PLANNING EFFECTIVE MAINTENANCE

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MAINTENANCE FUNCTION

The maintenance function can be described as the prevention of breakdowns and the repair of breakdowns.

There are of course systems which must be maintained on a regular basis in terms of hours run, and for safety reasons.

In the case of major ventilation systems at Ansto surveillance maintenance is carried out.

The performance of the plant is assessed on a daily basis by shift staff who are familiar with and perform all operational functions on the plant.

As soon as a requirement for mechanical, electrical or filter maintenance which will entail a shutdown of the system is determined. A meeting with the Program concerned is set up to establish date, time and duration of the outage to minimise the down time inconvience.

EFFECTIVE MAINTENANCE

Make the most effective use of the available resources in terms of technical expertise, local knowledge, and experience to avoid breakdowns.

In the event of a breakdown taking place, the utilisation of these same resources to take effective remedial action. To determine the cause and the effect and restore the situation to normal as efficiently, and quickly as possible.

CAUSE AND EFFECT

The repair effort should not necessarily be a straight out replacement of defective parts.

The cause of the breakdown should be clearly established. Has it happened before, will it happen again?

Bearing type and size, bearing supporting plates, belts and pulleys, motor support rails, and motor electrical load may all be considered for possible modification.

Determine what may need upgrading to better advantage. It is essential for safety reasons in laboratory ventilation systems that unscheduled shutdowns be prevented.

QUALITY OF OPERATION

Required to ensure the plant is not electrically or mechanically overloaded, and it capable of long term continuous and reliable operation.

MAINTENANCE

At Ansto we have been fortunate in the technical experience and quality of the maintenance effort available on site.

Their ability to repair, modify and upgrade ventilation plant on site has been impressive over past years. Also the metrication conversion of good quality original fans , some of which have now been in service for over thirty years and are still operational and repairable.

GETTING IT RIGHT

Effective maintenance planning should begin at the design stage with the inspection of the project construction drawings, together with the plant and services specification.

Taking the time to study the information supplied, making comments in writing about undesirable features of plant room layouts, location of services, contract panels and switchboards etc will give you good chances to get your comments acted on.

Getting it right at this stage with pave the way for efficient maintenance.

DESIGN DRAWING AND SPECIFICATIONS

All too often a pile of design drawings, and specifications land on the desk at a time when current problems require full time attention.

The mental effort required to get involved in the details of a project which is still in design stage, and probably a year down the track can be difficult to generate.

However it may help to consider the cause of your current problems, would you have them if sufficient time, and effort had been spent at the design stage.

INSTALLATION

It is so much easier to wait for installation work to start when layout problems become self evident then start criticising. It is also then for the most part too **late**. What you see is what you will get, and have to live with.

CONTROL SPECIFICATIONS

The ventilation control system specification in particular requires close scrutiny. It is a complex subject, and too often only broad guidelines are supplied for a PLC or an IBM compatible PC with multiplexer panels. This allows the contractor to use his local knowledge to install a system more suitable to his needs, than the clients.

FILTRATION

There are at present seventy three buildings at Ansto. Twenty of them contain major active ventilation systems. Many of them have a number of separate systems within the same building.

All are fitted with absolute HEPA type exhaust filter banks. Within the same banks there are roughing filters in line to protect, or extend the life of the absolute filters.

Increasingly we are now seeing the construction of clean areas within the active areas. In these installations the supply is filtered through a first and second stage of roughing filters before passing through the absolute filter located at each outlet grill.

The exhaust air filtration is always arranged in filter banks located before the exhaust fans. These banks are designed to allow the safe handling of active filters during replacement using the sealed bag routine to ensure the contents of the filters are never exposed to atmosphere.

The pressure drop reading across all active filters are recorded approximately every two months by a Shift Supervisor.

OPERATIONAL MAINTENANCE

This is the essential surveillance of plant and services carried out at Ansto on a fully rotating shift basis by a Shift Supervisor (Technical Grade 4) and two Plant Monitors (Technical Grade 1).

Ventilation is not their sole concern, they are responsible for the safe and efficient operation of all site services, plant and equipment, excluding the HIFAR area which has its own operating shift staff.

All essential ventilation plant is duplicated, and fitted with automatic change over which will alarm , should the selected plant fail.

The plant systems are changed over on a monthly basis as a routine measure.

All faults evident during routine surveillance, or at the change over are noted, and service requests raised for corrective maintenance.

BREAKDOWNS

Major breakdown are few and mostly instigated by electrical storms that are common to this area during the spring and summer months. Power transients and the odd blackout do occur, and can cause damage, especially to electronic and computerised control circuits.

EMERGENCY ALARM CENTRE

All alarms from essential plant are continuously monitored at the Emergency Alarm Centre.

Shift Plant Monitors spend half their time on shift in the EAC then change over and spend the other half around the site checking the plant. This ensures the EAC monitor is kept aware of what is happening around the site.

ALARMS

On receipt of an alarm on the EAC computer the monitor will make a call over the site public address system stating the location and the type.

The PA call serves to alert personnel in the area of the alarm condition, and instigates an emergency response from the Shift Supervisor and the second Plant Monitor. They are both mobile and in continuous radio contact.

They proceed to the area, find the cause and take corrective action as soon as possible.