Plant Equipment Maintenance
More important than ever

By Gary Mullings, Senior Vice President of Operations & Compliance, NRMCA

As we look forward to an improving ready mixed market in the upcoming months, now is the time to make sure that a complete plant equipment maintenance program is instituted. Concrete plant manufacturers often provide maintenance manuals with new equipment, but many concrete plants have been built, customized and upgraded one component at a time. Good housekeeping is essential for controlling maintenance costs. No equipment is designed to run without regular maintenance. Only qualified persons should perform maintenance on plant equipment.

Daily Equipment Maintenance Log

In order to keep up with all the various pieces of equipment at a ready mixed concrete plant, a daily equipment maintenance log or checklist must be the centerpiece of any maintenance program. In some cases, several different logs may be kept to track a variety of things, including:
• Maintenance, plant breakdowns and/or down time
• Dispensation of reshipped, recycled or returned concrete
• Materials received and used
• Quality Control notes, including manual batch adjustments and aborted batches
• Environmental and safety-related problems or actions

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Plant operators should work closely with their supervisors to decide what documentation needs to be kept during the workday. Recording a few notes on problems or unusual circumstances that occur during the day can be very valuable when troubleshooting problems.

Air Compressor System

The air compressor system is essential to proper plant operations, and maintenance of the system needs to be conducted daily. Check air-inlet filter daily and keep clean. Check oil level daily and service frequently per service manual recommendations. Periodically monitor compressor during operation to verify that electrical pressure cut-off switch (or switches) are functioning properly. Verify that air pressure relief valve is working. There may also be a valve lock-out switch that stops the compressor from pumping while leaving the motor running. Drain the air storage tank daily by opening the petcock at the bottom of the tank. In humid conditions, it is advisable to drain the tank more than once a day. Check compressor V-belts’ tension weekly and replace when damaged, worn or cracked. Make sure mounting bolts are tight to prevent vibration.

Admixture Delivery Systems

Frequently, the admixture supplier, rather than the ready mixed concrete producer, owns and/or maintains the plant’s chemical admixture dispensing equipment. The plant maintenance team should still get to know the admixture equipment and work with the vendor to maintain it. Storage tanks should be regularly checked. Ensure all fittings, ball valves, fill adapters and vents for proper operation and wear. Check all hoses, fasteners and air lines for signs of wear. Periodic or seasonal use of dispenser systems requires a higher degree of maintenance than continuously operated systems, due to product residues that may settle or dry out in the various dispenser components. Ensure that pumps are operating in the proper air pressure range. Check to ensure the meter gears are not binding and that they do not jerk during normal operation. Check all plastic and steel measuring units regularly for leaks and degradation. Check site tubes for clarity and that the zero point is in alignment with the decal. Finally, after all new installations or system retrofits, check fill rate to ensure it does not exceed batch computer specifications and install flow control valves if required.

Cementitious Material Aeration Systems

Check air supply, making certain aeration pads are receiving air. Remove and clean air pads regularly, if possible. Change blowers filters regularly. And make certain air dryers are working properly, when applicable.

Belt Conveyors

Maintain head and tail pulleys square with the conveyor frame. Alignment of a belt is accomplished by adjusting the trougher and return rollers, not the pulleys. Troughers and return rollers must roll freely and be checked regularly. The belt lace should be tight and in good repair. A properly placed piece of skirt board rubber can prevent loss of material from the belt. The rubber should fold down on the belt; the opening between the skirt boards will control the material flow. Belt-tension should be no greater than that required to maintain proper traction at the head pulley. Finally make sure that maintenance crews follow the manufacturer’s specified lubrication schedule.

Gates and Valves

Inspect gate pivots for movement and wear. Check gate for free range of motion with no binding or uneven opening or
closings. Make sure gate closes tightly. Check for wear and/or moisture deterioration on gate leaves and check box. Most gates include one or more grease fittings that should be greased daily.

Equipment Lubrication

Most plant bearings, unless otherwise noted, should be greased at least every 500 operating hours. Severe exposure bearings may require constant, automated, greasing. If the plant includes an automatic greaser, the grease reservoir should be checked and/or greased daily. Many plant motors are capped and should be flushed out with grease once a year. Frequently, a cap will need to be removed and a grease fitting installed to do this. A schedule should be set per the manufacturer’s instructions.

Scale Systems

Make sure scale pivots move freely and are kept clean. Maintain oil seal on all di- als. Maintain oil level in dash pots and verify free range of motion. Maintain a scale test, calibration and certification procedure. Ensure all load cells are kept clean and free of material.

Cement/Fly Ash/Slag Screw Feeders

Regularly inspect outboard bearings and shafts for unusual wear and movement. Inboard bearings and shafts should be inspected every six months, or every three months at high production facilities. Regularly check the motor and drive; tighten all bolts and maintain belt tension. Make certain flexible boot from the screw feeder to the batcher is water and cement tight. The boot must be free of tension and have enough slack to allow the scale to weigh properly.

Dust Collectors and Venting Systems

Filter bags and silo or batcher vents must allow air passage in both directions for proper operation. Dust collectors requiring removal of collected waste should be emptied when hoppers are no more than 2/3 full, if they are not equipped to recycle material automatically.

Water Systems

Check operation of control valves for freedom of movement on water meters. Check for both water and air leaks. Regularly operate all valves to make certain they do not become stuck in the opened or closed position. Check for obstructions in the line by loosening the plug and cleaning the strainer. While water is batching, check the manual water counter and make sure the water meter is running, if applicable. Check the surge standpipe for entrapped air and bleed air off if necessary.

In summary, for a ready mixed concrete plant to run efficiently an equipment maintenance program must receive the highest of priorities. All plant bolts must be checked and tightened regularly. A daily visual check of the entire plant should be made for any deformed, broken or deteriorated metal and welds. If any are discovered, the plant operations supervisor should be contacted immediately. And finally a maintenance, inspection and lubrication schedule must be followed closely.

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