TATE
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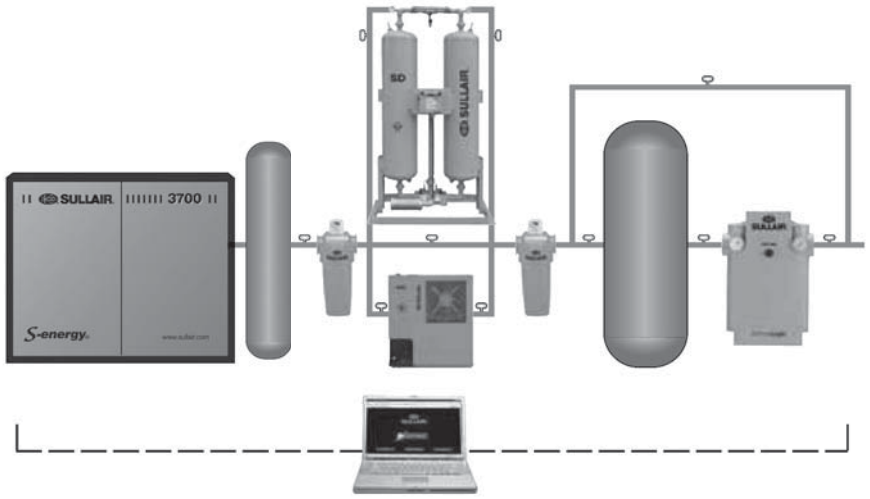
Compressed Air Systems Asset List

An inventory of compressors, dryers, filters and accessories.

FOR COMPANY: _____

Prepared by: _____ on: _____, _____

Manufacturer	Model	Serial Number	Flow/Pressure	Installation Date



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Rules of Thumb

Facts about compressed air and compressed air systems.

LEAK FLOW RATES

Based on flow through an orifice.

Upstream Psig	Orifice Diameter (Inches)				Orifice Diameter (Inches)			
	1/16"	1/8"	1/4"	1/2"	1/16"	1/8"	1/4"	1/2"
	Discharge, cfm Free Air				Annual Cost			
80	5	21	85	340	$757	$3,028	$12,111	$48,443
100	6	26	103	411	$917	$3,669	$14,674	$58,696
120	8	30	121	483	$1,077	$4,309	$17,237	$68,949
	*Based on air temperature of 60º F.				*Based on 4 CFM/HP and 8¢/kWH			

PIPE SIZING MAX. RECOMMENDED CFM

Based on 0.5 psi drop per 100' of pipe.

PSIG	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"
80	20	40	125	225	375	675	1350	4000
100	22	42	135	250	410	740	1510	4450
125	25	45	145	280	450	810	1640	4900

The flow contribution from a storage tank can be estimated as follows:

$$\text{Flow from tank (cfm)} = \frac{\text{Volume} \times (P_1 - P_2)}{\text{Time} \times P_0}$$

Where:

- Volume = Volume of the tank in Cubic Feet
- P_1 = Starting pressure inside the tank (psig)
- P_2 = Ending pressure inside the tank (psig)
- Time = Time of the pressure drop event (minutes)
- P_0 = Atmospheric pressure (usually 14.7 psia)

7.4805 gallons per Cubic Foot
0.1337 Cubic Feet per Gallon

Metric Conversions

- cfm = lpm **X** 0.0353
- lps = cfm **X** 0.472
- 1 bar = 14.5 psi
- kg/cm^2 = 14.22 psi

$$kW = \frac{0.746 \times bHp}{\text{Motor Efficiency}}$$

Effect of stabilizing Plant Pressure with FlowLogic Controller.

$$\text{Net flow} = \text{Current flow} \times \frac{\text{New Set Pressure (psia)}}{\text{Current Average Pressure (psia)}}$$

Rule of Thumb Annual Cost

Energy Cost ($) = HP × 550

(Assuming 8760 Hours/year at 8¢/kWH)

Energy Cost ($) = kW × Operating Hours × $/kWH x AVG. % loaded + kW (max.) × Demand Charge

$$kW\ (3\ Phase) = \frac{Amps \times Volts \times 1.73 \times Power\ Factor}{1000}$$

$$BHP\ (3\ Phase) = \frac{Amps \times Volts \times 1.73 \times Power\ Factor \times Motor\ Efficiency}{746}$$

Purge Rate for Regenerative Dryers: Heatless 15% / Heated 7% / Blower Purge 3%

Rule of thumb formulas for single stage rotary screw air compressor systems:

$$\text{Power Change} = \frac{5\%\ \text{Increase in Power}}{10\ \text{Psig Increase in Pressure}}$$

$$\text{Capacity Change} = \frac{0.75\%\ \text{Increase in Capacity}}{10\ \text{Psig Decrease in Pressure}}$$

1 Hp ≈ 4 to 5 cfmCost to run a compressor ⩾ $1.25 per HP per Day

A 100 cfm compressor (25 Hp), ingests approximately 18 gallons of water per day on a 75ºF, 75% RH day.

A properly operating after cooler and separator will remove approximately 68% of the water ingested by the compressor.

A properly operating refrigerated dryer and drain will remove 28% of the ingested water leaving approximately 4.0%.

A properly operating desiccant dryer will remove 32% of the ingested water, leaving approximately 0.3%.