

DRYER SYSTEM FOR NON-FERROUS MATERIAL HORMESA 2.012



THE COMPANY I



COMPANY	HORNOS Y METALES S.A.
FOUNDED	1987 BY MR. ANGEL AGUIRRE PASTOR
TURNOVER	8 MILLION EUROS IN 2011 30% SALES INCREASE SINCE 2009
MAJOR COMPLETED PROJECT	1,550.000 EUROS
EMPLOYEES	35 DIRECT AND INDIRECT 10 ENGINEERS AND QUALIFIED PERSONNEL
SURFACE AREA	1.200 M ²
OFFICES AND SUBSIDIARIES	HORNOS Y METALES S.A. (SPAIN) HORMESA AMÉRICA (COLOMBIA) HORMESA MÉXICO (MEXICO) HORMESA THAILAND (THAILAND) JUNG-HORMESA (BRAZIL) LABORATORY (SCOTLAND)



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SALES IN 36 COUNTRIES, 4 CONTINENTS , OVER 350 SATISFIED CUSTOMERS



THE COMPANY II



SINCE HORMESA WAS FOUNDED IN 1987 THE COMPANY HAS SPECIALIZED IN EQUIPMENT, MATERIALS AND CUSTOM MADE SOLUTIONS FOR MELTING NON FERROUS METALS, COPPER, ALUMINIUM, ZINC AND OTHER METAL ALLOYS



A CUSTOMER ORIENTATED APPROACH AND A CONTINUOUS TECHNOLOGICAL DEVELOPMENT ENABLE US TO PROVIDE THE FOUNDRY MEN HANDS-ON SOLUTIONS FOR THEIR INDUSTRIAL PROCESSES



OFFICES AND REPRESENTATIONS



HEAD OFFICE

HORNOS Y METALES S.A.

BRANCHES

HORMESA AMÉRICA

HORMESA MÉXICO

HORMESA THAILAND

JUNG-HORMESA

CONTICAST

REPRESENTATIONS

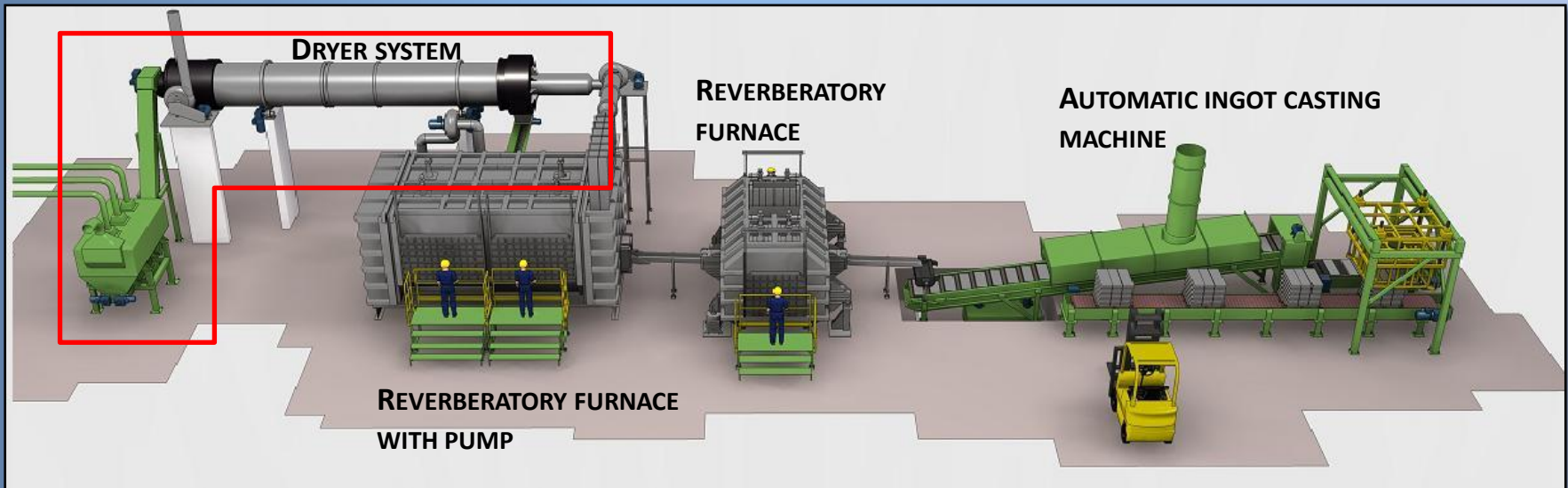
ARGENTINA, CHILE, PERU,
USA, CUBA, ITALY, FRANCE,
INDIA, MIDDLE EAST,
EGYPT, TURKEY, HUNGARY,
PORTUGAL, UKRANIA.



OVERVIEW



TECHNOLOGY BY SIB



DRYER SYSTEM FOR NON-FERROUS MATERIAL WITH ORGANIC CONTENT

ESPECIAL FOR ALUMINUM AND NON-FERROUS CHIPS OR MATERIAL WITH DIMENSIONS NOT HIGHER THAN 60MM X 60MM X 60MM.



PERSPECTIVE OF THE MELTING FURNACE WITH 2TON/H AND DRYER WITH POST-BURNER

CHARACTERISTICS



- ❖ HOPPER WITH SCREW TRANSPORTER BELT/ VIBRATING SYSTEM FOR PICKING UP OF TREATED MATERIAL
- ❖ CHIPS CHARGER
- ❖ DRYER CYLINDER
- ❖ DISCHARGE CHAMBER
- ❖ DISCHARGE VALVE WITH DOUBLE CLAPET
- ❖ ENERGY CHAMBER
- ❖ ASPIRATION GROUP AND RECIRCULATION OF GAS DERIVATES OF THE RECUPERATOR
- ❖ COOLER/HEAT RECUPERATOR
- ❖ POST-COMBUSTION SYSTEM
- ❖ DISCHARGE BELT
- ❖ GENERAL CONTROL PANEL
- ❖ ELECTRIC DEVICES, CONTROL WITH PLC

CHIPS CHARGING SYSTEM



WORKING OF THE SYSTEM I



WORKING PROCESS

PREPARATION AND TRANSPORT

- THE MATERIAL GOES INTO A VIBRATING HOPPER, CAPACITY 4 – 10 MC WITH MIN/MAX LEVEL PROXIMITY CONTROL DEVICE
- WITH CONTINUOUS DISCHARGE THE MATERIAL FALLS ON A RUBBER CONVEYOR BELT THAT RUNS UNDER A MAGNETIC CONVEYOR BELT IN ORDER TO SELECT AND REMOVE POSSIBLE FERROUS PARTS AMONG THE MATERIAL.
- THE RUBBER BELT IS SUPPLIED WITH A MAGNETIC DRUM FOR A SECOND SELECTION OF POSSIBLE FERROUS MATERIAL,
- THE MATERIAL IS CONVOYED INTO A ROTARY SCREENER – HEXAGONAL SECTION – EQUIPPED WITH DIFFERENT SIZED SIEVES
- THE SCREENED MATERIAL FALLS ON A SECOND CONVEYOR BELT
- THE RESIDUAL LARGER PARTS OF MATERIAL PASS THROUGH THE LARGER SIEVE OF THE ROTARY SCREENER AND ARE DISCHARGED INTO A SHREDDER
- THE SHREDDER CRASHES THE PARTS OF MATERIAL WITH DIMENSION HIGHER THEN THE MAX SUGGESTED DIMENSION
- AFTER THE SHREDDER, THE MATERIAL GOES ON THE SECOND CONVEYOR BELT THAT CONVOYS ALL THE COLLECTED MATERIAL INTO A SCREW CONVEYOR
- SCREW CONVEYOR IS MANUFACTURED WITH A COLLECTING TANK, LEVEL CONTROL MIN/MAX

WORKING OF THE SYSTEM II



DRYING PROCESS

- SCREW CONVEYOR PUSHES THE MATERIAL INSIDE THE DRYING CYLINDER WITH A CONTINUOUS MOVEMENT
- INSIDE THE DRYING CYLINDER THE MATERIAL PROCEEDS PUSHED FORWARD BY SPECIAL “WINGS” THAT ALSO ACT TO MAKE AN OPTIMAL MIXING OF THE MATERIAL
- AGAINST THE DIRECTION OF THE MATERIAL, THE CYLINDER IS CROSSED BY THE COMBUSTION GAS COMING FROM AN ENERGY CHAMBER WITH CONTROLLED OXYGEN VALUE
- THE COMBUSTION GAS, RUNNING INSIDE THE CYLINDER, GIVES THERMIC ENERGY TO THE MATERIAL GIVES AWAY ORGANIC PRODUCTS AND WATER BY MEANS OF PYROLYSIS AND EVAPORATION PROCESS
- AT THE EXIT OF THE CYLINDER THE DRIED MATERIAL IS DISCHARGED THROUGH SOME DISCHARGE CELLS THAT PREVENT FROM THE ENVIRONMENTAL AIR INLET INTO THE CYLINDER.
- THE MATERIAL DISCHARGED IS CONVOYED ON A THIRD INSULATED CONVEYOR BELT AND THEN INTO A SPECIAL INSULATED PIPE CONVEYOR THAT BRINGS THE MATERIAL (STILL AT A T° OF 180-200°C) INTO THE SPECIAL MELTING FURNACE
- MELTING FURNACE MELTS THE MATERIAL AT A T° OF 700/750°C



WORKING OF THE SYSTEM III



THERMICAL DESTRUCTION OF DANGEROUS GAS

- THE GAS OF COMBUSTION, AFTER THE PYROLYSIS PROCESS OF ORGANIC PRODUCTS INSIDE THE CYLINDER, EXIT FROM THE CYLINDER AND GO INTO AN AFTER-BURNING CHAMBER
- INSIDE THE AFTER-BURNING CHAMBER THE GAS ARE THERMO-DESTROYED AT A T° OF 800/1200°C – WITH A PERMANENCE OF 2" AT LEAST.
- THE CHAMBER OF AFTER-BURNING AND THERMO-DESTROY IS EQUIPPED WITH A SPECIAL BURNER TYPE "W" WITH TWO HEADS OF COMBUSTION THAT MAINTAINS THE SET TEMPERATURE FOR THE THERMAL- DESTRUCTION PROCESS
- THE PYROLISYS GAS INSIDE THE AFTER-BURNER SYSTEM CONTAINS POTENTIAL ENERGY, TO DESTROY THESE GAS IS NECESSARY AN OXIDATION WITH BURNING AIR; THE SECOND HEAD OF COMBUSTION "W" OF THE BURNER DEVELOPS THE BURNING AIR NECESSARY TO THE OXIDATION. IN THIS PHASE THE BURNER DECREASES THE POWER OF THE FLAME PROPORTIONALLY WITH THE INCREASING OF THE ENERGY CONTAINED IN THE PYROLYSIS GAS COMING FROM THE DRIER PROCESS OF THE MATERIAL INSIDE THE CYLINDER :

- + ORGANIC PYROLYZED PRODUCTS ENTER INSIDE THE AFTER-BURNING CHAMBER
- COMSUMPTION OF PRIMARY ENERGY (GAS) FROM THE BURNER WITH DOUBLE AIR

WORKING OF THE SYSTEM IV



ENERGY RECOVER

FROM THE CHAMBERS OF AFTER-BURNING EXIT THE OVER-HEATED GASES (800/900°C) THAT CONTAIN THERMICAL ENERGY : THESE GASES ARE CONVOYED INTO AN HEAT COOLER/EXCHANGER AND THERMICAL ENERGY RECOVERER THAT DECREASES THE TEMPERATURE TILL 400/500°C THROUGH HEAT EXCHANGE TO THE AIR NECESSARY FOR THE AFTER-BURNING PROCESS.

THE OVER-HEATED GASES THAT EXIT FROM THE RECOVERER ARE ASPIRATED FROM AN INTAKER/VENTILATOR THAT DEVELOPS THE CORRECT DEPRESSURE INSIDE THE CYLINDER FOR THE EXTRACTION OF ALL THE PROCESS GAS.

RE-UTILIZATION OF RESIDUAL ENERGY

THE PROCESS GASES EXIT FROM THE INTAKER/VENTILATOR UNDER PRESSURE AND ARE PARTIALLY CONVOYED INTO THE ATMOSPHERE (OR PROCESS FILTERS) AND PARTIALLY INTO THE ENERGY CHAMBER WHERE IT DEVELOPS THERMICAL ENERGY NECESSARY TO THE DRYING PROCESS OF MATERIAL AND PYROLYSIS PROCESS OF ORGANIC CONTENT (POINT 3) THESE GASES AT 400/500°C BRING THERMICAL ENERGY SO THAT THE BURNER OF THE ENERGY CHAMBER DECREASES IN PROPORIAL WAY THE ENERGETIC CONSUMPTION.

WORKING OF THE SYSTEM V



THIS SYSTEM REALIZES AN AUTHENTIC **CO-GENERATION OF THERMICAL ENERGY** THAT PERMITS – IN SOME CONDITIONS – TO THE SYSTEM TO RUN WITHOUT PRIMARY ENERGY CONSUMPTION (GAS)

WHY INVEST IN DRYING AND MELTING TECHNOLOGY

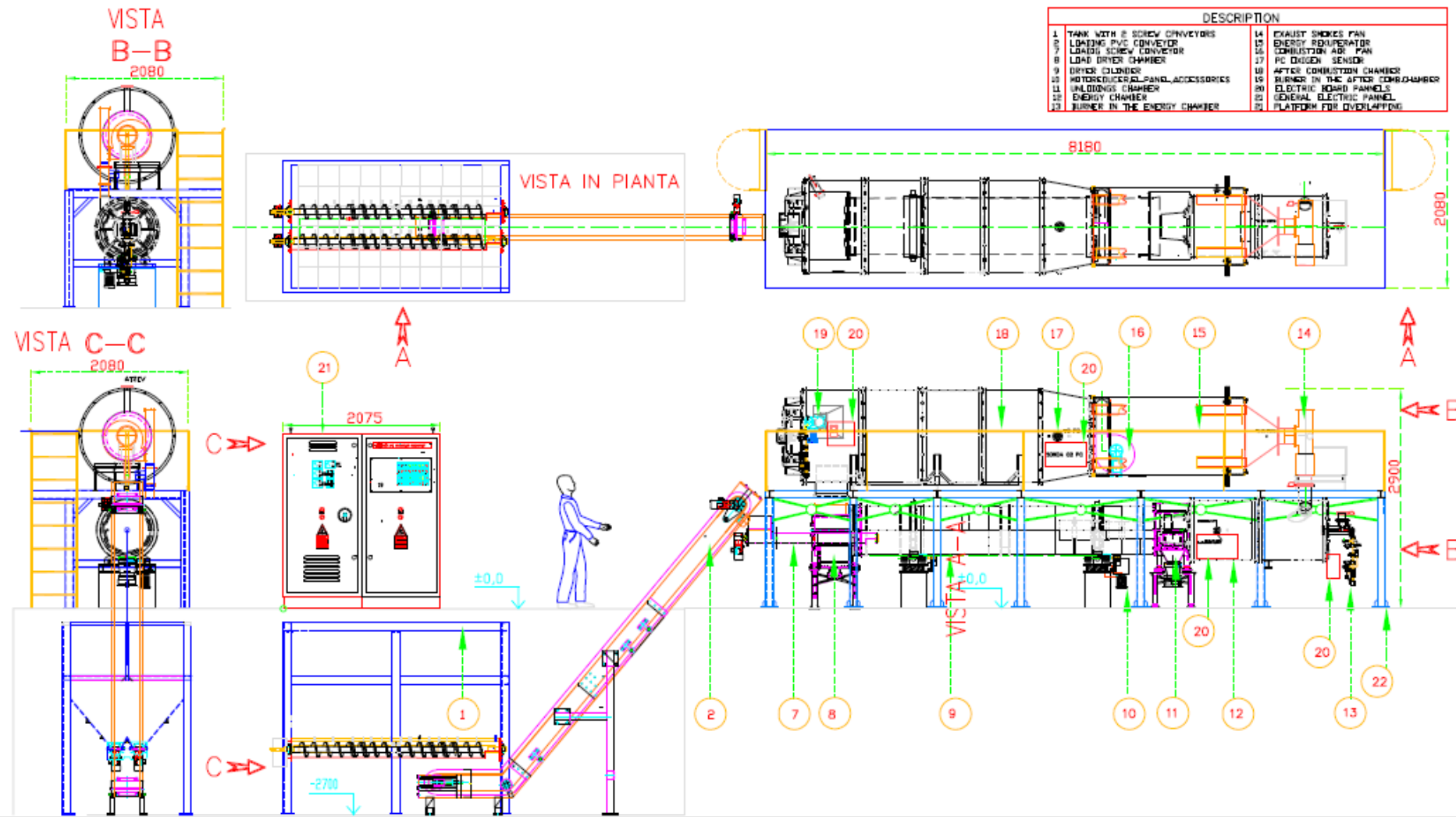
WHEN NO-FERROUS MATERIAL ARE CHARGED IN A MELTING FURNACE WITHOUT A CORRECT DRYING TREATMENT, THAT REMOVES H₂O & CUTTING OILS & ORGANIC MATERIAL, THERE IS A DEFLAGRATION DANGER CAUSED BY THE H₂O CONTENT AND IT IS DIFFICULT TO SUBMERGE THE MATERIAL DIRECTLY UNDER THE MOLTEN BATH INSIDE THE MELTING FURNACE.

DURING THE MELTING PROCESS THE MATERIAL NOT DRIED DEVELOPS SMOKES FULL OF CARBON RESIDUAL AND DEVELOPS DROSS AND MELTING LOSS EVEN TILL 15/20% AND SO LOSS OF MATERIAL NOT RE-USABLE.

USING WITH HORMESA SPECIAL MELTING FURNACE, THE DRYING TECHNOLOGY PERMITS TO DELETE EITHER THE DEFLAGRATION DANGER (CAUSED BY THE H₂O CONTENT) AND THE DROSS PRODUCTION.

MANY METALS REFINERY AND RECYCLE COMPANY COMPANIES USES THIS DRYING TECHNOLOGY AND RE-UTILIZE COMPLETELY THE MATERIAL COMING FROM THEIR PRODUCTION PROCESS.

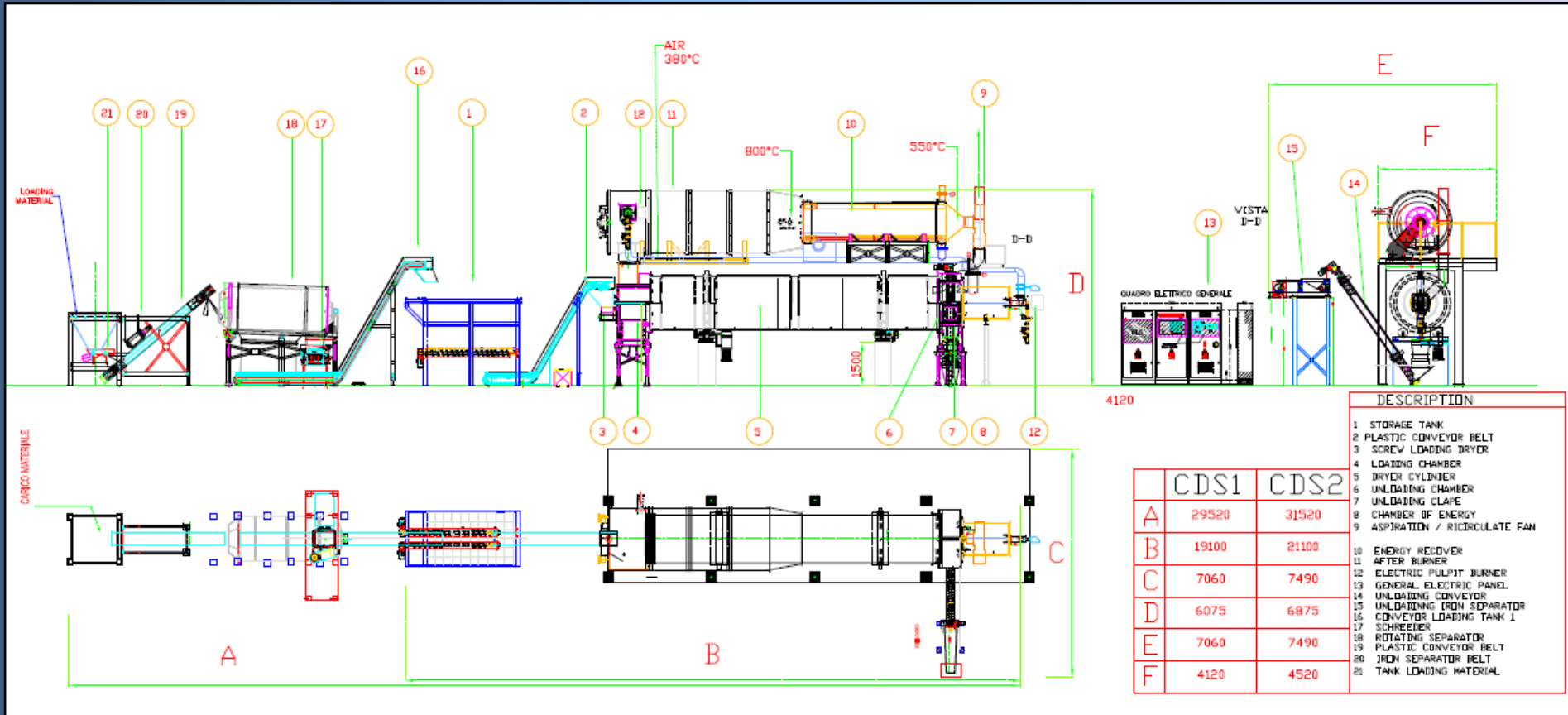
PROCESS SCHEME



DESCRIPTION	
1	TANK WITH 2 SCREW CONVEYERS
2	LOADING SCREW CONVEYOR
7	LOAD SCREW CONVEYOR
8	LOAD DRYER CHAMBER
9	DRYER CYCLONE
10	MOTORED/CIRCUL-PANEL ACCESSORIES
11	UNLOADING CHAMBER
12	ENERGY CHAMBER
13	BURNER IN THE ENERGY CHAMBER
14	EXHAUST SMOKE FAN
15	ENERGY RECUPERATOR
16	COMBUSTION AIR FAN
17	PC OXYGEN SENSOR
18	AFTER COMBUSTION CHAMBER
19	BURNER IN THE AFTER COMB. CHAMBER
20	ELECTRIC BOARD PANELS
21	GENERAL ELECTRIC PANEL
22	PLATFORM FOR OVER-LAPPING



PROCESS SCHEME



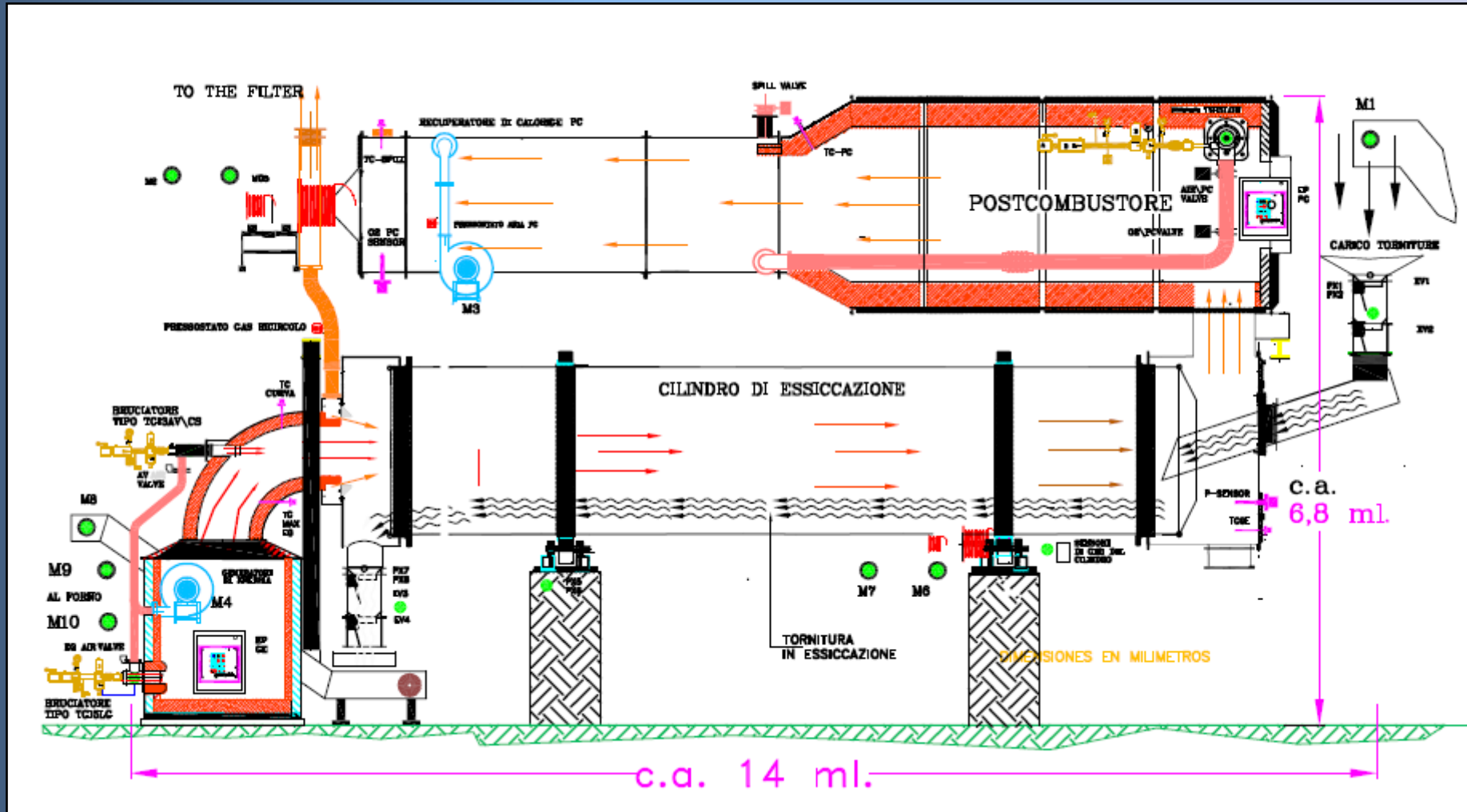
DESCRIPTION

- 1 STORAGE TANK
- 2 PLASTIC CONVEYOR BELT
- 3 SCREW LOADING DRYER
- 4 LOADING CHAMBER
- 5 DRYER CYLINDER
- 6 UNLOADING CHAMBER
- 7 UNLOADING CLAPE
- 8 CHAMBER OF ENERGY ASPIRATION / RECIRCULATE FAN
- 10 ENERGY RECOVER
- 11 AFTER BURNER
- 12 ELECTRIC PULPIT BURNER
- 13 GENERAL ELECTRIC PANEL
- 14 UNLOADING CONVEYOR
- 15 UNLOADING IRON SEPARATOR
- 16 CONVEYOR LOADING TANK 1
- 17 SCHREIEEN
- 18 ROTATING SEPARATOR
- 19 PLASTIC CONVEYOR BELT
- 20 IRON SEPARATOR BELT
- 21 TANK LOADING MATERIAL

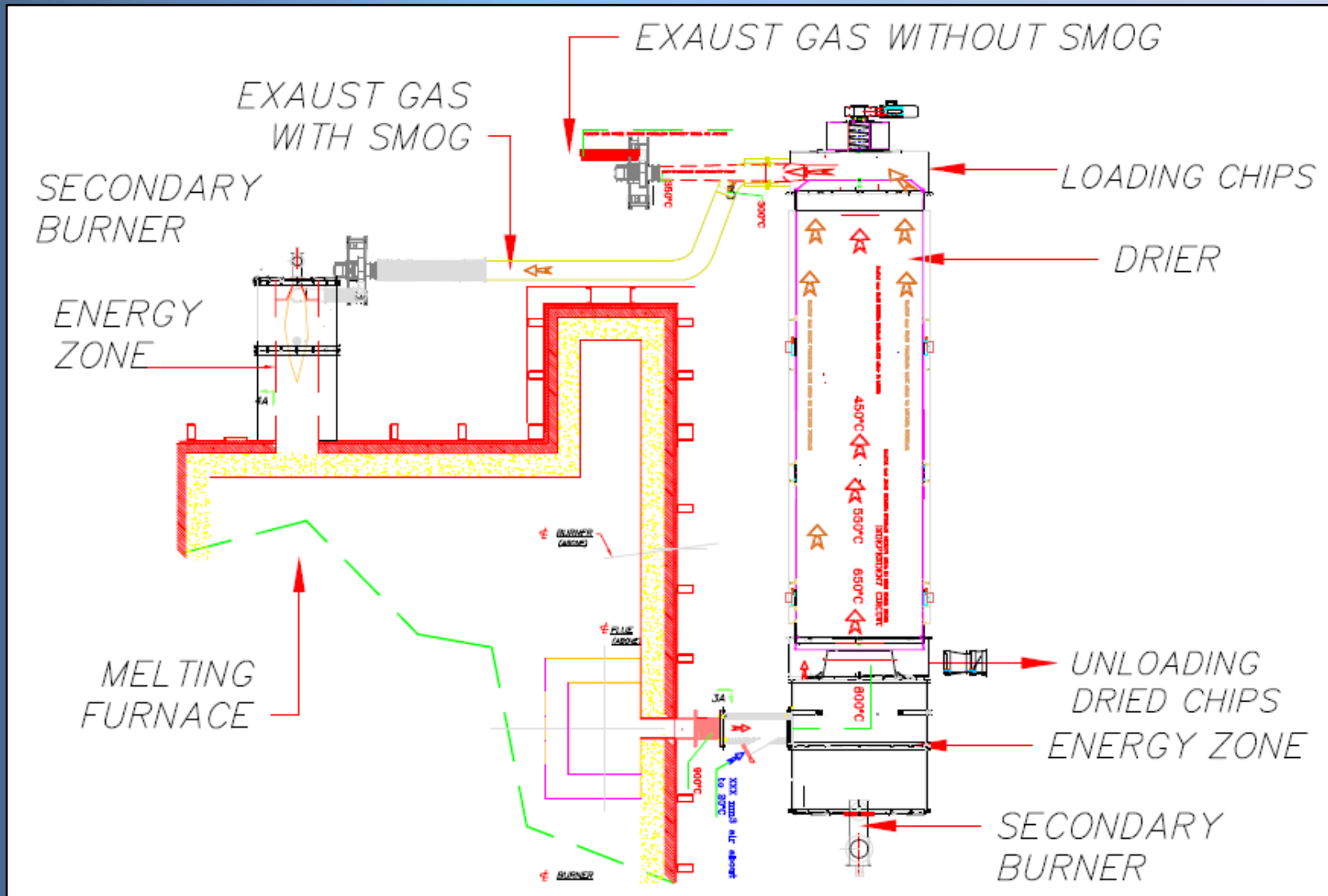
	CDS1	CDS2
A	29520	31520
B	19100	21100
C	7060	7490
D	6075	6875
E	7060	7490
F	4120	4520



PROCESS SCHEME



PROCESS SCHEME



PICTURES



PICTURES



PICTURES



PICTURES



PICTURES



PICTURES



THANK YOU

