Allvision
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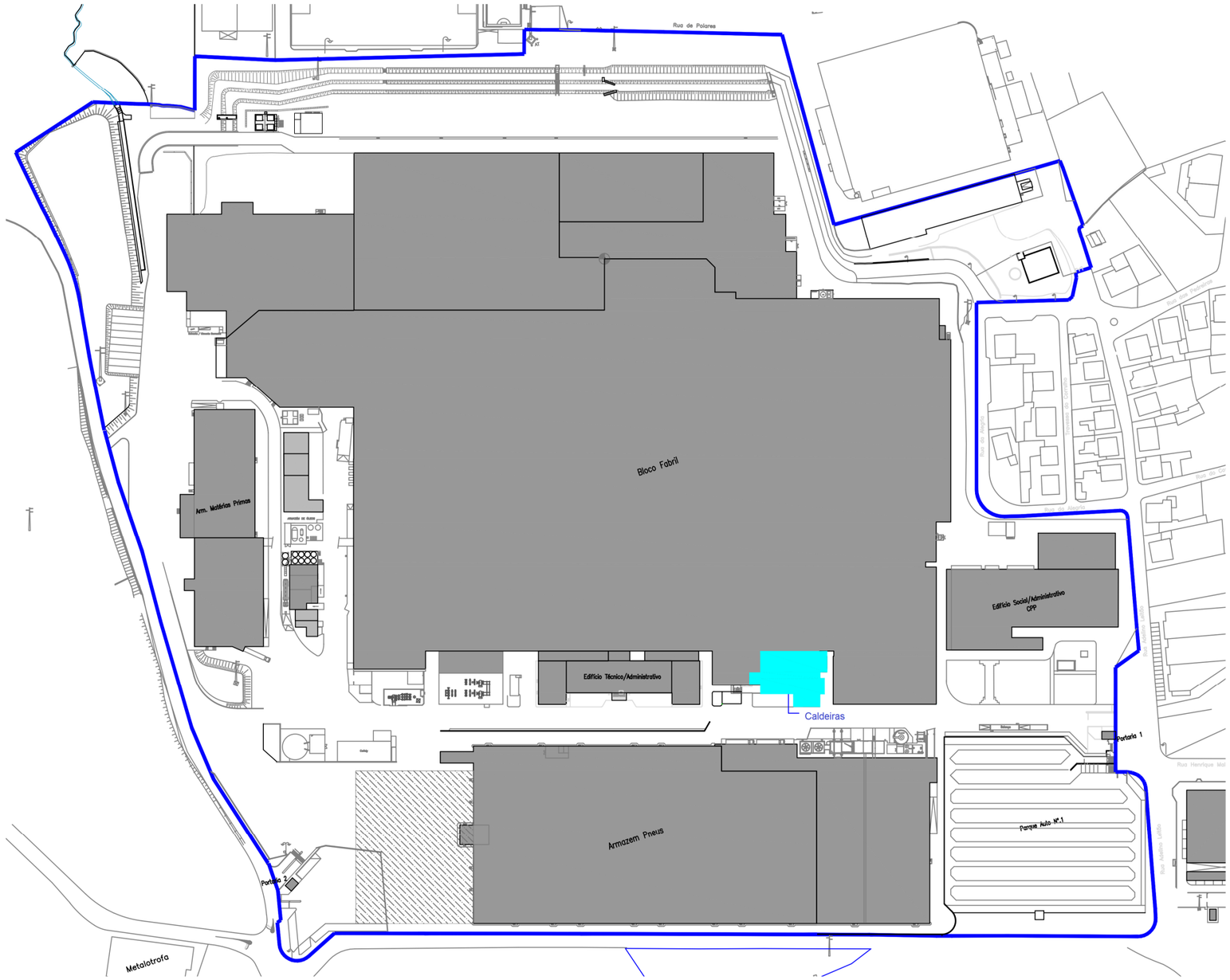
ANEXO I - PEÇAS DESENHADAS



ÁREA DE INTERVENÇÃO/PROJETO

LIMITE DA CONTINENTAL MABOR

Proponente: ENERLOUSADO - RECURSOS ENERGÉTICOS, UNIPESSOAL, LDA.	Data: Julho/2017
Estudo/Projeto: Projeto de Execução **Agregação de Capacidade na Unidade de Produção da ENERLOUSADO**	Escalas: 1/25000
	Des n.º: 1
Designação: Planta de Localização Extrato da Carta Militar Folha nº 97	Revisão: 00



ÁREA DE INTERVENÇÃO/PROJETO

LIMITE DA CONTINENTAL MABOR

Proponente: ENERLOUSADO - RECURSOS ENERGÉTICOS, UNIPESSOAL, LDA.	Data: Julho/2017
Estudo/Projeto: Projeto de Execução Agregação de Capacidade na Unidade de Produção da ENERLOUSADO	Escalas: 1/2000
	Des n.º: 2
Designação: Planta de Implantação	Revisão: 00

PT2

Compressores
Secadores

Sala Caldeiras

ZR 5
Nº.3

ZR 5
Nº.2

ZR 5
Nº.1

ZR 315 VSD
Nº.4

Secador D22800IN

FD 450

FD 45

GR 200W

ESD 441

GA 250W

Quadro Comando
Caldeira Nº.3

OMNICAL
CALDEIRA
CONVENCIONAL
25 TON/H
22 BAR

VKK GR.
CALDEIRA
CONVENCIONAL
30 TON/H
25 BAR

GEA
CALDEIRA
RECUPERATIVA
20 TON/H
25 BAR

Gas
Compressor

Concrete Wall
th.=300
h=2500

Steam Header

Existing channel

DESGASIFICADOR

Boiler

VKK Po.
CALDEIRA
CONVENCIONAL
0,6 TON/H
30 BAR

Feeding Pumps

RESERVADO
ÁGUA DESCALCIFICADA
80 m3

RESERVADO
ÁGUA OSMOTIZADA
80 m3

Osmose Inversa BW30 30 m3/h

LEGENDA:

- Equipamentos existentes / Em exploração
- Equipamentos novos instalados
- Área de intervenção / Projeto

Proponente: ENERLOUSADO - RECURSOS ENERGÉTICOS, UNIPESSOAL, LDA.	Data: Julho/2017
Estudo/Projeto: Projeto de Execução	Escalas: 1/200
Agregação de Capacidade na Unidade de Produção da ENERLOUSADO	Des.Nº.: 3
Designação: Planta de Layout	Revisão: 00

PT2

Compressores
Secadores

Sala Caldeiras

ZR 5
Nº.3

ZR 5
Nº.2

ZR 5
Nº.1

ZR 315 VSD
Nº.4

GR 200W

ESD 441

GA 250W

FD 450

FD 45

Secador DZ2800WN

Quadro Comando
Caldeira Nº.3

OMNICAL
CALDEIRA
CONVENCIONAL
25 TON/H
22 BAR

VKK GR.
CALDEIRA
CONVENCIONAL
30 TON/H
25 BAR

GEA
CALDEIRA
RECUPERATIVA
20 TON/H
25 BAR

Gas
Compressor

VKK Po.
CALDEIRA
CONVENCIONAL
0.6 TON/H
30 BAR

Concrete Wall
th.=300
h=2500

Steam Header

Existing channel

Boiler

Feeding Pumps

DESGASIFICADOR

RESERVATORIO
AGUA DESCALCIFICADA
80 m3

RESERVATORIO
AGUA OSMOTIZADA
80 m3

Osmose Inversa BW30 30 m3/h

REDE INTERNA DA CONTINENTAL

REDE INTERNA DA CONTINENTAL

REDE INTERNA DA CONTINENTAL

LEGENDA:

Rede abastecimento água

Proponente: ENERLOUSADO - RECURSOS ENERGÉTICOS, UNIPESSOAL, LDA.		Data: Julho/2017
Estudo/Projeto: Projeto de Execução	Agregação de Capacidade na Unidade de Produção da ENERLOUSADO	Escalas: 1/200
Designação: Rede de abastecimento de água		Des.nº: 4
		Revisão: 00

REDE INTERNA DA CONTINENTAL MABOR

PT2

Compressores
Secadores

ZR Nº.1
ZR Nº.2
ZR Nº.3

Secador D22800IN

FD 450
FD 45

ZR 315 VSD
Nº.4

GR 200W
ESD 441
GA 250W

Quadro Comando
Caldeira Nº.3

OMNICAL
CALDEIRA
CONVENCIONAL
25 TON/H
22 BAR

VKK GR.
CALDEIRA
CONVENCIONAL
30 TON/H
25 BAR

GEA
CALDEIRA
RECUPERATIVA
20 TON/H
25 BAR

Gas
Compressor

Sala Caldeiras

DESGASIFICADOR

Concrete Wall
th.=300
h=2500

Steam Header

Existing channel

Boiler

VKK Pq.
CALDEIRA
CONVENCIONAL
0,6 TON/H
30 BAR

Feeding Pumps

RESERVATORIO
AGUA DESCALCIFICADA
60 m3

RESERVATORIO
AGUA CONDENSADA
60 m3

Osmose Inversa BW30 30 m3/h

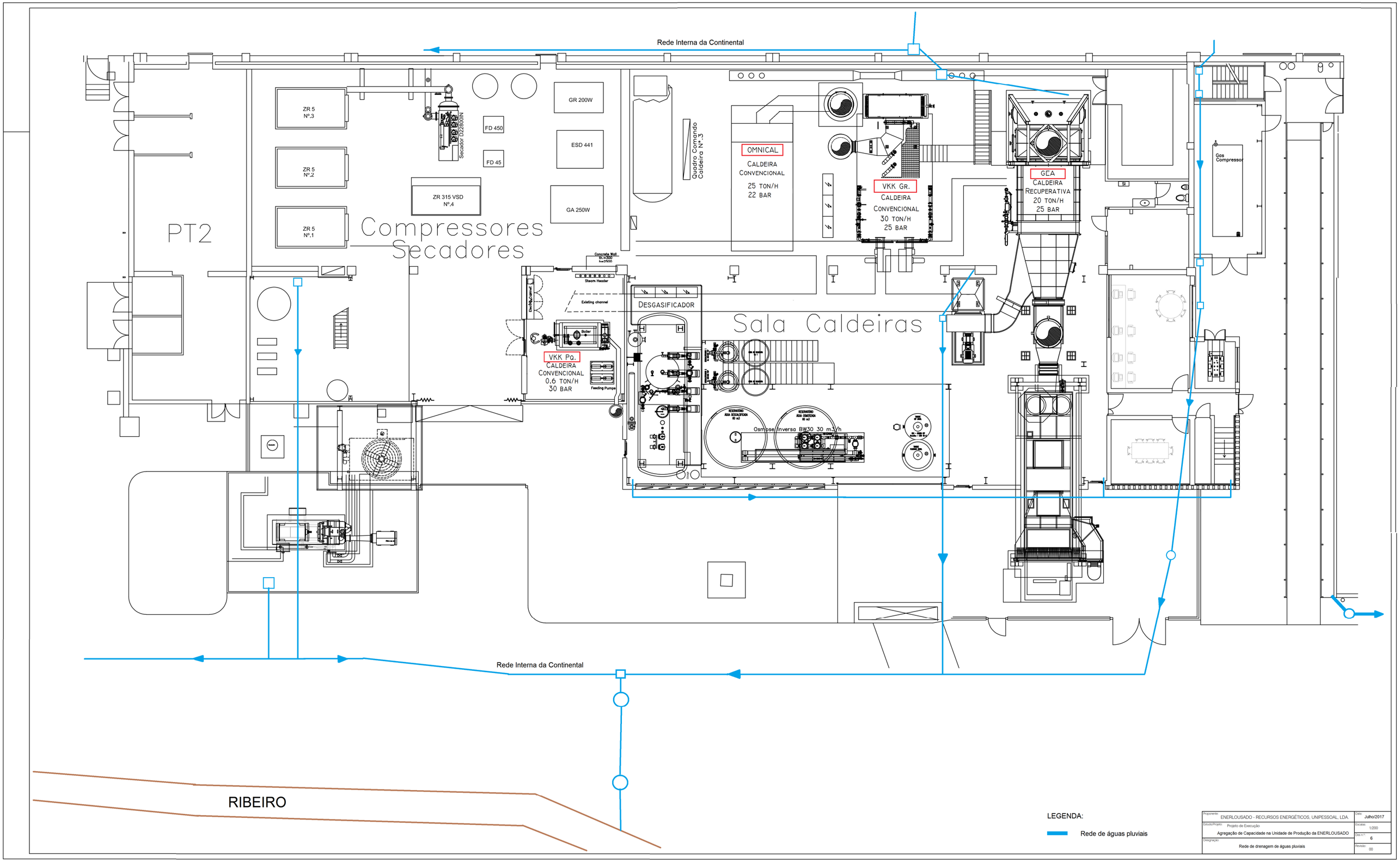
REDE INTERNA DA CONTINENTAL MABOR

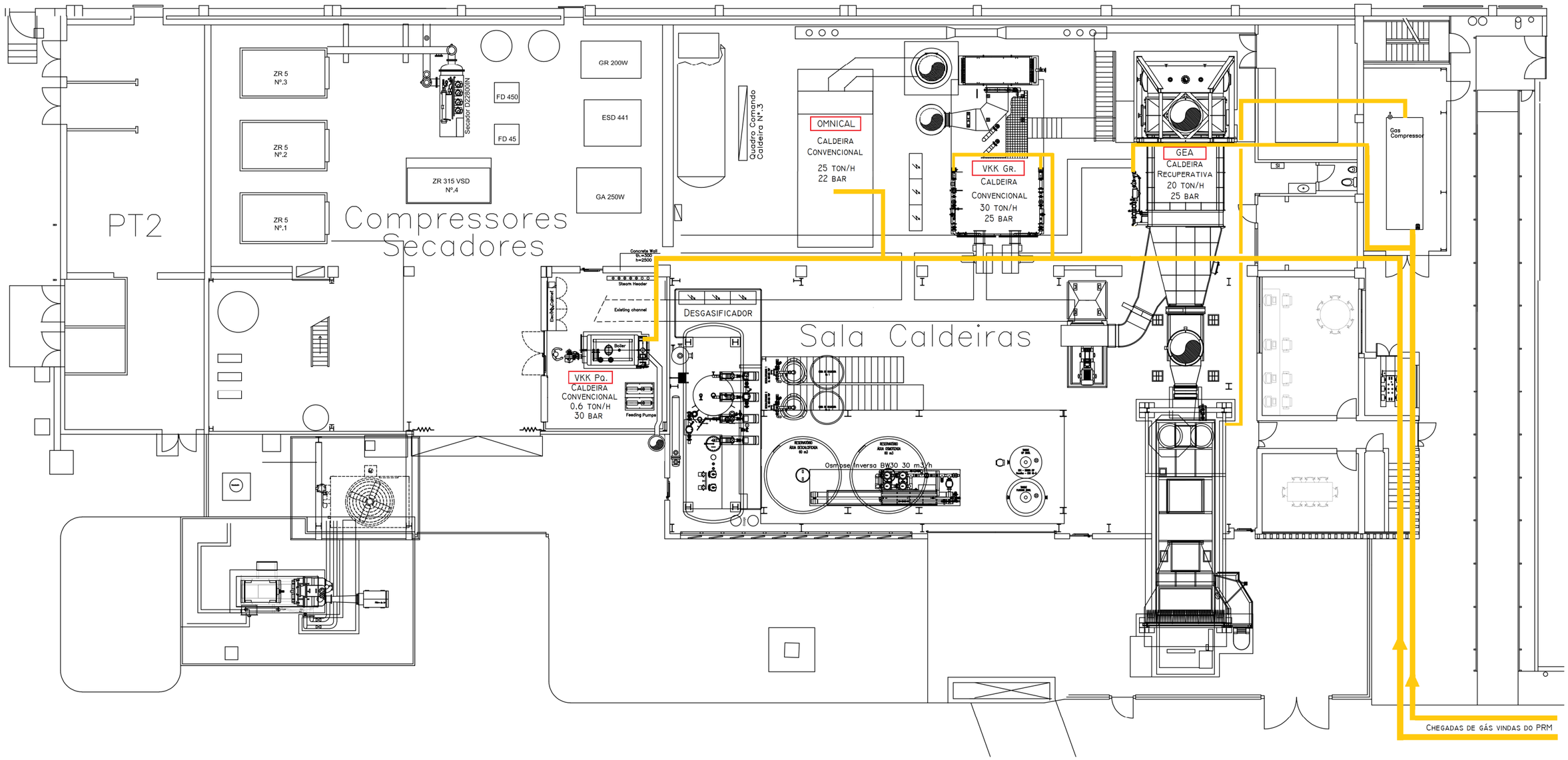
LIGAÇÃO AO SIDVA

LEGENDA:

Rede de águas industriais

Proponente: ENERLOUSADO - RECURSOS ENERGÉTICOS, UNIPESSOAL, LDA.	Data: Julho/2017
Estudo/Projeto: Projeto de Execução	Escalas: 1/200
Agregação de Capacidade na Unidade de Produção da ENERLOUSADO	Des.n.º: 5
Designação: Rede de drenagem de águas industriais	Revisão: 00


Rede Interna da Continental
ZR 5 Nº.3
ZR 5 Nº.2
ZR 5 Nº.1
ZR 315 VSD Nº.4
Secador DZ2800N
FD 450
FD 45
GR 200W
ESD 441
GA 250W
PT2
Compressores Secadores
Quadro Comando Caldeira Nº.3
OMNICAL
CALDEIRA CONVENCIONAL
25 TON/H
22 BAR
VKK GR.
CALDEIRA CONVENCIONAL
30 TON/H
25 BAR
GEA
CALDEIRA RECUPERATIVA
20 TON/H
25 BAR
Gas Compressor
Concrete Wall Th.=300 h=2500
Steam Header
Existing channel
DESGASIFICADOR
Sala Caldeiras
VKK Pq.
CALDEIRA CONVENCIONAL
0.6 TON/H
30 BAR
Boiler
Feeding Pumps
RESERVATORIO AGUA DESCALCIFICADA 60 m3
RESERVATORIO AGUA OSMOTIZADA 60 m3
Osmose Inversa BW30 30 m3/h
Rede Interna da Continental
RIBEIRO
LEGENDA:
Rede de águas pluviais
Proponente: ENERLOUSADO - RECURSOS ENERGÉTICOS, UNIPESSOAL, LDA.
Data: Julho/2017
Estudo/Projeto: Projeto de Execução
Escalas: 1/200
Agregação de Capacidade na Unidade de Produção da ENERLOUSADO
Des.nº: 6
Designação: Rede de drenagem de águas pluviais
Revisão: 00



LEGENDA:

Rede de gás Natural

Proponente: ENERLOUSADO - RECURSOS ENERGÉTICOS, UNIPESSOAL, LDA.	Data: Julho/2017
Estudo/Projeto: Projeto de Execução Agregação de Capacidade na Unidade de Produção da ENERLOUSADO	Escalas: 1/200
Designação: Rede de abastecimento de gás natural	Des.nº.: 7
	Revisão: 00

CONDENSADO DA FÁBRICA

VAPOR PARA FÁBRICA

PT2

ZR 5 Nº.3

ZR 5 Nº.2

ZR 5 Nº.1

ZR 315 VSD Nº.4

Secador DZ2800IN

FD 450

FD 45

GR 200W

ESD 441

GA 250W

Compressores Secadores

Quadro Comando Caldeira Nº.3

OMNICAL
CALDEIRA CONVENCIONAL
25 TON/H
22 BAR

VKK GR.
CALDEIRA CONVENCIONAL
30 TON/H
25 BAR

GEA
CALDEIRA RECUPERATIVA
20 TON/H
25 BAR

Gas Compressor

Tanque de Condensados

Concrete Wall
SL.=300
h=2500

Steam Header

Existing Channel

DESGASIFICADOR

Sala Caldeiras

VKK Pq.
CALDEIRA CONVENCIONAL
0,6 TON/H
30 BAR

Feeding Pumps

BACIA DE RETENÇÃO

BACIA DE RETENÇÃO

RESERVATORIO AGUA DESCALCIFICADA 60 m3

RESERVATORIO AGUA OSMOTIZADA 60 m3

Osmose Inversa BW30 30 m3/h

VAPOR PARA FÁBRICA
26 bar

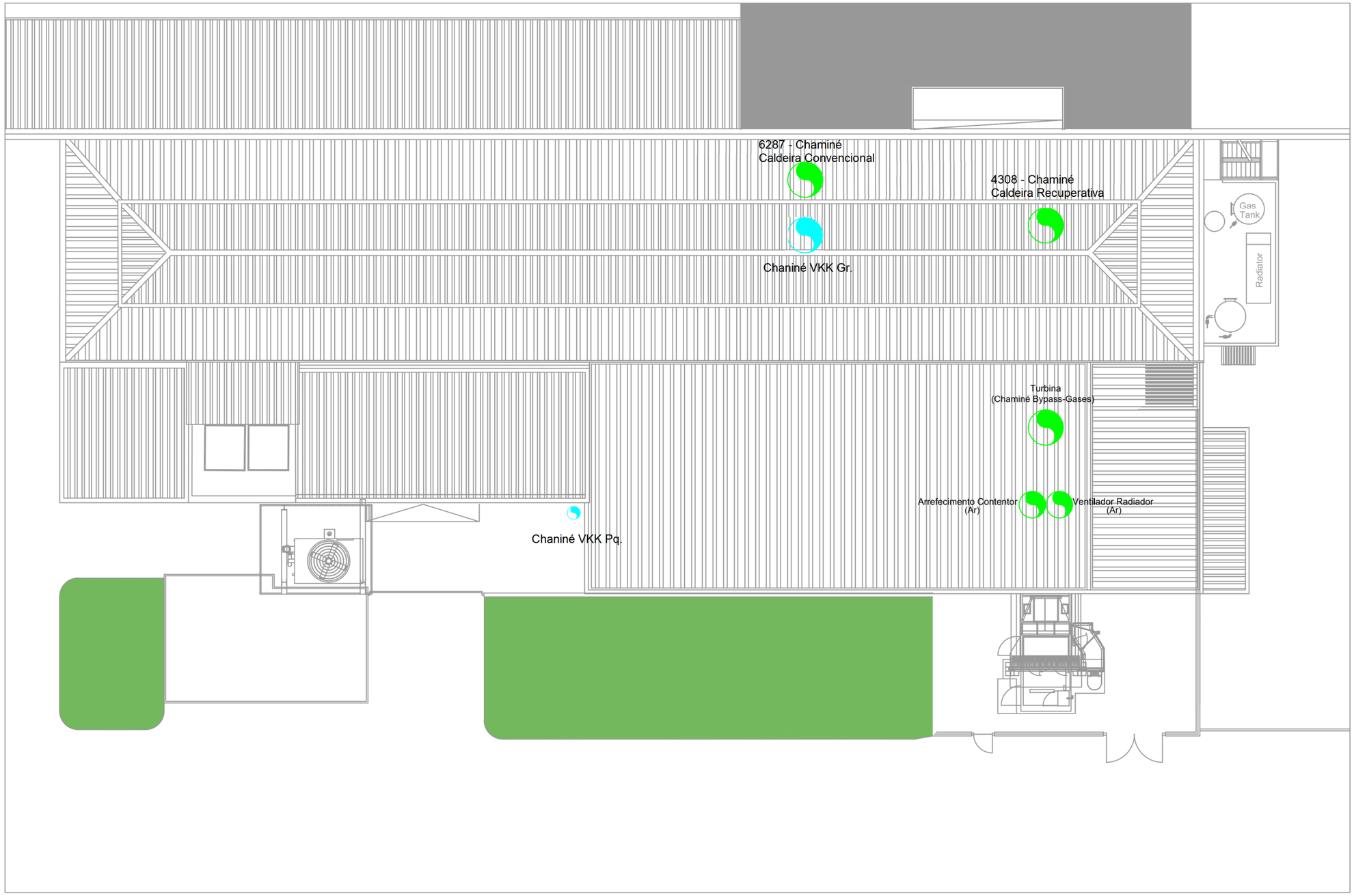
VAPOR PARA FÁBRICA
19 bar

LEGENDA:

Rede de vapor de água

Rede de condensados

Proponente: ENERLOUSADO - RECURSOS ENERGÉTICOS, UNIPESSOAL, LDA.	Data: Julho/2017
Estudo/Projeto: Projeto de Execução Agregação de Capacidade na Unidade de Produção da ENERLOUSADO	Escala: 1/200
Designação: Rede de vapor de água e de condensados	Des.nº: 8
	Revisão: 00



Legenda:

- Chaminé Nova
- Chaminé Existente

Proponente: ENERLOUSADO - RECURSOS ENERGÉTICOS, UNIPESSOAL, LDA.		Data: Julho/2017
Estudo/Projeto: Projeto de Execução Agregação de Capacidade na Unidade de Produção da ENERLOUSADO		Escalas: 1/200
		Des n.º: 9
Designação: Localização das Chaminés		Revisão: 00


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Dados técnicos: Caldeira de vapor saturado

Tipo de caldeira:	Caldeira Condor	HU0601-14-30/25
Ano de fabrico:		2016
N.º produto:		22361
potência máx. da caldeira:		30 t / h
Potência máx. de aquecimento:		2 x 10,5 MW
Pressão de funcionamento permitida:		25 bar
Temperatura do vapor saturado permitida:		226 °C
Pressão de funcionamento:		25 bar
Pressão de ensaio:		42,5 bar
Superfície aquecida:		515 m²

Equipamento:

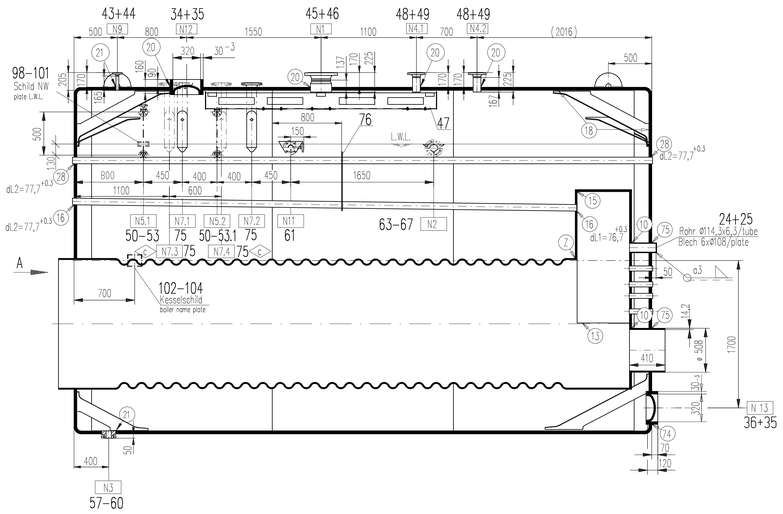
☐ DIN EN 12953 – BOB 24h

☒ DIN EN 12953 – BOB 72h

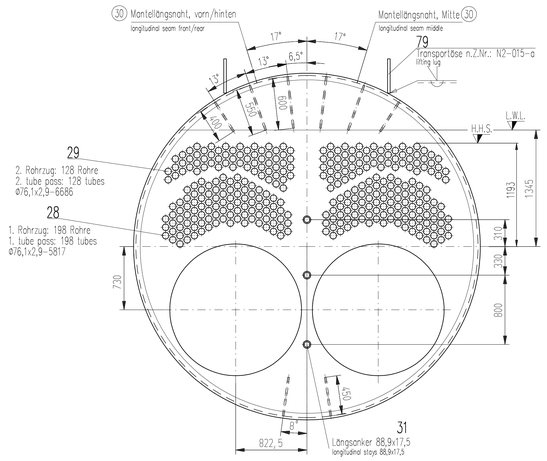
☐ Assim como: TRBS 2141 Parte 1 Ponto 4.2.3

***** BOB = Funcionamento sem supervisão constante.

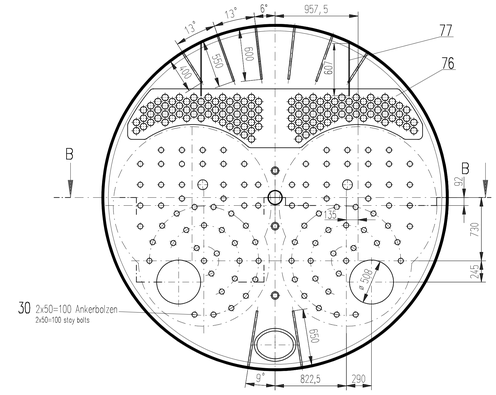
Längsschnitt
longitudinal section

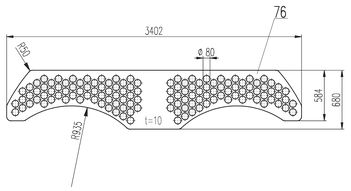


vorderer Mantelboden
front shell end plate

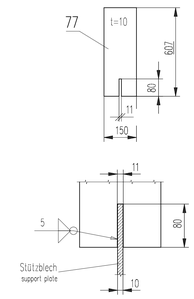


hinterer Mantelboden
rear shell end plate





M 1:10



Schnitt B–B
section B–B

Ansicht A
view A

M 1:20

M 1:20

Detail X
detail X
M 1:2

Detail Z
detail Z
M 1:2

Schweißdetail W
welding detail W
M 1:2,5

Schweißdetail Y
welding detail y
M 1:5

Vorderer Wendekammerboden
Front reversal chamber end plate

Nr.	DN	PN	DIN EN Norm	Bezeichnung / Funktion Designation / Function	Rohr Tube Ø x s	Flanschanschluß Flange connection Ø x s
N1	200	40	1092–1	Dampfaustritt steam outlet	244,5x20	219,1x16,3
N2	80	40	1092–1	Speisung feeding	139,7x17,5 88,9x6,3	88,9x3,2
N3	50	40	1092–1	Abschlämmung / Entleerung blow down / drainage	60,3x5,6	60,3x2,9
N4.1 N4.2	80	40	1092–1	Sicherheitsventil safety valve	88,9x6,3	88,9x3,2
N5.1 N5.2	20	40	1092–1	Wasserstandanzeiger water level indicator	42,4x5,6	26,9x2,3
N6						
N7.1– N7.4	100	40	1092–1	Wasserstandbegrenzer water level limiter	114,3x8,0	114,3x3,6
N8		20	40	1092–1	Druckentnahmestutzen pressure take off branch	26,9x2,3	26,9x2,3
N9		25	40	1092–1	Entlüftung venting	33,7x5,6	33,7x2,6
N10		20	40	1092–1	Entsalzung demineralisation	26,9x2,3	26,9x2,3
N11		50	40	1092–1	Leitfähigkeit conductivity	60,3x5,6	60,3x2,9
N12		300 400	40	DIN851	Mannloch manhole		
N13		300 400	40	DIN851	Mannloch manhole		
N14							

Maße ohne Toleranzangabe nach EN ISO 13920–D
size without tolerance declaration acc. to

Bauteil Component	Werkstoff Material	Prüfbescheinigung test certificat DIN DIN EN	DIN EN 10204	Bemerkungen remarks
Mantelböden Shell end plates	P355GH	10028	3.1	Druckgerät nach Druckgeräterichtlinie 2014/68/ EU: Artikel 4 (1) b) Gefahrenkategorie nach Diagramm 5 Anhang II, Kategorie IV Konformitätsbewertungsverfahren: Modul G (EG–Einzelprüfung) Angewandte technische Spezifikationen: für die Werkstoffe: EN 12953 für die Herstellung: EN 12953 für die Berechnung: EN 12953 Die auf die Konstruktion anwendbare Verbändevereinbarung FDBR–VDK 003 (2011–01) wurde beachtet bzw. Abweichungen durch ausgleichende Maßnahmen berücksichtigt.
Kesselmantel Boiler shell	P355GH	10028	3.1	Schweiß–Verbindungsgüteficient des Kesselmantels vN =0,85
Wendekammermantel Wrapper shell	P295GH	10028	3.1	Schweißstahlformen nach Schweißdetailzeichnung–Nr.:03000 Ausführung ungekennzeichneter Rundnähte : nach Detail 56 bei gleicher Wanddicke nach Detail 57 bei ungleichen Wanddicken
Flammrohr Furnace	P295GH	10028	3.1	Zerstörungsfreie Prüfungen: Prüfplan "EN 12953–Kessel (0,85)"
Eckanker Gusset stays	P355GH	10028	3.1	Sicherung der Güte von Schweißarbeiten nach EN ISO 5817, Bewertungsgruppe: B
Mannlochring Manhole ring	P295GH	10028	3.1	pressure equipment according to PED 2014 / 68 / EU: Article 4 (1) b) category of hazard according to table 5 annex II: Category IV
Mannlochdeckel Manhole cover	P265GH	10028	3.1	conformity assesment procedure: Module G (EC unit verification)
Wendekammerstutzen Access opening	P235GH	10216	3.1	applied technical specification: for materials: EN 12953 for manufactoring: EN 12953 for calculation: EN 12953 Associations–Agreement FDBR–VDK 003 (2011/01) applicable to the construction is observed or deviations are taken into account by compensating measures.
Ankerbolzen Stay bolts	P250GH	10273	3.1	weld–joint coefficient at boiler shell vN =0,85
Rauchrohre Smoke tubes	P235GH	10217	3.1	welding detail according to drawing no.: 03000
Stutzenrohre/Rohrbogen/Reduz. Branches/Tube bends/Reducer	P235GH	10216	3.1	execution of unmarked circumferential seams according to detail: 56 at equal wallthickness 57 at unequal wallthickness
Stutzenrohre N7,N2 Branches N7,N2	16Mo3	10216	3.2	Non–destructiv examination: testplan"EN 12953–boiler (0,85)"
Flansche Flanges	P250GH	10222	3.1	quality assurance of welded structures acc. to EN ISO 5817, valuation group: B
Blockflansch Blockflange	16Mo3	10273	3.2	
Schrauben Bolts	5.6	24014	St	
Anschweißteile Welding parts	S235JR	10025		

Eckanker gusset stays

Pos.	LB(mm)	h (mm)	se (mm)
11	600	140	35
12	600	140	35
13	550	140	35
14	450	140	35
15	400	140	35

Böden im ebenen Teil, sowie sämtliche Blechwanddicken ohne Unterschreitung der Nennd icke (EN 10029 – Klasse C).
Drum and plates in the plain part and all thicknesses of plates without undercut of the nominal thickness (EN 10029 – class C)

Achtung! Stutzen N1 nach Zeichnung N1–013–a!
Attention! Branch N1 acc. to drawing N1–013–a!

Zugehörige Zeichnungen / Appertaining drawings		Zeichnung–Nr. / Drawing–no.
Beiblatt zur Bödenberechnung	Supplement to end plates calculation	A1001–01–67860–01–a
Schweissdetailzeichnung	Drawing of welding details	03000–25
Eckanker	Gusset stays	N1–014–a
Ankerbolzen	Stay bolts	A1001–30–67860–01
Wasserstandbegrenzer	Water level limiter	N1–087–a
Dampfentnahme	Steam take–off	A1001–47–67860–01–a
Leitfähigkeit mit Entsalzung	Conductivity and demineralisation	A1001–61–67860–01–a
Blockflansch	Blockflange	N1–006–a
Dickwandige Rohrstutzen	Heavy walled tubes	N1–013–a

Index	Änderung / alteration	Bearbeitet drawn	Datum date	Gepr. Abteil check. branch	Datum date	Gepr. (Ch) check. (weld)	Datum date
c	Trittleisten Pos.80+81 entfernt; N7.3+N7.4 hinzugefügt	Beltz	11.10.2016	Steffens	11.10.2016		
b	Dicke Pos.8 in 28mm korrigiert	Steffens	29.09.2016	Gottwald	29.09.2016		
a	Erstellt	Beltz	22.07.2016	Steffens	12.09.2016	Wolfram	12.09.2016

maximal heat input per furnace day	10.500 kW
flue gas volume	28,42 m³
water capacity to L.W.L.	40,91 m³
water capacity full	49,01 m³
heating surface	515 m²
max. steam output	30 t/h
max. thermal output	19.813,6 kW
set pressure safety valve	25 bar
max. allowable pressure	25 bar
max. steam temperature	226 °C
test pressure	42,5 bar
steel mass	67.000 kg

VKK STANDARDKESSEL Köthen GmbH

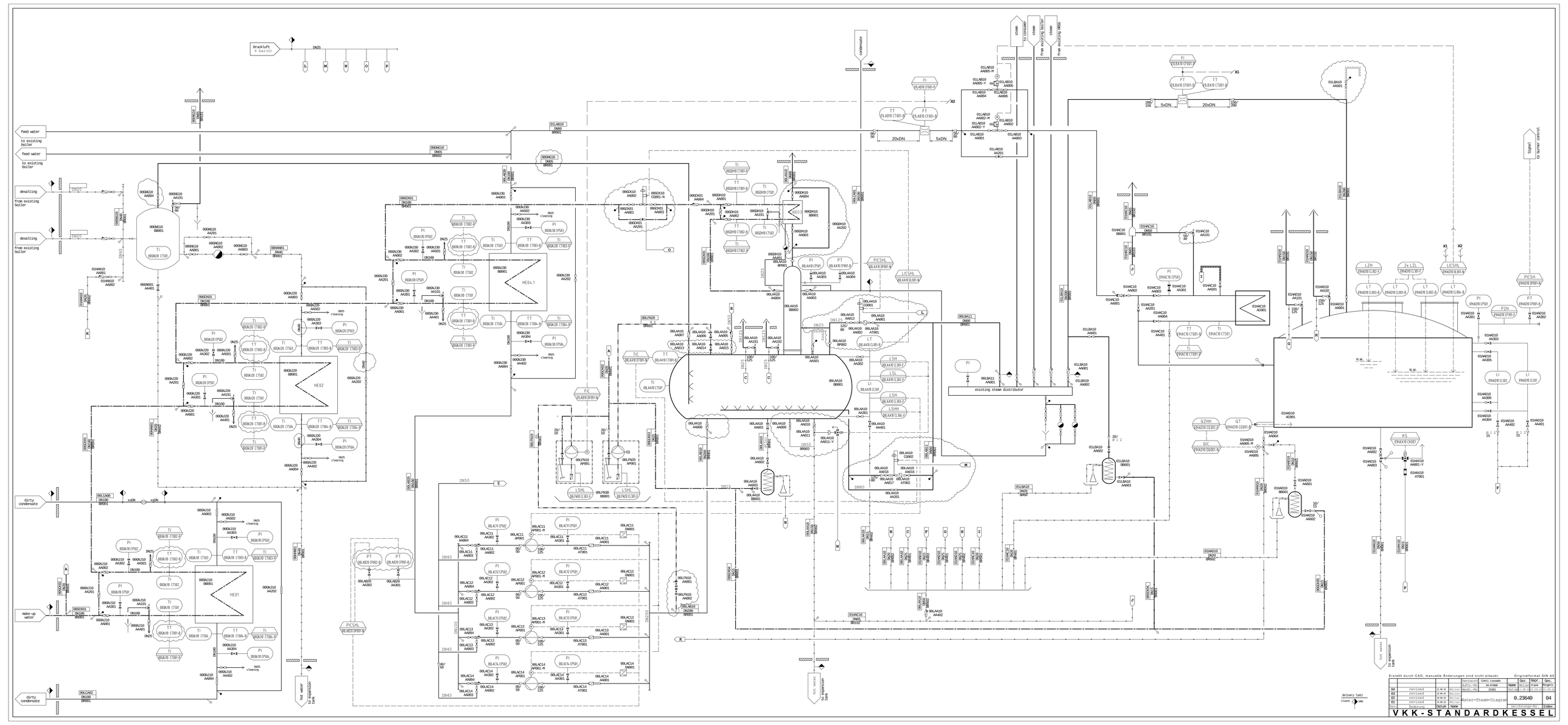
Maßstab / scale 1:25
Original–Format / source document A0

Auftrags–Nr. / order no.	Hersteller–Nr. makers no.	Datum	Name	Benennung / designation
34–67860	22.361	Bearb. 22.07.2016	Beltz	Condorkessel HD0601–14–30/25
		Gepr. Abteil 12.09.2016	Steffens	
		Gepr. (Ch) 12.09.2016	Wolfram	Condorboiler HD0601–14–30/25

Konstruiert / coordinated: Conti Lousado
Schutzvermerk nach DIN 34, beachten.

Zeichnungs–Nr. / drawing no.: A1001–00–67860–01–c
Bl. 5 Bl. 6

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Druckluft
6 bar(G)
DN25
L
M
N
O
P
condensate
steam
to consumer
steam
from existing boiler
steam
from existing HRSG
feed water
to existing boiler
feed water
to existing boiler
desalting
from existing boiler
desalting
from existing boiler
dirty condensate
make-up water
dirty condensate
hot water to expansion tank
hot water to expansion tank
hot water to expansion tank
signal to burner control
existing steam distributor
delivery limit
client
vkk
Erstellt durch CAD, manuelle Änderungen sind nicht erlaubt.
Originalformat DIN A0
Gez.
Gepr.
Gen.
Name
Datum
Kontrolliert
Autr.-Nr.
34-07800
Zeichn.-Nr.
22301
Maßstab
0.23640
Blatt
04
Index
Water-Steam-Diagram
Zeichnungsänderungen
Index
04 revised
03 revised
02 revised
01 revised
00 Anderung
VKK-STANDARDKESSEL

Technical Data: Gas Firing

Make:	
Burner type:	
Control:	modulating
Control ratio:	1:
Fuel:	Natural gas
Calorific value (H_i):	kJ/Nm^3
Fuel flow at max.boiler output:	Nm^3/h
Flue gas side resistance:	mbar
Control pressure upstream burner shutoff valve: (stated as gauge pressure)	mbar
Gas pressure upstream of gas pressure controller: (stated as gauge pressure)	bar

Equipment:

☐ DIN EN 12953 – BOB 24h

☐ DIN EN 12953 – BOB 72h

☐ as well as: TRBS 2141 Part 1 point 4.2.3

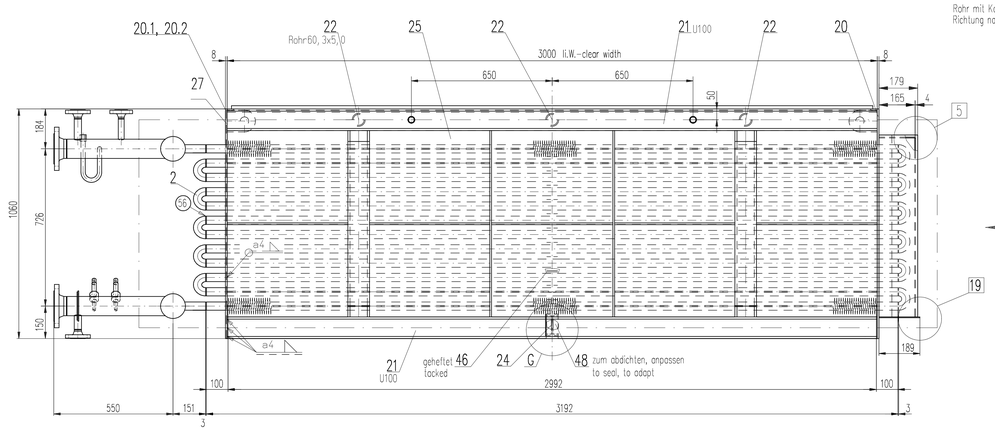
***** BOB = operation <u>without</u> permanent supervision.

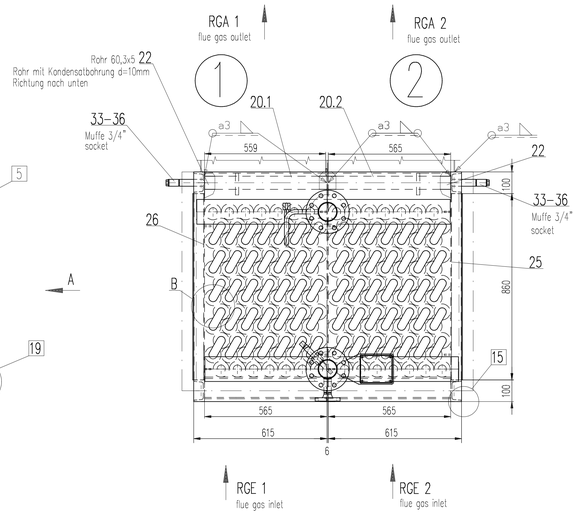
Kennwort/projekt name:	***Conti Lousado***	
Herstellnummer/ manufacture no.:	***34-67860, 22361***	
Berechnungsnummer/ calc. No.:	***A22361-00_SPW100***	
Abteilung / Name // department/name:	***K-WT/Reinhardt***	

Zug eines Schornsteines mit vorgeschaltetem Rauchgaskanal
chimney draft with upstream stack tube

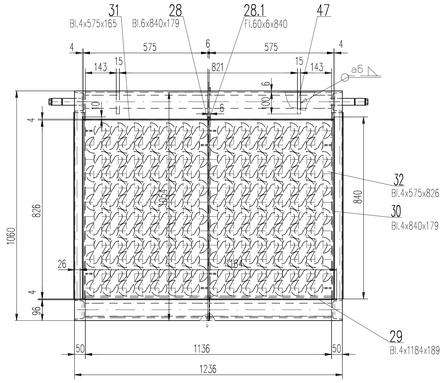
Umgebung				**environment**
Luftdruck	mbar	***1013***		air-pressure
Lufttemperatur	°C	***15***		air-temperature
rel. Feuchte	-	***0,6***		relative humidity
Wasseranteil in der Luft	kg/kg	0,0063		watercontent in the air
Partialdruck des Wassers	mbar	10,34		partial pressure, water
Dichte der tr. Luft	kg/m³	1,2930		density dry air
Dichte der feuchten Luft	kg/m³	1,2880		density wet air
Dichte der feuchten Luft bei T	kg/m³	1,2210		density wet air at T
Rauchgas				**smoke gas**
Rauchgasmassenstrom	kg/s	***8,4344***		mass flow
Eintrittstemperatur	°C	***120***		inlet temperature
Austrittstemperatur	°C	***101***		outlet temperature
mittlere Temperatur	°C	110,5		average temperature
Rauchgasdruck	mbar	***1015***		smoke gas pressure
Dichte (Normzustand)	kg/m3	1,2445		standard density
Dichte (bei T)	kg/m3	0,8860		density at T
dyn. Viskosität bei T	Pa s E-6	20,41		dynamic viscosity
Rauchrohr				**smoke tube**
Länge unknown	mm	***0***		length
Rohrdurchmesser (außen)	mm	***1.016***		tube diameter outside
Wanddicke	mm	***6,00***		thickness
Rohrdurchmesser (innen)	mm	1.004		tube diameter inside
Geschwindigkeit im Rohr	m/s	12,02		velocity tube inside
Reynoldszahl	-	523976		Reynolds number
Rohrreibungsbeiwert	-	0,015		tube friction coefficient
Anzahl 90° Bögen (Umlenkung Schornstein)	-	***0***		number of bends
Anzahl 45° Bögen	-	***0***		number of bends
Druckverlust Bögen	mbar	0		pressure loss bends
Druckverlust Rohr + Bögen	mbar	0,000		pressure loss tube+bends
Schornstein				**chimney**
Eintrittshöhe	mm	***6000***		inlet level
Rohrdurchmesser (außen)	mm	***1.016***		tube diameter outside
Wanddicke	mm	***6,00***		thickness
Rohrdurchmesser (innen)	mm	1.004		tube diameter inside
Geschwindigkeit im Rohr	m/s	12,02		velocity tube inside
Reynoldszahl	-	523976		Reynolds number
Widerstandsbeiwert (Reibung)	-	0,015		friction factor
Widerstandsbeiwert (Austritt)	-	1		friction factor outlet
Druckverlust Schornst.+Austritt	mbar	0,827		pressure loss chimney+outlet
Höhe	m	***25***		high
Zug des Schornsteins	mbar	0,62		chimney draft
gesamter Zug hinter Kessel	**mbar**	**-0,20**	(ohne Zuschlag)	total chimney draft

Darstellung von hinten auf den Kessel gesehen
view from back side boiler

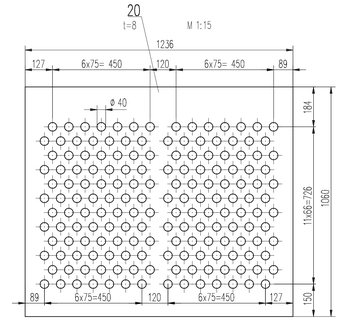


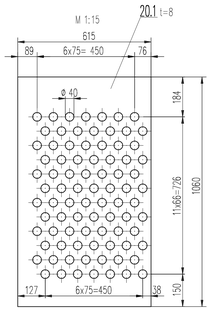


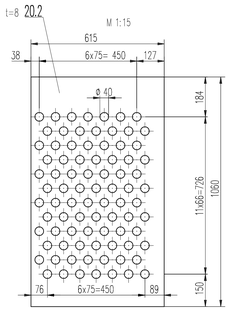
Ansicht A
view A

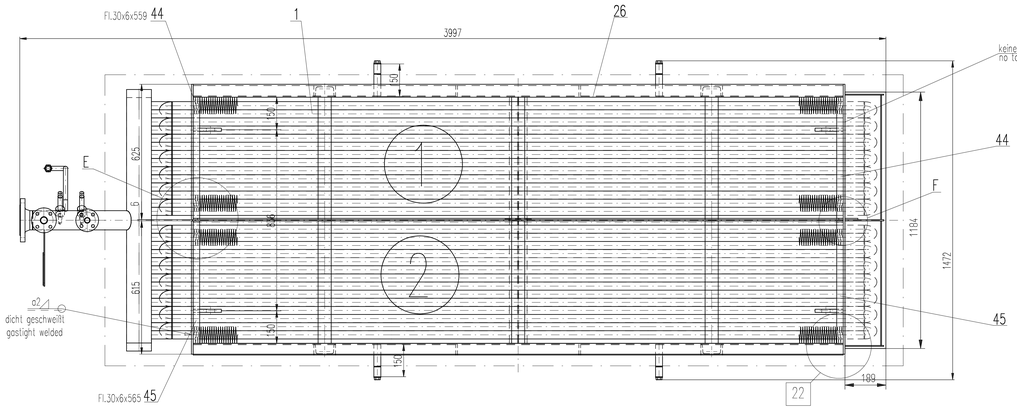


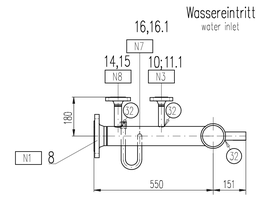
Bohrungen und Fasen
hole and bevel
Rz160

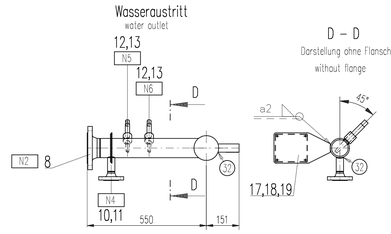


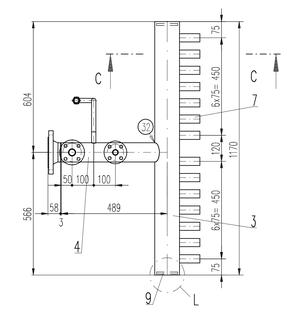


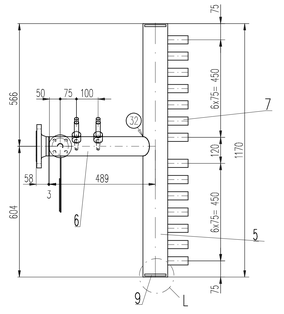


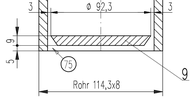


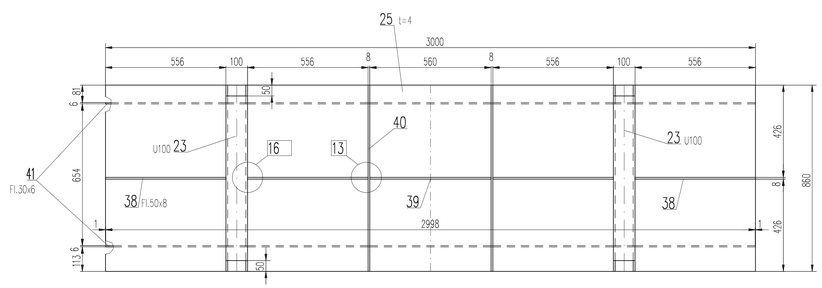


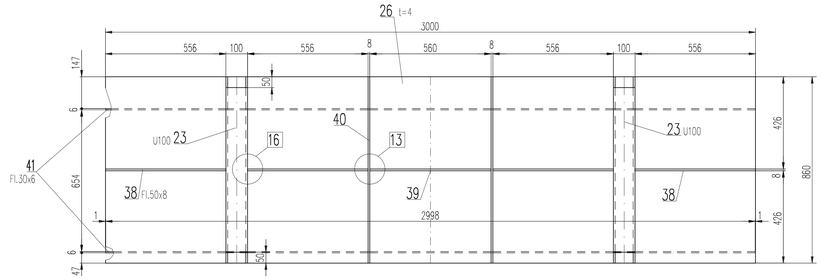




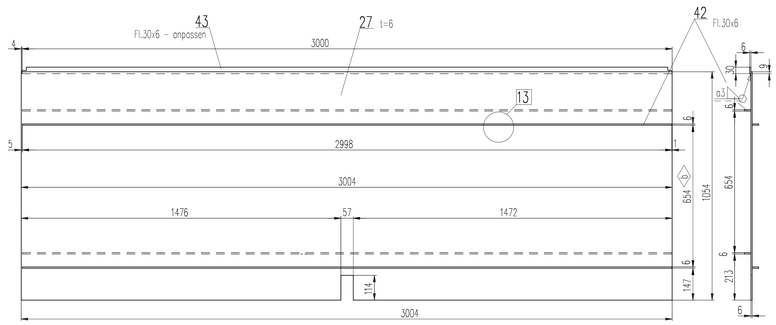


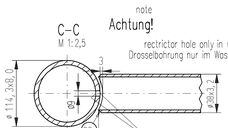


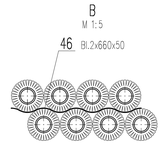


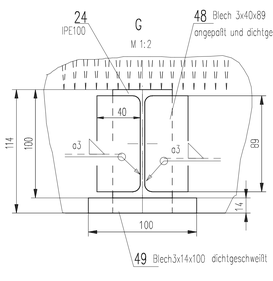


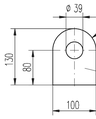
Detail Trennwand Pos.27

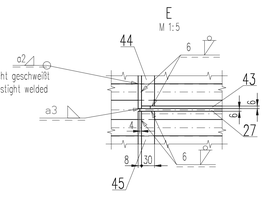


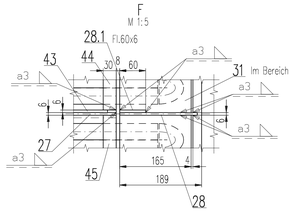












Nr.	DN	PN class	ANSI Norm	Bezeichnung / Funktion Designation / Function	Rohr Tube ø x s	Flanschanschluß Flange connection ø x s
N1	80	40	1092-1	Wassereintritt water inlet	88,9x6,3	88,9x3,2
N2	80	40	1092-1	Wasseraustritt water outlet	88,9x6,3	88,9x3,2
N3	20	40	1092-1	Entlüftung ventilation	26,9x5,0	26,9x2,3
N4	20	40	1092-1	Entleerung drain	26,9x5,0	26,9x2,3
N5	D4			Thermometer thermometer	Rd.40	
N6	D4			Thermometer thermometer	Rd.40	
N7	1/2"			Manometer manometer	20x2,6	
N8	25	40	1092-1	Sicherheitsventil safety valve	33,7x5,6	33,7x2,6

Maße ohne Toleranzangabe nach EN ISO 13920-D
sizes without tolerance declaration acc. to

Bauteilabmessungen / dimensions of components			
Position item	Bauteil component	Standard standard	Abmessungen dimensions
1,7	Rohr tube	DIN EN 10216-2	38x3,2
2	Bogen bends		180°-38,0x3,2 r=37,5
3,5	Rohr tube	DIN EN 10216-2	114,3x8
4,6	Rohr tube	DIN EN 10216-2	88,9x6,3
8	Flansch flange	DIN EN 1092-1	11/St1/DN80/PN40
10	Flansch flange	DIN EN 1092-1	11/St1/DN20/PN40
14	Flansch flange	DIN EN 1092-1	11/St1/DN25/PN40

Bauteil Component	Werkstoff Material	Prüfbescheinigung Inspection document DIN EN DIN EN	10204	Bemerkungen: remarks
Flansche Flanges	P250GH	10222	3.1	Druckgerät nach Druckgeräterichtlinie 2014 / 68 / EU: Artikel 4 (1) b) Gefahrenkategorie nach Diagramm 5 Anhang II: Kategorie IV Konformitätsbewertungsverfahren: Modul G (EG-Einzelprüfung)
Stutzenrohre Branches	P235GH–TC1	10216–2	3.1	Angewandte technische Spezifikationen: für die Werkstoffe: EN 12953
Rohrbogen Tube bends	P235GH–TC1	10216–2	3.1	für die Herstellung: EN 12952 für die Berechnung: EN 12952
Reduzierstücke Reducer				Schweißnahtformen nach Schweißdetailzeichnung-Nr.03000
T–Stück Tee				Ausführung ungleichenzeichneter Rundnähte : nach Detail 96 bei gleicher Wandstärke
Sammler Header	P235GH–TC2	10216–2	3.1	nach Detail 57 bei ungleichen Wandstärken Eignungsnachweise prüfungen: Prüfplan EN 12952 – Eco
Kappe cap				Sicherung der Güte von Schweißarbeiten nach DIN ISO EN 5817 Bewertungsgruppe: B
Ebener Boden plan head	P295GH	10028	3.1	pressure equipment according to PED 2014 / 68 / EU: Article 4 (1) b) category of hazard according to table 5 annex II: Category IV
Heizflächenrohre Heating surface tubes	P235GH–TC1	10216–2	3.1	conformity assesment procedure: Module G (EC unit verification) applied technical specification: for materials: EN 12953
Rippen Fins	St			for manufacturing: EN 12952 for calculation: EN 12952
Einschweißstutzen Welding in branch	16Mo3	10273	3.2	
Meßstellen Measuring Points	P235GH–TC1	10216–2	3.1	welding detail according to drawing no.: 03000 execution of unmarked circumferential seams according to detail: 96 at equal wallthickness
				57 at unequal wallthickness Non–destructiv examinations: test plan EN 12952 – economizer
Schrauben Bolts	5.6	24014	St	Quality assurance of welded structures acc. to DIN EN ISO 5817 valuation group: B
Anschweißteile Welding parts	S235JR	10025	3.1	
Ebene Böden ohne Minustoleranz plan end plates without minustolerance				

Zugehörige Zeichnungen / Appertaining drawings		Zeichnungs–Nr. / Drawing–no.	
Schweißdetailzeichnung	drawing of welding details	03000	1
Schweißverf. f. Eco–Blechgehäuse	welding procedure for economizer–plate case	KESCHW–1610–00	1
Eco–Übersicht	economizer – gen.arrng'. drg.	A1100–00–67860–01	
Rauchgashaube	flue gas hood	A1104–00–67860–01	
Abgaskammer	flue gas chamber	A1005–00–67860–01	

max. Wärmeleistung		allowable thermal output	1540	kW
Wasserinhalt		water capacity	458	l
Heizfläche		heating surface	716	m²
max.zul.Druck		max. allowable pressure	25	bar
max.Temperatur		max. temperature	226	°C
Prüfdruck		test pressure	46	bar
Stahlmasse		steel mass	4315	kg

Index	Änderung / alteration	Bearbeitet drawn	Datum date	Gepr. Konstr. check. (const.)	Datum date	Gepr. (Ch) check. (weld.)	Datum date
b	Lage Verdränger korrigiert	Fällgraf	04.10.2016	Nowosielski	04.10.2016		
a	Erstellt	Herms	07.07.2016	Gottwald	16.09.2016	Wallnöfer	19.09.2016

VKK STANDARDKESSEL Köthen GmbH

Maßstab / scale 1:10

Original–Format / source document A0

Auftrags–Nr. / order no.: 34–67860

Herstell–Nr. / makers no.: 22361AV

	Datum	Name
Bearb.	07.07.2016	Herms
Gepr. Konstr.	15.09.2016	Gottwald
Gepr. (Ch)	19.09.2016	Wallnöfer
DB: 03/08/2016		

Benennung / designation: Spiralrippenrohrvorwärmer
spiral finned tube economizer

Kennwort / codeword: Conti Lausado

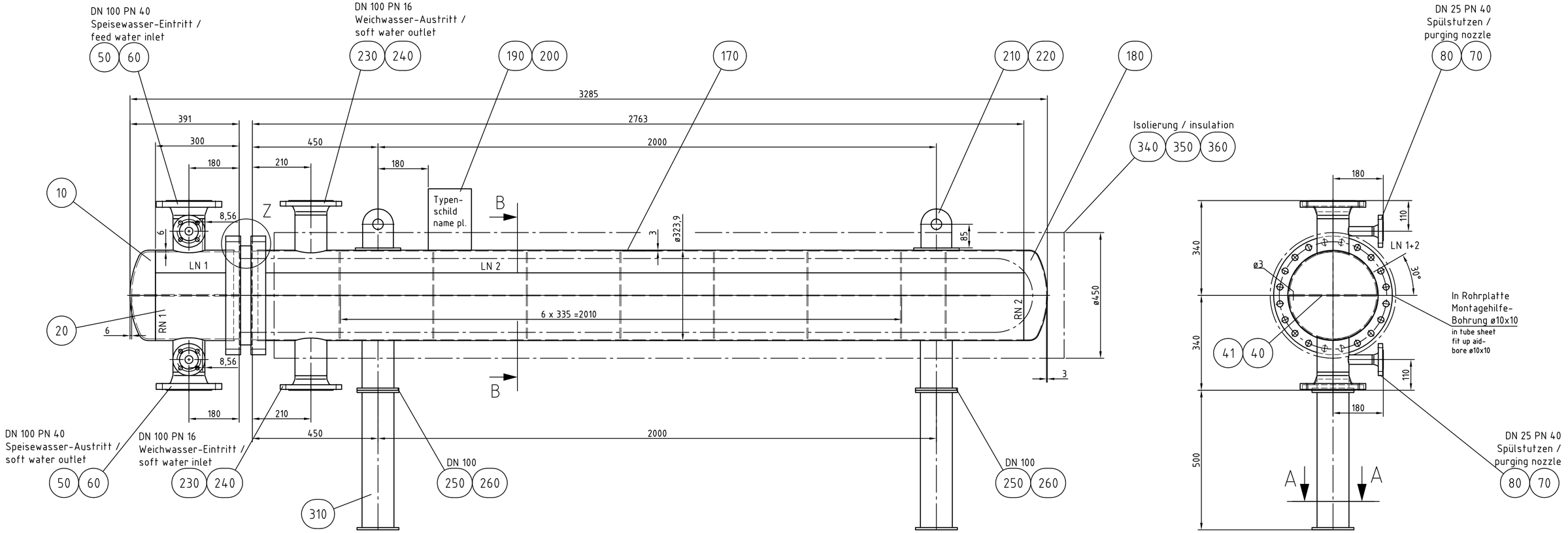
CAD

Zeichnungs–Nr. / drawing no.: A1101–00–67860–01–b

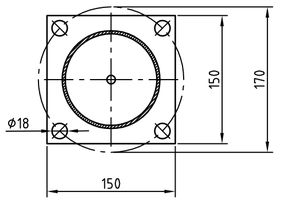
Schutzvermerk nach DIN 34 beachten. Urs.: Urs.e.

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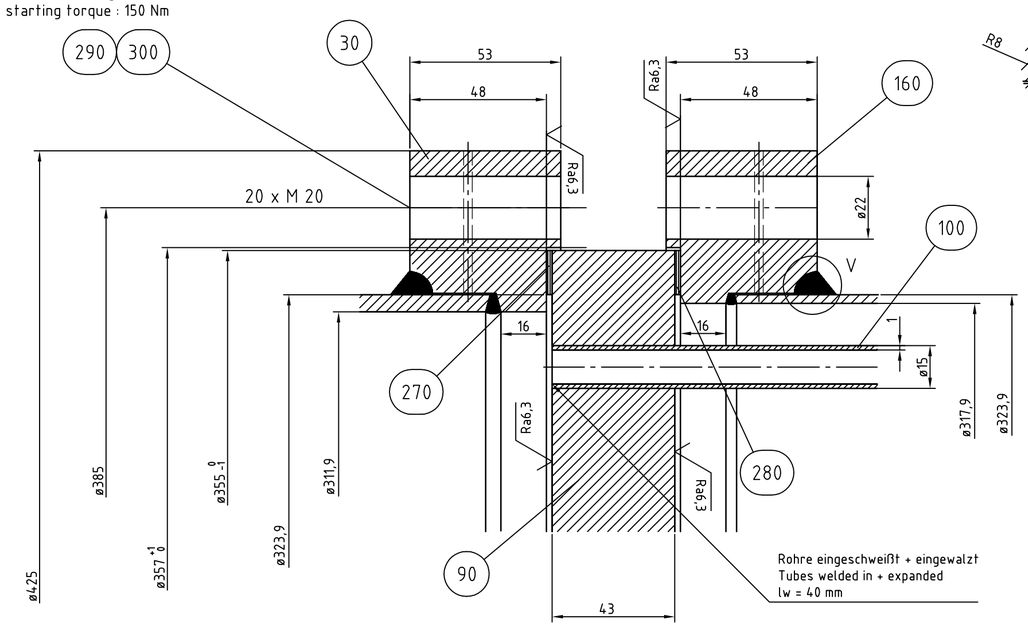
10.10.2016



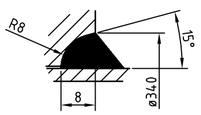
A-A



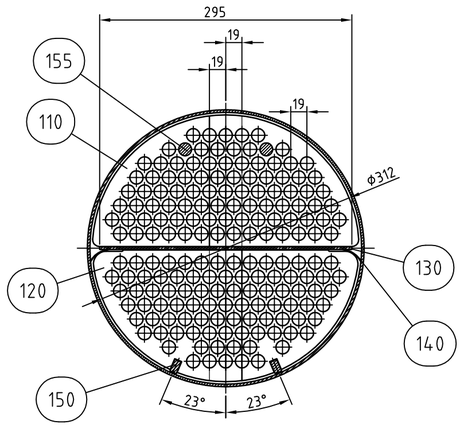
Z



V



B-B

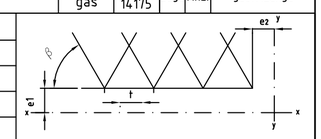


alle Kehlnähte ohne Maßangabe a=0,7 x s
all filled welds without dimension a=0,7 x s

1.4571 / 1.4541							
	WIG	Hand	Böhler EAS 4 M-IG	W 19 12 3 L	12072	Argon	i1
	MAG	Hand	Böhler EAS 4 M-IG (Si)	G 19 12 3 L Si	12072	Inoxline C2	M12
	E	Hand	Limarosta 316L	E 19 12 3 LR 12	1600		
	MAG-F	Hand	Böhler EAS 4 M-FD	T 19 12 3 L R M (C) 3	17633-A	Ferroline C18	M1
zu verschweißende Werkstoffe	Ver-fahren	Schw. Art	Marken Bez. / Zusatzwerkstoff	Norm Bez.	DIN/EN	Schutz-gas	DIN EN/ISO 14175

Lage	Anz.	gestr.Länge
8	5	5820
7	6	Leerstelle 3.Pl.
6	11	
5	12	
4	13	
3	14	
2	15	
1	14	

Vorkopf channel	75	kg	Korrosionszuschlag Stahl corrosion allowance c-steel	--	mm
Bündel bundle	239	kg	Korrosionszuschlag VA corrosion allowance austenit	0	mm
Gehäuse shell	120	kg	Bf. GSD-W-10-09		
Gesamt (leer) summary (empty)	501	kg	RSP. U-323/360-19/60-17-00-2-90		
Teil part	Gewicht weight	kg	VZ:		
Identifikations-Nr. identification-no.	Konformitätsbewertungsmodul conformity - assesment - modul		G		
CE 0045	in den Rohren tubeside	um die Rohre shellside	Kategorie category	IV	
Fluidgruppe fluidgroup	2	2	Ausnutzung der zul. Berechnungsspg. welding factor	85 %	
zul. Betriebsüberdruck design pressure	0/37 bar barg	0/6 bar barg	Berechnung nach	AD 2000	
Prüfüberdruck testpressure	58,5 bar barg	9,0 bar barg	Abnahme nach	DGRL 2014/68/EU	
Betriebstemperatur Tmin design temperautre min	0 °C	0 °C	Abnahme durch	TÜV Nord	
Betriebstemperatur Tmax design temperautre max	152 °C	120 °C	gezeichnet drawed	13.10.2016	Preuß
Inhalt content	99 l	139 l	geprüft checked		
Medium medium	Speisewasser feed water	Weichwasser soft water		Datum date	Name



2 - Wege	2	--	60	19	17	--
ohne Gefälle	K	K1	β/°	t	e1	e2

LH = 2530 | aH = 160 | LB = 2840 | Hüllkreis = **290,3**

Pos. 30,90,160 :	Ra25	Ra6,3

Rev.	Änderung	Datum	Name
a	Lage Spülstutzen / nach Genehmigung	25.10.2016	Preuß

MaBstab 1:10

Wärmetauscher / heat exchanger HE 04.1
Bestell-Nr.: F 32-309-15-24
Leistung 2320 kW F = 23,8 m2

Toleranzen nach Tema R

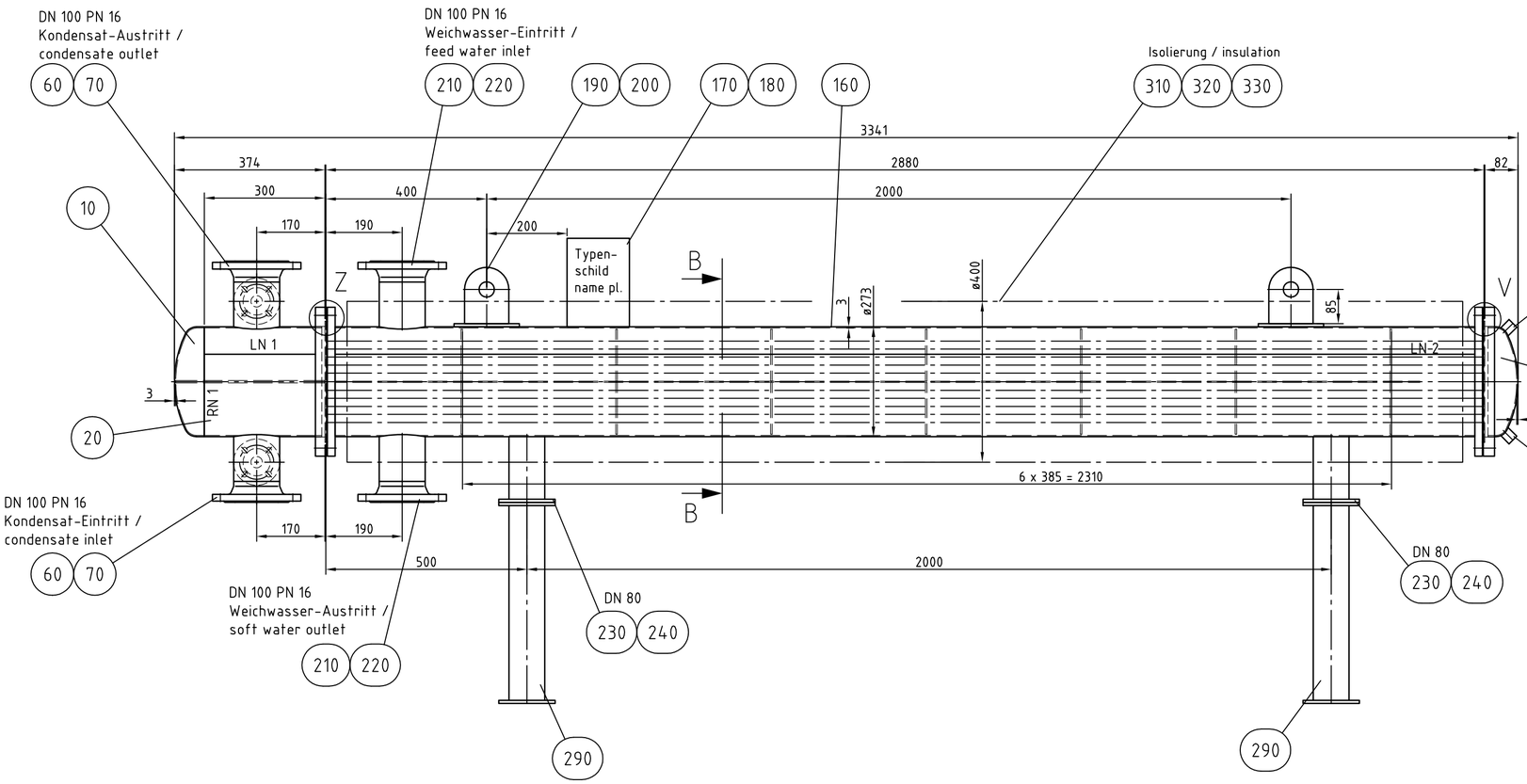
entstanden aus: Sa 60 Fer 033

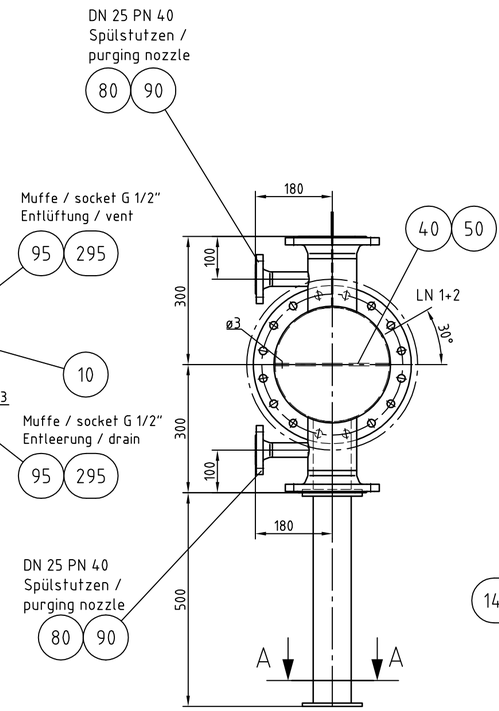
Auftrag-Nr: order-no. 996037 Pos.2

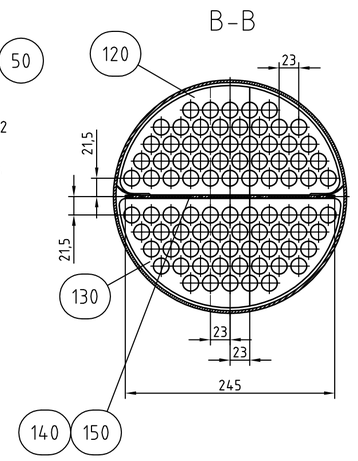
GSD Wärmetechnik GmbH
Waldstraße 55-57
57250 Netphen-Deuz
Telefon +492737/59520 Telefax +492737/592350

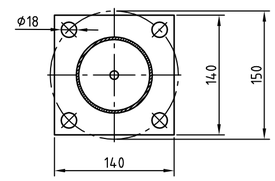
Zeichng.-Nr.: 60 C 30/37/23,8/66588 a

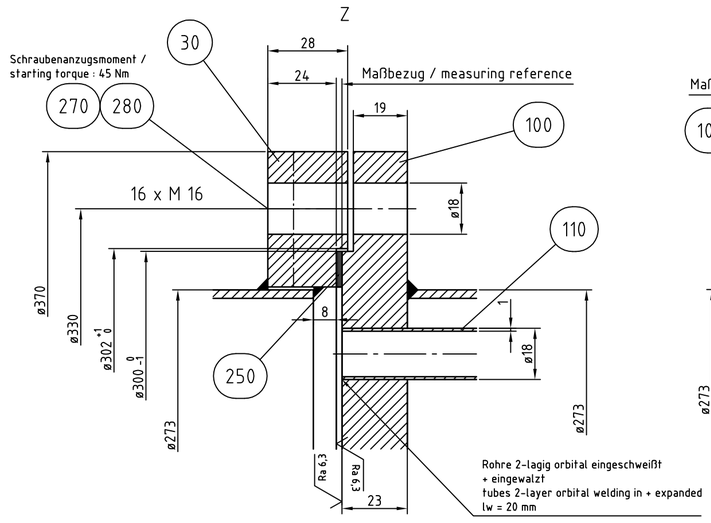
Fabrik-Nr. serial-no. 996037 - 2

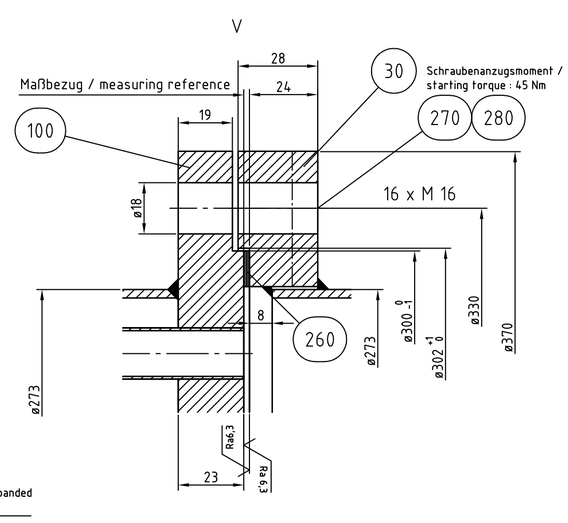












Pos. 20 ,60 : $\sqrt{}$ Ra 25 ($\sqrt{}$ Ra 6,3)

alle Kehlnähte ohne Maßangabe a=0,7 x s
all filled welds without dimension a=0,7 x s

1.4571 / 1.4541	WIG	Hand	Böhler EAS 4 M-IG	W 19 12 3 L	12072	Argon	i1	5+5'	5	2880
	MAG	Hand	Böhler EAS 4 M-IG (Si)	G 19 12 3 L Si	12072	Inoxline C2	M12	4+4'	8	2880
	E	Hand	Limarosta 316L	E 19 12 3 LR 12	1600			3+3'	9	2880
	MAG-F	Hand	Böhler EAS 4 M-FD	T 19 12 3 L R M (C) 3	17633-A	Ferroline C18	M1	2+2'	10	2880
zu verschweißende Werkstoffe	Ver-fahren	Schw. Art	Marken Bez.	Norm Bez.	DIN/EN	Schutz-gas	DIN EN/ISO 14175	1+1'	11	2880
			Zusatzwerkstoff					Lage	Anz.	gestr.Länge

Eintrittskammer channel inlet	**39**	kg	Korrosionszuschlag Stahl corrosion allowance c-steel	-- mm							
Wendekammer channel	**13**	kg	Korrosionszuschlag VA corrosion allowance austenit	**0** mm							
Gehäuse shell	**227**	kg	Bf. ---								
Gesamt (leer) summary (empty)	**339**	kg	RSP. SG-273/370-23/60-21,5-00-2-86								
Teil part	Gewicht weight	kg	VZ: Wd. n. Berechnung								
Identifikations-Nr. identification-no.	Konformitätsbewertungsmodul conformity - assesment - modul		--								
- - - -	in den Rohren tubeside	um die Rohre shellside	Kategorie category	**Art.4 Abs. 3**							
Fluidgruppe fluidgroup	**2**	**2**	Ausnutzung der zul. Berechnungsspg. welding factor	85 %							
zul. Betriebsüberdruck design pressure	0/3 bar barg	0/6 bar barg	Berechnung nach	AD 2000							
Prüfüberdruck testpressure	4,5 bar barg	9,0 bar barg	Abnahme nach	DGRL 2014/68/EU							
Betriebstemperatur Tmin design temperautre min	0 °C	0 °C	Abnahme durch	Hersteller							
Betriebstemperatur Tmax design temperautre max	110 °C	110 °C	gezeichnet drawed	11.10.2016	Preuß						
Inhalt content	71 l	96 l	geprüft checked	14.10.2016	RB						
Medium medium	Schmutzkondensat dirt condensate	Weichwasser soft water		Datum date	Name						

	2 - Wege	1	--	60	23	21,5	--
	ohne Gefälle	K	K1	β/°	t	e1	e2

LH = | aH = | LB = 2880 | Hüllkreis = **251,99**

Rev.	Änderung	Datum	Name
a	nach Genehmigung	25.10.2016	Preuß

GSD Wärmetechnik GmbH
Waldstraße 55-57
57250 Netphen-Deuz
Telefon +492737/59520 **Telefax +492737/592350**

MaBstab 1:10

Wärmetauscher / heat exchanger HE 01
Bestell-Nr.: SkFG 27-336-18-22
Leistung 600 kW , F = 14 m2

Toleranzen nach Tema R

entstanden aus:

Auftrag-Nr. order-no. 996037 Pos.1

Zeichng.-Nr.: 90 C 25/6/14/31494 a

Fabrik-Nr. serial-no. 996037 - 1

SUPPLIER

AGENT / REF.

REF.

ITEM NO.
HE02 Nominal rev. 1

CUSTOMER NAME / REF. NO.
VKK Standardkessel Köthen GmbH

SIGN.
MNK

RISK CATEGORY
1

M10-MFM

PLATE HEAT EXCHANGER

PED

DATE
2016-10-25

16.0338.4500
DEGLSNEL-717

REV NO.
0

REMARKS:

	SIDE 1	SIDE 2
TEST PRESSURE	14,3 bar	14,3 bar
DESIGN PRESSURE	10 bar	10 bar
MAX TEMPERATURE	152 °C	152 °C
MIN TEMPERATURE	0 °C	0 °C

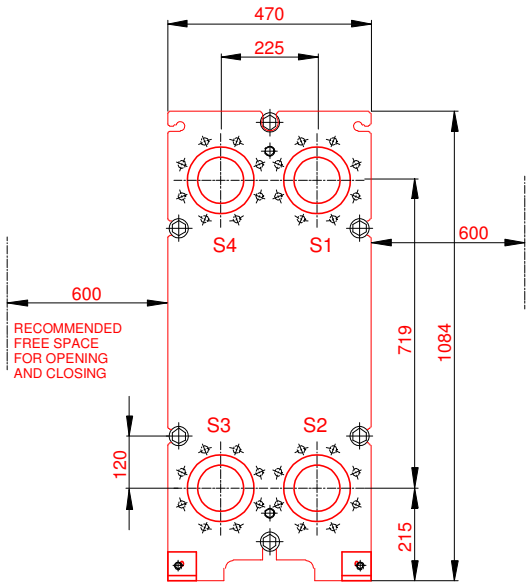
GASKET
PLATE MATERIAL
PLATE THICKNESS

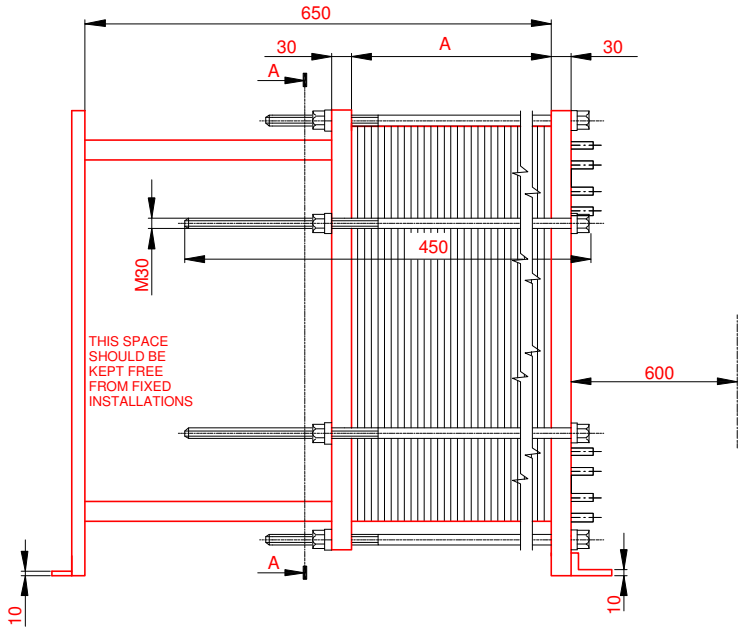
EPDMC Clip-on
ALLOY 316
0.50 mm

WEIGHT WITH WATER 316 kg

HEAT LOAD 61 kW

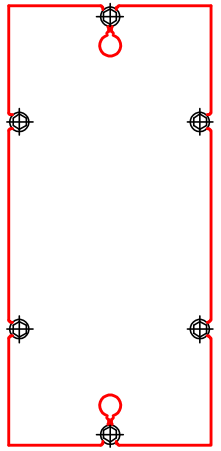
FRAME PLATE
(FIXED)

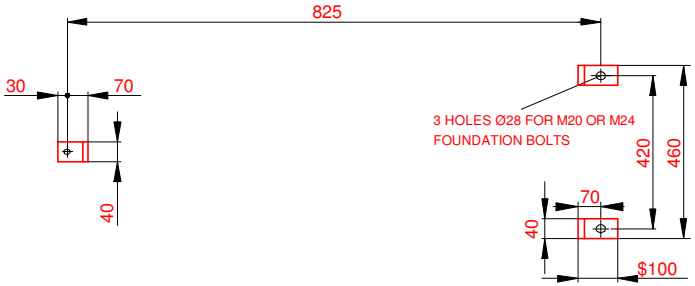




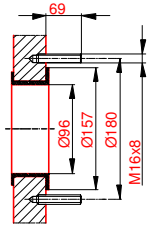
PRESSURE PLATE
(MOVABLE)

SECTION A-A





EN 1092-1 DN100 PN10
SHEET LINING
SS
S1,S2,S3,S4



TOTAL LENGTH	885
TOTAL WIDTH	470
TOTAL HEIGHT	1084

ALL DIMENSIONS IN MILLIMETERS

Do not use this drawing for foundation bolting or piping layout.

SIDE	MEDIA	F.D.G.	INLET	TEMP.	OUTLET	TEMP.	FLOW RATE	PRESSURE DROP	
1	Water	2	S2	133.0 °C	S1	40.0 °C	0.1556 kg/s	0.01436 kPa	
2	Water	2	S3	34.6 °C	S4	36.5 °C	7.805 kg/s	14.49 kPa	

Technical Data: Saturated Steam Boiler

Boiler type:	Condor boiler
Year of construction:	
Manufacturing No.:	
max. Boiler output:	t / h
max. Heat input	MW
Maximum allowable operating gauge pressure:	bar
Allowable saturated steam temperature:	°C
Allowable operating pressure:	bar
Test gauge pressure:	bar
Heating surface:	m²

Equipment:

☐ DIN EN 12953 – BOB 24h

☐ DIN EN 12953 – BOB 72h

☐ as well as: TRBS 2141 Part 1 point 4.2.3

***** BOB = operation without permanent supervision.

VKK
STANDARDKESSEL
Köthen GmbH

operating - characteristics (guide value)
HD0101-64, 0,6t/h

project:	**Conti Lousado Container**
BKL:	LK6741-00
page:	1/2
date:	2016.04.05
calc.-nr.:	6741-00

Basic data for operating characteristics

boiler type:	**CONDORBOILER**	
type of construction:	**HD0101-64**	
fuel:	**natural gas**	
net caloric value: LCV	**45114**	**kJ/kg**
allowable steam capacity:	**0,6**	**t/h**
design pressure:	**30**	**barg**
working pressure:	**26**	**barg**
feed water temperature:	**103-105**	**°C**
radiation, conduction and convection loss:	**4**	**kW**
reference temperature:	**25**	**°C**
outside air temperature:	**15**	**°C**

water quality:

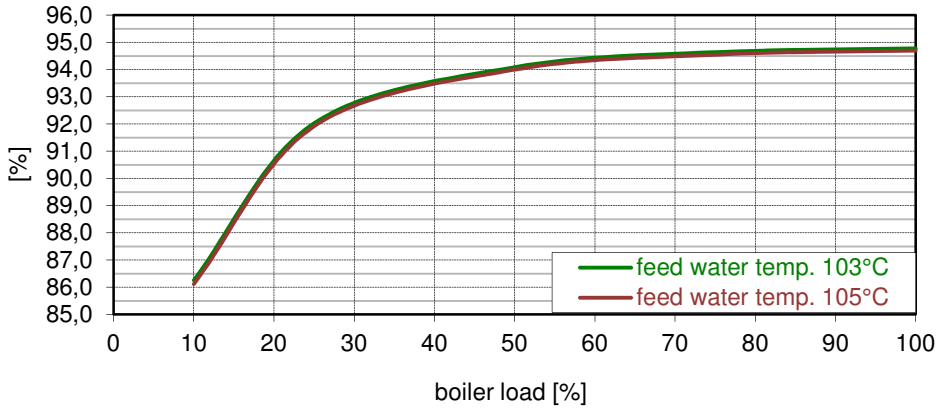
Boiler feed water and boiler water in accordance with TRD 611,
DIN EN 12953 section 10 and our valid water chemical operating instructions

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Köthen GmbH

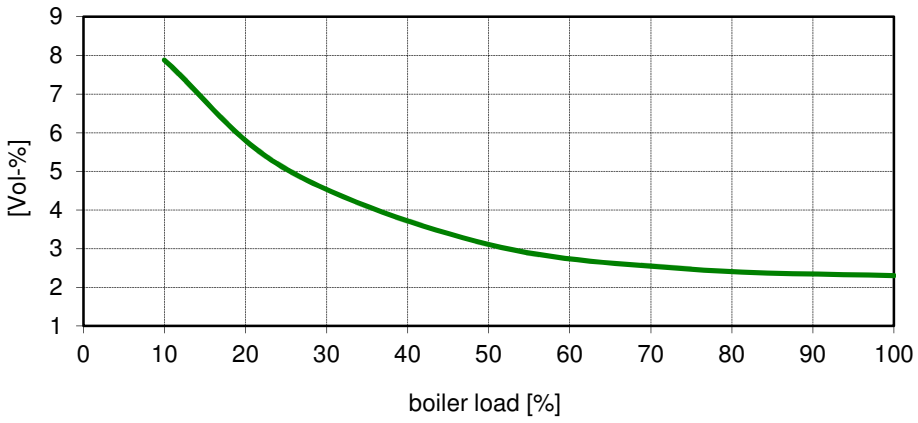
operating - characteristics (guide value)
fuel: natural gas, feed water 103°C-105°C

project: Conti Lousado Container
BKL: LK6741-00
page: 2/3
date: 2016.04.05
calc.-nr.: 6741-00

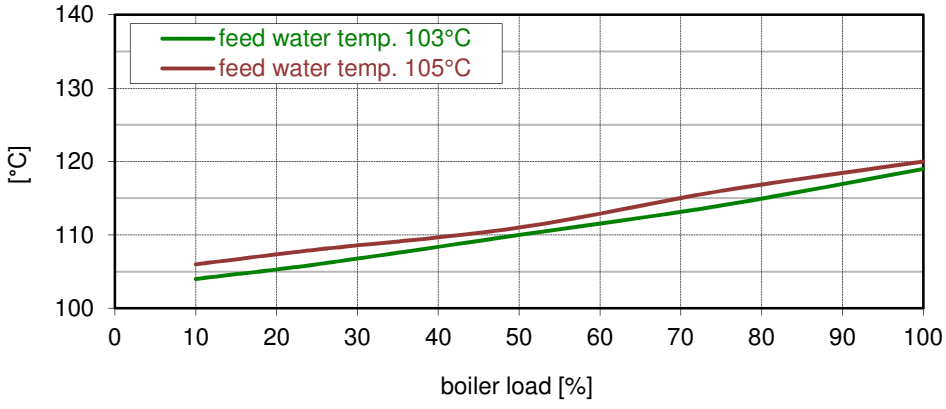
- efficiency EN 12953-11



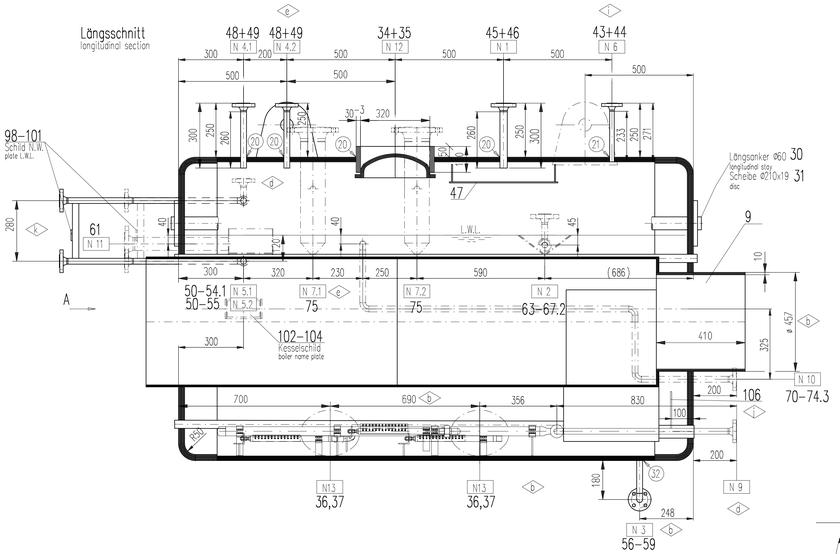
- dry oxygen content



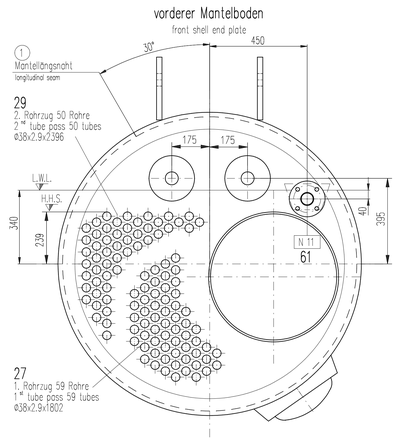
- flue gas temperature outlet



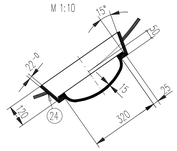
Längsschnitt
longitudinal section



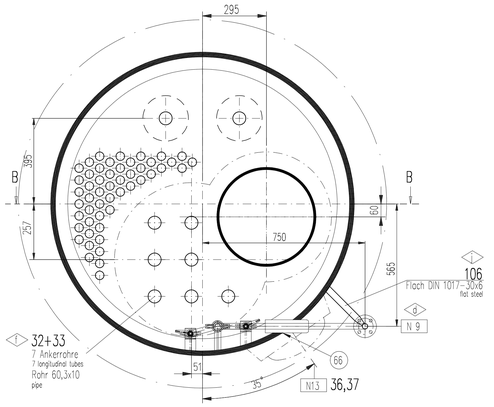
vorderer Mantelboden
front shell end plate



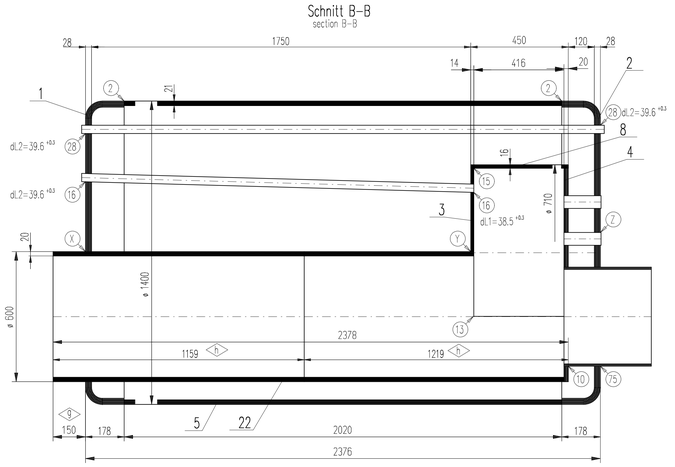
Kopfloch N 13
headhole N 13
M 1:10



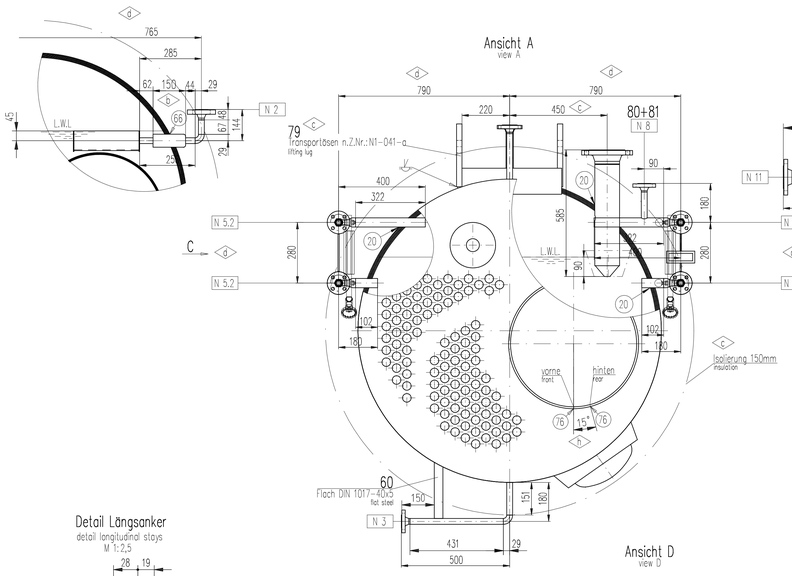
hinterer Mantelboden
rear shell end plate



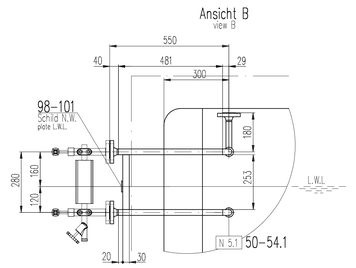
Schnitt B-B
section B-B



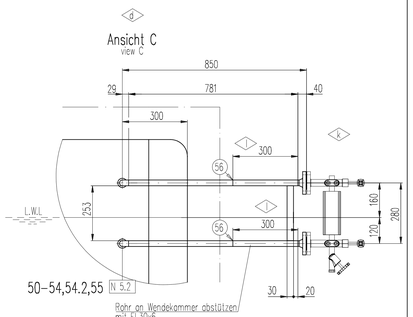
Ansicht A
view A



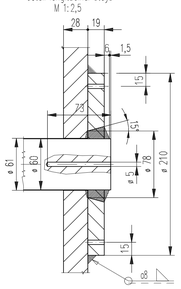
Ansicht B
view B



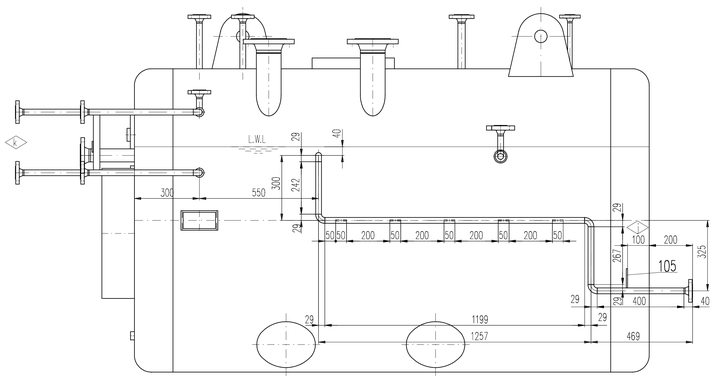
Ansicht C
view C

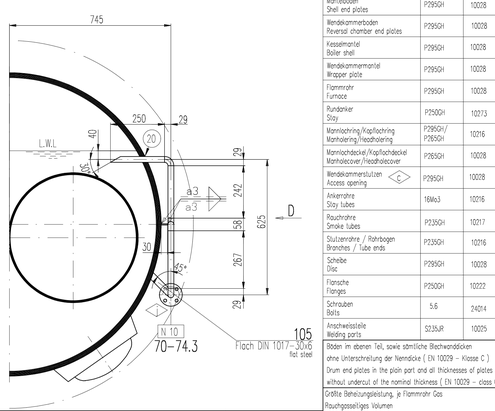


Detail Längsanker
detail longitudinal stays
M 1:2,5

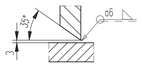


Ansicht D
view D

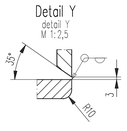




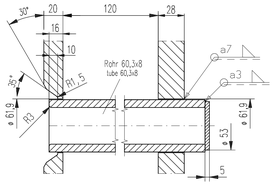
Detail X
detail X
M 1:2,5



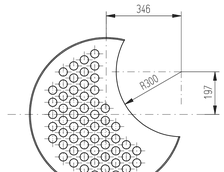
Detail Y
detail Y
M 1:2,5



Detail Z
detail Z
M 1:2,5



vorderer Wendekammerboden
front reversal chamber end plate



Nr.	DN	PN	DIN Norm	Bezeichnung / Funktion Designation / Function	Rohr Tube Φ x s	Flanschanschluß Flange connection Φ x s	Nr.	DN	PN	DIN Norm	Bezeichnung / Funktion Designation / Function	Rohr Tube Φ x s	Flanschanschluß Flange connection Φ x s
N1	25	40	1092/1	Dampfaustritt steam outlet	33,7x5,6	33,7x2,6	N8	20	40	1092/1	Druckentnahmestutzen pressure take off branch	26,9x2,3	26,9x2,3
N2	20	100	1092/1	Speisung feeding	60,3x5,6 26,9x5,0	26,9x2,6	N9	20	40	1092/1	Warmhaltung hot standby system ◁b▷	26,9x5,0 60,3x5,6	26,9x2,3
N3	20	40	1092/1	Abschlämmung / Entleerung blow down / drainage	26,9x5,0	26,9x2,3	N10	20	40	1092/1	Entsalzung demineralisation	26,9x2,3	26,9x2,3
N4.1 N4.2	20	40	1092/1	Sicherheitsventil safety valve	26,9x5,0	26,9x2,3	N11	50	40	1092/1	Leitfähigkeit conductivity	60,3x5,6	60,3x2,9
N5.1 N5.2	20	40	1092/1	Wasserstandanzeiger water level indicator	42,4x5,6	26,9x2,3	N12	320 400	40	DIN851	Mannloch manhole		
N6	15	40	1092/1	Entlüftung venting ◁f▷	21,3x5	21,3x2	N13	220 320	40	DIN851	Kopfloch headhole ◁f▷		
N7.1 N7.2	100	40	1092/1	Wasserstandsbegrenzer /regler water level limiter /regulator	114,3x8,0	114,3x3,6	N14						

Zugehörige Zeichnungen / Appertaining drawings		Zeichnung-Nr. / Drawing-no.
Beiblatt zur Bodenberechnung	Supplement to end plates calculation	A1001–01–67850–01–b ◁d▷
Schweissdetailzeichnung	Drawing of welding details	0,0000–25
Wasserstandsbegrenzer	Water level limiter	A1001–75–67850–01–a ◁c▷
Leitfähigkeit	Conductivity	A1001–61–67850–01–a ◁d▷
Speisewanne	feeding pan	N1–083–a

Index	Änderung / alteration	Bearbeitet drawn	Datum date	Gepr. Werk (verk. Leiter)	Datum date	Gepr. IÜ (verk. Leiter)	Datum date
l	Schweißnaht in Ansicht C ergänzt	Stelfens	12.09.2016	Nowosielski	12.09.2016		
k	Stutzen N5.2 300mm verlängert	Stelfens	07.09.2016	Gottwald	07.09.2016		
j	Abstützung für Stutzen N9 und N10 ergänzt	Stelfens	06.09.2016	Gottwald	06.09.2016		
i	Stutzen N8 ergänzt	Stelfens	29.08.2016	Gottwald	29.08.2016		
h	Flammrohrteilung ergänzt	Stelfens	23.08.2016	Gottwald	23.08.2016		
g	Flammrohrüberstand	Beltz	19.08.2016	Stelfens	19.08.2016		
f	Stutzentabelle N13, Ankerrohre	Beltz	15.08.2016	Stelfens	15.08.2016		
e	Stutzen N7.1 + N4.2 verschoben	Stelfens	09.08.2016	Gottwald	09.08.2016		
d	N5.2 hinzu, N11 verschoben; N12 einzeln; N9 getrennt	Beltz	03.08.2016	Stelfens	05.08.2016	Wolfram	08.08.2016
c	Werkstofftabelle korrigiert, Isolierstrke. N7.1/N7.2, N2, Flachbar	Beltz	02.08.2016				
b	Reinigungsverschluss kleiner(M13 verschraubt, N2 gekürzt; N9 hinzu	Beltz	25.07.2016	Ullgraf	29.07.2016	Schwiczek	29.07.2016
a	Erstellt	Beltz	06.07.2016	Ullgraf	29.07.2016	Wolfram	29.07.2016

Maße ohne Toleranzangabe nach EN ISO 13920–D
size without tolerance déclaration acc. to

Bauteil Component	Werkstoff Material	Prüfbescheinigung Inspection document DIN EN	 DIN EN 10204	Bemerkungen Remarks
Mantelboden Shell end plates	P295GH	10028	3.1	Druckgerät nach Druckgeräterichtlinie 2014/68/ EU: Artikel (1) b) Gefahrenkategorie nach Diagramm 5 Anhang II: Kategorie IV Konformitätsbewertungsverfahren: Modul G (EG-Einzelprüfung)
Wendekammerboden Reversal chamber end plates	P295GH	10028	3.1	Angewandte technische Spezifikationen: für die Werkstoffe: EN 12953 für die Herstellung: EN 12953 für die Berechnung: EN 12953
Kesselmantel Boiler shell	P295GH	10028	3.1	Die auf die Konstruktion anwendbare Verbändevereinbarung FDBR–VDK 003 (2011–01) wurde beachtet bzw. Abweichungen durch ausgleichende Maßnahmen berücksichtigt.
Wendekammermantel Wrapper plate	P295GH	10028	3.1	Schweiß–Verbindungskoeffizient des Kesselmantels vN =0,85
Flammrohr Furnace	P295GH	10028	3.1	Schweißnahtformen nach Schweißdetailzeichnung–Nr.03000 Ausführung ungekennzeichneter Rundnähte :
Rundanker Stay	P250GH	10273	3.1	nach Detail 56 bei gleicher Wanddicke nach Detail 57 bei ungleichen Wanddicken
Mannlochring/Kopflochring Manholering/Headholering	P295GH/ P265GH	10216	3.1	(verstärkungsfreie Prüfungen Prüfplan "EN 12953–Kessel (0,85)"
Mannlochdeckel/Kopflochdeckel Manholecover/Headholecover	P265GH	10028	3.1	Sicherung der Güte von Schweißarbeiten nach EN ISO 5817, Bewertungsgruppe: B
Wendekammerstutzen ◁c▷ Access opening	P295GH	10028	3.1	
Ankerrohre Stay tubes	16Mo3	10216	3.2	pressure equipment according to PED 2014/68/ EU: Article 4 (1) b) category of hazard according to table 5 annex II: Category IV
Rauchrohre Smoke tubes	P235GH	10217	3.1	conformity assesment procedure: Module G (EC unit verification) applied technical specification:
Stutzenrohre / Rohrboden Branches / Tube ends	P235GH	10216	3.1	for materials: EN 12953 for manufactoring: EN 12953 for calculation: EN 12953
Scheibe Disc	P295GH	10028	3.1	Associations–Agreement FDBR–VDK 003 (2011/01) applicable to the construction is observed or deviations are taken into account by compensating measures.
Flansche Flanges	P250GH	10222	3.1	weld–joint coefficient of boiler shell with =0,85
Schrauben Bolts	5.6	24014	St	welding detail according to drawing no.: 03000 execution of unmarked circumferential seams
Anschweissteile Welding parts	S235JR	10025		according to detail: 56 ist equal wallthickness 57 ist unequal wallthickness
				Non–destructiv examinations: test plan "EN 12953–Boiler (0,85)"
Böden im ebenen Teil, sowie sämtliche Blechwanddicken ohne Unterschreitung der Nennd icke (EN 10029 – Klasse C) Drum end plates in the plain part and all thicknesses of plates without undercut of the nominal thickness (EN 10029 – class C)				quality assurance of welded structures acc. to EN ISO 5817, valuation group: B

Größte Beheizungsleistung, je Flammrohr Gas	maximal heat input per furnace gas	416,5 kW
Rauchgasseitiges Volumen	flue gas volume	1,1 m³
Wasserinhalt bis N–W	water capacity to L.W.L.	1,7 m³
Wasserinhalt voll	water capacity full	2,4 m³
Heizfläche	heating surface	27,3 m²
max. Dampferzeugung	max. steam output	0,6 t/h
max. Wärmeleistung Gas	max. thermal output gas	394,7 kW
Einstelldruck Sicherheitsventil	set pressure safety valve	30 bar
max. zul. Druck	max. allowable pressure	30 bar
max. Dampftemperatur	max. steam temperature	236 °C
Prüfdruck	test pressure	55,5 bar
Stahlmasse	steel mass	4400 kg

VKK STANDARDKESSEL Köthen GmbH

Maßstab / scale 1:10

Original–Format / source document A1

Auftrags–Nr. / order no.	Hersteil–Nr. makers no.	Datum	Name
		Bearb. 26.07.2016	Beltz
		Gepr. Werk 29.07.2016	Ullgraf
37–67850	22.360	Gepr. IÜ 29.07.2016	Wolfram
		ÜA SAARBRÜCK	

Benennung / designation

Condorkessel HD0101–14–0,6/30

Condorboiler HD0101–14–0,6/30

Kennwort / codeword

Conti AGRO

CAD

Zeichnungs–Nr. / drawing no.

A1001–00–67850–01–I

Schutzvermerk nach DIN 34 beachten. Ers.f. Ers.d.

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Kennwort/projekt name:	***Conti Agro***	
Herstellnummer/ manufacture no.:	***37-67850, 22360***	
Berechnungsnummer/ calc. No.:	***A22360-00_SPW103***	
Abteilung / Name // department/name:	***K-WT/Reinhardt***	

Zug eines Schornsteines mit vorgeschaltetem Rauchgaskanal
chimney draft with upstream stack tube

Umgebung				**environment**
Luftdruck	mbar	***1013***		air-pressure
Lufttemperatur	°C	***15***		air-temperature
rel. Feuchte	-	***0,6***		relative humidity
Wasseranteil in der Luft	kg/kg	0,0063		watercontent in the air
Partialdruck des Wassers	mbar	10,34		partial pressure, water
Dichte der tr. Luft	kg/m³	1,2930		density dry air
Dichte der feuchten Luft	kg/m³	1,2880		density wet air
Dichte der feuchten Luft bei T	kg/m³	1,2210		density wet air at T
Rauchgas				**smoke gas**
Rauchgasmassenstrom	kg/s	***0,1692***		mass flow
Eintrittstemperatur	°C	***119***		inlet temperature
Austrittstemperatur	°C	***116***		outlet temperature
mittlere Temperatur	°C	117,5		average temperature
Rauchgasdruck	mbar	***1015***		smoke gas pressure
Dichte (Normzustand)	kg/m3	1,2445		standard density
Dichte (bei T)	kg/m3	0,8702		density at T
dyn. Viskosität bei T	Pa s E-6	20,71		dynamic viscosity
Rauchrohr				**smoke tube**
Länge	mm	***3500***		length
Rohrdurchmesser (außen)	mm	***219***		tube diameter outside
Wanddicke	mm	***4,50***		thickness
Rohrdurchmesser (innen)	mm	210		tube diameter inside
Geschwindigkeit im Rohr	m/s	5,61		velocity tube inside
Reynoldszahl	-	49512		Reynolds number
Rohrreibungsbeiwert	-	0,024		tube friction coefficient
Anzahl 90° Bögen (Umlenkung Schornstein)	-	***2***		number of bends
Anzahl 45° Bögen	-	***0***		number of bends
Druckverlust Bögen	mbar	0,0837		pressure loss bends
Druckverlust Rohr + Bögen	mbar	0,138		pressure loss tube+bends
Schornstein				**chimney**
Eintrittshöhe	mm	***3250***		inlet level
Rohrdurchmesser (außen)	mm	***219***		tube diameter outside
Wanddicke	mm	***4,50***		thickness
Rohrdurchmesser (innen)	mm	210		tube diameter inside
Geschwindigkeit im Rohr	m/s	5,61		velocity tube inside
Reynoldszahl	-	49512		Reynolds number
Widerstandsbeiwert (Reibung)	-	0,024		friction factor
Widerstandsbeiwert (Austritt)	-	1		friction factor outlet
Druckverlust Schornst.+Austritt	mbar	0,332		pressure loss chimney+outlet
Höhe	m	***15,77***		high
Zug des Schornsteins	mbar	0,43		chimney draft
gesamter Zug hinter Kessel	**mbar**	**-0,04**	(ohne Zuschlag)	total chimney draft

Technical Data: Gas Firing

Make:	
Burner type:	
Control:	modulating
Control ratio:	1:
Fuel:	Natural gas
Calorific value (H_i):	kJ/Nm^3
Fuel flow at max.boiler output:	Nm^3/h
Flue gas side resistance:	mbar
Control pressure upstream burner shutoff valve: (stated as gauge pressure)	mbar
Gas pressure upstream of gas pressure controller: (stated as gauge pressure)	bar

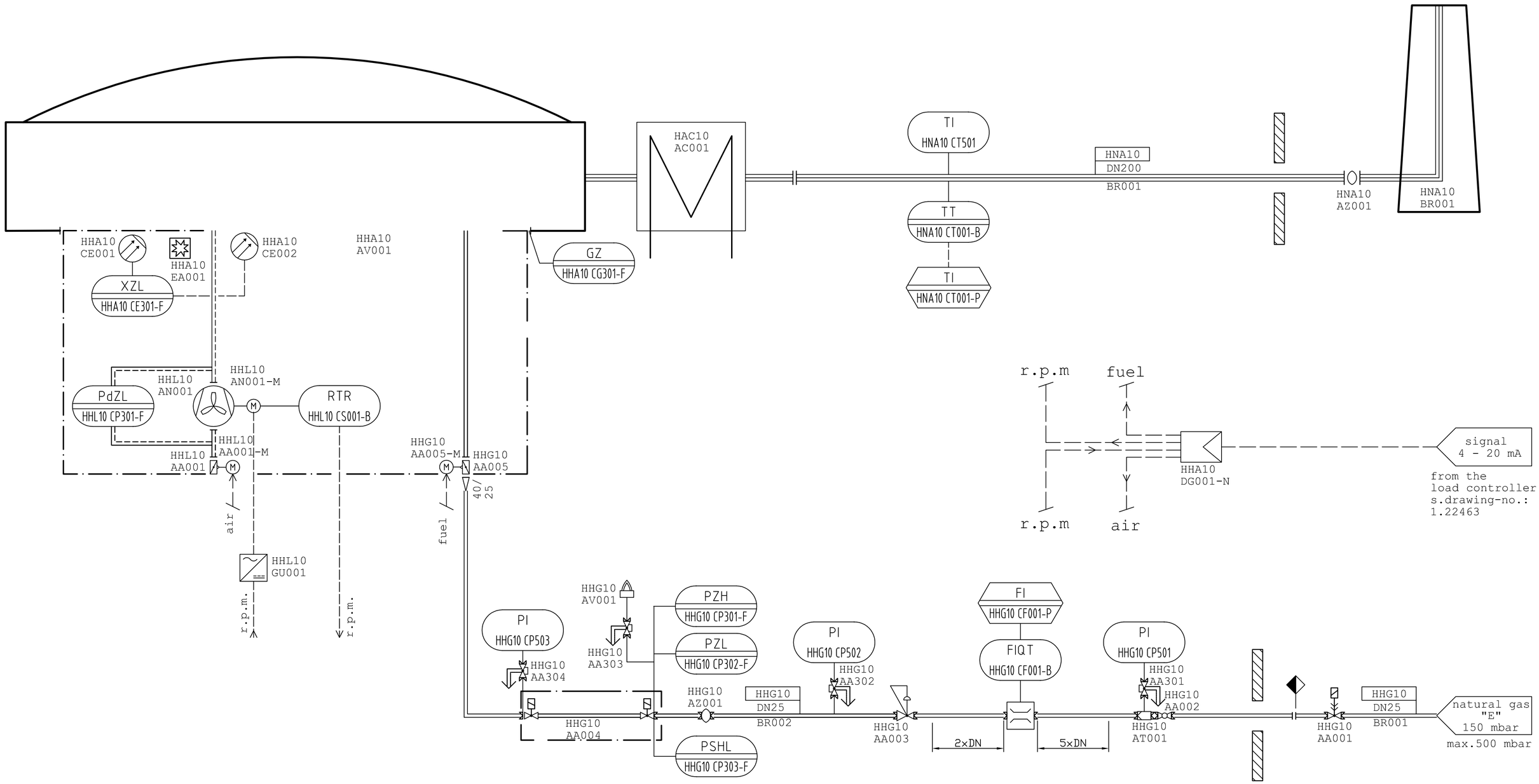
Equipment:

☐ DIN EN 12953 – BOB 24h

☐ DIN EN 12953 – BOB 72h

☐ as well as: TRBS 2141 Part 1 point 4.2.3

***** BOB = operation <u>without</u> permanent supervision.



Erstellt durch CAD, manuelle Änderungen sind nicht erlaubt. Originalformat DIN A2

Rev.	Änderung	Datum	Name

Kennwort	Conti Agro		
Auftr.-Nr.	37-67850		
Herst.-Nr.	22360		
Gas firing diagram			
HD01 0,6 t/h 30 bar			

	Gez.	Gepr.	Ges.
Name	Budéus	Lemmen	Mingels
Datum	12.07.16	15.07.16	15.07.16

Zeichnungs-Nr.	Index
2.26184	00

delivery limit
client VKK

VKK-STANDARDKESSEL

Technical Data: Economizer

controlled: ☐ lockable: ☐

uncontrolled: ☐ non lockable: ☐

Note:
Boiler and economizer are one pressure equipment.

Year of construction:

Manufacturing No.:

Admissible thermal output:		kW
Maximum allowable operating gauge pressure:		bar
Allowable operating temperature:		°C
Test gauge pressure:		bar
Heating surface:		m²
Water temperature at inlet:	approx.	°C
Weight (empty):	approx.	kg

Type of construction:

Finned tube ☐

Plain tube ☐

Note:

For Maintenance and inspection work see: „MAINTENANCE INSTRUCTION 33“