

APPENDIX A

Con-Arsenic Sludge Drying Circuit

- 1) Flowsheet
- 2) Mass and Energy Balance
- 3) Equipment List

APPENDIX - A

FIGURE A1 - CON ARSENIC SLUDGE DRYING CIRCUIT

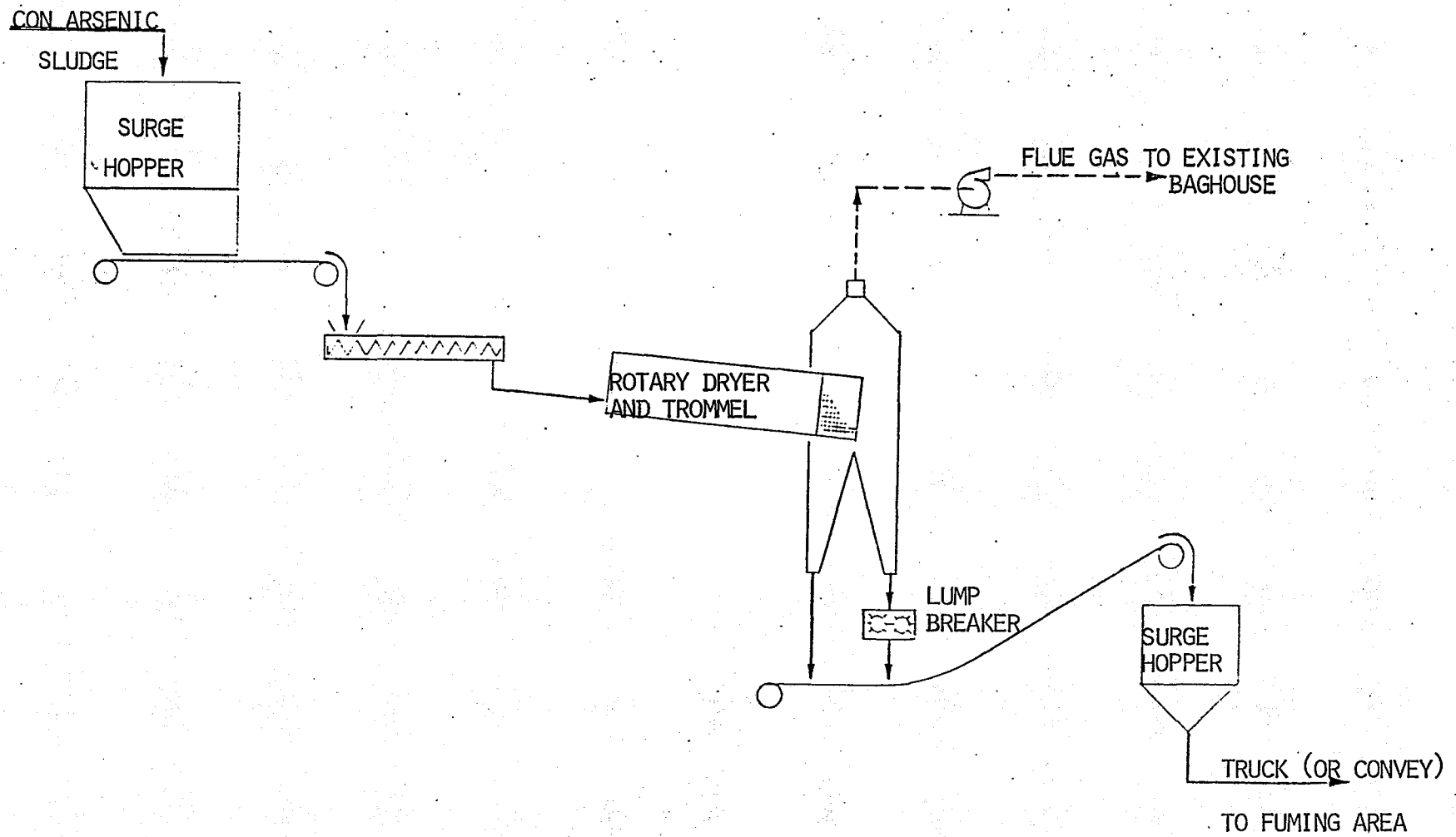


Table A1 Con-Arsenic Drying Circuit Mass and Energy Balance

Note: 15,428 kg/day wet feed @ 30% moisture

10,800 kg/day dry

Operation to be sized for one shift operation, 6 operating hours, per day.

1) <u>Mass & Heat Balance</u>	<u>Mass Rate</u>		<u>Heat effects</u> K cals.		<u>Total</u> K cals in 000's
	<u>Kg/Hr</u>	<u>Kg moles</u> <u>per</u> <u>Hour</u>	<u>Per Kg</u>	<u>Per</u> <u>Keg mole</u>	
<u>Input:</u>					
Con Arsenic sludge @ 25°C: solids	1800.0				
water	771.4	42.85			
Combustion air @ 25°C	-	108.76			
propane	60.0	1.36	11,100	-	<u>666.0</u>
Total input					<u>666.0</u>

Output

Dry Con-Arsenic product @ 100°C	1800.0	-	18.75	-	33.8
Sludge water: vapourization	771.4	42.85	583.9	-	450.4
sensible heat @ 127°C	-		45.8	-	35.3
combustion gases @ 127°C =					
Co ₂	-	4.08	-	954.8	3.9
H ₂ O	-	5.44	-	824.9	4.5
O ₂	-	16.04	-	725.1	11.6
N ₂	-	85.92	-	710.1	61.0
Heat losses	-	-	-	-	66.5
Total output		<u>154.33</u>	-	-	<u>666.0</u>

2) Flue Gas Composition & Volume

	<u>Volume</u>		<u>Volume</u> %
	<u>Nm³/Hr</u>	<u>Cfm @ 127°C</u>	
Co ₂	91.4	78.8	2.6
H ₂ O	1081.7	932.8	31.3
O ₂	359.3	309.8	10.4
N ₂	1924.6	1659.7	55.7
Total	<u>3457.0</u>	<u>2981.1</u>	<u>100.0</u>

Appendix ATable A-2Con Arsenic Drying Circuit Equipment List

1)	Surge hoppers (two required) for dryer feed and product. 3 m long x 2 m wide, 2 m high straight section, and 1.5 m high, sloping bottom. Estimated volume: 16 m ³ estimated weight: 2250 kg.	10,000
2)	Belt feeder. 60 cm wide 3.7 meters long	15,000
3)	Rotary dryer package to include dryer, exhaust fan, combustion chamber, combustion air blower, combustion hardware and screw feeder.	165,000
4)	Lump breaker - costed as 10" x 6" Denver equipment type roll crusher.	15,000
5)	Belt conveyor to deliver dryer product from dryer discharge to surge hopper. 0.5 m wide, 15 meters long. @ \$350/meter.	<u>5,000</u>
Total Equipment Cost		210,000