SEMI-AUTOMATIC CORRUGATED BOX PLANT

Investment & Project Report — 2 Configurations

100 Tons/Month · 250 Tons/Month · Single Shift · 2-Colour Print · **Natraj Biomass Boiler Included**

METRIC	SEMI-AUTO 100T	SEMI-AUTO 250T
Plant Type	Semi-Auto	Semi-Auto
Monthly Output	100 tons/month	250 tons/month
Operating Shifts	1 shift / day	1 shift / day
Space Required	6,000 sq ft	10,000 sq ft
Labour Required	12–15 people	20–25 people
Print Capability	2-Colour Printer Slotter	2-Colour Printer Slotter
Paper Cost	Rs.30/kg	Rs.30/kg
Conversion Cost — GAS (old)	Rs.12/kg	Rs.8/kg
Conversion Cost — BIOMASS (new)	Rs.10/kg	Rs.6.5/kg
Conversion Revenue	Rs.14.2/kg	Rs.9.6/kg
Total Billed to Customer	Rs.44.2/kg	Rs.39.6/kg
NET PROFIT/KG — GAS (old)	Rs.2.2/kg	Rs.1.6/kg
NET PROFIT/KG — BIOMASS (new)	Rs.4.2/kg	Rs.3.1/kg
Monthly Profit — BIOMASS	Rs.4.20L	Rs.7.75L
Annual Profit — BIOMASS	Rs.50.40L	Rs.93.00L
Machine Investment	Rs.45.00L	Rs.1.20 Cr
+ Biomass Boiler	Rs.9.00L (NB-1000)	Rs.11.00L (NB-2000)
Working Capital	Rs.50.00L	Rs.75.00L
Civil & Infrastructure	Rs.48.00L	Rs.80.00L
TOTAL INVESTMENT	Rs.1.52 Cr	Rs.2.86 Cr
Payback Period — BIOMASS	33 months	37 months
Annual ROI — BIOMASS	36%	33%

HOW TO READ THIS REPORT

This report covers two semi-automatic plant configurations. Each section includes: plant specifications, machine list, monthly P&L, capacity utilisation table, investment breakdown, payback analysis, and 12-month ramp. **Section 3 (NEW — March 2026)** covers the Natraj Biomass Boiler pairing for each plant size and the revised conversion cost economics after gas elimination.

HOW THE SEMI-AUTO CORRUGATED BOX BUSINESS WORKS

A corrugated box plant is a **conversion business**. Paper is purchased as raw material, converted into boxes through the machinery line, and sold to manufacturing customers. Paper cost is passed through at the same rate you buy it. All profit comes from the **conversion margin** — what you charge for the conversion process above and beyond the paper cost.

UNIT ECONOMICS — PER KILOGRAM OF FINISHED BOX

Paper Cost (raw material)	Rs.30/kg	Rs.30/kg	Kraft/test liner — same for both. Largest input cost.
Conversion Revenue	Rs.14.2/kg	Rs.9.6/kg	What customer pays you for manufacturing, above paper.
TOTAL BILLED TO CUSTOMER	Rs.44.2/kg	Rs.39.6/kg	Paper passthrough + conversion charge. Full invoice per kg.
Paper Cost (paid by you)	Rs.30/kg	Rs.30/kg	Exact same as billed — zero margin on paper.
Conversion Cost — WITH GAS (old)	Rs.12/kg	Rs.8/kg	Rent+EMI+Power+Gas+Gum+Ink+Stitching+Labour+Logistics
Conversion Cost — WITH BIOMASS (new)	Rs.10/kg	Rs.6.5/kg	Gas replaced by rice husk/bagasse biomass. Rs.2–2.5/kg saving.
TOTAL COST — WITH BIOMASS	Rs.40/kg	Rs.36.5/kg	Paper + biomass conversion cost combined.
NET PROFIT/KG — WITH GAS (old)	Rs.2.2/kg	Rs.1.6/kg	Conversion revenue minus gas-based conversion cost.
NET PROFIT/KG — WITH BIOMASS	Rs.4.2/kg	Rs.3.1/kg	Conversion revenue minus biomass conversion cost. 91–94% more profit per kg.

Why does 100T earn Rs.2.2/kg (gas) → Rs.4.2/kg (biomass) while 250T earns Rs.1.6/kg → Rs.3.1/kg? The gas-to-biomass conversion saves Rs.2.0–2.5/kg across both plant sizes. The 250T plant generates Rs.7.75L/month vs Rs.4.20L/month for the 100T — 85% more total monthly profit despite lower per-kg margin, simply from scale.

SECTION 1 · SEMI-AUTO · 100 Tons/Month

Rs.4.2/kg NET PROFIT

Entry-level investment. Single shift. Lowest risk for first-time plant owners. Positive cash flow from Month 3 at 50% capacity. **Paired with Natraj NB-1000 (1 TPH) Biomass Boiler.**

100 Tons	Rs.4.20L	Rs.50.40L	Rs.1.52 Cr	33 months	33%
Monthly Output	Monthly Profit	Annual Profit	Total Investment	Payback Period	Annual ROI

PLANT SPECIFICATIONS

Plant Type	SEMI-AUTO — 100 Tons/Month
Monthly Production	100 metric tons/month = 100,000 kg/month
Annual Production	1200 metric tons/year = 1,200,000 kg/year
Operating Shifts	1 shift / day · 26 working days/month
Factory Space	6,000 sq ft
Labour Required	12–15 people
Print Capability	2-Colour Flexo Printer Slotter
Civil Cost Basis	Rs.800 per sq ft
Steam Source	Natraj NB-1000 Biomass Boiler — 1 TPH — NO GAS REQUIRED
Natraj Care AMC	Year 1 INCLUDED FREE · Renewed annually from Year 2

MACHINE LINE — 7 MACHINES

NO.	MACHINE	KEY PRODUCTION BENEFIT
1	Electric Shaft-Less Mill Roll Stand (1400 mm)	Motorised loading, pneumatic tension — consistent paper feed, no manual heavy lifting
2	Fingerless Single Facer — B-Flute (1400 mm)	HMI touchscreen, vacuum fingerless — clean flute formation, minimal paper waste
3	PLC Servo Reel-to-Sheet Cutter (55 inch)	±2 mm cutting accuracy, Schneider servo drive — precise sheet lengths every cut
4	3-Roller Sheet Pasting Machine (85 inch)	Hard chrome-plated rollers — even glue application, strong board bond
5	Thin Blade Slitter Scorer (2500 mm)	Auto-grind blade — stays sharp throughout shift without stopping production
6	2-Colour Flexo Printer Slotter (1400 × 2800 mm)	2-colour branding, 1400 mm board width
7	Single Head Box Stitching Machine (1400 mm)	Fast single-nail stitching

MONTHLY P&L; — 100 TONS/MONTH — 100% CAPACITY (WITH BIOMASS)

P&L; ITEM	Rs./kg	MONTHLY	ANNUAL (×12)
▲ REVENUE			
Paper Revenue (passthrough)	Rs.30	Rs.3,000,000	Rs.3.60 Cr
Conversion Revenue	Rs.14.2	Rs.1,420,000	Rs.1.70 Cr
TOTAL REVENUE	Rs.44.2	Rs.44.20L	Rs.5.30 Cr
▼ COSTS			
Paper Cost (same as paper revenue)	Rs.30	Rs.3,000,000	Rs.3.60 Cr
Conversion Cost — BIOMASS (new)	Rs.10.0	Rs.1,000,000	Rs.1.20 Cr
(Conversion Cost — GAS, old)	(Rs.12.0)	(Rs.1,200,000)	(Rs.1.44 Cr)
TOTAL COST — BIOMASS	Rs.40.0	Rs.40.00L	Rs.4.80 Cr
(★ Net Profit @ Rs.2.2/kg, GAS, old)	(Rs.2.2)	(Rs.2.20L)	(Rs.26.40L)
BIOMASS ADVANTAGE — EXTRA ANNUAL PROFIT	+Rs.2.0/kg	+Rs.2.00L/mo	+Rs.24.00L/yr

PROFITABILITY AT DIFFERENT CAPACITY UTILISATION (BIOMASS)

UTIL %	TONS/MO	KG/MO	MONTHLY REVENUE	MONTHLY PROFIT	ANNUAL PROFIT	PAYBACK (mo)
50%	50T	50,000	Rs.22.10L	Rs.2.10L	Rs.25.20L	72.4
60%	60T	60,000	Rs.26.52L	Rs.2.52L	Rs.30.24L	60.3
70%	70T	70,000	Rs.30.94L	Rs.2.94L	Rs.35.28L	51.7
80%	80T	80,000	Rs.35.36L	Rs.3.36L	Rs.40.32L	45.2
90%	90T	90,000	Rs.39.78L	Rs.3.78L	Rs.45.36L	40.2
100%	100T	100,000	Rs.44.20L	Rs.4.20L	Rs.50.40L	36.2

INVESTMENT BREAKDOWN (WITH BIOMASS BOILER)

INVESTMENT HEAD	AMOUNT	BASIS & NOTES
Natraj Machinery — Full Plant Line	Rs.45.00L	All machines as listed · delivery · installation · commissioning
Natraj NB-1000 Biomass Boiler (1 TPH)	Rs.9.00L	1000 kg/hr · rice husk/bagasse/mustard stalk · installed
Civil Works & Infrastructure	Rs.48.00L	Rs.800/sq ft × 6,000 sq ft = Rs.48.00L
Working Capital — Month 1	Rs.50.00L	2 weeks paper stock · operator salaries · running expenses
TOTAL PROJECT INVESTMENT	Rs.1.52 Cr	Complete, gas-free, ready-to-operate plant
Typical Funding Structure	**40% + 60%**	40% promoter equity · 60% MSME term loan + CC limit

Rs.1.52 Cr	Rs.4.20L	Rs.50.40L	32.9 months	33%
Total Investment	Monthly Profit	Annual Profit	Payback Period	Annual ROI

YEAR 1 — REALISTIC PRODUCTION RAMP & CUMULATIVE PROFIT

New plants ramp over 3–4 months as commissioning completes, operators are trained and the sales pipeline fills.

MONTH	UTIL %	TONS	MONTHLY REVENUE	MONTHLY PROFIT	CUMUL PROFIT
Month 1	20%	20T	Rs.8.84L	Rs.0.84L	Rs.0.84L
Month 2	35%	35T	Rs.15.47L	Rs.1.47L	Rs.2.31L
Month 3	50%	50T	Rs.22.10L	Rs.2.10L	Rs.4.41L
Month 4	60%	60T	Rs.26.52L	Rs.2.52L	Rs.6.93L
Month 5	70%	70T	Rs.30.94L	Rs.2.94L	Rs.9.87L
Month 6	75%	75T	Rs.33.15L	Rs.3.15L	Rs.13.02L
Month 7	80%	80T	Rs.35.36L	Rs.3.36L	Rs.16.38L
Month 8	85%	85T	Rs.37.57L	Rs.3.57L	Rs.19.95L
Month 9	90%	90T	Rs.39.78L	Rs.3.78L	Rs.23.73L
Month 10	95%	95T	Rs.41.99L	Rs.3.99L	Rs.27.72L
Month 11	100%	100T	Rs.44.20L	Rs.4.20L	Rs.31.92L
Month 12	100%	100T	Rs.44.20L	Rs.4.20L	Rs.36.12L
YEAR 1 TOTAL			Rs.4.60 Cr	Rs.36.12L	Rs.36.12L

YEAR 1 BOTTOM LINE

Realistic Year 1 (ramping 20%→100%): **Rs.36.12L** net profit. Total investment: Rs.1.52 Cr. Full capacity from Year 2: **Rs.50.40L per year**. Full payback: **36.2 months**. ROI: **33%**.

SECTION 2 · SEMI-AUTO · 250 Tons/Month

Rs.3.1/kg NET PROFIT

Mid-scale production. Single shift. For established converters expanding capacity. Higher throughput machines, auto splicer, automatic stacker. **Paired with Natraj NB-2000 (2 TPH) Biomass Boiler.**

250 Tons	Rs.7.75L	Rs.93.00L	Rs.2.86 Cr	37 months	33%
Monthly Output	Monthly Profit	Annual Profit	Total Investment	Payback Period	Annual ROI

PLANT SPECIFICATIONS

Plant Type	SEMI-AUTO — 250 Tons/Month
Monthly Production	250 metric tons/month = 250,000 kg/month
Annual Production	3000 metric tons/year = 3,000,000 kg/year
Operating Shifts	1 shift / day · 26 working days/month
Factory Space	10,000 sq ft
Labour Required	20–25 people
Print Capability	2-Colour Flexo Printer Slotter
Civil Cost Basis	Rs.800 per sq ft
Steam Source	Natraj NB-2000 Biomass Boiler — 2 TPH — NO GAS REQUIRED
Natraj Care AMC	Year 1 INCLUDED FREE · Renewed annually from Year 2

MACHINE LINE — 8 MACHINES

NO.	MACHINE	KEY PRODUCTION BENEFIT
1	Heavy Duty Mill Roll Stand with Auto Splicer (1600 mm)	Auto paper splicer — reel change without stopping the line, zero production loss
2	High Speed Fingerless Single Facer (1600 mm)	Higher throughput, B and C flute capable — flexibility for different board grades
3	High Speed PLC Reel-to-Sheet Cutter (66 inch)	Servo drive — maintains speed synchronisation at elevated output
4	4-Roller Sheet Pasting Machine (85 inch)	Higher nip pressure — consistent bond strength at elevated line speeds
5	Motorised Thin Blade Slitter Scorer (2500 mm)	Electric job change — fast size changeover between customer orders
6	2-Colour Flexo Printer Slotter (1600 × 3000 mm)	2-colour branding across full 1600 mm board width
7	Double Head Box Stitching Machine (1600 mm)	High-speed double-nail stitching
8	Automatic Board Stacker & Conveyor	Auto stacking at line-end — reduces manual handling, consistent stack height

MONTHLY P&L; — 250 TONS/MONTH — 100% CAPACITY (WITH BIOMASS)

P&L; ITEM	Rs./kg	MONTHLY	ANNUAL (×12)
▲ REVENUE			
Paper Revenue (passthrough)	Rs.30	Rs.7,500,000	Rs.9.00 Cr
Conversion Revenue	Rs.9.6	Rs.2,400,000	Rs.2.88 Cr
TOTAL REVENUE	Rs.39.6	Rs.99.00L	Rs.11.88 Cr
▼ COSTS			
Paper Cost (same as paper revenue)	Rs.30	Rs.7,500,000	Rs.9.00 Cr
Conversion Cost — BIOMASS (new)	Rs.6.5	Rs.1,625,000	Rs.1.95 Cr
(Conversion Cost — GAS, old)	(Rs.8.0)	(Rs.2,000,000)	(Rs.2.40 Cr)
TOTAL COST — BIOMASS	Rs.36.5	Rs.91.25L	Rs.10.95 Cr
(★ Net Profit @ Rs.1.6/kg, GAS, old)	(Rs.1.6)	(Rs.4.00L)	(Rs.48.00L)
BIOMASS ADVANTAGE — EXTRA ANNUAL PROFIT	+Rs.1.5/kg	+Rs.3.75L/mo	+Rs.45.00L/yr

PROFITABILITY AT DIFFERENT CAPACITY UTILISATION (BIOMASS)

UTIL %	TONS/MO	KG/MO	MONTHLY REVENUE	MONTHLY PROFIT	ANNUAL PROFIT	PAYBACK (mo)
50%	125T	125,000	Rs.49.50L	Rs.3.88L	Rs.46.50L	73.8
60%	150T	150,000	Rs.59.40L	Rs.4.65L	Rs.55.80L	61.5
70%	175T	175,000	Rs.69.30L	Rs.5.43L	Rs.65.10L	52.7
80%	200T	200,000	Rs.79.20L	Rs.6.20L	Rs.74.40L	46.1
90%	225T	225,000	Rs.89.10L	Rs.6.98L	Rs.83.70L	41.0
100%	250T	250,000	Rs.99.00L	Rs.7.75L	Rs.93.00L	36.9

INVESTMENT BREAKDOWN (WITH BIOMASS BOILER)

INVESTMENT HEAD	AMOUNT	BASIS & NOTES
Natraj Machinery — Full Plant Line	Rs.1.20 Cr	All machines as listed · delivery · installation · commissioning
Natraj NB-2000 Biomass Boiler (2 TPH)	Rs.11.00L	2000 kg/hr · rice husk/bagasse/cotton stalk · installed
Civil Works & Infrastructure	Rs.80.00L	Rs.800/sq ft × 10,000 sq ft = Rs.80.00L
Working Capital — Month 1	Rs.75.00L	2 weeks paper stock · operator salaries · running expenses
TOTAL PROJECT INVESTMENT	Rs.2.86 Cr	Complete, gas-free, ready-to-operate plant
Typical Funding Structure	**40% + 60%**	40% promoter equity · 60% MSME term loan + CC limit

Rs.2.86 Cr	Rs.7.75L	Rs.93.00L	37.4 months	33%
Total Investment	Monthly Profit	Annual Profit	Payback Period	Annual ROI

YEAR 1 — REALISTIC PRODUCTION RAMP & CUMULATIVE PROFIT

New plants ramp over 3–4 months as commissioning completes, operators are trained and the sales pipeline fills.

MONTH	UTIL %	TONS	MONTHLY REVENUE	MONTHLY PROFIT	CUMUL PROFIT
Month 1	20%	50T	Rs.19.80L	Rs.1.55L	Rs.1.55L
Month 2	35%	88T	Rs.34.65L	Rs.2.71L	Rs.4.26L
Month 3	50%	125T	Rs.49.50L	Rs.3.88L	Rs.8.14L
Month 4	60%	150T	Rs.59.40L	Rs.4.65L	Rs.12.79L
Month 5	70%	175T	Rs.69.30L	Rs.5.43L	Rs.18.22L
Month 6	75%	188T	Rs.74.25L	Rs.5.81L	Rs.24.03L
Month 7	80%	200T	Rs.79.20L	Rs.6.20L	Rs.30.23L
Month 8	85%	212T	Rs.84.15L	Rs.6.59L	Rs.36.82L
Month 9	90%	225T	Rs.89.10L	Rs.6.98L	Rs.43.80L
Month 10	95%	238T	Rs.94.05L	Rs.7.36L	Rs.51.16L
Month 11	100%	250T	Rs.99.00L	Rs.7.75L	Rs.58.91L
Month 12	100%	250T	Rs.99.00L	Rs.7.75L	Rs.66.66L
YEAR 1 TOTAL			Rs.8.51 Cr	Rs.66.66L	Rs.66.66L

YEAR 1 BOTTOM LINE

Realistic Year 1 (ramping 20%→100%): **Rs.66.66L** net profit. Total investment: Rs.2.86 Cr. Full capacity from Year 2: **Rs.93.00L per year**. Full payback: **36.9 months**. ROI: **33%**.

■ MARCH 2026 GAS CRISIS ALERT

QatarEnergy force majeure · GAIL LNG allocation → ZERO · Gas rationed to 80% · LNG spot price doubled to $25.40/MMBTU · Commercial LPG down 40–50% availability. **Gas is no longer a reliable fuel source for corrugating plants.**

SECTION 3 · NATRAJ BIOMASS BOILER PAIRING — GAS-FREE STEAM

100% Gas-Free

The Natraj Single Facer uses steam to heat the corrugating rolls. Previously, plants used PNG pipelines or LPG cylinders. **Both are now unreliable.** Natraj supplies purpose-matched biomass boilers that run on locally available agricultural waste — rice husk, bagasse, mustard stalk, cotton stalk, or coconut shell — eliminating gas dependency entirely. Fuel cost drops by **75–80%** versus normal PNG rates, and by **85–90%** versus crisis-level LNG spot pricing.

BOILER RECOMMENDATION BY PLANT SIZE

PLANT SIZE	BOILER MODEL	CAPACITY	FUEL TYPES	APPROX COST	STEAM OUTPUT
Semi-Auto 100T/Month (1400 mm line)	Natraj NB-1000	1 TPH (1,000 kg/hr)	Rice husk · Mustard stalk Bagasse · Wood chips	Rs.8.00L (installed)	Sufficient for continuous 1400 mm single facer operation
Semi-Auto 250T/Month (1600 mm line)	Natraj NB-2000	2 TPH (2,000 kg/hr)	Rice husk · Bagasse Cotton stalk · Coconut shell	Rs.15.00L (installed)	Full capacity for high-speed 1600 mm single facer + buffer

CONVERSION COST BREAKDOWN — GAS vs BIOMASS (PER KG)

COST COMPONENT	100T — GAS	100T — BIOMASS	250T — GAS	250T — BIOMASS
Rent	Rs.1.5	Rs.1.5	Rs.1.0	Rs.1.0
EMI (machinery loan)	Rs.1.0	Rs.1.0	Rs.0.8	Rs.0.8
EMI (boiler loan)	—	Rs.0.2	—	Rs.0.2
Electricity (motors)	Rs.1.5	Rs.1.5	Rs.1.2	Rs.1.2
Fuel — Gas/PNG	Rs.2.5	—	Rs.2.0	—
Fuel — Biomass	—	Rs.0.5	—	Rs.0.5
Starch Gum	Rs.1.5	Rs.1.5	Rs.1.0	Rs.1.0
Ink	Rs.0.5	Rs.0.5	Rs.0.3	Rs.0.3
Stitching Wire	Rs.0.3	Rs.0.3	Rs.0.2	Rs.0.2
Labour	Rs.2.5	Rs.2.5	Rs.1.2	Rs.1.2
Logistics	Rs.1.2	Rs.1.0	Rs.1.3	Rs.1.1
TOTAL CONVERSION COST	Rs.12.0	Rs.10.0	Rs.8.0	Rs.6.5
NET PROFIT/KG	Rs.2.2	Rs.4.2	Rs.1.6	Rs.3.1

BIOMASS FUEL AVAILABILITY BY STATE

STATE	PRIMARY FUEL	AVAILABILITY	APPROX COST
Haryana / Punjab	Rice husk	Abundant — post-harvest Oct–Nov, year-round storage possible	Rs.2–3/kg

Uttar Pradesh	Bagasse (sugarcane)	Available near sugar mills year-round	Rs.1.5–2.5/kg
Rajasthan	Mustard stalk	Oct–Mar harvest, dry climate — easy storage	Rs.1.5–2/kg
Maharashtra / Gujarat	Bagasse + cotton stalk	Both widely available near agro belts	Rs.1.5–2.5/kg
South India	Coconut shell + rice husk	Excellent calorific value, consistent supply	Rs.2–3/kg
Madhya Pradesh	Rice husk + soybean stalk	Both available post-harvest	Rs.1.5–2.5/kg

WHAT HAPPENS TO PROFITABILITY IF YOU KEEP GAS? At crisis LNG rates (double normal), gas fuel cost rises from Rs.2.5/kg to Rs.5.0/kg (100T plant). Conversion cost jumps from Rs.12/kg to Rs.14.5/kg. Since conversion revenue is Rs.14.2/kg, **you start losing Rs.0.3/kg on every box.** At 100T/month, that is a loss of Rs.30,000/month — and the crisis shows no sign of easing. For the 250T plant, gas at crisis price = Rs.4/kg. Conversion cost = Rs.10/kg. Conversion revenue = Rs.9.6/kg. **Loss of Rs.0.4/kg = Rs.1.00L/month in losses.** The biomass boiler pays for itself in fuel savings within **4–6 months** at current gas crisis prices.

INVESTMENT & RETURNS — SIDE-BY-SIDE COMPARISON

METRIC	100T — GAS ONLY	100T — WITH BIOMASS	250T — GAS ONLY	250T — WITH BIOMASS
Conversion Cost	Rs.12/kg	Rs.10/kg	Rs.8/kg	Rs.6.5/kg
Net Profit/kg	Rs.2.2	Rs.4.2	Rs.1.6	Rs.3.1
Monthly Profit	Rs.2.20L	Rs.4.20L	Rs.4.00L	Rs.7.75L
Annual Profit	Rs.26.40L	Rs.50.40L	Rs.48.00L	Rs.93.00L
Total Investment	Rs.1.43 Cr	Rs.1.52 Cr	Rs.2.75 Cr	Rs.2.86 Cr
Payback Period	59 months	33 months	69 months	37 months
Annual ROI	18%	33%	17%	33%
Gas Dependency	YES — RISK	NONE	YES — RISK	NONE

SECTION 4 · THE GAS CRISIS IS YOUR COMPETITIVE ADVANTAGE

ACT NOW

Every corrugated box plant in India that runs on gas is **bleeding money right now.** LNG spot prices doubled in one week. GAIL allocations dropped to zero. The plants that switch to biomass *today* will lock in a structural cost advantage that competitors cannot replicate without capital investment — and those competitors are already behind. **Natraj customers who buy biomass boilers now will be the lowest-cost producers in their region for the next 3–5 years.**

TABLE 1 — BEFORE vs AFTER: CONVERSION COST PER KG

COST COMPONENT	100T GAS (OLD)	100T BIOMASS (NEW)	100T SAVING	250T GAS (OLD)	250T BIOMASS (NEW)	250T SAVING
Rent	Rs.1.5	Rs.1.5	—	Rs.1.0	Rs.1.0	—
Machinery EMI	Rs.1.0	Rs.1.0	—	Rs.0.8	Rs.0.8	—
Boiler EMI	—	Rs.0.15	—Rs.0.15	—	Rs.0.07	—Rs.0.07
Electricity	Rs.1.5	Rs.1.5	—	Rs.1.2	Rs.1.2	—
FUEL (Gas/PNG)	Rs.2.5	—	**+Rs.2.5**	Rs.2.0	—	**+Rs.2.0**
FUEL (Biomass)	—	Rs.0.5	—	—	Rs.0.5	—
Starch Gum	Rs.1.5	Rs.1.5	—	Rs.1.0	Rs.1.0	—
Ink	Rs.0.5	Rs.0.5	—	Rs.0.3	Rs.0.3	—
Stitching Wire	Rs.0.3	Rs.0.3	—	Rs.0.2	Rs.0.2	—
Labour	Rs.2.5	Rs.2.5	—	Rs.1.2	Rs.1.2	—
Logistics	Rs.1.2	Rs.1.0	**+Rs.0.2**	Rs.1.3	Rs.1.1	**+Rs.0.2**
TOTAL CONVERSION COST	**Rs.12.0**	**Rs.10.0**	**+Rs.2.0**	**Rs.8.0**	**Rs.6.5**	**+Rs.1.5**

** Boiler EMI: Rs.0.15/kg (100T) and Rs.0.07/kg (250T) — loan repayment on the biomass boiler over 5 years. Net fuel saving after EMI = Rs.1.85/kg (100T) and Rs.1.43/kg (250T). After loan is repaid, full Rs.2.0/kg (100T) and Rs.1.5/kg (250T) saving is realised.*

TABLE 2 — ROI & PROFITABILITY: GAS vs BIOMASS — FULL COMPARISON

METRIC	100T WITH GAS	100T WITH BIOMASS	100T UPLIFT	250T WITH GAS	250T WITH BIOMASS	250T UPLIFT
Conversion Cost/kg	Rs.12.0	Rs.10.0	**–Rs.2.0/kg**	Rs.8.0	Rs.6.5	**–Rs.1.5/kg**
Net Profit/kg	Rs.2.2	Rs.4.2	**+91%**	Rs.1.6	Rs.3.1	**+94%**
Monthly Profit	Rs.2.20L	Rs.4.20L	**+Rs.2.00L**	Rs.4.00L	Rs.7.75L	**+Rs.3.75L**
Annual Profit	Rs.26.40L	Rs.50.40L	**+Rs.24.00L**	Rs.48.00L	Rs.93.00L	**+Rs.45.00L**
Year 1 Profit (ramp)	Rs.18.92L	Rs.36.12L	**+Rs.17.20L**	Rs.34.40L	Rs.66.66L	**+Rs.32.26L**
Total Investment	Rs.1.43 Cr	Rs.1.52 Cr	**+ Rs.9.00L**	Rs.2.75 Cr	Rs.2.86 Cr	**+ Rs.11.00L**
Payback Period	65 months	36 months	**–29 months**	69 months	37 months	**–32 months**
Annual ROI	18%	33%	**+15 pts**	17%	33%	**+16 pts**

5-Year Cumulative Profit	Rs.1.32 Cr	Rs.2.52 Cr	+Rs.1.20 Cr	Rs.2.40 Cr	Rs.4.65 Cr	+Rs.2.25 Cr
Gas Dependency Risk	HIGH	ZERO	Eliminated	HIGH	ZERO	Eliminated

TABLE 3 — GAS CRISIS SCENARIO: PROFITABILITY AT DIFFERENT GAS PRICE LEVELS

GAS PRICE SCENARIO	FUEL COST/kg	CONVERSION COST/kg	NET PROFIT/kg (100T)	MONTHLY PROFIT (100T)	NET PROFIT/kg (250T)	MONTHLY PROFIT (250T)
Pre-crisis PNG (normal)	Rs.2.5	Rs.12.0	+Rs.2.2	+Rs.2.20L	+Rs.1.6	+Rs.4.00L
Current crisis rate (×1.5)	Rs.3.75	Rs.13.25	+Rs.0.95	+Rs.0.95L	+Rs.0.35	+Rs.0.88L
LNG spot price (×2.0)	Rs.5.0	Rs.14.5	–Rs.0.3	–Rs.0.30L	–Rs.0.9	–Rs.2.25L
Extended crisis (×2.5)	Rs.6.25	Rs.15.75	–Rs.1.55	–Rs.1.55L	–Rs.2.15	–Rs.5.38L
BIOMASS (any scenario)	Rs.0.5	Rs.10.0	+Rs.4.2	+Rs.4.20L	+Rs.3.1	+Rs.7.75L

At LNG spot pricing (×2.0 normal), a 100T plant running on gas makes a LOSS of Rs.0.30/kg — Rs.30,000 every month. A 250T plant loses Rs.2.25L/month. The biomass plant earns Rs.4.2/kg regardless of gas prices.

HOW TO USE THE GAS CRISIS AS A SALES OPPORTUNITY

FOR NEW PLANT BUYERS	Do not start a plant that will be at the mercy of gas prices. Build your plant gas-free from Day 1. Your conversion cost will be Rs.10/kg (100T) or Rs.6.5/kg (250T) — locked in, regardless of what happens to LNG or PNG. Your competitors who built gas plants are running at a loss or near-zero margin today.
FOR EXISTING GAS PLANT OWNERS	You are losing Rs.30,000–Rs.2.25L per month right now. The Natraj NB-1000 costs Rs.9L installed. At Rs.2.0/kg fuel saving, it pays back in 4–6 months at current gas prices. After that, every month is Rs.2.00L in extra profit — forever.
FOR INVESTORS / BANKS	The biomass plant has a 33-month payback vs 59 months for the gas equivalent. Annual ROI is 36% vs 20%. The investment risk profile is fundamentally different — fuel cost is domestically sourced agricultural waste at Rs.0.5/kg, not imported LNG subject to geopolitical disruption.
THE MOAT ARGUMENT	Plants that switch today will have operating cost structures that competitors cannot match for 2–3 years — the time it takes for a competitor to decide, fund, and install a boiler. First movers lock in Rs.2–4L/month of extra margin that becomes permanent structural advantage.

NEXT STEPS — HOW TO PROCEED

STEP	ACTION	WHEN
1	Confirm preferred configuration (100T or 250T) based on capital and market	Today
2	Confirm biomass fuel availability in your area (Natraj will advise on fuel sourcing)	Today
3	Call Rishi Nagpal +91-9810075497 — discuss site, requirement, timeline	This week
4	Factory visit to Palwal — see semi-auto machines + biomass boiler running live	Next week
5	Reference check — visit existing Natraj semi-auto plant in your region	Within 10 days
6	Receive detailed proposal with exact specs, pricing, Natraj Care agreement	Within 48 hrs
7	Issue PO + 30% advance — plant + boiler goes into production at Palwal factory	On decision
8	Delivery · installation · commissioning · operator training at your site	Per timeline

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All projections based on stated unit economics at 100% single-shift capacity. Civil at Rs.800/sqft. Biomass fuel costs based on current North/Central India market rates. Results depend on actual utilisation, paper prices, fuel availability, and market conditions. Natraj provides machinery, boiler, installation and service. Business performance is the operator's responsibility.