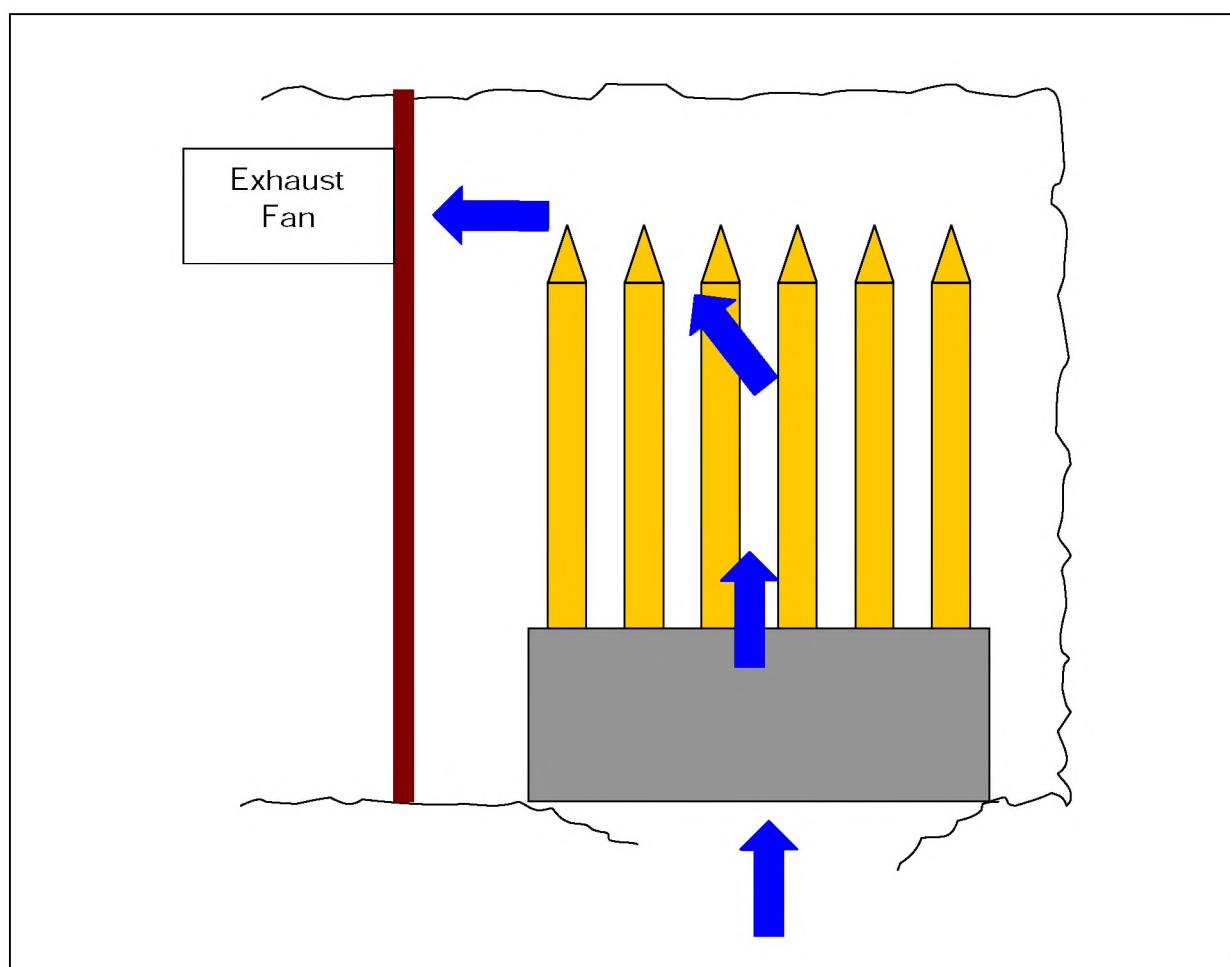


EVALUATION OF THE 104 LEVEL RABSON DUST FILTER UNIT

MPONENG MINE
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PURPOSE

To evaluate the dust filtering efficiency of the 104 level Rabson dust filter unit. Both dust mass filtering efficiency and dust particle filtering efficiency was evaluated.

METHODOLOGY

Project was conducted at the 104 Level Dust Filter installation on Mponeng Mine. This unit is currently installed at the 104 Level station tips.

Two AEROCET 531 particle mass and count instruments were utilised to determine the filtering efficiency of the Bona Dust Filter.

Samples were collected at both the intake and the return of the dust filter unit.

FINDINGS

The detailed results of the particle filtrating efficiency tests and the mass filtrating efficiency tests are depicted in Appendix A.

The negative efficiencies are mainly due to inward leakage's into the dust filter chamber.

Visual leakage's were observed at:

- The intake inspection hole (This door must be fitted with sealing material and be kept locked at all times),
- The front wall (Cracks in wall, opening between wall and fan columns, and electrical cable inlet hole must be sealed),
- Filter chamber access door (door must be fitted with sealing material and kept locked at all times),
- Openings between base-plate and concrete foundation (these openings must be sealed).

It was also observed that "clean side" of the base-plate and the inside chamber area was full of mud and dry dust.

CONCLUSION

No meaning full project results (filter efficiency values) could be obtained.

RECOMMENDATIONS

All leakage's (as discussed under "findings") must be addressed and the filter chamber properly cleaned.

The determination of filtrating efficiency project must be re-conducted after completion of the above.

APPENDIX A – Test Results

Location	104 LEVEL FILTER UNIT (Particle Count Evaluation)						
	INTAKE		RETURN		EFFICIENCY		
	0.5 u > Litre	5.0 u > /Litre	0.5 u > /Litre	5.0 u > /Litre	0.5 u > /Litre	5.0 u > /Litre	Overall /Litre
104 Level Stn. Dust Filter	412470	27461	187845	6695	54.5	98.4	56
104 Level Stn. Dust Filter	410234	20544	155162	6056	62.2	98.5	63
104 Level Stn. Dust Filter	372803	19511	160786	6507	56.9	98.3	57
104 Level Stn. Dust Filter	228873	8462	147175	3029	35.7	98.7	37
Average	356095	18995	162742	5572	52	98	53

Location	104 LEVEL FILTER UNIT (Particle Mass Evaluation)														
	INTAKE					RETURN					EFFICIENCY				
	PM 1.0	PM 2.5	PM 7.0	PM 10.0	TSP	PM 1.0	PM 2.5	PM 7.0	PM 10.0	TSP	PM 1.0	PM 2.5	PM 7.0	PM 10.0	TSP
	mg/m ³														
104 Level Stn. Dust Filter	0.009	0.151	0.895	1.092	1.244	0.017	0.215	1.37	1.765	3.051	-89	-42	-53	-62	-145
104 Level Stn. Dust Filter	0.008	0.07	0.615	0.753	0.868	0.006	0.102	0.424	0.486	0.557	25	-46	31	35	36
Average	0.009	0.111	0.755	0.923	1.056	0.012	0.159	0.897	1.126	1.804	-35	-43	-19	-22	-71