CARMEUSE SYSTEMS

HOW HEALTHY IS YOUR SLAKER?

TAKE THE SLAKER HEALTH ASSESSMENT

BEFORE YOU START:

This assessment is intended as a self-evaluation tool to help identify potential strengths, risks, and opportunities for improvement within a lime slaking system. Results are based on the observations and experiences of the individual completing the assessment and should not be considered a substitute for a detailed system review, engineering evaluation, or on-site audit.

RECOMMENDED ASSESSMENT FREQUENCY

System evaluations should be completed at a frequency in line with the operational demands at your site:

- ***Bi-Weekly*** *for high-production plants where slaker performance has a significant impact on overall operations.*
- ***Monthly*** *for stable water treatment systems operating under consistent conditions.*
- ***Quarterly*** *for low-utilization slakers or systems with limited production demands.*

Systems should also be assessed following major maintenance activities, equipment modifications, process changes, or recurring operational issues. Regular system reviews help identify developing concerns early, track system performance over time, and support proactive maintenance and continuous improvement efforts.

OPERATIONAL PERFORMANCE & RELIABILITY

Score: __0__ / 30

Score each statement using the following scale: Always = 5, Usually = 3, Occasionally = 1, Rarely/Never = 0

_____ Lime feed rates remain stable during normal operation.

_____ Water supply pressure and temperature are routinely monitored and remain within established operating parameters.

_____ Slaking temperatures remain within ±3°F of your site's established operating range.

NOTE: The typical recommended slaking temperature is 185°F (85°C). Certain site-specific factors (i.e. elevation, lime quality, etc.) can change this target. Consult your Carmeuse Systems Applications Specialist for recommendations.

_____ The slaker consistently achieves targeted throughput rates.

_____ The slaker operates reliably without recurring unplanned downtime or emergency repairs.

_____ Operators do not need to make frequent process adjustments to maintain performance.

EARLY WARNING INDICATORS

Score: 0 **/ 30**

Score each statement using the following scale: Always = 5, Usually = 3, Occasionally = 1, Rarely/Never = 0

_____ Piping, tanks, and process equipment remain free of significant plugging or buildup.

_____ Grit accumulation is clean and granular (i.e. no lime present)

_____ Lime consumption does not trend upward without a corresponding increase in production or treatment requirements.

_____ Unexpected changes in process performance are investigated promptly.

_____ Equipment and process deficiencies are corrected before workarounds become necessary.

_____ Corrective actions effectively prevent recurring equipment and process issues.

FAILURE MODE INDICATORS

Score: 0 **/ 30**

Score each statement using the following scale: Always = 5, Usually = 3, Occasionally = 1, Rarely/Never = 0

_____ Slaking temperature remains stable without spikes above 93°C.

_____ Lime feed rate stays consistent without surges, stalls, or torque alarms.

_____ The grit screen assembly operates without overflow, clogging, or abnormal grit accumulation.

_____ Slurry concentration remains stable without unplanned dilution.

_____ Steam is venting safely with no condensate buildup.

_____ Sensors and control loops operate reliably without erratic readings.

MAINTENANCE

Score: 0 **/ 30**

Score each statement using the following scale: Always = 5, Usually = 3, Occasionally = 1, Rarely/Never = 0

_____ Routine inspections are performed and documented at the required frequency.

Note: Inspection frequency may vary by facility. If requirements are unclear, consult a qualified Carmeuse Systems expert.

_____ Preventive maintenance activities are completed on schedule.

_____ Wear components are replaced before failure, rather than after breakdowns.

_____ Bearings, drives, mixers, and rotating equipment operate without recurring issues.

_____ Personnel promptly report and address leaks, unusual noises, vibration, and other developing equipment issues.

_____ Instrumentation and controls are calibrated and function properly.

SAFETY & HOUSEKEEPING

Score: 0 / 30

Score each statement using the following scale: Always = 5, Usually = 3, Occasionally = 1, Rarely/Never = 0

_____ The slaker area is clean and free of excessive buildup, spills, and dust.

_____ Dust collection systems operate effectively.

_____ Potential hazards such as buildup, plugging, overflows, and hot surfaces are promptly addressed.

_____ Employees consistently use appropriate PPE around lime and slurry systems.

_____ Walkways, access points, and work areas remain clear and safe for routine operation and maintenance.

_____ Emergency eyewash stations, safety showers, and other safety equipment are accessible and in good working condition.

TRAINING & WORKFORCE READINESS

Score: 0 / 30

Score each statement using the following scale: Always = 5, Usually = 3, Occasionally = 1, Rarely/Never = 0

_____ Standard operating procedures and maintenance guidance are current and readily available.

_____ Multiple employees can independently operate and troubleshoot the slaker.

_____ Operators understand normal operating parameters and can recognize when performance begins to drift.

_____ Employees receive periodic training on safe operation, routine maintenance, and troubleshooting.

_____ Operational issues are documented and communicated to support consistent practices across shifts.

_____ Personnel can identify the likely causes of common problems before they result in downtime or process impacts.

QUESTIONS OR CONCERNS NOT COVERED HERE?

This assessment covers many of the most common factors affecting slaker performance, but it may not address every site-specific condition or operational challenge. If you have concerns that are not included in this assessment, questions about your results, or would like assistance identifying improvement opportunities, please contact Carmeuse Systems. Our team can provide additional guidance based on your unique application and operating conditions.

HEALTH OF THE REACTION

While not included in this assessment score, water and lime quality should still be reviewed periodically.

- Water hardness, sulfates, chlorides, temperature, and pH can affect slaker performance, scaling, corrosion, and slurry quality. Changes in water supply should be evaluated.
- Understanding the typical properties of the lime being used can also help when evaluating overall system performance.

IMPORTANT:

If you suspect water quality is affecting performance, the Carmeuse Innovation Center may be able to assist with laboratory testing and water quality analysis.

Contact your Carmeuse representative for more information on available testing capabilities.

ADDITIONAL NOTES & OBSERVATIONS:

Use this space to document any observations, concerns, operating conditions, maintenance issues, or improvement opportunities not captured elsewhere in the assessment. Include details such as unusual equipment behavior, process variations, recurring operator challenges, or site-specific conditions that may affect slaker performance.

SYSTEM OPERATION

MAINTENANCE

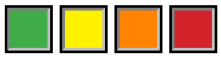
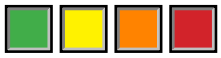
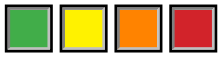
SAFETY & HOUSEKEEPING

TRAINING & WORKFORCE READINESS

OTHER

INTERPRETING YOUR RESULTS

It is important to review each section independently rather than focusing on a single overall score. A lime slaking system may perform well in some areas while exhibiting risks or opportunities for improvement in others. Lower-scoring sections may highlight conditions, practices, or trends that warrant additional attention. Even if a category scores well overall, low scores on individual line items may still indicate areas that need further evaluation.

Operational Performance & Reliability	0 / 30	
Early Warning Indicators	0 / 30	
Failure Mode Indicators	0 / 30	
Maintenance	0 / 30	
Safety & Housekeeping	0 / 30	
Training & Workforce Readiness	0 / 30	

26-30 points

GREEN ZONE - OPTIMIZE

Responses suggest that strong practices may be in place. Continue monitoring system performance and reviewing operating conditions to identify opportunities for continuous improvement. **Recommended Actions:** Review lime quality (reactivity, available CaO, grit content) and water chemistry (hardness, alkalinity, temperature) to fine tune slurry concentration and maximize slaking efficiency.

20-25 points

YELLOW ZONE - STABILIZE

Some early warning signs may be present. Performance inconsistencies, recurring maintenance demands, or process variability may indicate developing issues that should be addressed before they become larger operational or safety concerns. **Recommended Actions:** Inspect wear parts, verify temperature control, check feed variability, etc.

15-19 points

ORANGE ZONE - INVESTIGATE

Responses suggest potential issues affecting reliability, maintenance costs, operator workload, or process consistency. Additional evaluation of equipment condition, operating practices, and maintenance procedures may help identify opportunities for improvement. **Recommended Actions:** Perform grit system inspection, verify classifier condition, check lime vendor consistency, etc.

< 15 points

RED ZONE - IMMEDIATE ACTION REQUIRED

Multiple indicators suggest significant maintenance, reliability, operational, or safety concerns. Corrective actions should be prioritized to help reduce risk and improve system performance. **Recommended Actions:** Schedule shutdown inspection, verify safety systems, perform full slaker audit.

SLAKER HEALTH ASSESSMENT
CARMEUSE SYSTEMS

ABOUT THIS ASSESSMENT

This self-assessment is intended to help operators, maintenance personnel, and plant managers evaluate common practices associated with lime slaker performance, reliability, safety, and workforce readiness. Results provide a useful snapshot of current conditions but are based on the observations and experiences of the individual completing the assessment.

While self-assessments can help identify potential strengths and areas for improvement, they are not a substitute for a detailed system review or on-site evaluation. Operating conditions, maintenance history, equipment condition, and process requirements vary significantly from system to system. Many performance, reliability, and safety issues develop gradually and may not be immediately apparent during day-to-day operation. Periodic reviews by experienced lime system specialists can provide an additional perspective on operating practices, equipment condition, maintenance strategies, and potential opportunities for improvement that may not be apparent through self-assessment alone.

NEXT STEPS

WANT TO TAKE A CLOSER LOOK?

Carmeuse Systems can help validate current operating practices, identify potential improvement opportunities, and provide recommendations based on your system's specific operating conditions.

Request a Review by Carmeuse Systems:

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This assessment is provided for informational purposes only and is intended as a general guide to slaker operation and maintenance practices. Results should not be used as a substitute for site-specific engineering, operational, safety, or maintenance evaluations. Users are responsible for determining the suitability of any recommendations for their specific application.

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