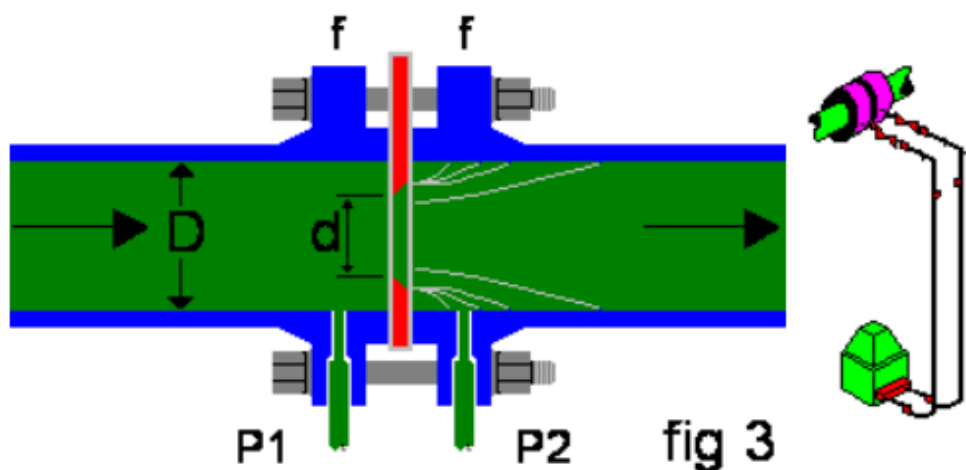


## PROTOCOLLO DI CALCOLO

Raffineria SARPOM TRECATE

# ALLEGATO A

Fogli di Calcolo Orifizi Calibri/ Venturi ISO 5168:2005

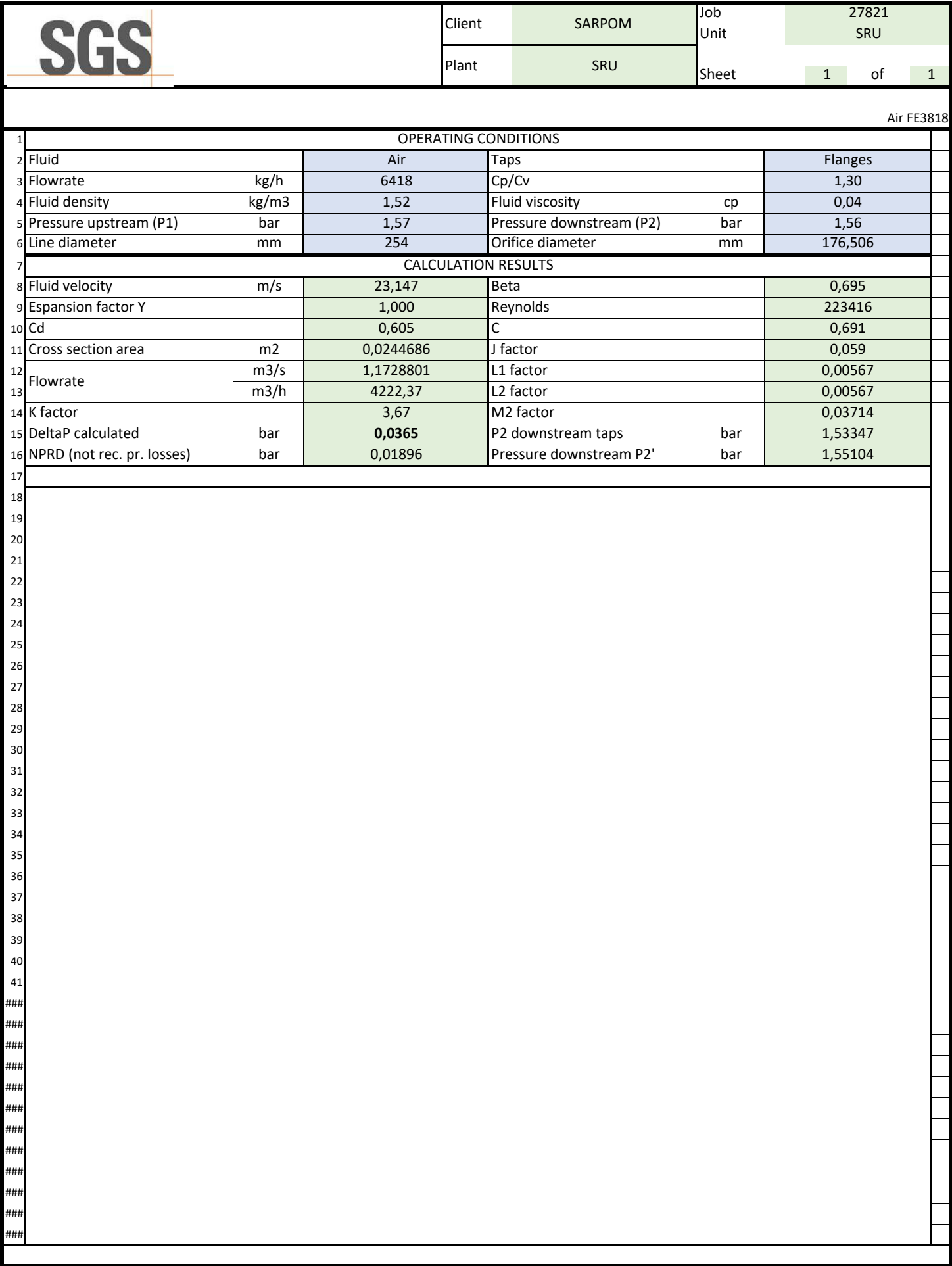


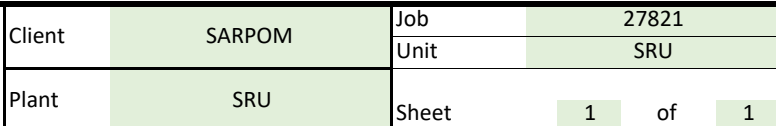
**Salvatore Salvaggio**  
**Natural Resources**  
Oil Gas and Chemicals Commodities  
Plant Performance Test Team Leader

Phone: +39 (0)931 761010 int 222  
Mobile: +39 346 6279331

1	Emissione finale	Gallo	SS	Salvaggio	09/09/21
0	Emissione per commenti	Gallo	SS	Salvaggio	13/08/21
Rev.	Descrizione	Prep.	Verif.	Approv.	Data



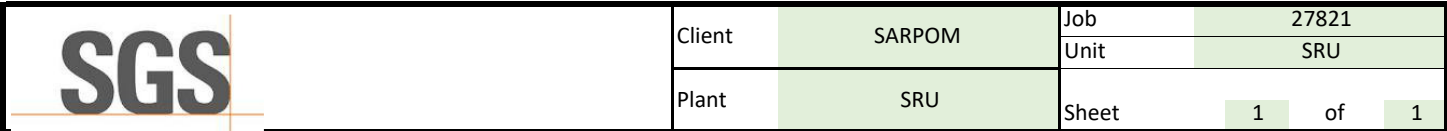




## Acid Gas Fe-3806

1	OPERATING CONDITIONS			
2	Fluid	Vapour/Gas	Taps	Flanges
3	Flowrate kg/h	3869	Cp/Cv	1,31
4	Fluid density kg/m3	2,27	Fluid viscosity cp	0,0134
5	Pressure upstream (P1) bar	1,83	Pressure downstream (P2) bar	1,82
6	Line diameter mm	154	Orifice diameter mm	108,876
7	CALCULATION RESULTS			
8	Fluid velocity m/s	25,418	Beta	0,707
9	Expansion factor Y	1,000	Reynolds	663103
10	Cd	0,602	C	0,695
11	Cross section area m2	0,0093101	J factor	0,020
12	Flowrate m3/s	0,4734459	L1 factor	0,00918
13	m3/h	1704,41	L2 factor	0,00918
14	K factor	3,22	M2 factor	0,06269
15	DeltaP calculated bar	<b>0,0608</b>	P2 downstream taps bar	1,76918
16	NPRD (not rec. pr. losses) bar	0,03078	Pressure downstream P2' bar	1,79922

[illegible]



SARPOM

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# ORIFICE CALCULATION SHEET

1	OPERATING CONDITIONS
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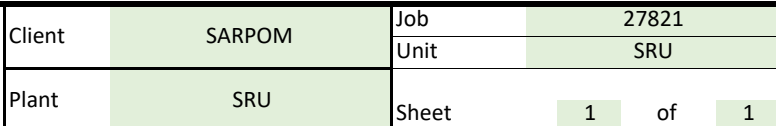
2	Fluid	Vapour/Gas	Taps	Flanges
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3	Flowrate	kg/h	3869	Cp/Cv	1,31
4	Fluid density	kg/m3	2,39	Fluid viscosity	cp
5	Pressure upstream (P1)	bar	1,83	Pressure downstream (P2)	bar
6	Line diameter	mm	146,3	Orifice diameter	mm
					108,876

7	CALCULATION RESULTS
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8	Fluid velocity	m/s	26,750	Beta	0,744	
9	Expansion factor Y		1,000	Reynolds	698003	
10	Cd		0,597	C	0,717	
11	Cross section area	m2	0,0093101	J factor	0,020	
12	Flowrate	m3/s	0,4496746	L1 factor	0,00918	
13		m3/h	1618,83	L2 factor	0,00918	
14	K factor		2,03	M2 factor	0,07181	
15	DeltaP calculated	bar	<b>0,0542</b>	P2 downstream taps	bar	1,77583
16	NPRD (not rec. pr. losses)	bar	0,02495	Pressure downstream P2'	bar	1,80505

[illegible]



## SWS FL3812

1	OPERATING CONDITIONS			
2	Fluid	Vapour/Gas	Taps	Flanges
3	Flowrate kg/h	794	Cp/Cv	1,31
4	Fluid density kg/m3	1,52	Fluid viscosity cp	0,0134
5	Pressure upstream (P1) bar	1,83	Pressure downstream (P2) bar	1,82
6	Line diameter mm	77,54	Orifice diameter mm	41,8
7	CALCULATION RESULTS			
8	Fluid velocity m/s	30,728	Beta	0,539
9	Expansion factor Y	1,000	Reynolds	270270
10	Cd	0,605	C	0,632
11	Cross section area m2	0,0013723	J factor	0,038
12	Flowrate m3/s	0,1451023	L1 factor	0,02392
13	m3/h	522,37	L2 factor	0,02392
14	K factor	19,23	M2 factor	0,10381
15	DeltaP calculated bar	<b>0,2127</b>	P2 downstream taps bar	1,61728
16	NPRD (not rec. pr. losses) bar	0,14762	Pressure downstream P2' bar	1,68238

[illegible]