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Mfr. Representative: __Authorized Inspector: _

Date: 14/1/2016

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1.	Manufact	ured an	d certif	ied by		Schrade	er Apparate	bau Gm	bH, S	chleeb	ergstra	sse 12	2, Enni	gerloh 59	9320, Ge	rmany		
2.	Manufact	ured fo				Evonik	Degussa C	Corporati	on, P	and addr O Box 8 dress of F	868, US	S-The		AL 36590)			
3 1	ocation	of inetal	lation			Evonik (Corporation	n, Mobile	, 420	1 Degu	ssa Ro	ad, U	S-The	odore AL	36582	0		
	Гуре ——			Vertical				Heat ex		me and a ger	ddress)					11-01		
٠.	уре		(Horizont	al, vertical, or	sphere)		(Tank, sepa	arator, jkt. v	vessel,	heat exc	h , etc)				lanufacture	er's serial i		
		n.a.			2	14-0451-16-				_	_		National	3 I Board nun	nbor)			15 built)
		(CRN)				(Drawing n						,	National	Dogra nan	ilber)			55.117
				, Div. 1 _	(Edition and A	Edition 2013 Addenda, if appl	licable (date))				n.a. Case nun					n.a service po	er UG-120	
					ngle wall ve	essels, jacke 2	ets of jacki							1721	mper oi	munuci		vessers.
		Course(s)		M	laterial		Thicknes	S		Long. Jo	int (Cat	. A)	Circum. J	oint (Cat. A	-	Heat Tr	eatment
No.	Diar	meter	L	ength	Spec./G	rade or Type	No	m,	Corr,	Туре	Full	, Spot, lone	Eff.	Туре	Full, Spot, None	Eff.	Temp.	Time
1	OD	609,6		568	SA-2	240 304L	6		0	1		spot	0.85	1	spot	0.85	n.a.	n.a.
2	OD	609,6		1025	SA-2	240 304L	6		0	1	5	spot	0.85	1	spot	0.85	n.a.	n.a.
							Body Flang	jes on She	ells									
				T									_		Bolting			
No.	Туре	ID	OD	Flange The	Min Hub Thk	Material	I Ho	w Attache	d Lo	cation	Num 8	& Size	Boltin	g Material	(OD,	asher . ID, thk)	Wash	er Material
nia,									F								-	
7.	Heads: (a) <u>n.a.</u>	(Mate	erial spec. nu	mber, grade or t	type) (H.T. — tin	ne and temp.		_ (b)	_	(Ma	terial sp	ec. num	ber, grade	or type) (H.	T time	and temp	.)
		. T		ckness	1	Radius	Elliptical	Conica		Hemis.		Flat	1	Side to Pr	essure		Categor	уА
	Location (Bottom, E		Min.	Corr	Crown	Knuckle	Ratio	Apex An		Radius	D	iameter	С	onvex	Concave	Туре	Full, S Nor	pot, le Eff.
(a)	n.a.	-		-		-			-			_	+				-	
(0)	1	_					1				_		-					
	Т	-			1 1		Body FI	anges on	Heads						Bolting			
	1		in.		FI This	Min Hall The	Banasia		How A	ttached	Num	& Size	Bolt	ing Materia		Washer D, ID, thk)	Was	sher Materia
(a)	Location	Type	ID	OD	Flange Thk I	VIIN HUD THK	Materia		IIOW A	ttacrica	T.Valin	G OILU			(0)	o, ito, tilki	1440.	IIICI IVIGECIIO
(b)	II,d,	1																
					200										n.a.			
8.	Type of ja	cket			n.a.			J	acket	closur	е			Describe as		weld, bar,	etc.)	
	lf bar, giv	e dime	nsions					n.a.						_	If bo	Ited, de	scribe	or sketch
9.	MAWP -	5,2 ba		1 bar	at max. ten	1D	50 °C	250 °C		Min.	design	meta	l temp	0.	-29 °C	at	5,	2 bar
10.	Impact te	(Interna est	1) (External)	No, ex	(In cempted as p or no and the co							at test	tempera	ature of	_	n.a.	
1 1	Uudeo n	nou o	comb	test press	477-22-27	hydro.: 10,6		-	f test					n	.a.			
	, ,	•		•	ube section	e			1 1001									
				10 316L	abe section	749,3			55	5				0			welded	1
12.	Tubeshe	[Stat	ionary (ma	aterial spec. r	o.)] [Diam	eter (subject to n.a.	press.l]		minal t N.A.	hickness)		n.a	rr. allow.) 3.			ent (welde n.a.	d or bolted
13	Tubes		ating (mat 213 TP3	erial spec. no 316L).)]	(Diameter) 50,8			2,11	ckness)			7	allow.) '1			Attachmer straigh	t
٠.		Vaterial sp	ec. no., gr	ade or type)		(O.D.)		(Nomin	al thic	(ness)			(Nu	mber)		[Тур	e (straight	or U)]

National Board Number:	1	3	
Mfr. Representative:	poli	Date: _/	14/1/2016
Authorized Inspector:	Pel	Date:	14/1/3018

Welded to head and shell

FORM U-1 (Cont'd)

Itama 14 10 inci	I to be some	alatad for innor	abambara of igaliate	ad waasala ar ahaan	ils of heat exchangers

_		_																	
		Course	(s)		Material			Thickness			IT.II Coat I				Circum, Joint (Cat. A, B & C)			Heat Treatment	
No	Dia	meter		.ength	Spec.	/Grade or Type		Nom.	Co	r. T	уре	Full, Spot, None	Eff.	Туре	Full, Spot, None	Eff.	Temp	Time	
1	OD	609,6		200	SA	-240 316L		6	0		1	Spot	0.85	1	Spot	0.85	n,a.	n.a.	
2	OĐ	609,6		1400	SA	-240 316L		6		0 1		Spot	0.85	1	Spot	0.85	n a.	n.a	
3	OD609,6	6 / OD323	3,8	249	SA	-240 316L		6	0		1	Spot	0.85	1	Spot	0.85	n₊a.	n.a.	
							Body Fla	nges on	Shells										
											-		_		Bolting		-		
No.	Type	ID	OD	Flange Thk	Min Hub Thi	Material	- I	low Attac	ched	Location	Nu	um & Size	Boltin	g Material	(OD,	sher ID, thk)	Washe	r Materi	
1	WN	597,6	609,6	152,4	6	SA-182 F31	16L	welded Bott		Bottom	20	0 - 1 1/4"	SA-	193 B7	60,	32,3	Stainle	ess Ste	
2	WN 597,6 609,6 152,4		152,4	8	SA-182 F31	16L	welde	d	Тор	20	0 - 1 1/4"	SA-	-193 B7	60,	32,3	Stainle	ess Ste		
5 H	leads: (a)			SA-240	316L				(b)				n	.a.				
. ,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		(Mate	rial spec. nun	nber, grade, o	r type) (H.T. — tim	e and tem	p.)				(Material sp	ec. num	ber, grade	, or type) (H	.T. — time	and temp.)	
	Location (Ton	Thic	kness	Radius			Iliptical Conical Hemis		. T	Flat		Side to Pre		Pressure		Category A		
	Bottom, E		Min.	Corr	Crown	Knuckle	Ratio		Angle			Diameter	Co	onvex	Concave	Туре	Full, Spo	ot, Eff.	
(a)	Тор		6.0	0	610	61	n.a.	T n	n.a.	n.a	\neg	n.a.		Yes	Yes	1	Spot	0.8	
(b)									-										
	-						_						_				_		
-		-		_	1		Body	Flanges	on Hea	ds	1				Bolting				
									l			2.0:	D. In	Massa-ia		/asher			
	Location	Туре	ID	OD	Flange Thk	Min Hub Thk	Materi	al	Hov	Attached	Nu	ım & Size	BOIL	ng Materia	(OD,	, ID, thk)	Washe	er Mate	
(a)			-								+		1				-	_	
(b)		1	4		1						_	-	1_		100		0.41		
6. N	IAWP _	3,1 bai			t max. ten	np. 250 °C		250 °C		Min. de	esign	metal te	mp	-29	°C	at	3,1 ba	.Г	
		(Internal)		ternal)	No e	(Interna kempted as pe			31)			_			£		n.a.		
/. In	npact tes	t		{1		no and the comp			ted]			a	test	empera	ture of _				
8. H	ydro., pr	neu., or	comb. t	est pressu	ıre	hydro.: 7,6 ba	ar	_ Pro	of tes	t				n.	.a.				
					e opening	js:													
	Purpose		1			Mate	erial		T	ozzle Thic	kness	1		A	ttachment D	etails			
	let, Outlet, rain, etc.)			ameter r Size	Туре	Nozzle	T	ange	_	Nom.	Corr.	-	rcement terial			Flange	1	ation Open.)	
	inlet A1			IPS 3		A-790 S31803	_	32 F316L	_	5,49	0	+	0 316L	_		Wld.			
	Inlet A2			IPS 2		A-790 S31803	-	32 F3041	_	3,91	0		IO 316L	_	16.1(c	Wld	4		
	Outlet B1			PS 12	#150	SA-240 316L		32 F316L	_	6,0	0	Int	egral	UW-	16.1(c	Wld			

	Diameter	1	Mate	rial	Nozzle T	hickness	Reinforcement	Attachme	nt Details	Location
No	or Size	Type	Nozzle	Flange	Nom.	Corr.	Material	Nozzle	Flange	(Insp. Open.)
1	NPS 3	#150	SA-790 S31803	SA-182 F316L	5,49	0	SA-240 316L	UW-16.1(c	Wld	
1	NPS 2	#150	SA-790 S31803	SA-182 F304L	3,91	0	SA-240 316L	UW-16.1(c	Wld₋	4
1	NPS 12	#150	SA-240 316L	SA-182 F316L	6,0	0	Integral	UW-16 1(c	Wld	4
1	NPS 1	#150	SA-312 TP316L	SA-182 F304L	3,38	0	Integral	UW-16.1(c	Wld.	*
1	NPS 1	#150	\$A-312 TP316L	SA-182 F304L	3,38	0	Integral	UW-16.1(c	Wld.	1
1	NPS 1	#150	SA-312 TP316L	SA-182 F304L	3,38	0	Integral	UW-16.1(c	Wld.	-
1										
	No. 1 1 1 1 1 1 1 1	No. or Size 1 NPS 3 1 NPS 2 1 NPS 12 1 NPS 1 1 NPS 1	No. or Size Type 1 NPS 3 #150 1 NPS 2 #150 1 NPS 12 #150 1 NPS 1 #150 1 NPS 1 #150	No. Diameter or Size Type Nozzle 1 NPS 3 #150 SA-790 S31803 1 NPS 2 #150 SA-790 S31803 1 NPS 12 #150 SA-240 316L 1 NPS 1 #150 SA-312 TP316L 1 NPS 1 #150 SA-312 TP316L	No. or Size Type Nozzle Flange 1 NPS 3 #150 SA-790 S31803 SA-182 F316L 1 NPS 2 #150 SA-790 S31803 SA-182 F304L 1 NPS 12 #150 SA-240 316L SA-182 F316L 1 NPS 1 #150 SA-312 TP316L SA-182 F304L 1 NPS 1 #150 SA-312 TP316L SA-182 F304L	No. Diameter or Size Type Nozzle Flange Nom. 1 NPS 3 #150 SA-790 S31803 SA-182 F316L 5,49 1 NPS 2 #150 SA-790 S31803 SA-182 F304L 3,91 1 NPS 12 #150 SA-240 316L SA-182 F316L 6,0 1 NPS 1 #150 SA-312 TP316L SA-182 F304L 3,38 1 NPS 1 #150 SA-312 TP316L SA-182 F304L 3,38	No. Diameter or Size Type Nozzle Flange Nom. Corr. 1 NPS 3 #150 SA-790 S31803 SA-182 F316L 5,49 0 1 NPS 2 #150 SA-790 S31803 SA-182 F304L 3,91 0 1 NPS 12 #150 SA-240 316L SA-182 F316L 6,0 0 1 NPS 1 #150 SA-312 TP316L SA-182 F304L 3,38 0 1 NPS 1 #150 SA-312 TP316L SA-182 F304L 3,38 0	No	No. Diameter or Size Type Nozzle Flange Nom. Corr. Reinforcement Material Nozzle 1 NPS 3 #150 SA-790 S31803 SA-182 F316L 5,49 0 SA-240 316L UW-16.1(c 1 NPS 2 #150 SA-790 S31803 SA-182 F304L 3,91 0 SA-240 316L UW-16.1(c 1 NPS 12 #150 SA-240 316L SA-182 F304L 6,0 0 Integral UW-16.1(c 1 NPS 1 #150 SA-312 TP316L SA-182 F304L 3,38 0 Integral UW-16.1(c 1 NPS 1 #150 SA-312 TP316L SA-182 F304L 3,38 0 Integral UW-16.1(c	No No No No No No No No

20. Supports: Skirt No Lugs 3 Legs n.a. Others 4 x Brackets Attached (Number) (Where and how) 21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report (list the name of part, item number, Manufacturer's name, and identifying number):

Lens expansion joint , Item 7; Manufacturer: HKS-CZ, s.r.o., Mlékojedská 1994/7, 41201 Litomerice, Czech Republic; Serial-Number: SN3509268-2-1/151321

22. Remarks

For non-corrosive service only. Safety valve is not in scope of supply of Schrader. All units are in [mm] unless otherwise stated. Spot RT performed according to UW-11(b) and UW-11(a)(5)(b) (RT4). E Head and E Shell = 0,85. No PWHT required. Impact testing exempted as per UHA-51(d).

National Board Number:		3			
reacional board reambon.	M. A		101	1112016	
Mfr. Representative:	13/9/1	_Date:	114	11/100	,
Authorized Inspector:	201	_Date:	110	FIMI COM	Ŀ

FORM U-1 (Cont'd)

CERTIFICATE OF SHOP COMPLIANCE
We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this vessel
conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1.
U Certificate of Authorization Number U-51,435 Expires Sept. 11, 2018
Date Jan 16/20/6 Name School 64 Aprile School 18 Signed (Representative)
CERTIFICATE OF SHOP INSPECTION
I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by TÜV NORD Systems GmbH & Co. KG of Essen, Germany
TÜV NORD Systems GmbH & Co. KG of Essen, Germany have inspected the pressure vessel described in this Manufacturer's Data Report on De C. 3 nd , 2015, and
state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND
PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed
or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall
be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.
Date 14/1/2016 Signed Mountained Inspector) Commissions NB 14044 Am S [National Board (Incl. endorsements)]
CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE
We certify that the statements in this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements
of ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. U Certificate of Authorization Number Expires
Date Name Signed(Representative)
CERTIFICATE OF FIELD ASSEMBLY INSPECTION
I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by
of, have compared the statements in this Manufacturer's Data Report with the described pressure vessel
and state that parts referred to as data items, not included in the certificate of shop inspection, have been
inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance
with the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. The described vessel was inspected and subjected to a hydro-
static test ofBy signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or
implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.
DateSigned(Authorized Inspector)(National Board (Incl. endorsements)]

FORM U-5 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET

SHELL-AND-TUBE HEAT EXCHANGERS
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

	d certified by _	30	addi ripparate	bau GmbH, Schl			
Manufactured fo	·	E	vonik Degussa	(Name and Corporation, PO I (Name and addre			00
		Ev	onik Corporation	n, Mobile, 4201 D		US-Theodore AL	36582
Location of instal	llation	L.V	OTIK COIPOIAGO		and address)	00 111000010712	. 00002
Туре	Vertical		1	0911-01			n.a.
(Horizo	ontal, vertical, or sphe	ere)	(Manufact	urer's serial number)			(CRN)
	-16-001 Rev. 4			3			2015 (Year built)
(Drav	ving number)			(National Board numb			(real built)
			D SHELL-AND-T	UBE HEAT EXCHA	NGER DATA		
		ating Pressure	Max	imum Design/Operati	ng Metal Tempera	iture	Axial Differential Thermal
Name of Condition	Shell Side (min,/max.)	Tube Side (min./max.)	Shell	Channel	Tubes	Tubesheet	Expansion Range (min./max.)
	(units)	(units)	(units)	(units)	(units)	(units)	(units)
Design	-1 / +5,2 bar	-1 / +3,1 bar	250 °C	250 °C	250 °C	250 °C	0
						/	
ta Report Item Nu					emarks		
				E4.405		70-	ptombh 44 2049
tificate of Author		U	No.	51,435	Expires	Se	ptembjer 11, 2018
tificate of Author			No	51,435		Se gned	pterobjer 11, 2018