

GAS HEATERS WITH UNPROTECTED FURNACE

Well gas heaters with unprotected furnace manufactured by CONFIND are intended to be used in the technological process of methane gas heating which otherwise by Joule-Thomson lead to a decrease in temperature and the formation of cryohydrates.

This equipment is an indirect type heat exchanger (gas burned-water-process gas). Thermal energy for the process is achieved from burning methane gas. Dimension and number of heaters depend on the flow and pressure of gas to be heated . Burning takes place in a furnace pos 4, and exhaust gas is evacuated via gas pipes pos 5 and finally through the stack pos 7.

Furnace and exhaust gas pipes are immersed in water from the insulated furnace compartment pos 1, in which it is also immersed the process gas pipe at the upper side, pos 2.

Process coil is designed for the process pressure 140 or 210 bar and for the surface required by the heat exchange.

Water compartment is covered by a detachable cover and heating of thermal agent is made at atmospheric pressure.

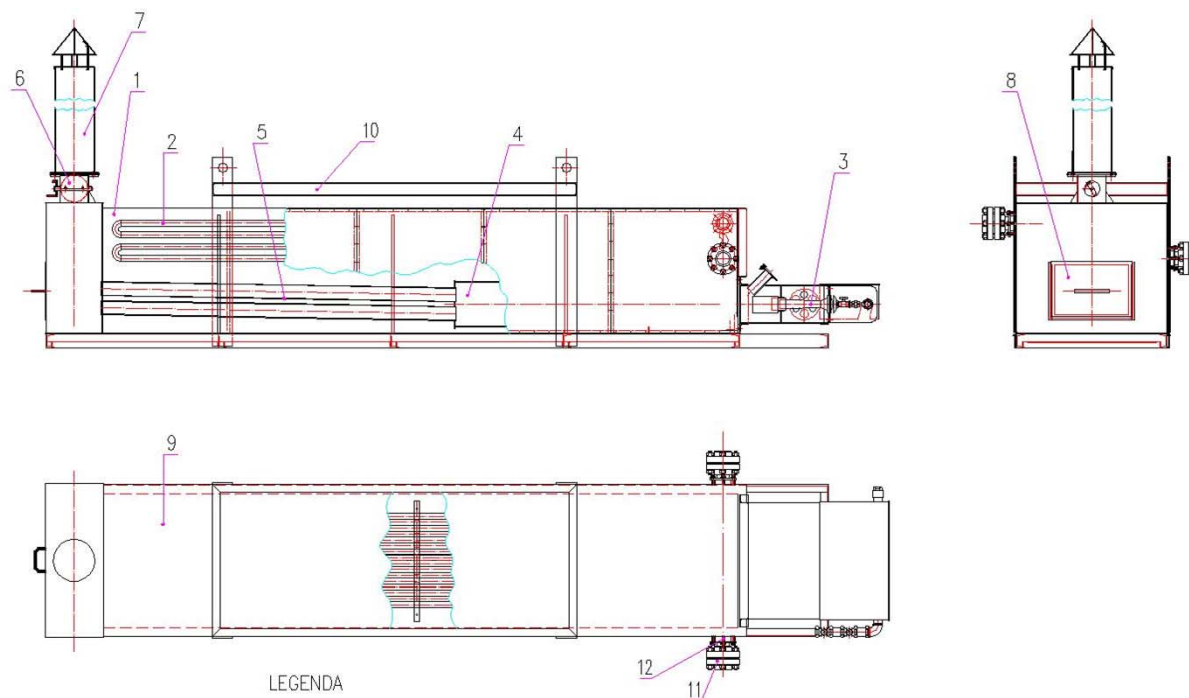
The equipment is connected to the well gas by means of connection flange pos 12, DN65 PN210.

Water filling of the equipment is made through the upper cover until the process coil is completely immersed.

Furnace ignition and monitoring are performed by means of an eye slit. On the stack it is installed a register that can adjust exhaust gas flow. For water purging the compartment is designed with a purge nozzle with a threaded plug.

GAS HEATERS

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LEGENDA

- | | |
|-------------------------|------------------------|
| 1- CUVA IZOLATA | 7- COS DE FUM |
| 2- SERPENTINA | 8- USA DE VIZITARE |
| 3- INSTALATIE DE ARDERE | 9- CAPAC IZOLAT |
| 4- FOCAR | 10- CADRU DE RIDICARE |
| 5- TEVI DE GAZE ARSE | 11- FLANSA DE RCORDARE |
| 6- OBTURATOR GAZE ARSE | 12- PRESETUPA |

SC CONFIND SRL – CAMPINA

INCALZITOR DE GAZE SONDA

**Heater
components**

GAS HEATERS

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TECHNICAL CHARACTERISTICS

No	Heater type	Code	Number of furnaces	Furnace type	Flow of burning gas	Process gas pressure	Test pressure process coil	Heat exchange surface
-	-	-	[pc]	-	[cm/h]	[bar]	[bar]	[sqm]
1	II-140	P3863-00	3	TD2	6	140	210	7.5
2	III-140	P3882-00	5	TD2	10	140	210	10.2
3	II-210	P4200-00	3	TD2	6	210	280	10
4	III-210	P3864-00	5	TD2	10	210	280	12.1

GAS HEATERS

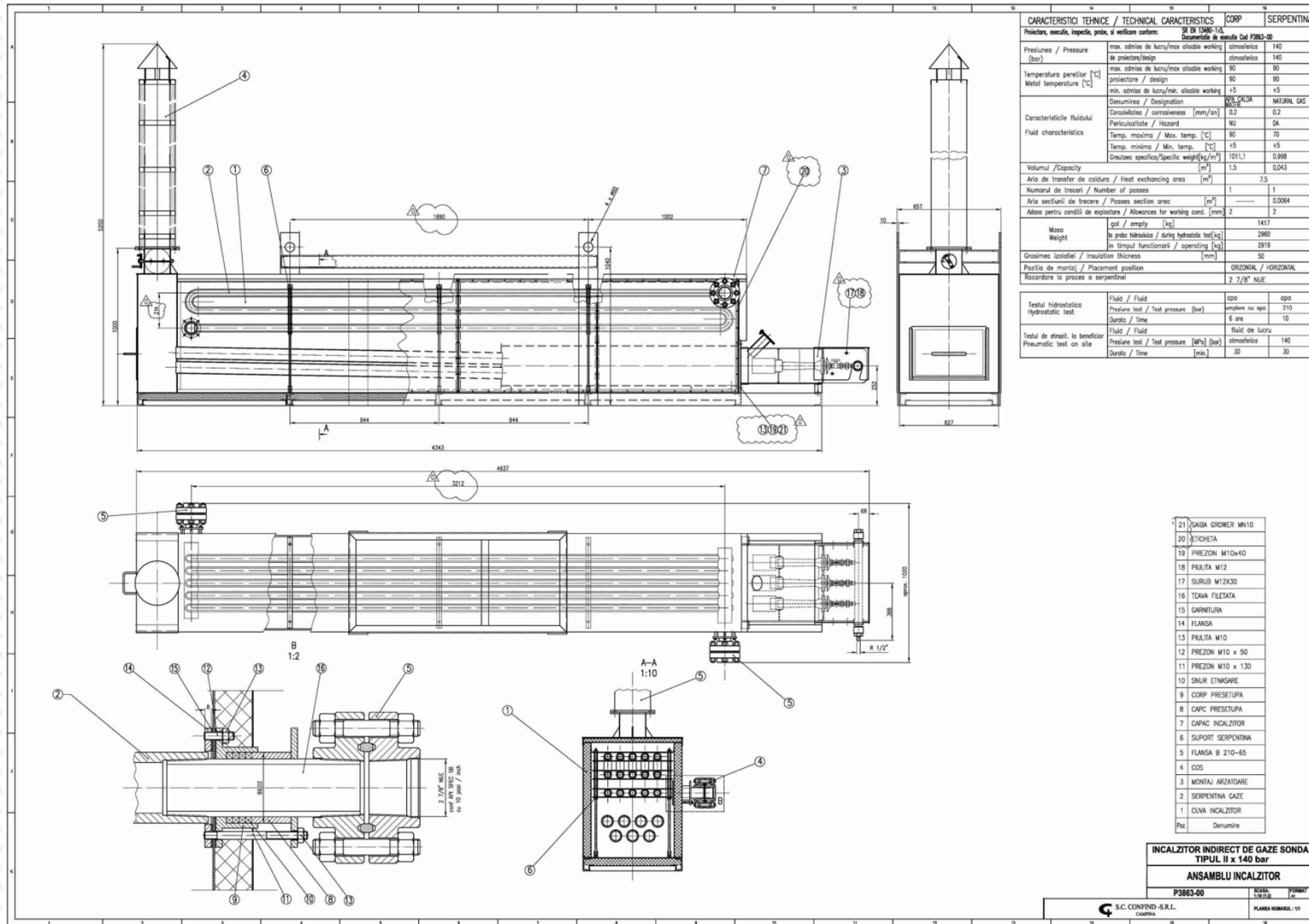
GAS HEATERS WITH UNPROTECTED FURNACE

Heater type

II-140

Code

P3863-00

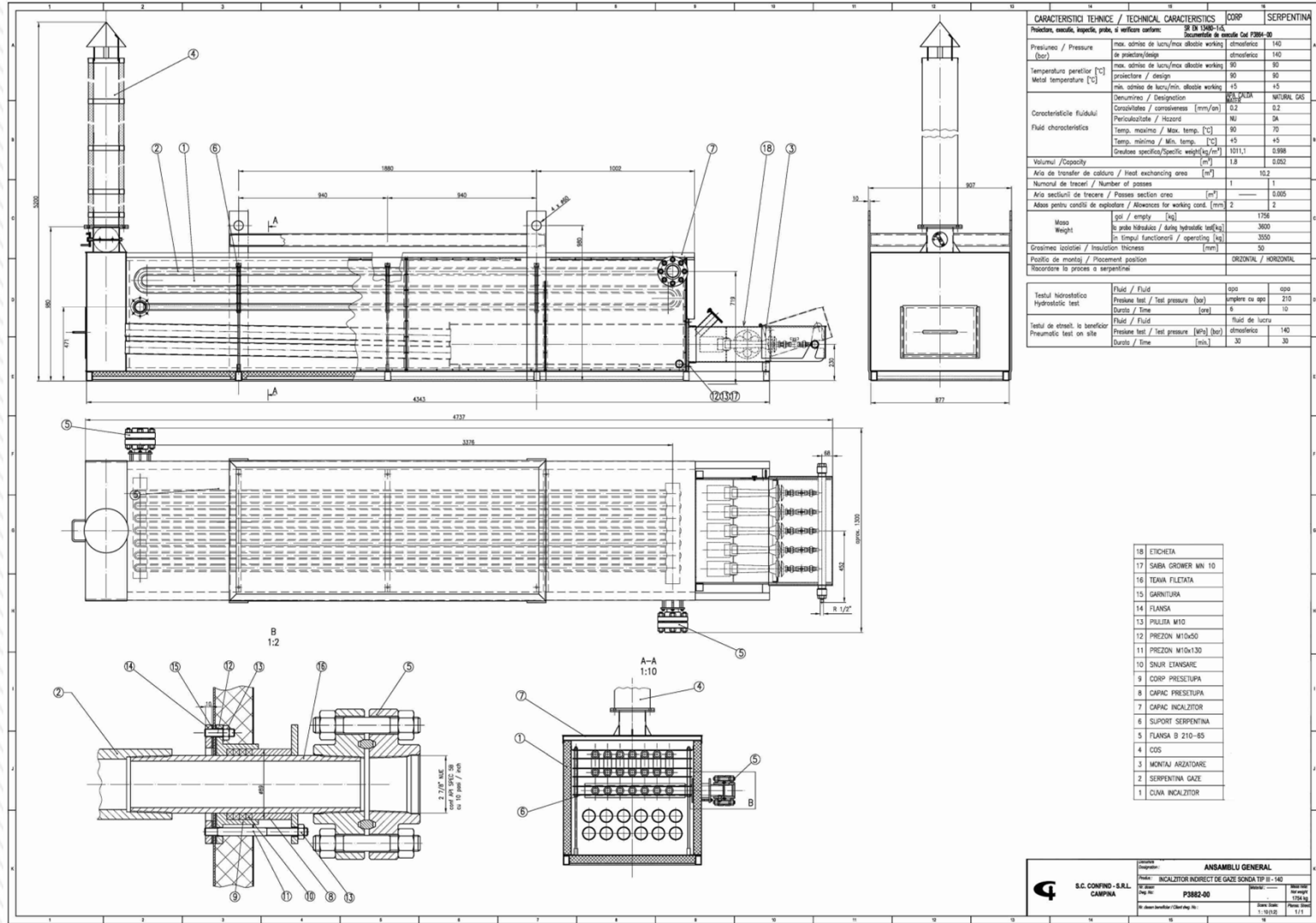


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GAS HEATERS

GAS HEATERS WITH UNPROTECTED FURNACE

Heater type	Code
III-140	P3882-00

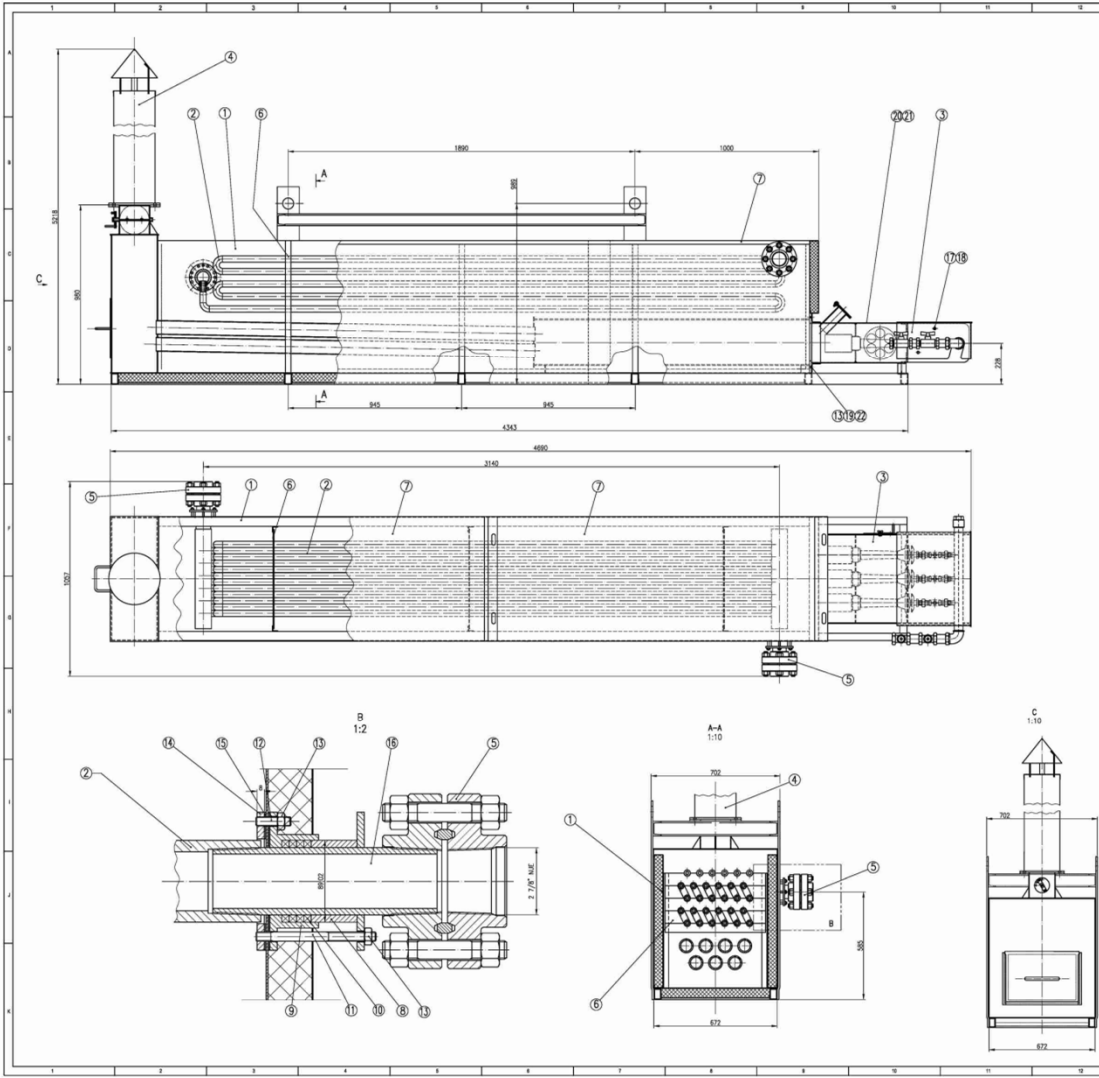


10/3/2014

GAS HEATERS


GAS HEATERS WITH UNPROTECTED FURNACE

Heater type	Code
II-210	P4200-00



CARACTERISTICI TEHNICE / TECHNICAL CHARACTERISTICS	CORP	SERPENTINA
Proiectare, executie, inspectie, probe, si verificari conform: ST EN 1546-1-2 Documentatie de executie Cod P383-90		
Presiune / Pressure (bar)	max. admisa de lucru/max allowed working pressure	210
Temperatura peretilor / Metal temperature [°C]	max. admisa de lucru/max allowed working pressure / proiectare / design	90
	min. admisa de lucru/min. allowed working	+5
Caracteristicile fluidului / Fluid characteristics	Denumirea / Designation	NATURAL GAS
	Corozivitate / corrosiveness (mm/an)	0,2
	Particulectate / viscosity	80
	Temp. maxima / Max. temp. [°C]	90
	Temp. minima / Min. temp. [°C]	+5
	Densitate specifica/specific weight(kg/m³)	1011,1
Volume / Capacity	[m³]	1,7
Aria de transfer de caldura / Heat exchanging area	[m²]	10
Numarul de treceri / Number of passes		1
Aria sectiunii de trecere / Passes section area	[m²]	0,0015
Adasa pentru conditi de exploatare / Allowances for working cond.	[mm]	2
Masa / Weight	gol / empty [kg]	1343
	la probe hidrostatice / during hydrostatic test [kg]	3070
	in timpul functionarii / operating [kg]	3440
Grasimea izolatiei / Insulation thickness	[mm]	50
Poziția de montaj / Placement position		ORIZONTAL / HORIZONTAL
Recoredare la proces / Recordare la proces		2, 7/8" N1E
Testul hidrostatic / Hydrostatic test	Fluid / Fluid	apa / water
	Presiune test / Test pressure (bar)	315
	Durata / Time	6 ore / 6 hrs
Testul de etasare la beneficiar / Pneumatic test on site	Fluid / Fluid	fluid de lucru / working fluid
	Presiune test / Test pressure (mPa) (bar)	210
	Durata / Time	30

- 22 SABA GROWER M10
- 21 M1 #5
- 20 ETICHETA
- 19 PREZON M10x40
- 18 PILURA M12
- 17 SURUB M12X30
- 16 TEARIA FILETATA
- 15 CARNITURA
- 14 FLANSA
- 13 PILURA M10
- 12 PREZON M10 x 50
- 11 PREZON M10 x 130
- 10 SNUR ENLARGARE C 1111
- 9 CORP PRESETURPA
- 8 CAPC PRESETURPA
- 7 SEMICORP INCALZITOR
- 6 SUPPORT SERPENTINA
- 5 FLANSA B 210-85
- 4 COC
- 3 MONTAJ ARZATOR
- 2 SERPENTINA GAZE
- 1 CAVA INCALZITOR

	ANSAMBLU GENERAL INCALZITOR	
	INCALZITOR INDIRECT DE GAZE SONDA TIP II-210 GAZ	
	P4200-00	1343 kg
	1:10	1:11



GAS HEATERS

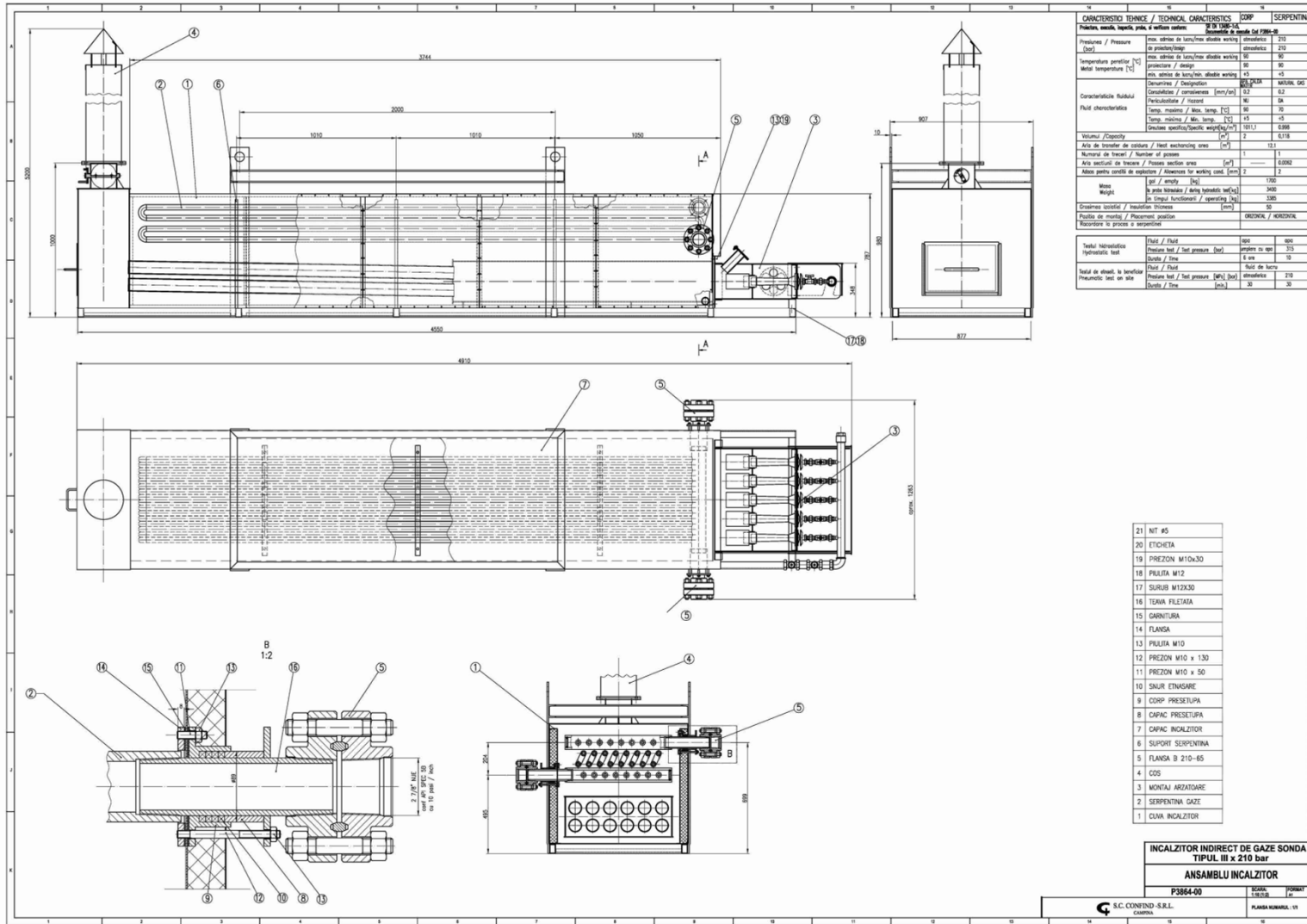
GAS HEATERS WITH UNPROTECTED FURNACE

Heater type

III-210

Code

P3864-00



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GAS HEATERS WITH PROTECTED FURNACE

In the process of crude oil extraction a significance importance is held by the equipment that provides well fluid heating.

Starting from this statement, CONFIND designed and manufactured a new generation of gas indirect heaters in accordance with API 12K – process design, EN 13445 – mechanical design .

The equipment ensures heating of extracted fluid in safe conditions and at high yields. They can be installed close to the well due to the fact that the furnace is protected and all other monitoring and control components are pneumatically actuated.

Heater is a horizontal equipment supported o two saddles and includes: shell, coil, furnace tube, vertical stack, furnace with flame arrestor, fuel gas line, controls.

The heater is “INDIRECT” because well fluids are heated through the thermal agent located inside the equipment (water, TEG with water mixture) by the exhaust gas.

Process fluid passes through the horizontally installed coil which is completely immersed. At the lower side of the coil, in liquid, it is installed the furnace tube that consists of a horizontal, cylindrical, “U” tube having the furnace at one end and the stack at the other end.

Indirect heater shell with two flat covers, has an overflow with level indicator installed at the upper part of the dome. It also has a filling nozzle and an air bleeder.

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GAS HEATERS WITH PROTECTED FURNACE



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For safe operation, the indirect gas heater is equipped with a pneumatic control system. The furnace is installed in an arrestor house-FAH which is attached to the furnace shell with bolts and nuts.

At the same place it is installed the pilot furnace and the spark plug that protect the heater in case of “no flame” situation.

Monitoring and control system protect the heater against lack of gas, gas overpressure, water overheating, insufficient water.

For yield increase and safety reasons the equipment is insulated and has an aluminum enclosure.

For transport and handling reasons the heater is installed on a chassis.

GAS HEATERS

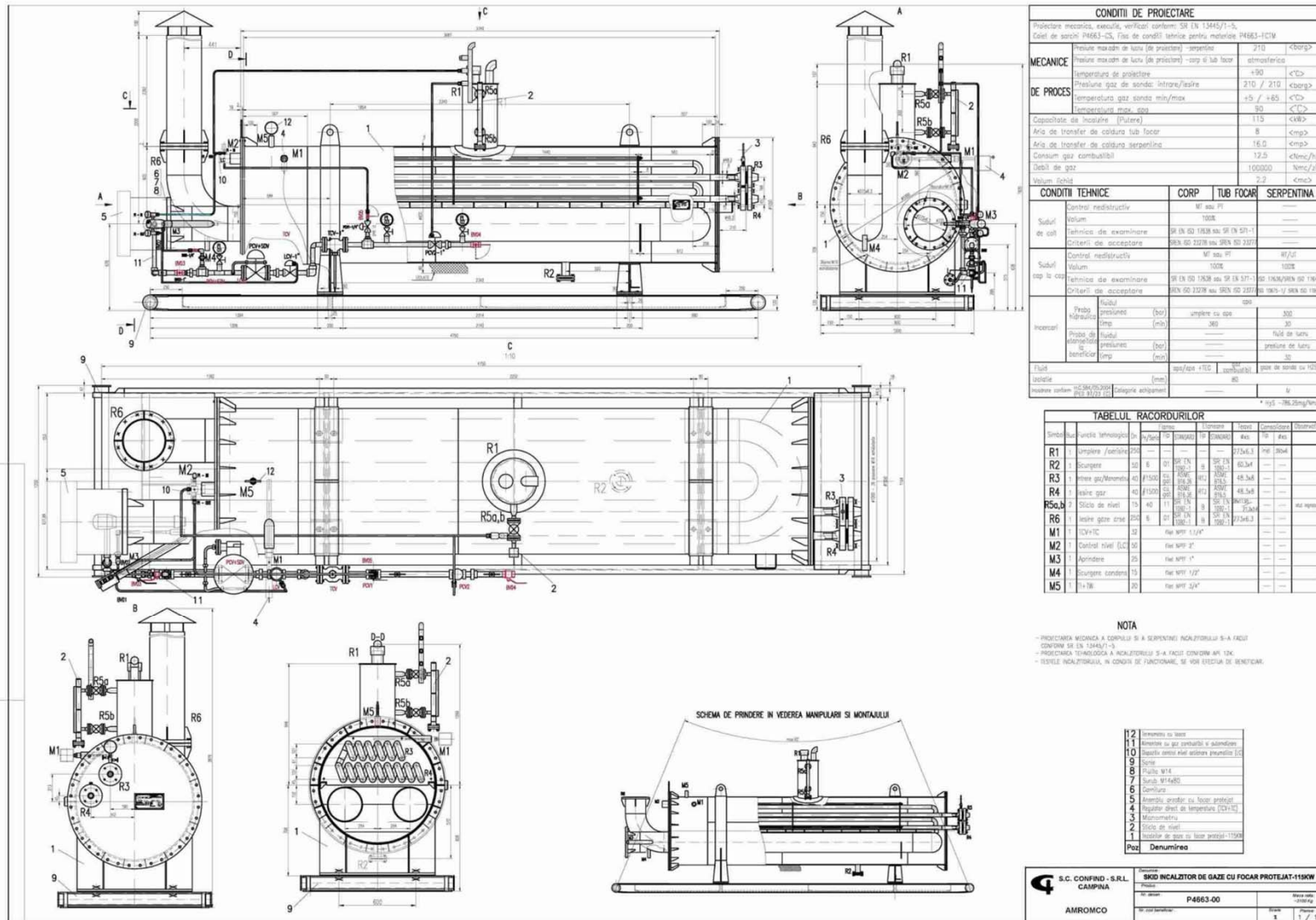
GAS HEATERS WITH PROTECTED FURNACE

DESCRIPTION	INDIRECT GAS HEATER 500KW P4871-00	INDIRECT GAS HEATER 400KW P4797-00	INDIRECT GAS HEATER 115KW P4663-00	INDIRECT GAS HEATER 10KW
Design standards	API 12K SR EN 13445-1÷5	API 12K SR EN 13445-1÷5	API 12K SR EN 13445-1÷5	API 12K SR EN 13445-1÷5
Process fluid	well gas	well gas	well gas	well gas
Process coil design pressure	350 bar	350 bar	210 bar	64 bar
Process gas pressure min./max.	100/310 bar	100/310 bar	210 bar	15/40 bar
Maximum flow	300000Nm3/zi	300000Nm3/zi	100000Nm3/zi	15000Nm3/zi
Inlet process gas temperature	+5 °C	+5 °C	+5 °C	+5 °C
Discharge process gas temperature	+20 °C ÷ +65 °C	+20 °C ÷ +65 °C	+20 °C ÷ +65 °C	+20 °C ÷ +65 °C
Fuel gas	methane gas	methane gas	methane gas	methane gas
Fuel gas flow	max.52 Nm3/h	max.40 Nm3/h	max.20 Nm3/h	max.1 Nm3/h
Fuel gas pressure	0.5÷1.5 bar	0.5÷1.5 bar	0.5÷1.5 bar	0.5÷1.5 bar
Thermal agent	water+TEG	water+TEG	water+TEG	water+TEG
Shell design pressure	atmospheric	atmospheric	atmospheric	atmospheric
Maximum temperature of thermal agent	+95 °C	+95 °C	+95 °C	+95 °C
Maximum power	500KW	500KW	115KW	10KW
Heat exchange surface of process coil	25 m2	25 m2	18.75 m2	2.5 m2
Heat exchange surface of furnace tube	16 m2	12 m2	8 m2	1.26 m2
Thermal agent volume	5.5 m3	5.5 m3	2.2 m3	0.1 m3
Weight	~ 6500 kg	~ 5800 kg	~ 3000 kg	~ 500 kg

GAS HEATERS

GAS HEATERS WITH PROTECTED FURNACE

115KW INDIRECT GAS HEATER

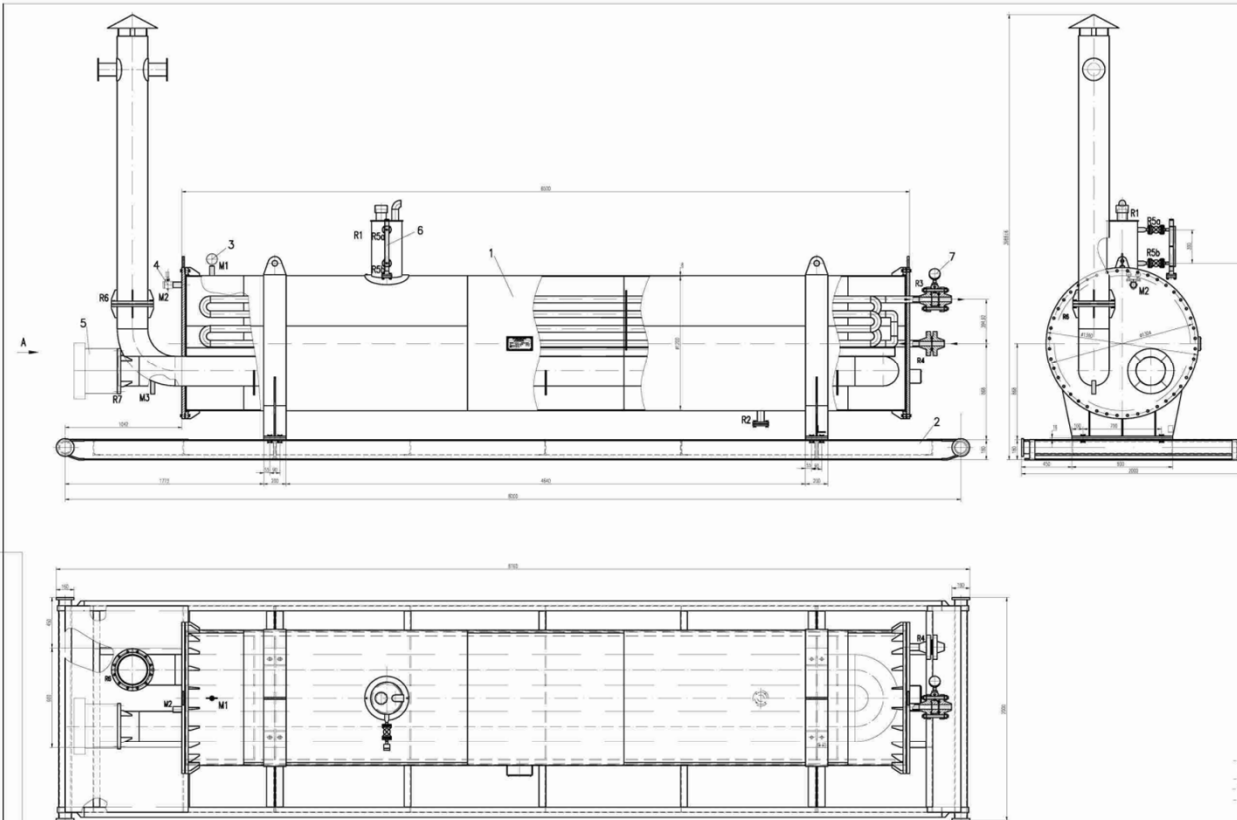


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GAS HEATERS

GAS HEATERS WITH PROTECTED FURNACE

400KW INDIRECT GAS HEATER



CONDITII DE PROIECTARE	
Proiectare mecanica, executie, verificari conform: SR EN 13445/1-5, Ciel de aplicatie P4797-C5, Fișa de condiții tehnice pentru materiale P4797-1/1W	
Presiune maximă de lucru (de proiectare) serpentina	1.500 cbar(g)
Presiune maximă de lucru (de proiectare) țevă și tub fier	atmosferică
MECANICE	
Temperatură de proiectare	+90 °C(°)
Presiune intrare gaz în serpentina min/max	100/310 cbar(g)
Presiune ieșire gaz din serpentina (după TFL)	35-62 cbar(g)
Temperatură intrare gaz în serpentina min/max	20/45 °C(°)
Temperatură ieșire gaz din serpentina	65 °C(°)
Temperatură medie apă	80 °C(°)
DE PROCES	
Capacitate de încălzire (Puterea)	400 kW(k)
Arie de transfer de căldură sub fier	12 cm²(k)
Arie de transfer de căldură serpentina	25.0 cm²(k)
Consum gaz combustibil	40 kWh(k)
Debit de gaz	300000 l/h(m³/h)
Volum lichid	5.5 cm³(k)

NOIA

- PROIECTAREA MECANICĂ A CORPULUI ȘI A SERPENTINEI ÎNCALZITORULUI S-A FACUT CONFORM SR EN 13445/1-5
- PROIECTAREA TEHNOLÓGICĂ A ÎNCALZITORULUI S-A FACUT CONFORM ARI 12K
- TESTELE ÎNCALZITORULUI, ÎN CONDITII DE FUNCȚIONARE, SE VOR EFECTUA DE BENEFIICIAR
- DOCUMENT DE REFERINȚĂ: FICHIER DE DATE NR. P4797-1/1W-REV.5, EMIS DE SC. TIAH-OL SRL

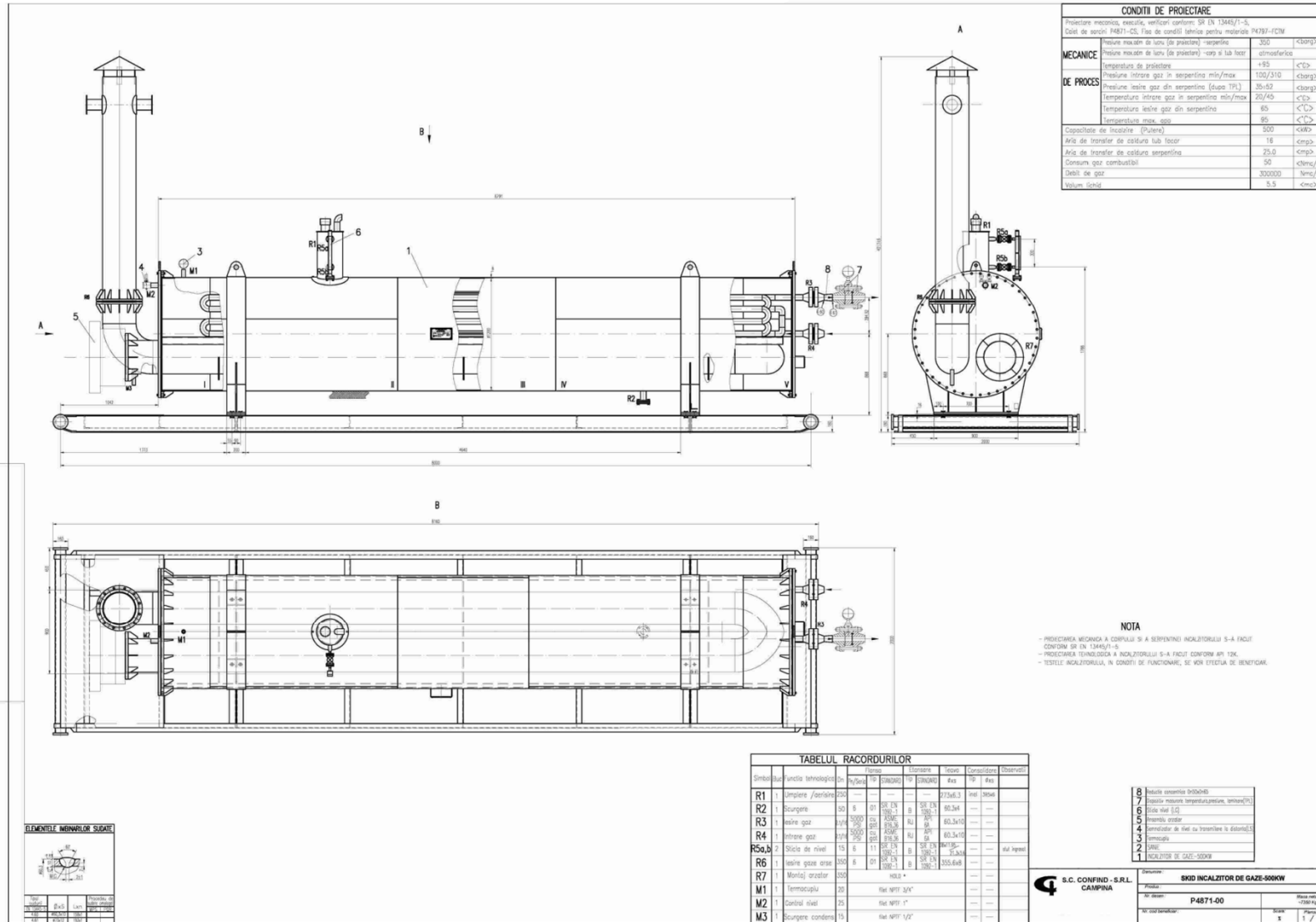
TABELUL RACORDURILOR							
Simbol	Funcție tehnologică	Dn	Materiale				Observații
			Flanșă	Etanșare	Teava	Conștință	
R1	Surgire / aerisire	50	SP	EPDM	SP	273x3.3	ref. 35x4
R2	Surgire	50	SP	EPDM	SP	273x3.3	ref. 35x4
R3	ieșire gaz	50	SP	EPDM	SP	273x3.3	ref. 35x4
R4	intrare gaz	50	SP	EPDM	SP	273x3.3	ref. 35x4
R5a	Siliacă de nivel	15	SP	EPDM	SP	273x3.3	ref. 35x4
R6	ieșire gaze arse	25	SP	EPDM	SP	273x3.3	ref. 35x4
R7	Montaj arzor	25	SP	EPDM	SP	273x3.3	ref. 35x4
M1	Termocapăt	20	SP	EPDM	SP	273x3.3	ref. 35x4
M2	Contaj nivel	25	SP	EPDM	SP	273x3.3	ref. 35x4
M3	Surgire condens	15	SP	EPDM	SP	273x3.3	ref. 35x4

S.C. CONFIND - S.R.L. CAMPINA		Denumire: SKID ÎNCALZITOR DE GAZE-400KW	
Nr. proiect: P4797-00		Data emis: 1/7/14	

GAS HEATERS

GAS HEATERS WITH PROTECTED FURNACE

500KW INDIRECT GAS HEATER



10/3/2014

GAS HEATERS WITH PROTECTED FURNACE

INDIRECT GAS HEATER 400/500KW

PERFORMANCE

- Heater is equipped with air suction furnace and burning control
- Upon request, the heater can be equipped with fuel gas regulation system, for ensuring the operation of the furnace ($p_i=8.5\text{bar}$, $p_e=0.5\div 1.5\text{ bar}$).
- Process gas minimum/maximum temperature monitoring
- Fuel gas minimum/maximum temperature monitoring
- Protection and signaling maximum temperature and minimum level of thermal agent
- Protection against lack of fuel gas and no flame situations
- Pilot furnace ignition from the control panel
- The heater can be equipped at the discharge of the process coil with a TPL device with pressure metering, temperature metering, orifice plate(three orifice plates for three different flows).
- Having these endowments, the heater can be installed in Ex zone 2
- All equipment for monitoring, signaling, control are powered 12 / 24V and Ex d II CT4-IP65 certified.

GAS HEATERS WITH PROTECTED FURNACE

INDIRECT GAS HEATER 115KW

PERFORMANCE

- Heater is equipped with air suction furnace and fuel gas adjusting system, from maximum 40 bar to 0.2÷1.2 bar.
- The same fuel adjusting system provides gas at 0.2÷1.2 bar for pneumatic actuation of valve that controls the level of the thermal agent by means of a level switch.
- Upon the thermal agent level drop below minimum or in case of no flame at the furnace the pneumatic valve closes the fuel gas line.
- After the remedial of the problems, by manually actuating a lever the gas line is opened.
- All equipment of the heater is ATEX – Ex d II CT4 certified.