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## APPENDIX - A

### PREVENTIVE MAINTENANCE TASK SHEET

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>EXTRUSION PRESS -- MECHANICAL</b>										
D	M	Guide ways	Brass pick-up	May indicate partial contact						
D	M	Guide ways	Nicks or other damage to surfaces							
D	M	Guide way wipers	Failure to wipe guide way clean							
D	M	Cylinders (main ram, crosshead, container)	Increase in amount of oil on main ram or cylinder rod	May indicate damage to packing. Also check bushings.						
D	M	Cylinders (main ram, crosshead, container)	Oil leaks at cylinder connections							
D	M	Cylinders (main ram, crosshead, container)	Nicks or other damage to rods or main cylinder	Damage to packing will result						
D	M	Cylinders (crosshead, container)	Excess heat	May indicate oil by-passing piston						
D	M	Tie rod nuts	Space between nuts and platen	May indicate loss of pre-stress						
D	M	Tie rod nuts	Match marks indicating nut has rotated							
W	M	Container cylinders	Oil by-passing piston head	Hold container against die stack at full pressure and check for temperature rise						

W	M	Main ram, crosshead and container cylinders	Nicks or other damage to rods or main cylinder	Remove nicks with polishing stone					
W	M	Cylinder packing	Embedded particles	Replace packing if scoring recurs					
W	M	Billet loader	Loose bolts						
W	M	Billet loader	Looseness in bushings or pivot pins						
W	M	Butt shear	Blade tight in mounting						
W	M	Butt shear	Nicks or other damage to blade						
W	M	Die hold-down clamp	Tightness -- properly holds die stack	Die stack should not move during shear cycle					
M	M	Clean-up press and related equipment	Metallic chips or dirt on guide ways, cylinder rods, or main ram						
M	M	Guide ways	Remove shoes and check fully	Replace or re-machine as needed					
M	M	Check and tighten all bolts and other mechanical connections	Bolts or cylinder mountings which may have worked loose; check cylinder bolts under load, re-tighten and check that cylinders are level						
M	M	Die changer pockets or carriers	Wear or damage, including keyways						
M	M	Tie rod nuts	Space between inside nuts and platen with press under load	May indicate loss of pre-stress					



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M	M	Tie rod nuts	Space between outside nuts and platen with press relaxed	May need to tram press and restress tie rods						
M	M	Tie rod nuts	Match marks indicating nut has rotated							
S	M	Guide ways	Remove shoes and check fully	Replace or re-machine as needed						
S	M	Guide ways	Check for wear or scoring of guide ways	Use stone or file as needed						
S	M	Die changer slide ways (gibs)	Adjustment for wear as needed							
S	M	Butt shear	Adjust or replace worn bushings as needed							
S	M	Main ram, crosshead and container cylinders	Check clearances of packing and bushings (also when replacing packings)							
Y	M	Tie rods	Ultrasonic testing for cracks	More frequent follow-up if a flaw is detected						

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>EXTRUSION PRESS -- PRESS ALIGNMENT</b>										
D	A	Billet loader	Billet centered with container							
D	A	Butt shear	Clearance between shear blade and die stack							
W	A	Stem and container	Stem level with main ram							
W	A	Stem and container	Stem aligned with container							
W	A	Billet loader	Aligned with container							

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W	A	Butt shear	Clearance between blade and tool stack (hot)							
M	A	Main ram	Check level in 3 positions	Variation indicates wearing of crosshead shoes; re-adjust						
S	A	Press base	Check level -- both ways							
S	A	Press frame	Check that tie rods are level, in both directions, both top and bottom rods							
S	A	Container and die stack	Check alignment of container to die stack							
S	A	Container and die stack	Adjust center guide (if fitted) for excessive clearance							
S	A	Die slide	Check die slide stops for centering with platen pressure							
Y	A	Tie rods	Tram press --- measure length between platen & main cylinder flange faces to check parallel	Maximum variation 0.010 inches						

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>EXTRUSION PRESS -- LUBRICATION</b>										
D	L	Fill all oil reservoirs and remove water								
D	L	Grease all required locations								



Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>EXTRUSION PRESS -- TOOLING</b>										
W	T	Container	Good sealing surface: no nicks or build-up							
W	T	Container liner	Not "bellied" (no increase in diameter at center)							
W	T	Stem	Straightness, stress cracking							
W	T	Dummy block	Wear (dimensional check)							
W	T	Dummy block	Aluminum build-up on block							
W	T	Dummy block	Nicks, stress fractures							
S	T	Stem pressure plate	Coining or dishing	Use straightedge and feeler gauge						
S	T	Platen pressure ring	Coining or dishing	Use straightedge and feeler gauge						
S	T	Container	Movement between container and holder	Tighten retainer or cap is possible. Repair and remachine if cracked or distorted.						

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>EXTRUSION PRESS -- HYDRAULIC</b>										
D	H	Oil level	Visual, with main ram in same position each time oil level is checked	Level varies considerably according to the position of the main ram.						
D	H	Oil condition	Air bubbles or foam	Aeration of oil may cause cavitation						
D	H	Oil color	Darkening (from heat) or clouding (from water)							
D	H	Oil temperature	Change in operating temperature; normal maximum 140 F (60 C)	May indicate internal by-passing in system or problems with cooling equipment						

<b>D</b>	<b>H</b>	Oil leaks	Visual inspection or pressure test.	Repair as required. Oil leaks may cause loss of pressure, air in system, excessive heat, dirty equipment, safety hazards						
<b>D</b>	<b>H</b>	Erratic operation	Movements that are unusual: jerky, chattering, erratic, etc.	May indicate impending part failure						
<b>D</b>	<b>H</b>	Oil filters	Filter indicator or pressure gauge	Change cartridge if indicated						
<b>D</b>	<b>H</b>	Pumps	Vibration	May indicate impending pump failure						
<b>D</b>	<b>H</b>	Control tubing	Excess heat	May indicate system oil in pilot system						
<b>D</b>	<b>H</b>	Piping clamps and supports	Loose or broken supports	May result in pipe failures						
<b>D</b>	<b>H</b>	Relief valves	Excess heat (in relief line)	May indicate abnormal opening of relief						
<b>D</b>	<b>H</b>	Pressures throughout system	Change from normal pressures	May indicate impending component failure						
<b>W</b>	<b>H</b>	Heat exchanger	Leaks, scale, or corrosion	Repair or clean. May cause oil contamination, excessive heat, or loss of oil or water.						
<b>W</b>	<b>H</b>	Temperature control	Temperature at which water valve opens	Check if opening and closing at proper temperature						
<b>W</b>	<b>H</b>	Flexible hoses	Physically inspect for damage or deterioration, replace as required	Avoid downtime, loss of fluid, safety hazard.						
<b>M</b>	<b>H</b>	Clean-up of equipment	Wash down, remove rags, etc.	Avoid dirt entering system, makes it easier to spot leaks, eliminates fire and safety hazards						
<b>M</b>	<b>H</b>	Air breathers	Remove, clean, re-oil, and re-install	Avoid dirt in system, pump cavitation.						

M	H	Hydraulic pipe, tubing, and connections	Tighten all bolts, connections, and pipe supports; replace bad fittings or O-rings	Avoid downtime, loss of fluid, safety hazard.						
M	H	Tank magnets	Clean off any foreign material	Avoid oil contamination						
M	H	Hydraulic valves	Oil leaks, broken solenoid covers or wires	Tighten bolts and pipe connections						
Q	H	Oil sample for analysis	Contamination, oil breakdown, loss of properties	Send sample to oil supplier						
Q	H	Relief valve settings, timer settings, etc.	Incorrect settings --- check with pressure gauges and stop watch; readjust as required	Avoid erratic operation of equipment						
Q	H	Heat exchanger	Check water passage for obstructions, leaks, etc. Clean or replace zinc anodes. Flush out.	Avoid excessive heat, water in oil leaks, contamination etc.						
S	H	Oil filters	Replace all cartridges in use for over 3 months							
S	H	Pump controls	Response through full stroke							
S	H	Slip test on main pumps	Deterioration of pump condition							
S	H	Slip test on system	Oil losses throughout system							
S	H	Relief valves and pressure switches	Check if relieving or operating at correct pressure							
Y	H	Pump/motor couplings	Check coupling alignment	Avoid excessive pump and motor wear						
Y	H	Pump/motor	Tighten mounting bolts	Avoid misalignment, excessive wear, noise						

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>EXTRUSION PRESS -- ELECTRICAL</b>										
D	E	Limit switches	Loose switch mounting							
D	E	Limit switches	Switches not tripping properly							
D	E	Electrical connections	Conduit damaged or broken							
M	E	Container heating elements	Check connections for tightness							
M	E	Container heating elements	Corrosion of elements							
M	E	Solenoid valves and relays	Overheating or chatter							
M	E	Solenoid valves and relays	Tighten covers and terminal connections							
Y	E	Motors	Clean and lubricate							
Y	E	Motors	Check windings with megohmmeter							

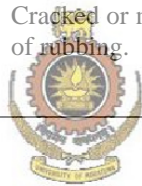
Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>PRESS FEED LINE -- COMBUSTION</b>										
D	C	Check temperature probes, clean tips, check connections.	Correct functioning. Rod tips not sharp. loose connections.							
D	C	Check pilot flames and flame detectors (UV or flame rods).	Pilots operating correctly; flame detectors are clean and working properly.							

W	C	Check cooling air to thermocouple probes.								
W	C	Check flame-type billet lubricator, clean igniter and nozzle.	Correct operation, safe, reliable ignition.							
M	C	Clean/replace intake air filter of combustion blower.								
M	C	Remove and clean pilot air strainers								
M	C	Perform leak test of safety shut-off and vent valves.	Leakage past safety shut-off when it is closed, or vent valve stuck open.							
M	C	Check linkages on air damper motor.	Loose or incorrectly adjusted linkage.							
M	C	Remove and clean spark plugs.	Buildup, correct gap. Replace as needed.							
M	C	Check burner tile(s) and nozzles.	Cracked or broken tiles, dirty nozzles.							
M	C	Check adjustment of air exhaust and/or recirculation damper.	Excessive air leakage into or out of oven. Control linkage loose.	Test with smoke or tissue paper. Air leakage is very costly!						



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Y	C	Remove and clean metering rods from atmospheric regulator (premix systems only).										
Y	C	Clean the inside body of ratio or atmospheric regulator(s)										
Y	C	Clean and inspect combustion blower impeller and housing.	Cracked or missing blades, signs of rubbing.									



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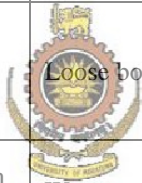
Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>PRESS FEED LINE -- MECHANICAL</b>										
D	M	Check log shear operation.	Correct sequence of function, smoothness, alignment of log travel.							
D	M	Check that all guards and safety devices are in place and operating properly.								
D	M	Check log shear cutting tools.	Clearance and metal build-up.							
W	M	Check guides or tracks of chains or carriages and clean any debris.	Dirt, debris, foreign matter.							

W	M	Billet/log feed guides and rollers.	Bent or damaged guides; debris or foreign matter; billet hang-up or metal build-up.	Replace rollers and/or bushings as needed (3 to 12 months life).					
W	M	Check operation and sealing of oven doors, lift cylinders, clamps..	Poor closing, air leaks.						
W	M	Check air seal around log at oven entry.	Poor seal, air leaks.						
W	M	Check, adjust clearance of log shear cutting tools.	*Frequency of adjustment and tolerances may vary according to manufacturer's recommendations.						
M	M	Check air cylinder packing or seals.	Air leaks.						
M	M	Check chains (conveyor and/or drive). and sprockets, shafts, bearings, and couplings.	Wear, alignment, chain tension, loose keyways or setscrews.						
M	M	Billet/log support rollers.	Bent, broken, or worn rollers.						
M	M	Check billet oven burner tiles	Proper sealing between tiles and burners, burners inserted correct distance into tiles, cracked or broken tiles.						




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M	M	Check hot air circulation blower, shaft seals, and drive belts.	Belts properly tensioned, aligned, not worn. Housing clean; no cracked blades, no rubbing or dragging of wheel in housing.	See section on belt tensioning, page 8-20.							
M	M	Check log shear cylinder speeds.	Speed controls not set properly.								
Q	M	Check refractory crown blocks.	Broken, cracked, deteriorated refractory.	Caulk with refractory fiber.							
S	M	Clean log shear cutting tools in caustic soda.	According to manufacturer's recommendations								
Y	M	Tighten all foundation, mounting, and attachment bolts.	Loose bolts, broken grout.								
Y	M	Inspect circulation blower fan wheel.	Wear or corrosion, build-up.								
Y	M	Tighten bolts and setscrews on combustion and air circulation blowers.	Loose bolts, keyways, setscrews.								
Y	M	Clean around log/billet transport rollers.	Open oven and clean thoroughly any dirt or debris around rollers.								
Y	M	Check log shear wear surfaces and guide ways.	Excessive wear.								



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Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>PRESS FEED LINE -- LUBRICATION</b>										
W	L	Check compressed air filter-regulator-lubricator units.	Clean filters, add oil, check pressure.							
W*	L	Grease all grease nipples.	*Daily on log shear, unless instructed otherwise by manufacturer.							
W	L	Fill chain oilers.								
W	L	Bearings of hot air circulation blower.		Use correct high-temperature grease.						
W	L	Grease all billet conveyor bearings.		Use high-temperature grease.						
M	L	Check oil level in gearboxes.								
S	L	Change oil in gearboxes.								

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>PRESS FEED LINE -- HYDRAULIC</b>										
D	H	Check hydraulic system(s) fluid level.	Low fluid level.							
W	H	Check hydraulic system(s).	Leaks, high temperature, filter by-passing.							

M	H	Check hydraulic cylinders' packing and seals.	Fluid leaks.							
Q	H	Oil sample for analysis	Contamination, oil breakdown, loss of properties	Send sample to oil supplier						
Y	H	Disassemble log shear cylinders and replace seals and packing.*	*Recommended by some log shear manufacturers.							

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>PRESS FEED LINE -- ELECTRICAL</b>										
W	E	Check all limit or proximity switches and photocells.	Proper functioning; loose switch arms, loose wires, Clean photocells.							
M	E	Check purge cycle timers.	Correct settings, proper functioning.							
M	E	Check temperature controllers and/or recorders.	Reliability, calibration.							
M	E	(Elect. Induction Heater) Check, clean, and lubricate tap switches.	Check terminal connections for tightness, check contacts for oxidation.	See page 7-20						
M	E	(Elect. induction heater) coil.	*Frequency of change depends on plant history.							

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>HANDLING SYSTEM -- MECHANICAL</b>										
D	M	Check graphite (or Kevlar) bars and surfaces on lead-out, run-out, and cooling tables.	Broken graphite, excessive wear, sharp projections which may damage the profiles.							
D	M	Check slat conveyor.	Broken or loose slats, smooth operation, stopping in correct position.							
D	M	Check all safety guards.	In place and working correctly.							
D	M	Check rollers and covers on run-out.	Damaged or grooved rollers, rollers not turning, drives working properly.							
D	M	Check run-out table lift mechanism.	Correct functioning.							
D	M	Check blade of hot saw or shear.	Sharpness (quality of cut), metal build-up on blade.							
D	M	Check positioning and actuation of hot saw or shear.	Proper functioning.							
D	M	Check lubricant applicators.	Fluid level, proper operation.							
D	M	Observe puller operation.	Smooth, level operation; no impact; correct stopping position, pick-up and release; correct speed and tension.							

D	M	Observe motion of lift-overs, belts, walking beams.	Smooth operation, no jerking, profiles handled smoothly and together.							
D	M	Check transfer and cooling table belts.	Damaged or burned surfaces, ragged edges, poor alignment, bad splices.							
D	M	Observe stretcher operation.	Smooth operation (stretching, movement, and locking).							
D	M	Observe saw feed conveyor.	Profiles loaded and conveyed smoothly; raise/lower functions smoothly.							
D	M	Check sharpness of finish saw blade.	Quality of cut, metal build-up on blade.							
D	M	Check finish saw clamps.	Good clamping, noise control; embedded saw chips.							
D	M	Check accuracy of finished cut length.	Measure several profiles in batch.	Re-check each time a new blade is installed.						
D	M	Observe operation of auto profile stacker.	Correct, smooth operation and placement of spacers.							
M	M	Check water supply pump and piping to water quench.	Water leaks, proper volume and pressure.							
M	M	Check drive chains and sprockets, adjust as needed.	Alignment, correct tension, wear.							



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M	M	Check slat conveyor chains and sprockets.	Tension, alignment, wear of chain and sprockets; adjust take-up as needed.						
M	M	Check brake(s) on run-out, puller.	Proper functioning; check and replace friction surfaces as needed.						
M	M	Clean saw chips and other debris from around hot saw and finish saw.							
M	M	Change/clean saw chip collector bags.							
M	M	Check puller drive cable or chain and adjust or replace if needed.	Correct tension and alignment; wear or work hardening.	Replace cables every 6 months.					
M	M	Check pulleys or sprockets for puller drive cable or chain.	Wear, alignment.						
M	M	Inspect puller support wheels and bearings.	Wear and roundness; free rotation.						
M	M	Inspect puller guide and support rails.	Wear, damage; alignment and straightness.						
M	M	Inspect puller jaws and fingers.	Wear, breakage, metal build-up.						
M	M	Inspect puller shock absorbers.	Condition and functioning.						



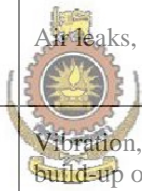
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M	M	Check drive shafts, eccentrics, couplings, and bearings.	Wear, alignment, loose couplings or setscrews.						
M	M	Inspect stretcher jaws.	Wear or damage.						
M	M	Check and clean stretcher drive wheels and contact surface.	Wheel surface worn smooth, bad bearings, wheels not round.						
M	M	Check stretcher locking mechanism.	Proper operation and locking; signs of overstress or deformation.						
M	M	Check saw feed conveyor drive belt sections; check rollers, roller covers, and roller drive chains.	Damaged belts, correct tracking; damaged roller covers; worn drive chains, incorrect chain tension.						
M	M	Check alignment of finish saw with back stop or guide fence.	Squareness of cut -- compare length of inside and outside profiles.						
M	M	Check saw gauge table for levelness with the saw and feed conveyor.							



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M	M	Inspect the automatic stacker's bearings, sprockets, chains, guide rods, rack and pinion, etc.	Wear, alignment; dirt or debris.										
Q	M	Check water spray quench spray nozzles.	Full spray pattern; plugging or mineral build-up.										
Q	M	Check actuator cylinder for water spray quench cover.	Air leaks, packing and seals.										
Y	M	Inspect air quench fans and blowers.	Vibration, blade damage or build-up on blades.										
Y	M	Check condition of drive couplings.	Condition and alignment.										
Y	M	Tighten all foundation, mounting, and attachment bolts.	Loose bolts, broken grout.										
Y	M	Check level and alignment of run-out, puller track, lift-overs, walking beams, stretcher base, and saw feed conveyor.	Adjust as needed to maintain units level and straight.	Use piano wire.									



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Y	M	Check condition and alignment of saw arbors.								
Y	M	Check grouting of stretcher frame.	Broken or loose grout or bolts.							

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>HANDLING SYSTEM -- LUBRICATION</b>										
D	L	Check lubricant level in saw coolant applicators.								
W	L	Fill chain lubricator system on run-out table.								
W	L	Lubricate all grease fittings.								
W	L	Check compressed air filter-regulator-lubricator units.	Clean filters, add oil, check pressure.							
M	L	Lubricate bearings of supply pump to water quench.								
M	L	Lubricate bearings of air quench fans.								
M	L	Check oil level in gearboxes.								



S	L	Change oil in gearboxes.		Follow manufacturers' recommendations.							
Y	L	Lubricate drive couplings.									

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>HANDLING SYSTEM -- HYDRAULIC</b>										
D	H	Hydraulic systems on run-out, cooling table, stretcher, etc.	Fluid level, leaks, high fluid temperature.							
M	H	Hydraulic systems on run-out, cooling table, stretcher, etc.	Filters, level, temperatures.							
Q	H	Oil samples for analysis	Contamination, oil breakdown, loss of properties	Send sample to oil supplier						

Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>HANDLING SYSTEM -- ELECTRICAL</b>										
D	E	Check all interlocks and safety switches.	Functioning properly.							
W	E	Check all limit or proximity switches and photocells.	Proper functioning; loose switch arms, loose wires. Clean photocells.							
M	E	Check amperage on all drive and saw	High amps may indicate mechanical problems.							

		motors.								
M	E	Check flexible power feeders (pendant cables and power-duct type feeders).	Mechanical damage, loose connectors.							
M	E	Check puller position encoder.	Correct functioning; look for loose coupling, wires.							
M	E	(Linear motor-type pullers) Check motors, tracks, feeder rails.	Correct motor gap; feeder rails not worn or skipping; damaged main rails.							
M	E	(Linear motor-type pullers) Check linear-type jaw actuators.	Remove and check for binding or galling.							
Y	E	Check variable-speed or variable-volume controllers for quench air.	Correct functioning.							
Y	E	Check, clean, and lubricate all motors; check and record amps and check motor with megohmmeter.	Dirty or oily windings, clogged vent openings.							



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Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>AGE OVEN -- COMBUSTION</b>										
W	C	Check pilot flames and flame detectors (UV or flame rods)	Pilots operating correctly; flame detectors are clean and working properly.							
M	C	Clean/replace intake air filter of combustion blower.								
M	C	Remove and clean pilot air strainers								
M	C	Perform leak test of safety shut-off and vent valves.	Leakage past safety shut-off when it is closed, or vent valve stuck open.							
M	C	Check linkages on air damper motor.	Loose or incorrectly adjusted linkage.							
M	C	Remove and clean spark plugs.	Buildup, correct gap. Replace as needed.							
M	C	Check burner tile(s) and nozzles.	Cracked or broken tiles, dirty nozzles.							
M	C	Check adjustment of exhaust damper.	Excessive air leakage into or out of oven.	Test with smoke or tissue paper. Air leakage is very costly!						



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Y	C	Remove and clean metering rods from atmospheric regulator (premix systems only).									
Y	C	Clean the inside body of ratio or atmospheric regulator(s)									
Y	C	Clean and inspect combustion blower impeller and housing.	Cracked or missing blades, signs of rubbing.								



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Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>AGE OVEN -- MECHANICAL</b>										
W	M	Clean the guiding tracks for load carts.								
M	M	Check hot air circulation blower and drive belts.	Belts properly tensioned, aligned, not worn. Housing clean; no cracked blades, no rubbing or dragging of wheel in housing.	See section on belt tensioning, page 8-20						
M	M	Check door seals.	Wear or incorrect fit (air leakage in or out).							
M	M	Check door hoist(s), cables.	Doors hang evenly, seal properly, open smoothly.							
M	M	Check roller or caster-type conveyors.	Alignment, wear, breakage.							

M	M	Check load cars or carts.	Alignment, wear, condition of wheels, smoothness of operation.							
Y	M	Inspect air circulation blower fan wheel.	Wear or corrosion, build-up.							
Y	M	Tighten fan bolts and setscrews.								
Y	M	Check door hoist gearbox, motor, brake.	Correct operation, condition of gears and brake surfaces.							
Y	M	Check all bolts and anchors.	Looseness -- tighten as needed.							
Y	M	Check oven floor.								
Y	M	Check oven shell for hot spots.	Hot spots, cracking, settled insulation.	May be checked with infrared detector.						
<b>Freq</b>	<b>Skill</b>	<b>Item</b>	<b>Look For:</b>	<b>Notes</b>	<b>Daily</b>	<b>Weekly</b>	<b>Monthly</b>	<b>Quarterly</b>	<b>6 Mo.</b>	<b>Annually</b>
<b>AGE OVEN -- ELECTRICAL</b>										
D	E	(Electric oven) Check heating elements.	Not damaged, clean, free of obstructions.							
M	E	Check purge cycle timers.	Correct settings, proper functioning.							
M	E	(Electric oven) Check heating elements.	Burned-out elements; check amperage of each. Check terminals for proper connections.							
M	E	Check temperature controllers and/or recorders.	Reliability, calibration.							

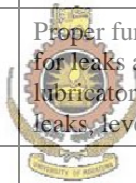
Q	E	Survey Age Oven temperatures	Non-uniform temperatures within a load.											
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Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>AGE OVEN -- LUBRICATION</b>										
M	L	Lubricate bearings of combustion blower.								
M	L	Lubricate bearings of hot air circulation blower.								
M	L	Door hinges (where installed)								
M	L	Conveyor rollers, caster wheels, conveyor or drive chains, gearbox (where installed).								
Y	L	Check oil level in door hoist gearbox.								



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Freq	Skill	Item	Look For:	Notes	Daily	Weekly	Monthly	Quarterly	6 Mo.	Annually
<b>DIE OVEN (All Skills)</b>										
D	E	Check heating elements.	Not damaged, clean, free of obstructions.							
M	M	Check air circulation blower(s).	Correct amount of air flow, no vibration.							
M	M	Check door or drawer seals.	Seals damaged or worn; air leaks.							
M	M	Check oven shell for hot spots.	Hot spots, cracking, settled insulation.	May be checked with infrared detector.						
M	M	Check door or drawer actuator cylinders.	Proper functioning; if any, check for leaks and service filter-lubricator. If hydraulic, fluid leaks, level, temperature.							
M	M	(Drawer-type) Check mechanical drawer drive: gearbox, drive chains, wheels, clean tracks.	Gearbox oil level; wear of components; dirt on tracks.							
M	E	Check heating elements.	Burned out elements; check amperage							
M	E	Check heating elements.	Burned-out elements; check amperage of each. Check terminals for proper connections.							
M	E	Check temperature controllers and/or recorders.	Reliability, calibration.							



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M	E	Check electrical contactors, thermocouples, and temperature controllers.	Temperature not controlled in range; thermocouples damaged by tooling.							
M	E	Check limit switches and interlocks.	Proper operation of safety devices.							
M	C	(Combustion-type) Check combustion system, clean combustion air filter.	Correct fuel-air ratio, high-low settings; correct function of pilots, flame detectors, and safety devices.							
Q	M	Check air circulation blower, motor, air baffles.	Damaged baffles or fan blades, obstructions. Bad motor or drive belts.							



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