

Scenario 1: Bearing Lubrication Guidance

AI Chatbot Response:

- Clean the grease fitting and the outside of the bearing housing.
 - Remove the drain plug.
 - Inject grease according to the table provided in the manual. The table specifies the lubrication intervals and the amount of grease required based on the pump speed and bearing group number 1.
 - Start and run the pump for a short time to allow any excess grease to purge.
 - Wipe off any excess grease that may have purged and replace the drain plug.
- ■ Important: Do not over-lubricate the bearings as this can cause them to overheat.

Scenario 2: Calciner Efficiency Troubleshooting

AI Chatbot Response:

Common causes of low efficiency include:

- High flue gas heat loss
- Poor hydrate curtain formation
- Air leaks or worn seals
- Baghouse inlet temperature too low, causing condensation and poor recovery

To improve efficiency, you can:

- Optimize the fuel–air ratio to maintain O₂ in flue gas between 3–5%.
- Check and tighten kiln seals to minimize air leaks.
- Ensure steady feed and proper curtain formation inside the kiln.
- Monitor baghouse inlet temperature (should be >120 °C).

Fuel-Air Optimization Guidance

- Check O₂ in flue gas; target is 3–5% for complete combustion.
- If O₂ is low, reduce fuel to avoid rich flame.
- If O₂ is high, gradually reduce air to prevent heat loss.
- Monitor CO levels; spikes indicate poor mixing or rich flame.

Curtain Formation Checks

- Visually inspect the kiln during rounds; ensure a continuous hydrate curtain.
- If curtains are weak or patchy, check feed consistency and kiln rotation speed.
- Avoid feed surges; maintain steady feed rate at design capacity.
- If operating at low load, raise outlet temperature slightly to compensate for reduced residence time.

Quick Checklist for Efficiency Improvement

- ■ Maintain O₂ in flue gas at 3–5%.
- ■ Check and tighten kiln seals to prevent air leaks.
- ■ Ensure steady feed and proper curtain formation.
- ■ Monitor baghouse inlet temperature (>120 °C).
- ■ Track specific fuel consumption daily (GJ/t alumina).