**: Important aspects of Operation and Maintenance for Stacker Reclaimer :**

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**It has been experienced that Raw Material Handling (RMH) system is treated / considered as non-priority area in cement industry. Only Kiln, RM and Coal Mill area are considered as important area. So priority for mobilizing resources for operation / maintenance activities for RMH is not given wrt main plant area.**

**RMH system is consists equipment like Wagon Tippler, BRU (Bulk Receiving Unit), Apron Feeder, Crusher, Belt Conveyor, Stacker, Reclaimer, Vibro-feeder, Chute diverter, Belt Weigher, Weigh feeder etc.. In this write-up, we will focus on Stacker and Reclaimer equipment. Next topic would be taken for installation, commissioning, operation and maintenance of Rubber Belt Conveyor which is the simplest equipment wrt its construction, but, it gives trouble frequently and causing stoppages of Stacker / Reclaimer / Raw Mill / Coal Mill / Cement Mill.**

**On the basis of my personal experience, it has been observed that the unplanned stoppages (Breakdowns) are faced frequently during operation and maintenance of RMH equipment for the following reasons:**

* **Ignorance of guidelines / instructions provided by OEM of the equipment. O&M manuals are not referred by team members of RMH area as and when needed.**
* **Weekly / Daily checks are not being carried out for corrective / preventive action due to round the clock operation of the RMH equipment to fulfil requirement of main plant production as RM and Kiln operation is of the top most priority.**
* **Non-availability of adequate skilled and trained manpower for routine check-up and corrective action timely. Observations about the abnormalities of the equipment even if are listed, timely action is not taken as priority is not given to RMH area. Hence, breakdown of any equipment any time will be faced by the RMH team.**
* **Non-availability of adequate trained supervisory staff for monitoring the operation and maintenance practices for timely corrective action for the running equipment. Round the clock supervision is needed for effective and efficient operation and maintenance practices for smooth / uninterrupted operation of the RMH equipment.**
* **Raw material specifications are not maintained. While ordering the equipment, normally technical specifications for the raw material is provided to the OEM. The specifications are almost on standard parameters. But, actual condition at plant is different like –**

1. **Actual moisture level is higher than the specified moisture level in the specification for the raw material.**
2. **Fine particles % is higher than the specified fine material % in the specification for the raw material. It is affecting the density of material.**
3. **Oversize material availability in the raw material is very high. This is also affecting operation of equipment creating jamming problem at discharge chutes, pin gates, diverter etc.**

**Now, we will focus on specific points related to Stacker :**

**A. Operation aspect for Stacker:**

**Stacker is a machine which is used to prepare a stock pile as per the design given by the OEM. Height, width and length of the stock pile is normally maintained with the stacker in Auto Mode with PLC. Stacker travel speed is decided on the basis of the number of layers to be achieved for desired blending efficiency of crushed raw material. Following points are to be noted as most important various aspects for Stacker operation:**

1. **Wear marking on the stacker rail: Please ensure guide wheels and travel mechanism wheels of the stacker moves on the rail smoothly and maintaining contact area almost full width of the rail. No abnormal friction should be created between wheel collar and the rail. Rail scrapers mounted at rail travel mechanism must effective enough to clean the top surface of the rail for smooth travel of stacker throughout the length of the stock pile length.**
2. **Riding of Yard conveyor belt (normally called Stacker Conveyor belt) on to the stacker tripper: This is very typical phenomena which is affecting travel of stacker during stock pile preparation in the travel direction of yard conveyor. Flow of material on the yard conveyor need to be maintained uniform to avoid impact on to the stacker tripper which may cause over-travel of the stacker in the direction of yard conveyor travel. The impact of this problem can be minimized by maintaining slope and support of the yard conveyor on the carrying idler frames mounted on tripper entry point of Stacker.**
3. **Spillage of material from the stacker belt at tripper portion: It must be ensured that the receiving of material on the stacker belt conveyor is in center of the belt. Off-center feeding of the material will cause spillage of material while riding of the yard conveyor belt on the stacker tripper as transition area between stacker belt and tripper structure is free in the air. At this portion, the belt tend to become flat. Hence, off-center feed material on the yard conveyor belt start spillage.**
4. **Slippage of Boom conveyor at head pulley resulting tripper discharge chute jamming: This condition arises when elongation of boom conveyor belt is taking place. The looseness of belt comes at head pulley due to gravity when boom conveyor discharge end position at upward inclination. Slippage of belt generating heat on the head pulley lagging and on the belt. It will damage the lagging as well as the bottom ply of the belt. In this condition, huge material spillage also taking place on the upper carriage of stacker. Cleaning of material and tensioning of boom belt in filled condition is very difficult and time consuming. Since boom conveyor is short belt, it is having screw take-up unit as belt tensioning device. It is utmost necessary to check the looseness of the belt and to give required tension to the boom belt as routine check point and adjustment of screw take-up to avoid such condition of slippage of conveyor and material jamming at tripper discharge chute.**
5. **Lubrication of slewing ring and drive pinion: Slewing ring is the most critical part of the slewing stacker as it its delivery period is long, its cost is too high, its replacement / installation activity involves lifting of Boom conveyor and upper carriage structure which is required long stoppage (3-4 days - if all resources are available in the plant) of the stacking circuit of RMH system. Lubrication of slewing ring is having motorized forced lubrication system.**
6. **Thruster-Brake functioning of travel drive mechanism: Since the travel operation of the stacker during stock pile preparation is continuous in reverse-forward direction with auto mode, the functioning of thruster brake plays very important role for smooth stoppage, pause time and restart of the travel drive at the end of the stock pile. Over-travelling of stacker is taking place in case thruster brake is not functioning smooth.**

**B. Operation aspect for Reclaimer:**

**Reclaimer is a machine which is used to reclaim the material from a stock pile as per the design given by the OEM. For effective reclaiming of the material the Height, width and length of the stock pile must be maintained. Reclaimer travel speed is having two modes. One is fast travel mode for changing the stock pile and second one is low speed travel mode (with DC drive or VFD ) for reclaiming the material.**

**Following points are to be noted as most important various aspects for Reclaimer operation:**

1. **Skew correction during travel while reclaiming the material: Both the travel drives are running simultaneously with same speed. But, due to inconsistent material flow from stockpile and uneven resistance of material, Reclaimer comes to skew condition. This phenomena must be addressed with skew correction in auto mode to avoid major damage to travel mechanism and to minimize the stoppage of the Reclaimer operation.**
2. **Overloading of Reclaimer chain drive : Due to excessive material flow to the chain conveyor buckets, the chain conveyor drive is getting tripped frequently. According to the material flow, travel speed to be controlled. Yes, lubrication of chain is also very important for smooth and normal operation of the chain conveyor.**
3. **Material flow towards Reclaimer buckets : The flow of material depends upon the slope of the harrow angle and material characteristic. Suitable action to be taken for consistent and uniform flow of the material towards chain conveyor buckets.**
4. **Material spillage from yard conveyor after discharge from the Reclaimer chain conveyor: It must be assured that material discharge on to yard conveyor is in center and consistent. Surging of material and off-center falling of material on to the yard conveyor will lead to spillage of the material from yard conveyor almost throughout the length of the yard conveyor.**

**Operational aspects of all above points for Stacker and Reclaimer machines, adequate care to be taken for maintenance activities as per the OEM’s guidelines. Looking to the actual observations of the machines during operation, action must be initiated to minimize the down time and major damage to the machines.**

**Hope, this brief write-up will help to all the concerned who are involved in operation and maintenance of Stacker and Reclaimer. For any query, you may contact on mobile no. 8875371364 or Email Id –** [**sure4u.solutions@gmail.com**](mailto:sure4u.solutions@gmail.com) **.**

**\*\*\*This is not the end…its beginning\*\*\***