

4-5TPH Palm Biomass Pellet Plant Complete Product Guide & Manual

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4-5 t/h

3 Pellet Mills Parallel

Octagonal Counterflow Cooling

5 Machines

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What This Line Is

This is a 4-5TPH palm biomass waste pellet plant — mid-to-large industrial configuration — that turns palm processing waste — empty fruit bunch (EFB), palm kernel shell (PKS), oil palm fronds (OPF), oil palm trunks (OPT) and palm pressed fiber (OPMF) — into dense biomass fuel pellets through chipping, grinding, pelleting, cooling and packing. Three MZLH508 ring die pellet mills run in parallel — 1.5 t/h each, 4.5 t/h together — with an octagonal counterflow cooler.

Why It Gets Specified

Five reasons. Rugged build: the core crushing and chipping machines use high-strength steel with good vibration resistance, designed for the high-fiber, high-friction character of palm material. Smooth, quiet running: the pellet mills carry Japanese NSK bearings and NAK seals for efficient drive with less vibration and noise. Damage protection: permanent-magnet iron removal built into the pellet mills pulls tramp metal and extends die and roller life. Easy upkeep: a hydraulic buffer system (chipper) and a separate oil lubrication system cut mechanical wear and daily maintenance. Balanced cooling: the octagonal cooler with counterflow principle prevents surface cracking and cross-contamination.

How the 4-5TPH Palm Biomass Pellet Plant Works

Flow: chipping → hammer grinding → ring die pressing → counterflow cooling → bagging. Five stages:

1

Chipping

Large palm waste is cut into roughly 30 mm chips by the drum chipper, which carries a hydraulic buffer system.

2

Fine grinding

Chips enter the water-drop hammer mill for high-speed beating and reduction.

3 Ring die pressing

Fine material feeds into three ring die pellet mills; twin rollers and stainless dies press it into pellets.

4 Octagonal counterflow cooling

Hot pellets pass the octagonal counterflow cooler for even heat and moisture removal.

5 Bagging

The packer weighs and seals the bags automatically.

Two things to remember: palm material is high-fiber and high-friction — the chipper's hydraulic buffer is what absorbs impact, so check its travel and seals; with three mills, keep the material split even.

Equipment Configuration

1. BX216 drum wood chipper

Model	Capacity	Feed size	Chip size	Blades	Knife speed	Main motor	Feed roller	Conveyor	Oil pump	Dimensions	Weight
BX216	7–8 t/h	230×500mm	~30mm	2	590rpm	55kW	3–4kW	3kW	1.5kW	1800×4900×1210mm	4070kg

2. ZW120B water drop hammer mill

Model	Capacity	Hammers	Rotor dia.	Chamber width	Speed	Hammer speed	Power	Air volume
ZW120B	4.5–5.5 t/h	156	660mm	1200mm	2980RPM	87m/s	132/160kW	130m ³ /min

3. MZLH508 ring die pellet mill ×3 units

Model	Capacity/unit	Main motor	Feeder screw	Die ID	Die speed	Rollers	Roller temp	Pellet size
MZLH508	1.5 t/h (3 units: 4.5 t/h)	90kW	2.2kW	508mm	150rpm	Ø190mm ×2	≤85°C	6/8/10mm

4. SKLN4 pellet cooler

Model	Capacity	Volume	Main power	Air-lock	Cooling time
SKLN4	3–5 t/h	4 m ³	1.5kW	0.55kW	≥6–10min

5. WDCS-50 biomass pellet packing machine

Model	Packing rate	Power	Dimensions
WDCS-50	3–4 bags/min (5–50kg/bag)	2.2kW	2×0.8×2.6m

Where It Gets Used

Feedstock: palm oil mills and palm-plantation waste collection stations. Downstream: large industrial biomass boilers, generator sets, district heating, and clean-energy supply replacing coal in palm-growing regions.

Installation and Commissioning

1. **Shop layout** — arrange the five machines per the flow (chip → grind → pellet×3 → cool → pack); confirm three-mill split piping and section conveyors.
2. **Positioning** — set and fix each machine per the drawing; level and isolate all three pellet mill bases individually.
3. **Electrical and power** — wire each motor and confirm phase sequence; check oil level in all three mills' gear transmissions.
4. **Linked no-load run** — run the whole line empty; watch three-mill operation, material split, vibration and noise.
5. **Load run** — feed chipped and ground palm waste evenly to all three mills; check forming rate, cooling and packing; ramp to rated capacity.

⚠ Lift by the designated points only — never by motors or piping; keep personnel clear of the lift zone.

⚠ During operation, stay clear of all feed and discharge openings; stop and lock out before clearing or servicing.

⚠ The chipper and pellet mills run at high speed and/or high temperature — never touch them in operation; stop immediately on abnormal vibration, noise or overheating.

Remove large stones and metal from the palm waste feed. Have the manufacturer's technician on site for the first load run.

Running and Maintenance

The three MZLH508 mills are the core: the stainless dies and rollers are the main wear items — check die-hole wear and roller clearance, and replace or flip at the wear limit. NSK bearings and NAK seals are what keep the units smooth and quiet — lubricate the bearings on schedule and watch the seals for aging. Clean the magnet iron guard regularly. The separate oil lubrication system gets oil-level and oil-condition checks. Roller temperature should stay $\leq 85^{\circ}\text{C}$. The three-mill split must stay even.

The BX216 chipper: blade wear and the hydraulic buffer system. The ZW120B hammer mill: hammer and screen wear — palm fiber is high-friction, so these two are heavy wear machines. The SKLN4 octagonal cooler: counterflow air volume and the rotating mechanism. The packer: weighing accuracy. Section capacities: chip 7–8 t/h, grind 4.5–5.5 t/h, three mills 4.5 t/h, cool 3–5 t/h — the mills are the bottleneck. Daily round: motor temperatures, three-mill sync, dust extraction.

