Ansicht in Durchflussrichtung! Middletown Energy Center CCPP 475MW MEC/KMEC Calibration-VCS A-A - Proiect V17494 View in flow-direction! 20" Flow Element 1CR-FE3001 (Reheat Steam outlet - Ventur 1:12 & Kings Moutain Energy Center ReDmax: 6 E6 49.43 35.21 MID volumetric procedure / 20 points per tap set, including repeat test points at 25%, 50%, and 75% - Project V17495 1255.54 894.46 Inspection port [15.12, Lc=14,975] [12.76, Lt=12,8\$\frac{1}{2}1.28, Ld,min. 13,692-max.21,064] of calibration range.
Accuracy: ±1/4%
Additional uncertainties: min. 0,50% 324.05 540.57 Flow direction Calibration code: [6.41] ASME MFC - 3M -2004 addendum 162.938 .56 4.2 Stamping Stampina (mwt=9,81) "Taps B" **DETAIL H** "Taps A" 12] 62 - BW ENDING Ε I:6∕€∖ 90° 75° ±2.5° c2> [32] OD812.8 7,38 BW in accordance \$\frac{1}{2}\$ [23] OD584.(with ASME B16.25 [18 Figure 2a [b.32] \Box F--Y LN a3 xID 8 al 0.8 В **a4** 180° **DETAIL E** B-B **DETAIL G** - Tap Detail - LOCATION OF - INSPECTION INSPECT. PORT **PORT** 1:37 9.19 [1.47] G 2 pairs 233.38 QD Ø 37,4 of plugs [9.55] 24.22 [7.75][19.87, Le,min.=18,376] [14.92] [7.75][1,09] 242.51 196.9 615.15 378.9 196.9 504.61 ID Ø 27.6=3/4"SW CLASS 3000 84.65 ±0.24 2150 ±6 1/2"NP:I(F) 9.19 **DETAIL F DETAIL D DETAIL B DETAIL A** 0.19 **DETAIL C** 233.38 - DETAIL OF IMPULSE - PLUGGED TAP - BW ENDING - BW ENDING - BW ENDING (mwt=1,05)CONNECTION 1:4 VOGT POWER INTERNATIONAL 3/4"SW CL. 3000 Untolerierte Maße nach/ 1.05 Intolarate Dimensions acc V17494-CIXD-6009-03 in accordance o, DIN 7168-mittel 0 QD 26,7 with ASME B16.11 0.84 12-Apr-2016 (0.39) bis/to ±0,1 QD 21,3 0.47 No SILICA used on pressure parts. ID 12 D über/over 0.18 ±0,2 max. misalignment acc. Fig. 127.3 max. 2 mm / 0,079 in 10 bis/to 4.65 (mwt=0,63) max. thickness of reinforcement acc. BW in accordance über/over 30 ±0,3 BW in accordance Table 127.4. 5 mm / 0.197 in with ASME B16.25 0.02 bis/to 100 Construction Code: ASME Section I, Ed. 2013 with ASME 16.25 nplementation of detal H and note for 07.04.16 Figure 2a 3/4"SW CL. 3000 Clasification: NBEF über/over 100 0.5 Figure 2a ±0,5 BW in accordance in accordance with ASME B16.1 Supporting Code: ASME B31.1 Edition 2014 + 2012 inspection port. Implementation of customer comment bis/to 300 with ASME B16.25 N.A. (not required by customer) über/over 300 Stamping: and inspection port. Modification of calibration code and table of required ±0,8 Figure 2a, Sch. 60 LB 03.02.16 bis/to 1000 appl. Code cases: None über/over 1000 TAG Plate 100x50x1,5 straight lengths. SS ±1,2 0.31 bis/to 3,94x1,97x0,06] 2000 Initial release 04.01.16 LB Medium: Superheated steam Α ID 8 11 Plug R1" EN10273 SA-105 3.1 Untolerierte Maße nach/ Änderungshinweis / Details of Datum ndex PWHT: NO Name Untolarate Dimensions acc EN ISO 13920- class/Klasse revision Date 10 Pin OD 3x12 [OD0,12x0,47in] 3.1 1 SA-105 2016 **SEIKO** Baujahr/Year built: Inspector: 9 Stamp OD 28x160 [OD1,10 x 6,29in] 3.1 Pos. 8 TAG-Plate SA-105 ±1 Gew./Weight: (kg) ~2050 lb / 930 kg | Einbaulage/mounting pos.: horizontal mounted with lacing cord Inspection tap OD 45x130 [OD1,77 x 3.1 EN10273 SA-105 über/over 5.12in] Abmessungen./Dimensions: (mm) L: 2150 mm W: 812,8 mm H: 812,8 mm ±2 Druckentnahmestutzen/taps: 2 pairs 100 120 bis/to 3.1 7 Plug OD 26.7x28.6 [OD1.05x1.13 in] SA-105 120 Corrosion protection: Remosil 32 in 32 in ±2 Pressure tap OD37,4x80 0 400 4 3.1 SA-105 SEIKO FLOWCONTROL [OD1,47x3,15in] PS (max. Pressure): 680Psig/4688,5kPa/47 bar(c SA2.5 Oberflächenbeh./Surface treatment: 400 WN Flange 20"600# RF ASME B16.5, ±3 2 SA-105N 3.1 1000 TS (max. Temp.): KKS-Nr./TAG-No.: 715°F / 379,4 °C Fabr. Nr./Serial No.: Year built: 2015 Sch. 60 Serial no.: see table Downstreamcone DN/Vol(I).: 20" Weight: *** (kg) TS: 715°F /379.4°C ±4 pl. 14,2 - OD492,7, OD398,12 x 378,9 [pl.0,56 - OD19,4, OD15,67 x 14,92in]
Upstreampipe OD508x20,62x504,6 [OD20x0,812x19,87in] PT (Testpressure) Inline, 1029,8Psig/7100kPa/71 bar(g) 2000 SA-516 Gr. 70 3.1 PS: 680Psig/ 4688,5 kPa PT: Inline, 1029,8 Psig/7100 kPa 1CR-FE3001 SEI15_2824 2000 Isolierstärke/Insulation thickness --- mm ±6 his/to 4000 0 SA-106 Gr. B 3.1 Corrosion allowance: 0 mm 4000 ±8 Jostreamcone 8000 *Note: Dimension will be changed Kunde/Customer: Benennung/Title: ol. 14,2 - OD492,07, OD409,63 x 20"/Sch.60 SA-516 Gr. 70 3.1 8000 242,51 [pl. 0,56-OD19,37, OD16,13x9,55in] Venturi tube meterrun with two pairs of taps ±10 600# 12000 **Coo d t** Power ASME MFC - 3M 2004 addendum/B CR Steam inlet flow element F über/over bis/to 12000 Throat OD405x615.2 ±12 SA-106 Gr. C 3.1 Projekt/Project.: 16000 OD15,94x24,22in] 466.750 1.867 Zeichnungs-Nr./Drawing-No.: Target mm ± Type: mm V17494 - Middletown Energy Center & V17495 - Kings Moutain Energy Center 16000 18.376 0.074 ØD: in in +14 Werkst Schmelze Seiko: A16020088-150712/10 RKVRB_ML_FL 20000 Benennung/Denomination MA/ Zeugnis/ EN10204 Norm / Pos. Part FLOWCONTROL Nr./ Nr./ 325.876 0.326 Target mm ± mm Abmessung/Dimension pcs tandard Material Charge 20000 ±16 PO: V0009647 Item#10 | HO: A16020088-150712 Kunde: Vogt Power International (VPI) 1/2 Ød: 12.830 0.0128 in + 3 5 8 2 4

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EXCERPT FROM ASME-MFC-3M-2004, TABLE 4-1 REQUIRED STRAIGHT LENGTHS FOR CLASSICAL VENTURI TUBES B														
BETA RATIO	Single 90° bend or tee (NOTE 1)		l hends same		Several 90° bends, different planes (NOTE 1)				Expander 0.75D to D over length of D		lGate Valve Fully		Required outlet section	
1	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B	8A	8B
0.698	258.399	55.371	332.228	55.371	332.228	55.371	193.800	46.143	101.514	64.600	101.514	64.600	51.319	51.319

GENERAL NOTES:

(a) Values are expressed in INCHES.

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- (b) Straight lengths shall be measured from the downstream end of the curved portion of the nearest (or only) bend or the downstream end of the curved or conical portion of the reducer or expander to the upstream pressure tapping plane of the classical Venturi tube.
- (c) If temperature pockets or wells are installed upstream of the classical Venturi tube, they shall not exceed 0.13D in diameter and shall be located at least 4D upstream of the upstream tapping plane of the Venturi tube.
- (d) For downstream straight lengths, fittings or other disturbances (as indicated in this Table) or densitometer pockets situated at least four throat diameters downstream of the throat pressure tapping plane do not affect the accuracy of the measurement.
- (e) Column A for each fitting gives lengths corresponding to "zero additional uncertainty" values.
- (f) Column B for each fitting gives lengths corresponding to "0.5% additional uncertainty" values. ADDITIONAL NOTES:
- (1) The radius of curvature of the bend shall be greater than or equal to the pipe diameter.
- (2) The straight length in each Column A gives zero additional uncertainty, data are not available for shorter straight lengths that could be used to give the required straight lengths for each Column B.

4

5

30 100 über/over 100 über/over 300 bis/to 1000 über/over 1000 bis/to 2000 Untolerierte Maße nach/ Untolarate Dimensions acc EN ISO 13920- class/Klasse 30 120 ±2 400 1000 ±3 2000 2000 ±6 4000 4000 8000 8000 12000 F über/over bis/to 12000 ±12 16000 16000 ±14 20000 ber/over 20000 ±16

Untolerierte Maße nach/ Untolarate Dimensions acc DIN 7168-mittel

D über/over

über/over

Construction Code: ASME Se Clasification: NBEP	,	С	Implementation of detal I	H and note for	r 07.04.16	LB		
Supporting Code: ASME B31			inspection port. Implementation of custon	ner comment				
, , ,	ot required by customer)	В	and inspection port. Mod calibration code and tab	03.02.16	LB			
appl. Code cases:	None		straight lengths.					
Medium:	Superheated steam	Α	Initial release	04.01.16	LB			
PWHT:	NO	Index rev.	Anderungshinweis / revision	Datum Date	Name			
Baujahr/Year built:	2016	Inspector: SEIKO						
Gew./Weight: (kg)	~2050 lb / 930 kg	Einbaulage/mounting pos.: horizontal						
Abmessungen./Dimensi L: 2150 mm W: 812,8 m	ons: (mm) nm H: 812,8 mm	Druckentnahmestutzen/taps: 2 pairs						
84,65 in 32 in	32 in	Corrosion protection: Remosil						
PS (max. Pressure): 680)Psig/4688,5kPa/47 bar(g)	Oberflächenbeh./Surface treatment: SA2.5						
TS (max. Temp.):	715°F / 379,4 °C	KKS-Nr./TAG-No.: Fabr. Nr./Seri			erial No.:			
PT (Testpressure)Inline, 10	29,8Psig/7100kPa/71 bar(g)	1CR-FE3001 SEI15			5_2824			
Isolierstärke/ Insulation thic	kness mm							
Corrosion allowance:	0 mm							
Kunde/Customer:			Benennung/Title: 20"/Sch.60					
Cogt Power	Venturi tube meterrun with two pairs of taps 600# CR Steam inlet flow element							
Projekt/Project.: V17494 - Middletown Energy Center & V17495 - Kings Moutain Energy Center FLOWCONTROL		Zeich	nungs-Nr./Drawing-No.:	Type:		F		
		Seiko	o: A16020088-1507	RKVRB_ <i>I</i>	B_ML_FL			
PO: V0009647 Item#10	HO: A16020088-150712	Kunc	de: Vogt Power Interna	tional (VPI)	2/2			