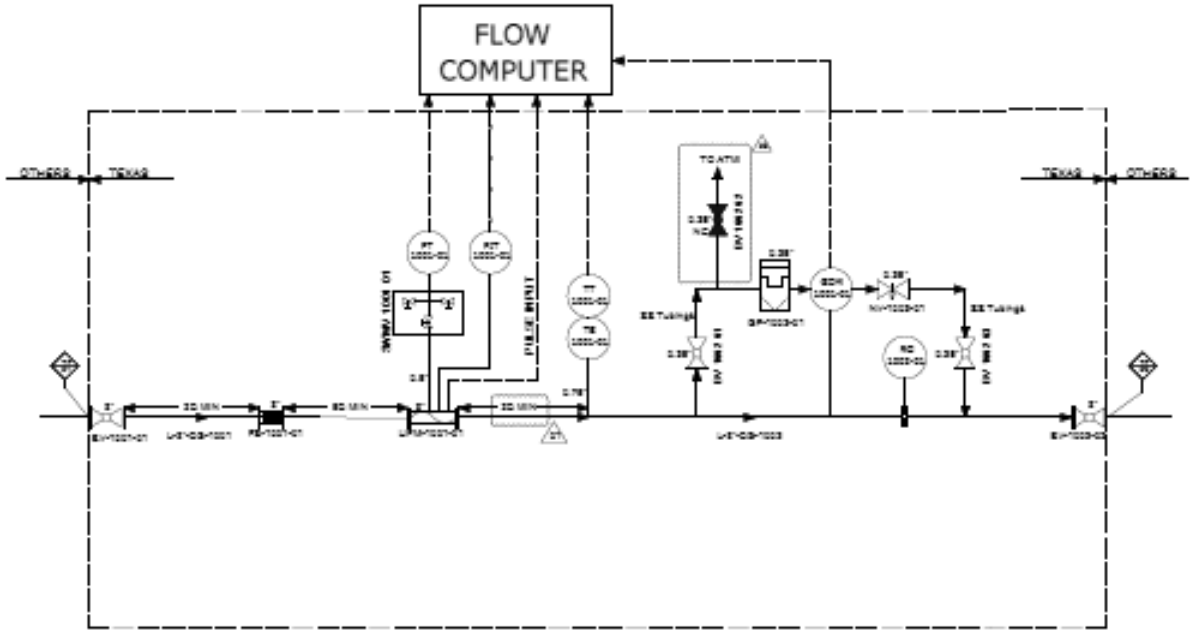
What is important :

- Dry LHV,
- Water contents,
- H_2S contents
- Nitrogen contents,
- Solid contents (particles)

PROCESS TECHNOLOGIES

NECESSARY INFORMATION FOR A SUCESSFUL DESIGN

TEMPERATURE AND PRESSURE AT THE GPRS INLET



PROCESS PARAMETERS			
SERVICE	DRY GAS	OUTLET DESIGN PRESSURE	100 Barg
MAXIMUM OUTLET PRESSURE	80 Barg	INLET DESIGN PRESSURE	100 Barg
FLOW RATE (SM³/HR) (min/max)	2690 / 45500	DESIGN TEMPERATURE (min/max)	-10°C/50°C
OPERATING PRESSURE (min/max)	20/80 barg		
OPERATING TEMPERATURE (min/max)	10°C/50°C		
INLET RATING	6", #600		
OUTLET RATING	6", #600		

What is important:

- Inlet minimal temperature
- Inlet maximal pressure
- Design temperature
- Design pressure

PROCESS
TECHNOLOGIES

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les Baronnies - Batiment A - ZAC du Château Gombert

3 rue Marc Donadille - 13013 Marseille - France

www.fivesgroup.com