



DUST MANAGEMENT STRATEGY 2002

DUST FILTRATION

1. BACKGROUND

With increasing health problems associated with dust exposure, focus has been placed on a dust management strategy.

To achieve the objective of defining filter design parameters to ensure correct dust control at ore pass high risk dust areas, new filtration units have been put in place during the past year, at the various Business Units, which proved to be successful. These include Envelope Filters at GNM and Kopanang, a two-stage installation at Moab Khotsong, a Dynavane installation at Tau Tona and a box type installation at Savuka.

A Multi Stage Spin Filter are also in the process of being tested at GNM. During the testing of the mentioned filters it became evident that the designed air volume of $6\text{m}^3/\text{s}$ could not be exhausted through this system to ensure optimal performance. A pressure survey was conducted on the system and a restriction in the outlet ducting was identified. For some unknown reason the filter outlet area was reduced to $300\text{mm} \times 300\text{mm}$ before it goes into the 570mm ducting. The supplier rectified this on their own cost and the ducting was delivered again on 2 August 2002. A more efficient bag to

be fitted on the purge fan was recommended, which will be supplied and fitted during the next visit.

The latest edition, the Liquicell horizontal wet scrubber, supplied by Air and Allied Technologies was demonstrated at GNM. The Liquicell is a wet dust scrubber, which operate in a horizontal position and is designed for air volumes from 1-30m³/s. A visit to the supplying company was arranged for 23 August 2002. During the visit, tests will be conducted with a particle size Analyser to sample the outlet air. A quote is awaited from the supplier and D Wrigley agreed to purchase the unit on his T & I budget. The unit will then be tested on a high dust load tip on 70 level at GNM.

Medium and low risk dust issues on ore transfer areas have been identified for investigation during 2002 and possible projects for 2003. These include dust load determination methodology, filter efficiency determination methodology, dust characteristics determination methodology, captured displacements and excavation determination methodology and maintenance program content. Other issues that need to be addressed include the regular maintenance on dust filter plants, the application of respiratory protection during tipping operations and filter plant-cleaning, as well as ore pass controls to be in working order at all times.

2. INTRODUCTION

While a few new filter installations was successfully installed at various business units during 2001, it is evident that many of the older filter installations (i.e Rabson, Cartridge type etc.) currently installed, do not meet the filtration expectations.

Dust filter plants at the individual Business Units are regularly maintained and cleaning schedules are available to clean filters periodically. The application of respiratory protection during tipping operations is currently enforced but 100% compliance is not yet evident and still need to be addressed. In general it is evident that the current adherence to ore pass controls (i.e. the installation of chutes, tip covers etc.) at filter installations are not up to standard and that dust plant efficiencies are not always known.

Tip filter layouts at numerous Business Units however are currently reviewed in order to install major filter plants in the near future, after the completion of the generic filter design standard for Anglogold.

The table below indicates the current status of all dust plant installations on the various Business Units.

CURRENT DUST PLANT INSTALLATIONS

	TYPE OF INSTALLATIONS	CURRENT STATUS	PLANNED INSTALLATIONS
MOAB KHOTSONG	Envelope -Multi stage installation plus cartridge type installtions.	-	23 New two-stage installations to be installed within the next year.
TAU TONA	Polyfred, Rabson Type	18	10 Dynavane installations.
GNM	Envelope installations	-	-
KOPANANG		30	-
SAVUKA	Envelope, Polyfred, Dynavane installations	-	-
TAU LEKOA	Cartridge installations	-	-
MPONENG	Rabson installations	-	-

ACTION PLAN

Currently AngloGold is spending millions for compensation as a result of employees contracting occupational lung diseases due to the inhalation of harmful pollutants in the working environment. Subsequently a project has been raised to investigate solutions that will drastically reduce and/or eliminate pollutants in the working environment.

Filtra-Matrix (Pty) Limited will participate in this investigation whereby filtration efficiency tests, together with the testing for dust holding capacities of various filter installations will be done. The following procedure for the determination of viable solutions will be followed:

Filter units are to be mounted into a system designed test channel with the airflow adjusted to the manufacturers recommended volume. The differential pressure across the clean device shall be measured and recorded.

The filter efficiency shall be tested by measuring the air quality standards emanating from the filter, using a calibrated laser particle counter. At least 10 samples shall be measured for each filter. Results will then be printed and interpreted.

Only the filters deemed to be successful in terms of efficiencies, will be subjected to a second test to determine the dust holding capacities.

The filter under test shall be subjected to ASHRAE test dust at a rate of 0.07mg/m^3 as defined in SABS 1424 (1987) test standards until the manufacturers final differential pressure has been reached. This procedure determines the dust holding capacities. Results will be recorded to determine the operational costs in real terms.

The successful product should be fit for the purpose intended. An evaluation process to assess the ability of the filter to function successfully through all aspects of its use is required. The following will be attended to:

- Cleaning procedures.
- Integrity and sealing when part of a structural filter plenum.
- Performance monitoring especially during the initial stages.

- Degradation tests to determine suitability during handling, transportation and servicing.
- Evaluation of the possibilities to recondition if practical.

The successful product will then be evaluated when in use under actual operating conditions. AngloGold will then approve the suitable products for use.

The process of evaluation will be based on scientific analysis to eliminate trial and error, and results will be reliable.