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X-MONITOR_GENERAL_070716_26.DOC
(FS_IN001112_MSYS_M7.DOC ORIGINAL FROM 2001-11-20)
E:\DOCUMENTS\WRITE_UPS\...
DATE: 2002-07-12
UPDATE: 2007-07-16

Why should you link your FLOW SORT DIAMOND RECOVERY MACHINES to a FLOW ELECTRONICS computer monitoring system?

1. First of all consider the following:

- a. X-ray diamond recovery machines are the last and final link in the entire diamond mining process.
- b. A lot of mining costs are incurred by the time the final diamond concentrate reaches the X-ray diamond recovery stage.
- c. It is therefore obvious that these X-ray diamond recovery machines must at all times operate at absolutely peak performance to ensure that no diamonds report to tailings.

2. An X-ray diamond recovery machine's performance is effected by a multitude of factors:

- a. Proper **functionality** of all sorter components which in turn is directly dependent on **service** and **maintenance**.
- b. **Operator (operation)** dependant factors:
 - i. Correct setting of feed rate setting for a given size range.
 - ii. Correct sensitivity setting of the sorters optical sensitivity.
 - iii. Correct water flow settings

- c. **Feed material characteristics** play a major role in a X-ray diamond recovery machine efficiency:
- i. The amount of over sized and or under sized particles contained in a feed material size fraction.
 - ii. General cleanliness of the feed material
 - iii. The quality of the water fed to the sorter
 - iv. The amount of free water in the sorter feed material
 - v. The amount and type of “other” x-ray fluorescent minerals in the sorters feed material
 - vi. The temperature of the feed material
 - vii. The variance of diamond fluorescence in different material batches

3. An experienced X-ray diamond machine operator can control and manage most these variables by:

- a. Ensuring regular service and proper sorter maintenance, keep an up to date log of all service and maintenance work.
 - b. Setting-up a sorter correctly and monitoring all settings at regular intervals and log all setting changes.
 - c. Monitoring and recording sorter operational feedback and sorter alarm conditions and take appropriate action.
 - d. Ensuring that the sorter receives the correct feed material times and keep a log of all feed related data. (Ejections, feed-rate,
4. In most cases however, particular in larger diamond mining operations, the **performance and efficiency of an X-ray diamond recovery plant depends on the effort of a group of people, some of them more experienced than others.** Genuine X-ray diamond sorting experts are (worldwide) few and far in between. However any diamond mine owner only gets peace of mind if he is convinced that his operation is looked after by the best in the trade. Second best is not good enough!

5. FLOW SORT (designer and manufacturer of electronic sorting machines for over 30 years), provide back up by means of regular on site inspection service visits, operator personnel training, maintenance personnel training as well as round the clock telephone support.
 - a. Larger diamond mining operations often use their own ‘roving’ expert to travel from site to site to check on proper sorter operation and sorter maintenance.
6. Unfortunately neither FLOW SORT nor any mine employed ‘in-house’ specialist engineer can be on site to continuously monitor and operate all FLOW SORT X-ray diamond recovery machines. It follow that competent X-ray diamond sorting specialists are also seldom on site at the point in time when ‘things go wrong’.
7. Experts and specialists, whilst not being on site, have to rely on information given to them by the mines x-ray sorter machine operating personnel. Such information is often very sketchy. This means that distorted pictures are created of whatever problem a mine is experiencing in their x-ray diamond recovery. This in turn makes it often difficult (if not impossible) to provide fast professional support and help via telephone.
8. To make things worse it is often found that an X-ray diamond recovery machine operator or maintenance technician won’t admit that the problem was caused by wrong doing but rather make up some story or find some excuse!
9. If a problem cannot be solved telephonically, the next step is to send a technician to site to sort out such problems which is obviously wasting valuable sorter production time and is a rather costly affair!
10. Needless to say that the more frequently our specialists have to make site inspection visits the more expensive such a service becomes.
11. For mine management (mine owners) this is, to say the least, a very worrying situation. Mine management is generally told that any problems in the X-ray diamond recovery plant are caused by poor performance of the x-ray recovery machine.

For mine owner and management there is one issue that matters...profits are reduced by every diamond reporting to tailings, what ever the reason might be! The remaining difficulty is how to find out what the real problems are and how to sort them out, how to make sure that they do not re-occur!

12. Following the above, it does not need much imagination to see what a computerized X-ray diamond recovery machine monitoring system will do:

- a. You have the best electronic sorting specialists never more than a phone call away.
- b. They can obtain, at any time, precise information from any FLOW SORT machine connected to a FLOW SORT monitoring system.
- c. They can monitor sorter problems, anywhere in the world, without the expense and time delays incurred by sending a specialist technician to site.
- d. Regular FLOW SORT machine inspections are now possible without the expense of sending a technician to site.

13. It follows that the few existing x-ray diamond sorting specialists can perform many more 'virtual' service calls than they could perform 'actual' mine visits. And they can be done so much more cost effectively!

- a. Mine visits are reduced to conducting actual repairs of identified problems.
- b. As far as record keeping (logging of sorter settings, faults, maintenance work etc.) is concerned FLOW SORT'S monitoring system offers an automatically updated Data-base (local and remote). Data base analyses options are virtually unlimited!
- c. By selecting an appropriate combination of data entries over a specific period of time it is possible to identify intermittent problems and long term performance variations that would not be otherwise possible.
- d. The same concept applies for maintenance planning and maintenance / spare parts control.

14. Finally we would like to add that FLOW SORT is equipped with a remote X-ray diamond recovery machine monitoring station. This enables FLOW SORT to offer an around the clock technical back-up service, including remote faultfinding and remote sorter performance monitoring.

15. It's the next best thing to having a top class service engineer on site!

16. We, at FLOW SORT, see our monitoring system as a dynamic concept that will in future see many enhancements. FLOW SORT, in general company tradition, will make such system improvements available to all users of its FLOW SORT MONITORING SYSTEM.

- a. The first system expansion, an automated maintenance control and monitoring package is already in the development phase and is scheduled to be completed by end 2002!

17. To summarize the effect of a FLOW SORT'S X-ray diamond recovery monitoring system:

- a. Peace of mind X-ray diamond recovery plant operation**
- b. Lower service and maintenance cost.**
- c. Increased profits derived from better sorter performance!**

Peter Wolf