KIRCHNER

FIRED HEATERS FOR REFINERIES AND PETROCHEMICAL PLANTS

Presentation of our Projects

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Presentation of our Projects

PDH - UOP Platformer Heaters

TOBOLSK, RUSSIA

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Oleflex Process Unit (Propilene) Heaters, basic design by UOP and detail engineering and supply by Kirchner Italia for JSC SIBUR Holding Polymer Plant located in Tobolsk, Russia.

Platformer Heater divided in Charge Heater, 1st, 2nd, 3rd Interheater for the PDH Plant.
Each radiant section is made of 2 twin cells, U-shaped tubes (TP347H) with Inlet and Outlet manifolds located on the arch of the radiant sections.
Each convection section is dedicated to auxiliary services like Steam Generation, Steam Superheating, BFW Economizer.
Overall Fuel Efficiency = 91%

Technical data:

Design Tube Wall Temperature	705°C
Heat Release	110,2 Gcal/h
Number of tubes	468
Tube Material	A376 TP347H
Guaranteed Efficiency	90%

STEAM REFORMER FOR 2400 MTPD Methanol Plant

TJELDBERGODDEN, NORWAY

STEAM REFORMER FOR 2400 MTPD Methanol Plant

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STEAM REFORMER FOR 2400 MTPD Methanol Plant

TJELDBERGODDEN, NORWAY

This primary steam reformer has been supplied by KIRCHNER ITALIA S.p.A. under the base design of Haldor Topsoe, for the Statoil Methanol Plant.

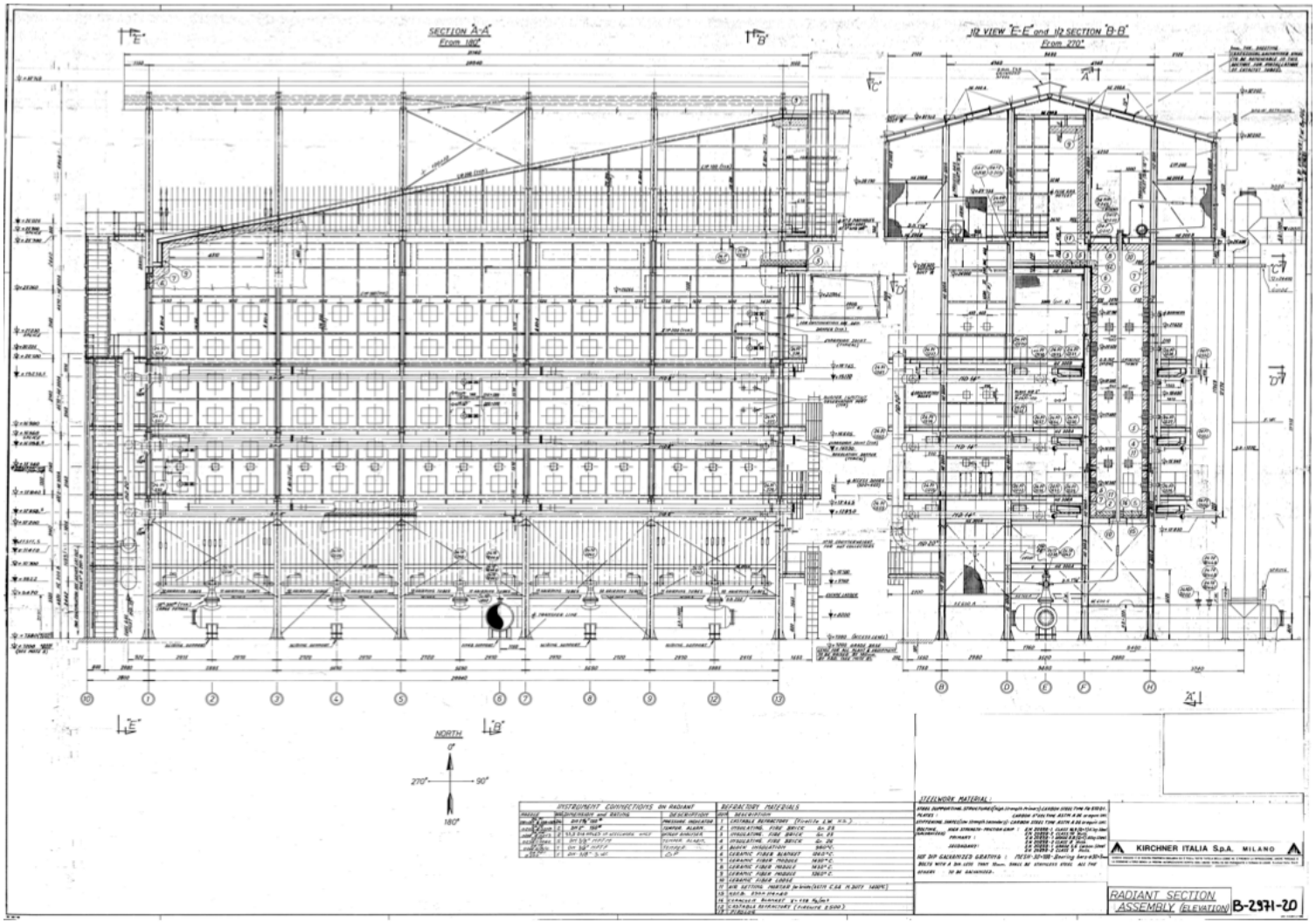
The heater has been completely assembled on yard in Italy in two modules: radiant section (1300 tons) and convection section (620 tons) that have been loaded on a “roll-on/roll-off” vessel to Norway.
The modules were complete with burner piping, external insulation, instrumentation and lighting.

Technical data:

Design pressure	44.3 barg
Design Tube Wall Temperature	807°C
Heat Release	160.1 MW
Number of Catalyst tubes	210
Catalyst Tubes Material	25Cr 35Ni
Burners number and location	360 - Sidewall

STEAM REFORMER FOR 2400 MTPD Methanol Plant

TJELDBERGODDEN, NORWAY



STEAM REFORMER FOR 2400 MTPD Methanol Plant

TJELDBERGODDEN, NORWAY

STEAM REFORMER FOR 2400 MTPD Methanol Plant

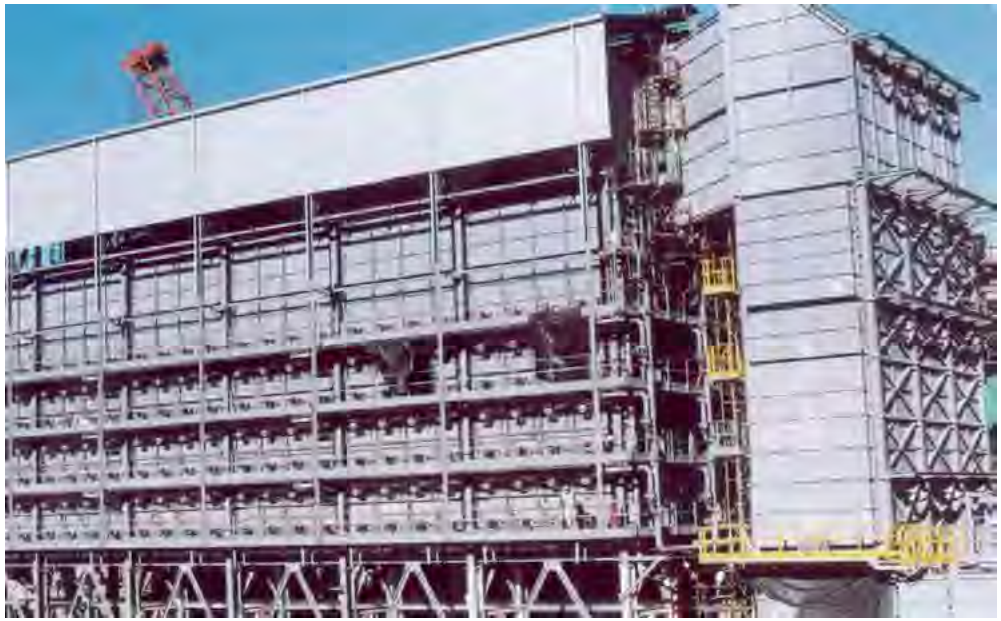
TJELDBERGODDEN, NORWAY

STEAM REFORMER FOR 2050 MTPD Ammonia Plant

BAHIA BLANCA, ARGENTINA

STEAM REFORMER FOR 2050 MTPD Ammonia Plant

BAHIA BLANCA, ARGENTINA



STEAM REFORMER FOR 2050 MTPD Ammonia Plant

BAHIA BLANCA, ARGENTINA

This primary reformer has been supplied by KIRCHNER ITALIA S.p.A. under the base design of Haldor Topsoe, for the new Profertil Ammonia Plant.

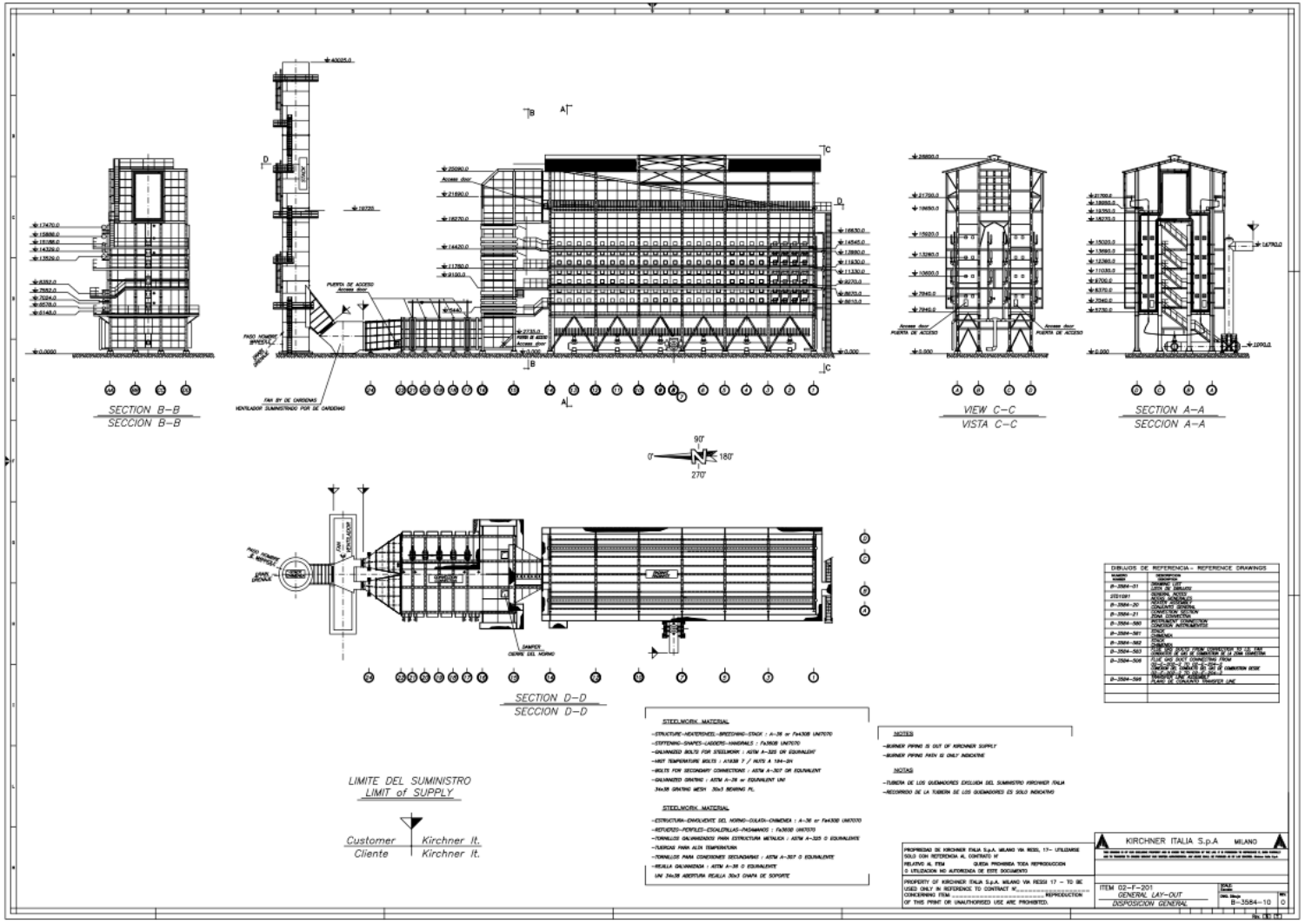
The heater consists of two firebox cells, one side vertical and horizontal convection sections.

Technical data:

Design pressure	40 Kg/cm2 (g)
Design Tube Wall Temperature	916°C
Heat Release	195.37 Gcal/h
Number of Catalyst tubes	264
Catalyst Tubes Material	25Cr 35Ni Nb Ti
Burners number and location	672 - Sidewall

STEAM REFORMER FOR 2050 MTPD Ammonia Plant

BAHIA BLANCA, ARGENTINA



Replacement of a Platforming Furnace

SANNAZZARO DE' BURGONDI, ITALY

Replacement of a Platforming Furnace

SANNAZZARO DE' BURGONDI, ITALY

Topping Heater designed by KIRCHNER ITALIA S.p.A. for the ENI Refinery located in Sannazzaro de Burgondi (PV), Italy.

This cabin heater has a double cell radiant section, each cell has horizontal wall tubes with central floor burners and a convection section with process and Steam SuperHeater coils.
An Air Preheater and a Steam Air preheater help reaching 91% Guaranteed Efficiency.

Technical data:

Design pressure	37 Kg/cm2 (g)
Design Tube Wall Temperature	500°C
Heat Release	56,56 Gcal/h
Number of tubes	192 + 16
Tubes Material	A 312 Tp 316 L (Mo>2,5%)
Guaranteed Efficiency	91%

Replacement of a Platforming Furnace

SANNAZZARO DE' BURGONDI, ITALY

1

Complete assembly of the heater inside the plant area close to the old heater, including platforms, process & burner piping, burners.

Replacement of a Platforming Furnace

SANNAZZARO DE' BURGONDI, ITALY

2

Shifting of the old heater (670 tons) in one piece, using n°2 heavy duty self-propelled platform trailers, 12 axles/ each.

Replacement of a Platforming Furnace

SANNAZZARO DE' BURGONDI, ITALY

3

Shifting of the new heater (430 tons) using same heavy duty self-propelled platform trailers.

Replacement of a Platforming Furnace

SANNAZZARO DE' BURGONDI, ITALY

4

Erection completion.

REFINERY HEATERS

SCOP, Baiji (Iraq)
n° 2 Hot Oil Heaters.

STATOIL, Kalundborg (Denmark)
Hydrofiner & Hot Oil Heaters.

REFINERY HEATERS

OCP, Amazonas (Ecuador) - n° 5 Hot Oil Heaters.

REFINERY HEATERS

PETROCHEMIA , Plock (Poland)
UOP Product Fractionator Feed Heater.

REFINERY HEATERS

ENICHEM ANIC, Gela (Italy)
Delayed Coking Furnace with APH.

Steam Superheater for Styrene Plant

MANTOVA, ITALY

Steam Superheater for Styrene Plant

MANTOVA, ITALY

This steam sperheater has been supplied by KIRCHNER ITALIA S.p.A. under own base design, for the Montedipe Styrene Plant.

This type of heater is quite critical for the high process temperature. The radiant coil is in HK 40. The heater is equipped with an air preheater installed on top of the convection section.

Technical data:

Steam production	50.000 kg/hr
Operating pressure	2,5 kg/cm^2
Process outlet temperature	815°C
Steam Superheating Section Heat Release	22,22 MM Kcal/h
Ethylbenzol Section Heat Release	4,15 MM Kcal/h
Efficiency	93,5%

Fully modularized Heaters for Condensate Project

KALUNDBORG, DENMARK

Powerformer

Hydrofiner & Hot Oil Heater

Fully modularized Heaters for Condensate Project

KALUNDBORG, DENMARK

KIRCHNER ITALIA S.p.A. has supplied a Powerformer, under Exxon base design, as well as a Hydrofiner and a Hot Oil Heater, under own design, for the Statoil Condensate Project.
The project was lumpsum turnkey, including erection on site.

The heaters, including burner piping and external insulation, have been completely fabricated on yard in Italy, under the severe safety rules specified by Statoil.
Once the assembly has been completed they have been loaded on vessel with platform trailers and shipped to Denmark. From the port of destination they have been directly put onto the foundations with same type of trailers.

Replacement of a Topping Heater

GELA, ITALY

Shifting of the old heater (450 tons) in one piece, using self-propelled platform trailers.

Shifting of the new heater (450 tons) in one piece, using same trailers.

Replacement of a Topping Heater

GELA, ITALY

Shifting of the new heater (450 tons) in one piece, using self-propelled platform trailers.

Replacement of a Topping Heater

GELA, ITALY

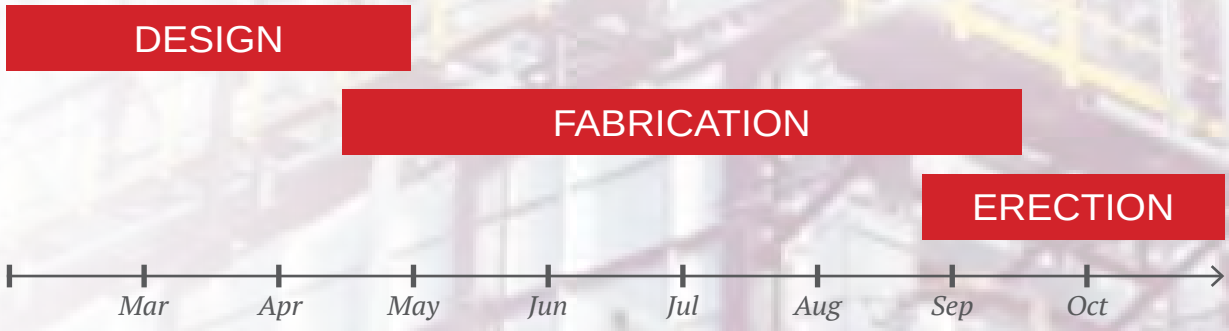
SCHEDULE CONSTRAINTS

Delivery of the heater with airpreheating system ready for start-up in 7.5 months from P.O. date. Site activities in only 25 calendar days, including the dismantling of the old heater, the erection of the new heater with aph system and the interconnecting with the plant.

KEY-IDEA

Complete assembly of the heater in the plant area, at 200 meters from the old heater, including platforms, process and burner piping, burners and sootblowers. At the plant shutdown old heater has been **entirely moved** from the foundations with heavy duty self-propelled platform trailers and the new full assembled heater has been put into position in the same way.

MASTER SCHEDULE



STEAM REFORMER FOR 1000 MTPD Ammonia Plant

URUMQUI, CHINA

STEAM REFORMER FOR 1000 MTPD Ammonia Plant

URUMQUI, CHINA

This primary steam reformer has been supplied by KIRCHNER ITALIA S.p.A. for the new CPCIC Ammonia Plant.

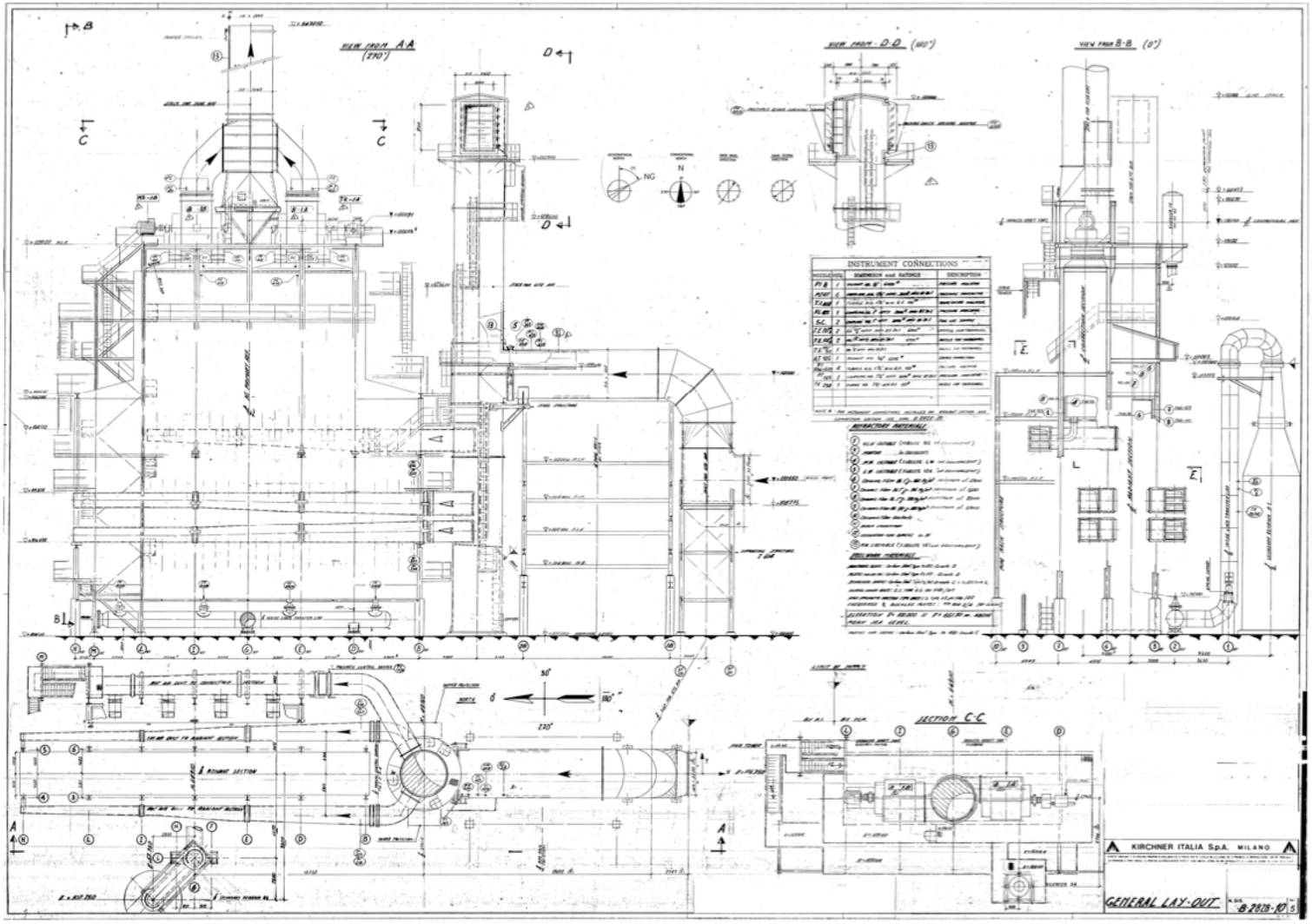
Process, thermal and mechanical design has been executed by Kirchner Italia S.p.A. according to **Brown & Root** specification.
The heater consists of one firebox cell with two rows of burners at bottom and in the middle of each sidewall, and one top mounted convection section.
Extra heat is provided by turbine exhaust gas at 535°C, which supplies the combustion oxygen. Ambient air can also be used alternatively.
The convection section is furnished with auxiliary burners for additional duty.

Technical data:

Design pressure	34 Kg/cm2 (g)
Design Tube Wall Temperature	850°C
Heat Release	106.06 Gcal/h
Number of Catalyst tubes	88
Catalyst Tubes Material	A297 HP mod
Burners number and location	104 - Sidewall

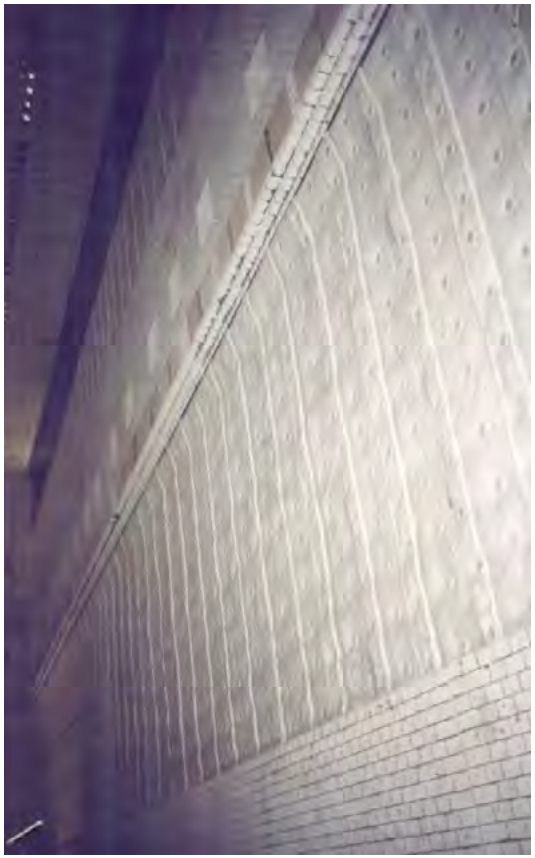
STEAM REFORMER FOR 1000 MTPD Ammonia Plant

URUMQUI, CHINA



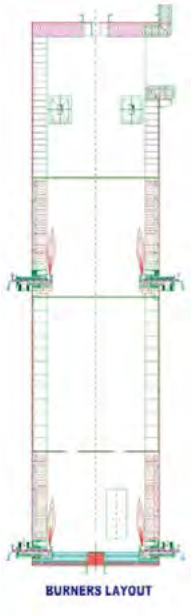
STEAM REFORMER FOR 1000 MTPD Ammonia Plant

URUMQUI, CHINA



STEAM REFORMER FOR 1500 MTPD Ammonia Plant

AL JUBAIL, SAUDI ARABIA



STEAM REFORMER FOR 1500 MTPD Ammonia Plant

AL JUBAIL, SAUDI ARABIA

STEAM REFORMER FOR 1500 MTPD Ammonia Plant

AL JUBAIL, SAUDI ARABIA

This primary steam reformer has been supplied by KIRCHNER ITALIA S.p.A. for the new Safco Ammonia Plant.

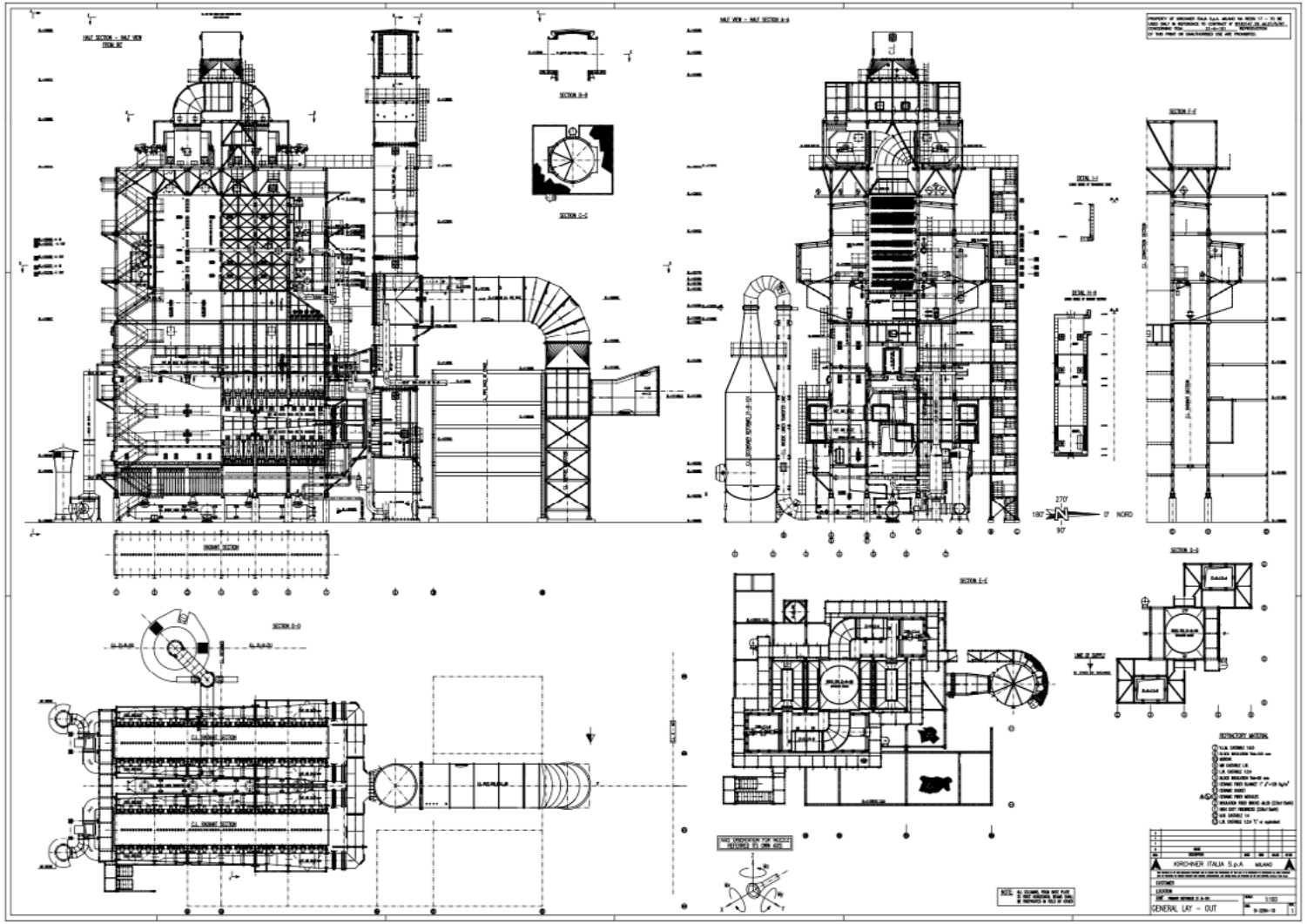
Process, thermal and mechanical design has been executed by kirchner Italia according to **Brown & Root** specifications.
The heater consists of two firebox cells with two rows of burners at bottom and in the middle of each sidewall, and one top mounted convection section.
Extra heat is provided by turbine exhaust gas at 535°C, which supplies the combustion oxygen and is also partially conveyed to the convection section inlet.
Ambient air can also be used alternatively.

Technical data:

Design pressure	34 Kg/cm2 (g)
Design Tube Wall Temperature	833°C
Heat Release	167.094 Gcal/h
Number of Catalyst tubes	128
Catalyst Tubes Material	HP45 Microalloy
Burners number and location	160 - Sidewall forced draft

STEAM REFORMER FOR 1500 MTPD Ammonia Plant

AL JUBAIL, SAUDI ARABIA



Steam Cracking Heaters for Ethylene Production

CANTON, CHINA

Steam Cracking Heaters for Ethylene Production

CANTON, CHINA

These six steam cracking heaters have been supplied by KIRCHNER ITALIA S.p.A. for the new CNTIC Ethylene Plant, based on Stone&Webster process technology.

The cracking coil is type USC Ultra Selective Conversion. Burners are located on floor n°16/each heater and on side walls n°32/each heater .
Materials of radiant coil are, from inlet to outlet, HK40 25-20 Cr-Ni, HP Mod. 25-35 Cr-Ni Nb Ti, HP 4W 25-35 Cr-Ni 4W. Transfer line is in HP Mod. 25-35 Cr-Ni Nb Ti. High pressure steam superheating and BFW coils have been installed in the convection section, together with the process coil, to maximi e the heat recovery. An induced draft fan is located on top of the convection section for flue gas suction.

Technical data:

Design Outlet Tubes Wall Temperature	1115°C
Heat Release per heater	37.93 MW
Number of Radiant Coils per heater	28
Efficiency	92.9

STEAM REFORMER FOR 2000 MTPD Methanol Plant

JOSE-EDO. ANZOATEGUI, VENEZUELA

STEAM REFORMER FOR 2000 MTPD Methanol Plant

JOSE-EDO. ANZOATEGUI, VENEZUELA

This primary steam reformer has been supplied by KIRCHNER ITALIA S.p.A. for the new Methanol Complex, owned by SuperMetanol.

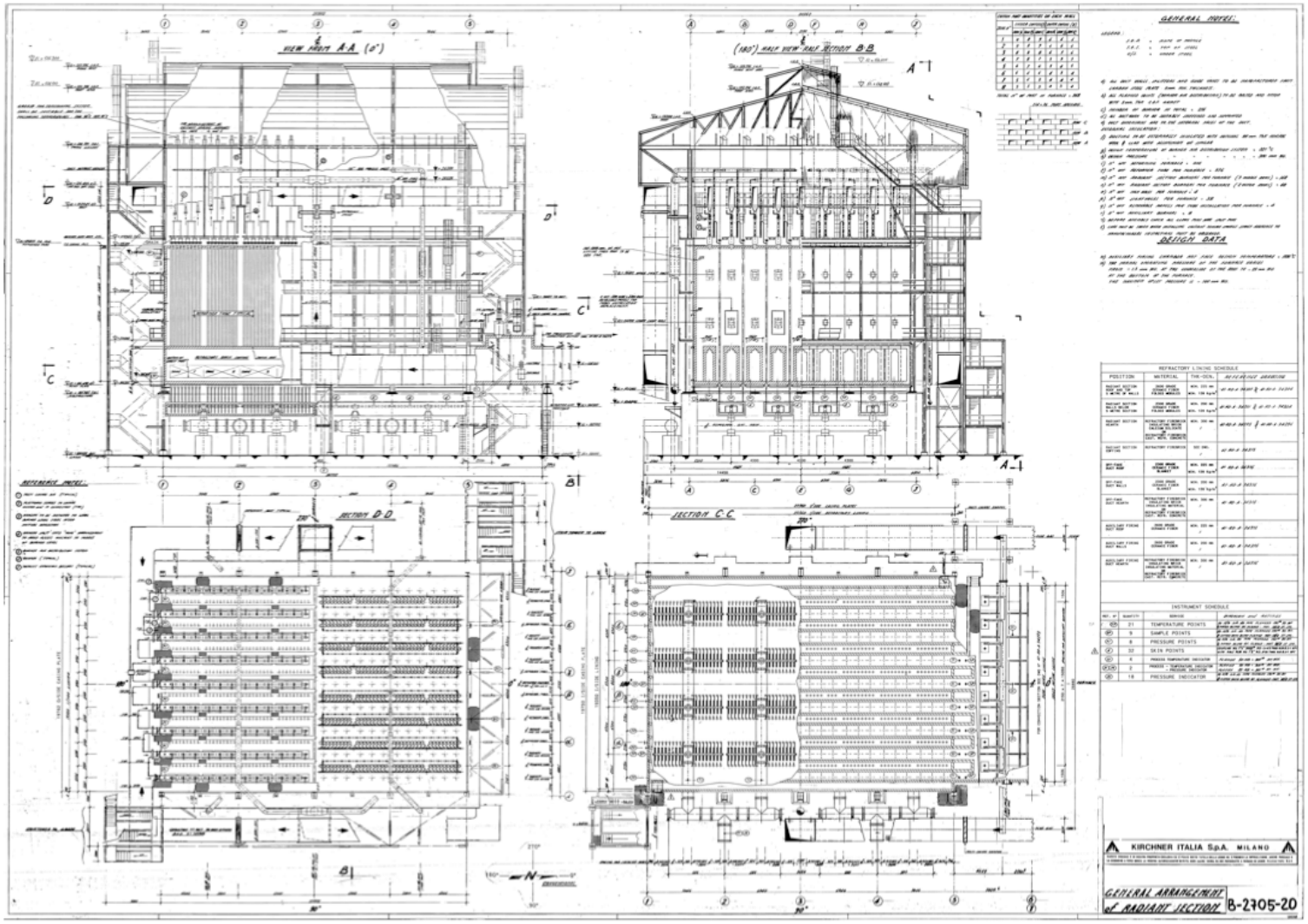
Process, thermal and mechanical design has been executed by Kirchner Italia S.p.A. according to **Davy McKee** specification.
The heater consists of one firebox cell with top-mounted burners, firing preheated air at 321°C. The waste heat recovery section is provided with auxiliary burners for additional duty and includes the air preheating section and high pressure steam superheating coils.

Technical data:

Process Outlet Temperature	880°C
Heat Release	300 Gcal/hr
Excess Air	8 %
Number of Catalyst tubes	576
Steam Superheated Temperature	510°C

STEAM REFORMER FOR 2000 MTPD Methanol Plant

JOSE-EDO. ANZOATEGUI, VENEZUELA



STEAM REFORMER FOR 3030 MTPD Methanol Plant

BANDAR IMAM, IRAN

STEAM REFORMER FOR 3030 MTPD Methanol Plant

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STEAM REFORMER FOR 3030 MTPD Methanol Plant

BANDAR IMAM, IRAN

This primary reformer has been supplied by KIRCHNER ITALIA S.p.A. under the base design of Haldor Topsoe, for the Third Methanol Plant at Bandar Imam, Iran.

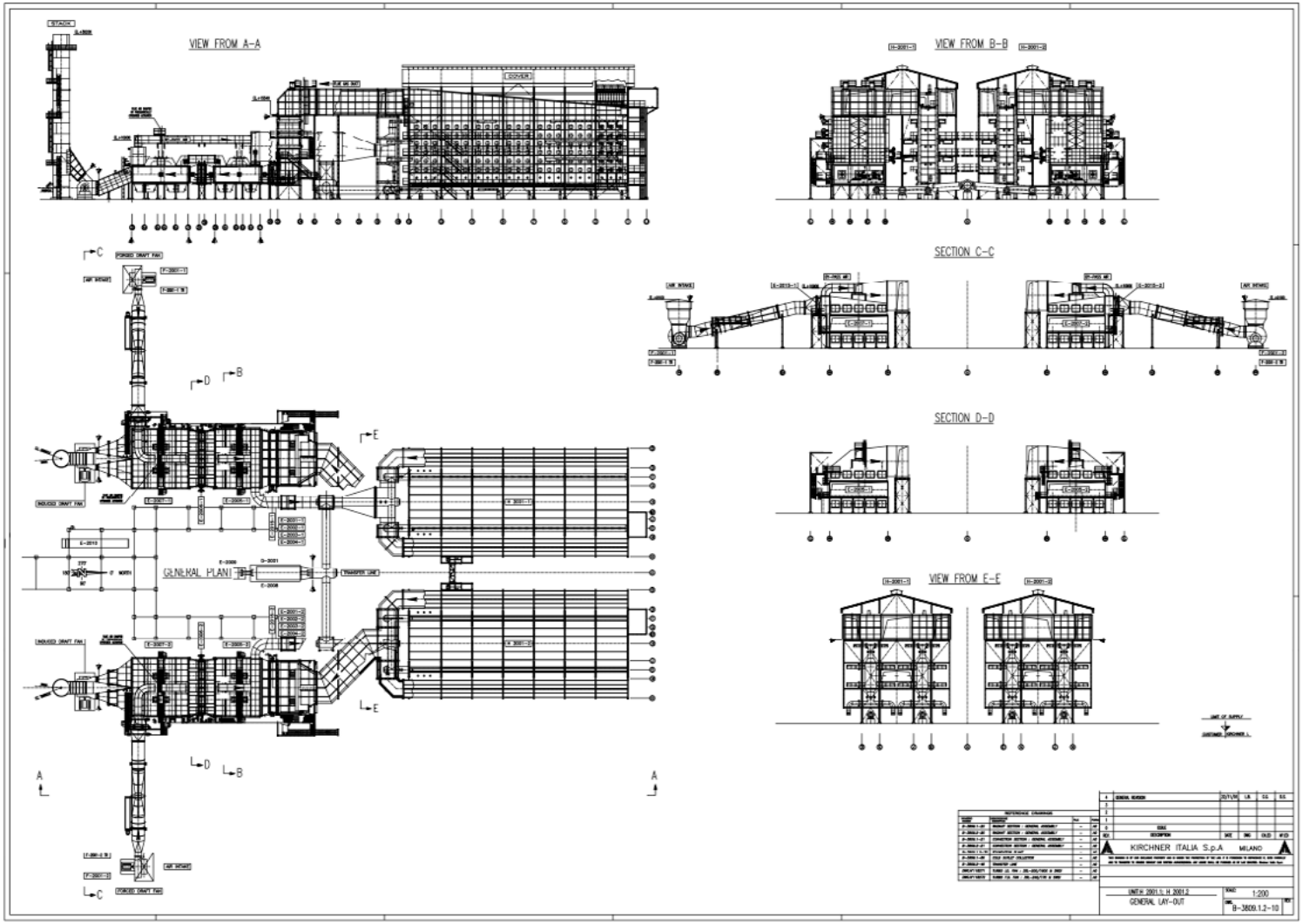
This reformer is installed in 3030 MTPD Methanol Plant. Kirchner Italia supplied two symmetrical reformer packages composed by a double cells radiant section and a convection section with horizontal/vertical tubes.
Each reformer package has an air combustion preheating system complete with flue gas air preheater, steam air preheater, forced draft fans and induced flue gas fan.

Technical data:

Design pressure	21.4 bar abs
Design Tube Wall Temperature	984°C
Heat Release	288.22 Gcal/h
Number of Catalyst tubes	294
Catalyst Tubes Material	25Cr 35Ni Nb Ti
Burners number and location	504 - Sidewall and 3 off post combustion burners in convection section.

STEAM REFORMER FOR 3030 MTPD Methanol Plant

BANDAR IMAM, IRAN



STEAM REFORMER FOR 14620 nm3/h Hydrogen Plant

CAMPANA, ARGENTINA

STEAM REFORMER FOR 14620 nm3/h Hydrogen Plant

CAMPANA, ARGENTINA

STEAM REFORMER FOR 14620 nm3/h Hydrogen Plant

CAMPANA, ARGENTINA

This primary reformer by KIRCHNER ITALIA S.p.A. under the base design of Haldor Topsoe, is for the Air Liquide Hydrogen Plant located in Campana, Argentina.

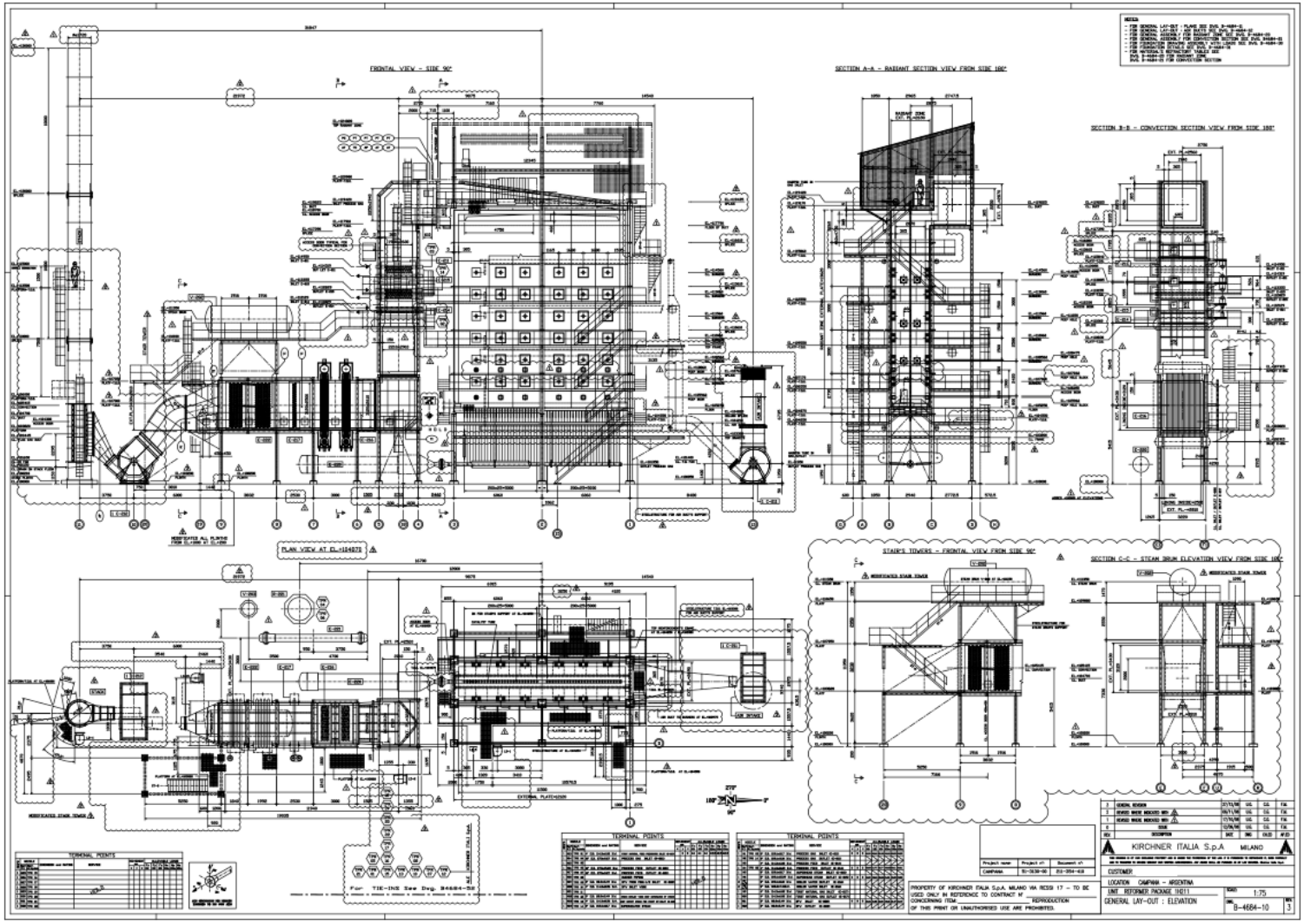
The radiant section has been provided in 5 modules complete of refractory lining and muffle blocks.

Technical data:

Design pressure	33.6 Kg/cm2 (g)
Design Tube Wall Temperature	935°C
Heat Release	33.19 Gcal/h
Number of Catalyst tubes	52
Catalyst Tubes Material	25Cr 35Ni Nb Ti
Burners number and location	72 - Sidewall

STEAM REFORMER FOR 14620 nm3/h Hydrogen Plant

CAMPANA, ARGENTINA



STEAM REFORMER FOR 3600 MTPD Methanol Plant

DAMIETTA, EGYPT

STEAM REFORMER FOR 3600 MTPD Methanol Plant

DAMIETTA, EGYPT

This primary reformer by KIRCHNER ITALIA S.p.A. is for the new Methanol Complex, owned by EMethanex in Damietta, Egypt.

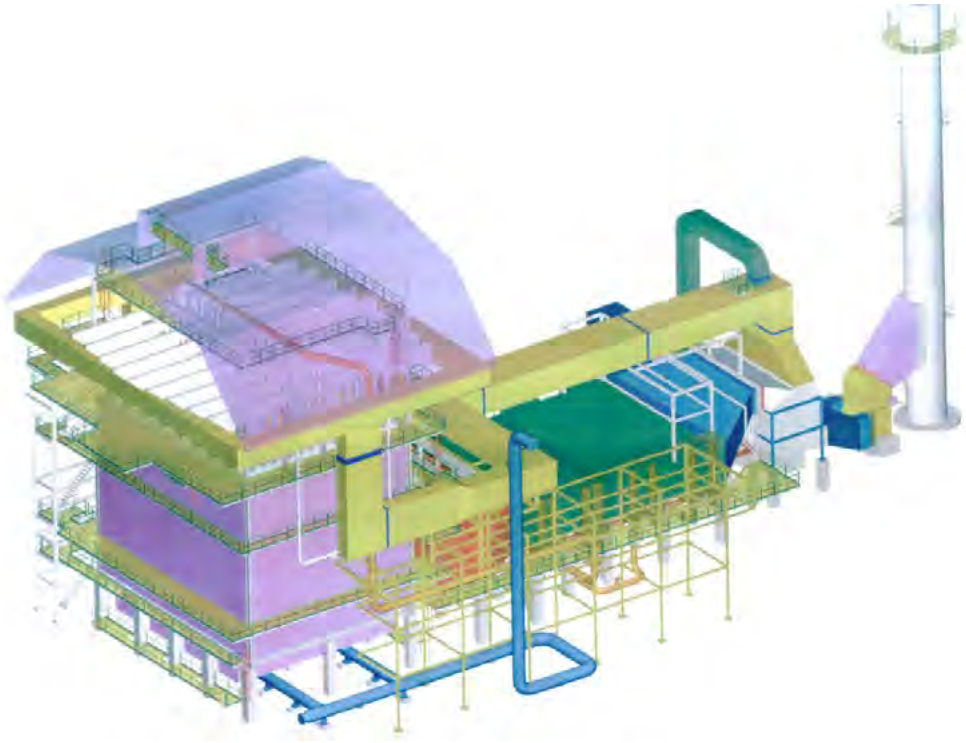
Process, thermal and mechanical design has been executed by kirchner Italia according to **Davy Process Tecnology** specification.
The heater consists of one firebox cell with 108 top-mounted burners.
The waste heat recovery section is provided with 16 down-firing auxiliary burners for additional duty and includes the air preheating section and high pressure steam superheating coils.

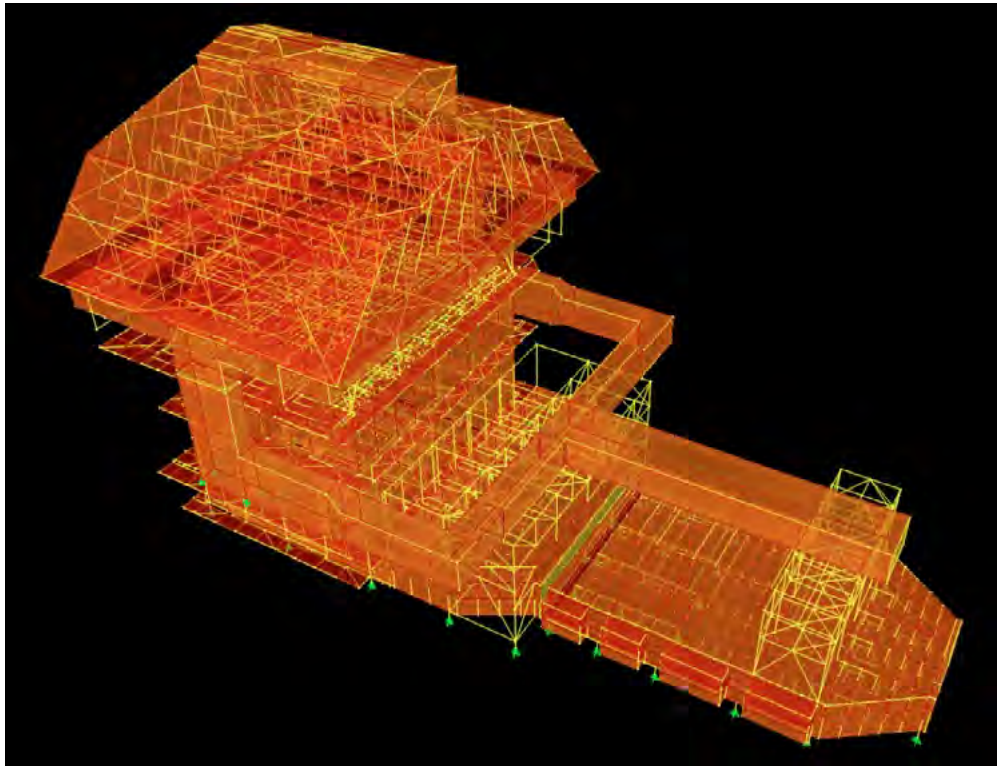
Technical data:

Process Outlet Temperature	750°C
Heat Release	326,9 MW
Excess Air	8%
Number of Catalyst tubes	288
Steam Superheated Temperature	520°C

STEAM REFORMER FOR 3600 MTPD Methanol Plant

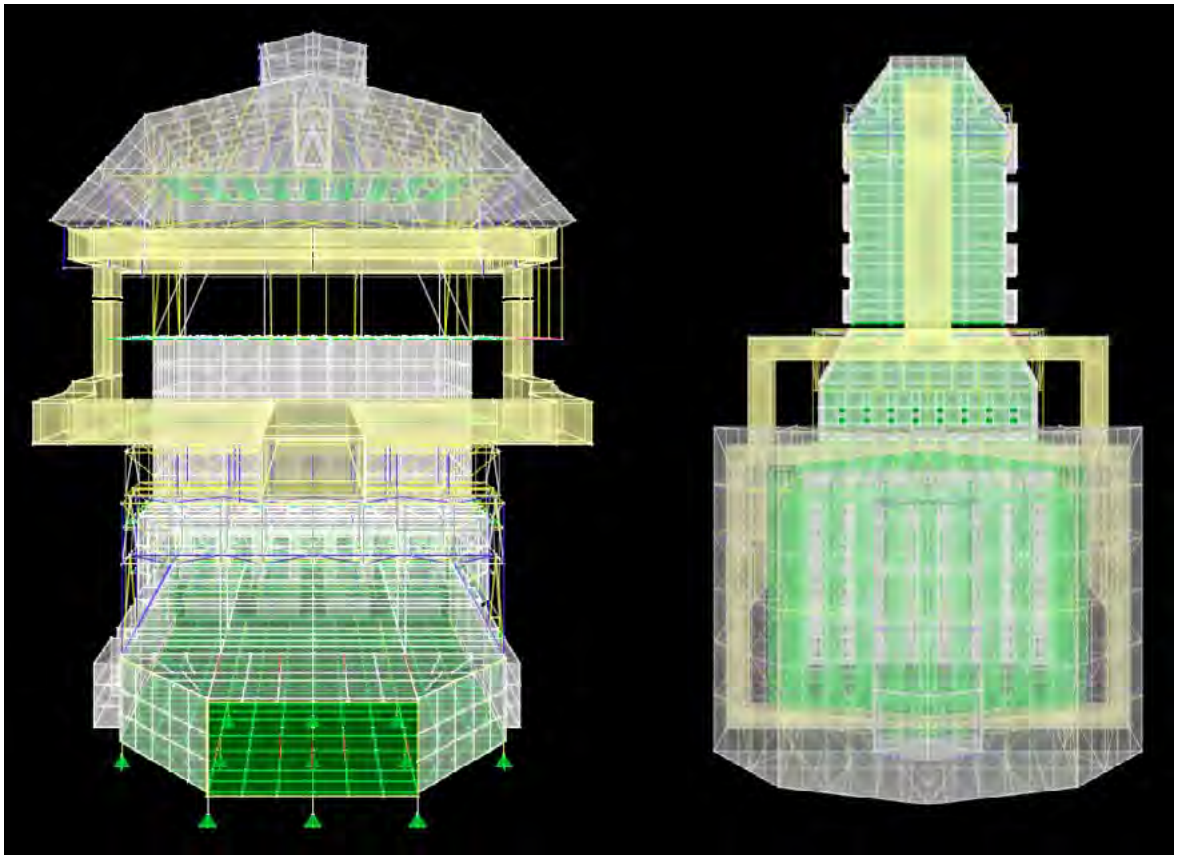
DAMIETTA, EGYPT





STEAM REFORMER FOR 3600 MTPD Methanol Plant

DAMIETTA, EGYPT



STEAM REFORMER FOR 1350 MTPD Methanol Plant

SHCHEKINO, RUSSIA

STEAM REFORMER FOR 1350 MTPD Methanol Plant

SHCHEKINO, RUSSIA

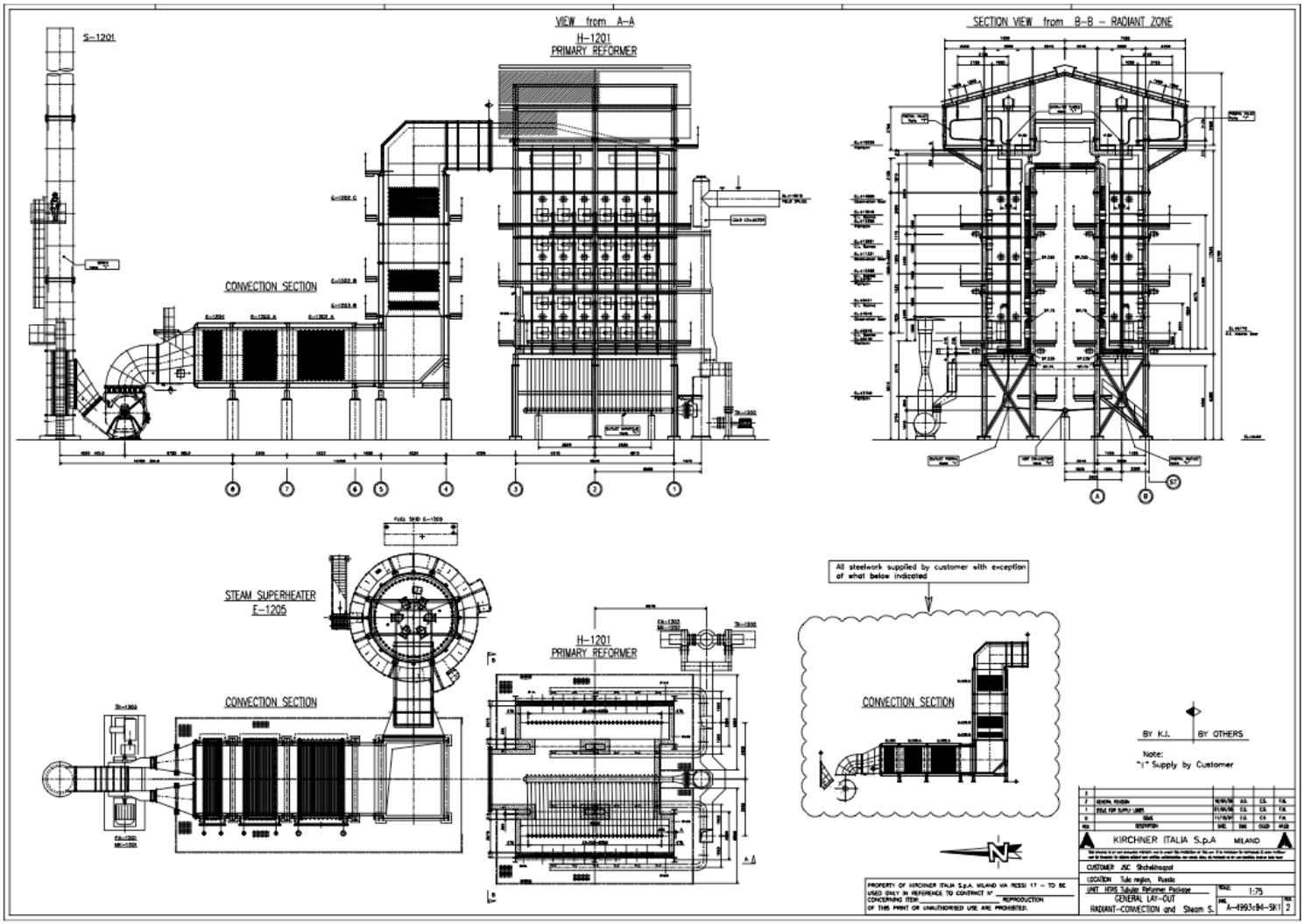
This Primary Reformer by KIRCHNER ITALIA S.p.A. under the base design of Haldor Topsoe, is for the JSC Shchekinoazot Methanol Plant located in Shchekino, Russia.

A Steam Superheater has been supplied with the Reformer, the heat exiting the Steam Superheater is recovered by the Reformer's convection section.

Technical data:

Design pressure	52 bara
Design Tube Wall Temperature	814°C
Heat Release	58,85 Gcal/h
Number of Catalyst tubes	68
Catalyst Tubes Material	25Cr 35Ni Nb Ti
Burners number and location	120 - Sidewall

SHCHEKINO, RUSSIA



STEAM REFORMER FOR 8500/17000 Nm3/h Hydrogen Plant

FALCONARA MARITTIMA, ITALY

STEAM REFORMER FOR 8500/17000 Nm3/h Hydrogen Plant

FALCONARA MARITTIMA, ITALY

STEAM REFORMER FOR 8500/17000 Nm3/h Hydrogen Plant

FALCONARA MARITTIMA, ITALY

This primary reformer has been supplied by KIRCHNER ITALIA S.p.A. under the base design of Haldor Topsoe, for Api Falconara Hydrogen Plant.

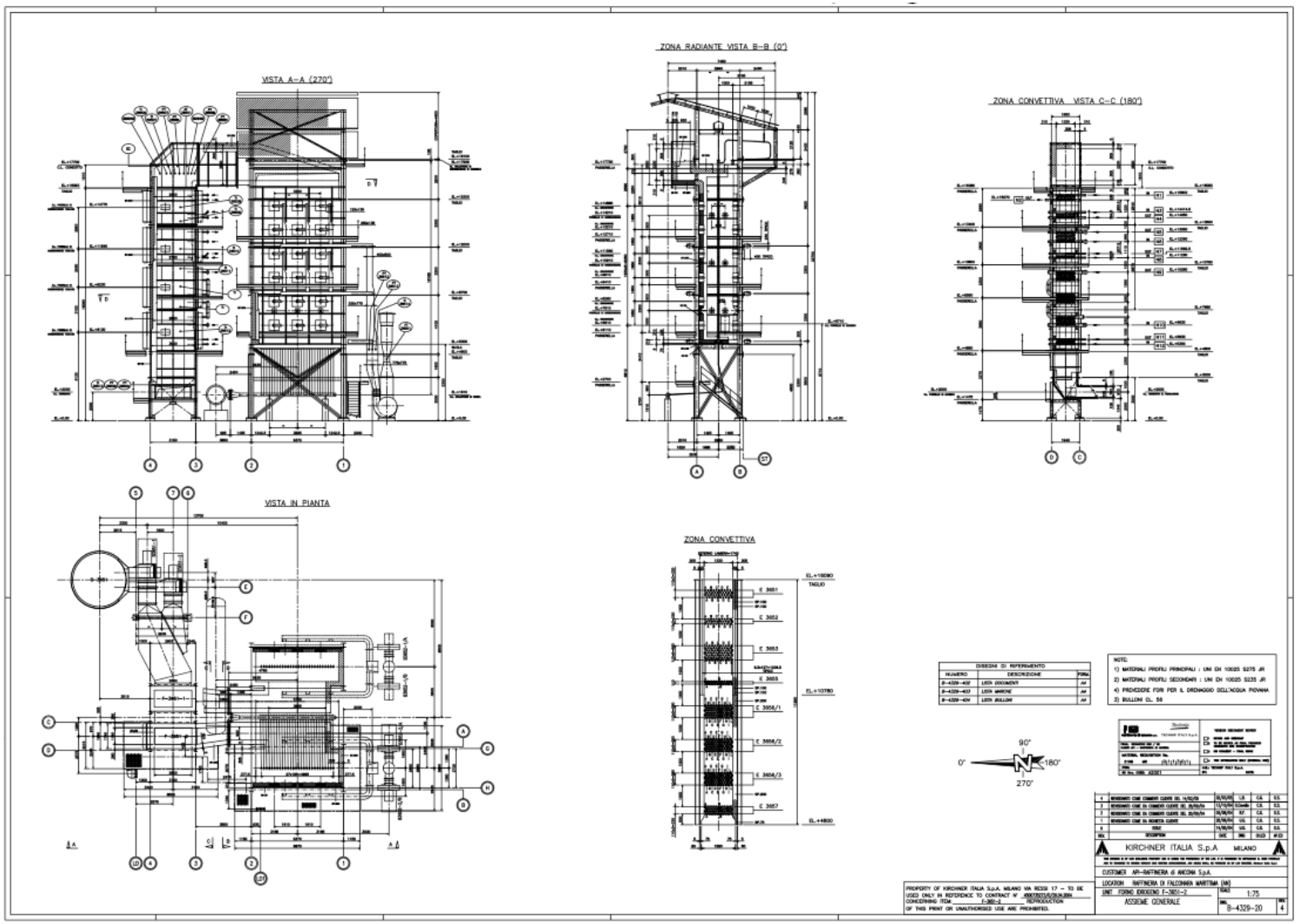
The heater consists in a radiant single box and in an horizontal convection section. The radiant section works in parallel with a radiant chamber of an existing reformer radiant chamber.

Technical data:

Design pressure	31.9 Kg/cm2 (g)
Design Tube Wall Temperature	939°C
Heat Release	7.23 Gcal/h (rad. sec.)
Number of Catalyst tubes	28
Catalyst Tubes Material	25Cr 35Ni Nb Ti
Burners number and location	36 - Sidewall

STEAM REFORMER FOR 8500/17000 Nm3/h Hydrogen Plant

FALCONARA MARITTIMA, ITALY



KIRCHNER

Thank You!

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