



BUSINESS PLAN · INDIA

LED-Lighting Manufacturing

LED lamps, battens, panels and luminaires - manufacture and test

ELECTRONICS

AISEVAK.IN · BY ABL DIGITAL TECHNOLOGIES

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This document is confidential and prepared for planning purposes. All financial figures are illustrative model assumptions for an Indian MSME context and must be validated against live quotes, local rates and professional advice before any investment or borrowing decision.

1. Executive Summary

This plan sets out an **LED-Lighting Manufacturing** business in India — a plant producing LED lamps, batters, downlights and panel lights alongside commercial and industrial luminaires, selling through trade channels, institutional accounts and street-lighting tenders, with an in-house photometric and reliability laboratory and lot-level traceability.

The electronics vertical's conventions are set in the consumer-electronics-store anchor and cross-referenced rather than re-derived: **the margin on commodity product is set by somebody else; stock depreciates while it sits; report ROCE beside net margin. The EMS plan's manufacturing conventions carry too — UTILISATION × CONTRIBUTION is the metric, line utilisation runs 41% to 78%, and the Year-1 loss is that gap. What is specific here is that this industry sells three numbers, and not one of them can be checked by the person buying.**

☐ **THE LUMEN AND THE LIFETIME.** An LED lamp is sold on wattage equivalence, lumen output and "25,000 hours". Lumens require an integrating sphere the buyer does not have. Lifetime requires LM-80 measurement over six thousand hours and TM-21 extrapolation — which means **THE LIFETIME CLAIM CANNOT BE TESTED WITHIN THE PRODUCT'S OWN WARRANTY PERIOD AND IS THEREFORE UNFALSIFIABLE BY DESIGN.** This is the water-purifier plan's theatrical verification device in its purest form: a specification that looks like evidence, is universally quoted, and cannot be disproved by anyone the claim is made to. So this plant measures and publishes: lumen output tested in its own integrating sphere with the report attached to the SKU (0% to 100%), average declared-versus-measured overstatement driven from 18.4% to nil, and the **LIFETIME BASIS STATED** — measured, LM-80 extrapolated, or the chip maker's number repeated — on every product.

☐ **The second finding is THE ₹9 CAPACITOR, and it generalises well beyond lighting: THE PRODUCT FAILS AT ITS WEAKEST COMPONENT AND THE CLAIM IS MADE FOR ITS STRONGEST.** The LED die genuinely may run 25,000 hours. The driver usually does not — and a "25,000-hour" lamp dies at fourteen months because of an electrolytic capacitor costing nine rupees, selected invisibly in a bill of materials nobody outside the factory ever sees. Driver-attributed failures are 78% of warranty returns in Year 1. So the driver's rated life is stated **SEPARATELY** from the LED's, the lamp is warranted at the **LOWER** of the two, the capacitor grade and temperature rating are named in the published specification, and field failures at twelve months in service fall from 412 per 10,000 to 96 — the only number that eventually tests any of the claims.

Two further positions cost money and are stated. BIS compulsory registration is mandatory for LED lamps and the Indian market is full of unregistered product; registered SKUs go from 71% to 100% at ₹34 lakh a year. And the street-lighting tender is named for what it is: won on price with a five-to-seven-year warranty tail that most bidders price at zero because they do not expect to be there — so this plant prices the warranty liability into every bid (0% to 100%) and **DECLINED FOURTEEN TENDERS** in Year 3 whose warranty tail could not be priced honestly. The warranty book itself is provisioned at ₹1.48 crore with its age reported, because a five-year promise from a three-year-old company is a liability written by a business that may not exist.

This plan models a manufacturer requiring **₹9.60 crore** (₹3.20 crore promoter + ₹4.20 crore term loan + ₹1.80 crore working-capital facility + ₹40 lakh investor), moving from **₹22.40 crore revenue and a ₹1.24 crore loss** to **₹58.20 crore revenue and ₹3.32 crore profit** by Year 3 — a 5.7% net margin and 26.3% return on capital, with commodity lamps at 19% contribution and luminaires at 38%. (LED lighting manufacture — figures illustrative.)

2. Business Description, Vision & Legal Structure

Concept: A lighting manufacturer that publishes the test report behind the number on the box.

Vision: To be the maker whose lifetime claim survives being asked how it was arrived at.

Mission: Measure the lumens ourselves and print the report; say whether the hours were measured, extrapolated or repeated; state the driver's life beside the LED's and warrant the lower; name the capacitor grade; publish what fails at twelve months; register every SKU; and decline the tender whose warranty tail we cannot price.

Legal structure

- **Private Limited** — recommended. BIS registration, government tender eligibility, equipment finance, channel credit and outside capital all point the same way.
- **LLP** — workable for a small assembly operation, weak for tenders and for carrying a multi-year warranty book.
- **Employed operators** — a traceability requirement rather than a preference: **lot-level records linking driver batch to lamp serial cannot be maintained across rotating contract labour.**

Regulatory anchor: lighting is one of the few Indian electronics categories with genuinely mandatory product certification, and compliance here is a market-access question rather than a paperwork one. **BIS compulsory registration under the Electronics and Information Technology Goods (Requirements for Compulsory Registration) Order covers LED lamps, luminaires and control gear — manufacture or sale of unregistered product is an offence, the registration is per model and per factory, and the Indian market nonetheless carries a very large volume of unregistered lamps sold through trade channels where nobody checks.** Then: **the applicable Indian Standards themselves — IS 16102 for self-ballasted LED lamps, IS 16103 and IS 10322 for luminaires — which set safety and performance requirements including photometric declarations, so an overstated lumen figure is a standards question and not merely a marketing one; Legal Metrology on declarations, since wattage, lumens, colour temperature and lifetime printed on a carton are declared quantities;** consumer protection on performance and warranty representations; **E-Waste Rules and EPR obligations, which reach LED lamps as a covered category and are widely ignored in this trade;** RoHS-equivalent restrictions on incoming components; energy-efficiency labelling where applicable; Factories Act obligations on solder fume, and hazardous-waste routing of drivers and scrap boards; GST; and EPF/ESI and POSH across a shift-based assembly workforce.

3. Promoter & Ownership

Led by a promoter with lighting, electronics manufacturing or electrical-products background. Three competences decide outcomes. *Driver engineering*, because the driver is where the product's real life is decided, where the cost is cut invisibly, and where almost every field failure originates — a promoter who buys drivers on price and specifies them on nothing is building a warranty liability. *Photometric literacy*, since the entire honesty position depends on being able to measure and defend a lumen figure rather than repeating a supplier's. And *tender discipline*, because street-lighting work fills lines attractively and carries a warranty tail that will outlive the contract, and the promoter must be willing to lose the bid. Ownership, equity & investor terms are editable inputs; **the test laboratory and field-failure analysis report to the promoter and quality, never to sales, whose declared specifications they constrain.**

4. Market Analysis — India

Indian LED lighting is a large, fast-commoditising market where the technology transition is complete and the competitive question has shifted entirely to cost, claims and channel.

Demand drivers

- **The conversion to LED is essentially done in urban India**, which makes this a replacement and upgrade market rather than a conversion one — and replacement demand is driven by product failure, which is a quality question.
- **Commercial, industrial and warehouse construction**, where luminaires rather than lamps are specified and margins are materially better.
- **Municipal street-lighting programmes** and public procurement, which are large, tendered, and carry long warranty obligations.
- **Energy-efficiency economics**, which remain genuinely favourable and are the honest part of this industry's sales pitch.
- **Rising specification sophistication** among architects, consultants and facility managers who ask for photometric data and increasingly read it.

Market sizing (illustrative framing)

Layer	Definition	Indicative scale
TAM	LED lamp and luminaire demand across the served region	Large; replacement-driven, commoditising
SAM	Segments where a published specification is read and valued	Bounded by WHO READS THE DATA SHEET
SOM (Yr 1-3)	Trade, institutional, project and tender volumes	Line utilisation 41% → 78%

The market divides on a single question — whether the buyer reads a data sheet — and that division decides both the price and the integrity of the sale. A household buying a nine-watt bulb from a shop compares a printed lumen figure and a printed hour count, has no means of verifying either, and reasonably assumes both are true; the manufacturer who prints better numbers wins, and printing better numbers costs nothing. A lighting consultant specifying a warehouse, a facility manager replacing four hundred battens, or a municipal engineer evaluating a street-lighting tender reads photometric files, asks which laboratory produced them, and can compare a driver specification across bidders. The first buyer cannot reward honesty and the second one can — which means this plant's entire commercial strategy is a migration from the first segment toward the second. Three consequences follow. Luminaires and project work are pursued deliberately, reaching 22% of revenue by Year 3 at 38% contribution against commodity lamps at 19%, because a specified product is sold to somebody who reads. Commodity lamps are carried for scale, channel presence and line utilisation rather than for margin, and the plan says so instead of pretending they are the business. And in the retail segment the published test report is placed on the carton and online rather than argued in a shop — because the only way to compete with a printed number that is not true is to publish the measurement behind one that is.

5. Competition & Position

Landscape: national lighting brands with scale, channel depth and their own testing; a very large unorganised assembly sector building lamps from imported kits, frequently unregistered, competing purely on trade price and printed claims; imported finished lamps; specialist luminaire makers serving architects and consultants; and government-programme suppliers bidding street-lighting tenders. Because lumens and lifetime cannot be checked at the point of purchase, price competition in the commodity segment rewards whoever declares most generously and specifies the cheapest driver.

The plant's position

- Lumen output measured in our own integrating sphere, with the report published per SKU.
- The lifetime basis stated — measured, extrapolated, or a chip maker's figure repeated.
- The driver's rated life stated separately, and the lamp warranted at the lower of the two.
- Capacitor grade and temperature rating named in the specification.
- Field failure at twelve months in service published.
- Every SKU BIS-registered, with the cost stated.
- Tender warranty liability priced into the bid, and bids declined when it cannot be.

The competitive difficulty is unusually stark: this plant's honesty makes its printed numbers look worse than its competitors' invented ones, on exactly the specification a buyer uses to choose. A measured 806-lumen lamp sits on a shelf beside a declared 1,000-lumen lamp of the same wattage from an unregistered assembler, at a lower price. The second lamp is not better; it is a smaller number printed larger. But there is no mechanism at the point of sale by which the customer can discover that, and the honest manufacturer is punished precisely in proportion to his honesty. This is the sharpest version in the library of a market where accurate disclosure is a competitive disadvantage. Three answers work. Publish the measurement rather than the claim — the test report, the laboratory, the date — because a competitor can print a bigger number but cannot produce a sphere trace, and the asymmetry only becomes visible when somebody asks for evidence. Sell into segments that ask: consultants, facility managers, institutional buyers and tenders with technical evaluation, where a photometric file is a requirement rather than a courtesy. And compete in the commodity segment on the twelve-month field failure rate rather than on the carton — because a trade distributor who has handled 412 returns per 10,000 from one supplier and 96 from another has the only comparison the market ever actually generates, and he is the customer who can act on it.

6. The Lumen and the Lifetime

Element	Character	Economics
Lumen output MEASURED in our own integrating sphere, report published per SKU	A competitor can print a bigger number but cannot produce a sphere trace	0% → 100% of SKUs
Average declared-versus-measured lumen overstatement	The industry's quiet inflation	18.4% → NIL
LIFETIME BASIS STATED — measured / LM-80 extrapolated / chip figure repeated	Unfalsifiable within the warranty period, so the basis is the disclosure	0% → 100%
SKUs carrying our own LM-80 data rather than a repeated chip number	6,000 hours of testing per family	0 → 31 of 88
DRIVER RATED LIFE STATED SEPARATELY / lamp warranted at the LOWER of the two	The product fails at its weakest component	0% → 100% / 0% → 100%
Driver-attributed share of warranty returns (published)	The ₹9 capacitor	78% → 61%
FIELD FAILURE AT 12 MONTHS IN SERVICE (returns per 10,000)	The only number that eventually tests the claim	412 → 96
BIS-registered SKUs · line utilisation · contribution (lamps vs luminaires)	Certification is market access, not paperwork	71% → 100% (₹34L) · 41% → 78% · 19% / 38%

Stating the **BASIS** of the lifetime claim deserves its own paragraph, because the claim itself cannot be made honest — only its provenance can. Nobody selling a lamp in 2026 knows whether it will run for 25,000 hours; that is nearly three years of continuous operation, and the product will have been superseded twice before anyone finds out. What a manufacturer **CAN** know is where his number came from, and there are exactly three honest answers: it was measured under LM-80 over six thousand hours and extrapolated under TM-21; it was extrapolated from the LED chip maker's data for the die alone; or it was repeated from a supplier's marketing sheet. The Indian market runs almost entirely on the third, printed as though it were the first. Publishing which of the three applies costs nothing, cannot be faked without leaving evidence, and is the only disclosure available for a claim that is structurally untestable. Three refinements make it real. The basis is printed per SKU rather than as a corporate statement, because a company that runs LM-80 on three families and repeats chip data on eighty-five must not be allowed to describe itself as an LM-80 manufacturer. Own LM-80 data is built family by family — 31 of 88 SKUs by Year 3 — and the count is published rather than the aspiration. And crucially the LED's rated life is never presented as the lamp's — because the die is the one component that probably will last, and quoting its number for the assembly is how the whole industry arrives at a figure it cannot support.

7. The ₹9 Capacitor, the Warranty and the Tender

Where the product actually dies

- **The LED die may genuinely run 25,000 hours; the driver usually does not** — and driver-attributed failures are 78% of warranty returns in Year 1.
- **An electrolytic capacitor costing nine rupees, chosen in a BOM nobody outside the factory sees, decides when a "25,000-hour" lamp dies at fourteen months.**
- **The driver's rated life is stated separately and the lamp warranted at the LOWER of the two (0% → 100%);** capacitor grade and temperature rating named in the published specification.
- **Driver-attributed returns fall to 61% — never to zero, because the driver remains the weakest element and a manufacturer reporting otherwise has stopped analysing returns.**

The warranty and the tender

- **A five-year lamp warranty from a three-year-old company is a liability written by a business that may not exist** — provisioned at ₹1.48 crore with the book's age reported (0.6 → 2.7 years).
- **Street-lighting tenders are won on price with a five-to-seven-year warranty tail**, and most bidders price that tail at zero.
- **Tender warranty liability priced into every bid: 0% → 100%, with 14 tenders DECLINED in Year 3 whose warranty tail could not be priced honestly.**

The government street-lighting tender is worth naming precisely, because it is the most attractive-looking and most dangerous demand available to a plant with idle lines. It arrives in volume, fills capacity, carries a public-sector counterparty, and is awarded on lowest price against a technical specification — and it obliges the supplier to replace failed fixtures for five to seven years, on poles, across a city, at his own cost. A bidder who prices that obligation honestly adds materially to his number and loses. A bidder who prices it at zero wins, and is very often right to, because the entity that must honour the obligation in year six may not exist — this industry's mortality is high and the warranty follows the company rather than the product. The tender therefore selects, structurally, for the bidder least able to honour it. Three disciplines follow. The warranty tail is costed into every bid as a provisioned liability rather than treated as a contingency, which is why this plant's

tender revenue stays a deliberate 5.6% of the book rather than the 20% its capacity could absorb. Bids are declined where the tail cannot be priced — fourteen of them in Year 3 — and the count is reported, because a manufacturer who never declines a tender is not pricing the warranty. And where a tender is won, the fixture population is tracked by installed location and batch — since a warranty obligation the supplier cannot locate is one he will meet by argument rather than by replacement.

8. Operations Plan (design, source, build, measure, publish, honour)

- **Design the driver, do not just buy it:** capacitor grade, temperature rating and expected life specified rather than delegated; driver rated life established and stated separately from the LED's.
- **Measure before declaring:** every SKU tested in the in-house integrating sphere with the report published (0% → 100%); declared-versus-measured overstatement driven from 18.4% to nil.
- **State the lifetime basis:** measured, LM-80 extrapolated or chip-maker figure repeated, printed PER SKU (0% → 100%); own LM-80 data built family by family (0 → 31 of 88 SKUs) and the count published rather than the aspiration.
- **Warrant honestly:** the lamp warranted at the LOWER of driver and LED rated life; warranty provisioned (₹1.48cr by Y3) with the BOOK'S AGE reported (0.6 → 2.7 years).
- **Publish what fails:** field failure at 12 months in service (412 → 96 per 10,000) and the DRIVER-ATTRIBUTED SHARE of returns (78% → 61%), never claimed at zero.
- **Register everything:** BIS compulsory registration per model and per factory on 100% of SKUs, at a stated ₹34 lakh a year, against a market carrying large volumes of unregistered product.
- **Price the tail:** tender warranty liability costed into every bid (0% → 100%); tenders DECLINED where it cannot be priced (0 → 14) and the count reported; won tenders tracked by installed location and batch.
- **Run the lines:** utilisation 41% → 78% with contribution per line-hour governing acceptance; commodity lamps carried for scale and utilisation, luminaires and projects for margin (19% vs 38% contribution).
- **Trace and analyse:** driver batch and LED lot recorded against lamp serial; returns analysed rather than replaced, with a field-failure function reporting to quality rather than to sales.
- **Take back what the rules require:** E-waste and EPR obligations on end-of-life lamps and drivers, with collection reported rather than assumed.

Control points

Area	Activity	Control point
☐ The number on the box	Lumens measured in-house and published / declared-vs-measured overstatement	0% → 100% / 18.4% → NIL
☐ A claim that cannot be falsified in warranty	Lifetime BASIS stated per SKU / SKUs with own LM-80 data	0% → 100% / 0 → 31 of 88
☐ The ₹9 capacitor	Driver life stated separately / lamp warranted at the lower	0% → 100% / 0% → 100%
What actually fails	Driver-attributed share of returns / field failure at 12 months per 10,000	78% → 61% / 412 → 96
Market access, not paperwork	BIS-registered SKU share / stated annual cost	71% → 100% / ₹34,00,000

□ The tail nobody prices	Tender warranty priced into the bid / tenders declined on the tail	0% → 100% / 0 → 14
A promise from a company that may not exist	Warranty provision carried / warranty book age	₹58L → ₹1.48cr / 0.6 → 2.7 yrs
Capacity & mix	Line utilisation · contribution, commodity lamps vs luminaires	41% → 78% · 19% vs 38%

9. BIS, Safety & Operating Compliance (India)

- **BIS compulsory registration under the Electronics and IT Goods (CRO) Order** covers LED lamps, luminaires and control gear — **manufacture or sale of unregistered product is an offence, registration is PER MODEL AND PER FACTORY**, and the market nonetheless carries very large volumes of unregistered lamps through trade channels where nobody checks.
- **IS 16102 (self-ballasted LED lamps), IS 16103 and IS 10322 (luminaires)** — which set safety and performance requirements INCLUDING PHOTOMETRIC DECLARATIONS, so an overstated lumen figure is a standards question rather than merely a marketing one.
- **Legal Metrology on declarations** — wattage, lumens, colour temperature and lifetime printed on a carton are declared quantities, not advertising copy.
- **Consumer protection on performance and warranty representations**, which reaches the lifetime claim directly.
- **E-Waste Rules and EPR obligations**, which cover LED lamps as a category and are widely ignored in this trade; RoHS-equivalent restrictions on incoming components.
- **Factories Act obligations** on solder fume and assembly safety; hazardous-waste routing of scrap drivers and boards; energy-efficiency labelling where applicable.
- **GST; EPF/ESI and POSH** across a shift-based assembly workforce, **with employment here also a traceability requirement, since driver-batch-to-lamp-serial records cannot survive rotating contract labour.**

10. Organisation & Manpower Plan

Role	Yr 1	Yr 2	Yr 3
Assembly & production operators (EMPLOYED, shift-based)	118	196	292
Sales, channel & institutional accounts	22	38	58
Quality, PHOTOMETRIC TEST LAB & reliability	12	21	33
Production planning & supervisors	10	18	28
R&D, DRIVER DESIGN & product development	8	14	22
Stores, kitting & lot traceability	7	12	19
Warranty, returns & FIELD-FAILURE ANALYSIS (reports to quality, not sales)	4	8	13
Finance & accounts · head office, HR & admin	4 · 4	7 · 6	10 · 9
Technology · leadership	2 · 3	3 · 4	5 · 5
Total	194	327	494

Two functions carry this plan and both are unusual for a plant of this size. The photometric test laboratory — integrating sphere, goniophotometer access, LM-80 ageing racks and thermal chambers — is capital and headcount most Indian lighting assemblers do not carry, because the numbers can simply be copied from a supplier's sheet. It exists here because the entire commercial position depends on being able to produce a measurement, and a manufacturer who cannot measure his own product is repeating somebody else's claim and calling it a specification. Warranty, returns and field-failure analysis is small but deliberately placed: it reports to quality rather than to sales, on this library's control-independence rule, because the function that must publish a 12-month failure rate of 412 per 10,000 cannot sit under the people whose declared specifications and channel relationships that number embarrasses. It also does the work most of this industry skips entirely — analysing returned lamps to establish WHY they failed rather than simply replacing them, which is how the driver-attribution figure exists at all.

11. Implementation Timeline & Milestones

Phase	Timeline	Milestone
Setup	Month 0-7	Assembly lines, ageing racks and the photometric laboratory commissioned together — the sphere before the first SKU is declared, not after; BIS registration filed per model and per factory before commercial sale; driver specification standard written with capacitor grade and temperature rating as mandatory fields; lot traceability from driver batch to lamp serial live from the first build; warranty provisioning policy and book-age reporting established before the first multi-year warranty is issued
Year 1	Year 1	₹22.40cr revenue, ₹1.24cr loss; line utilisation 41% — and the loss IS that gap; lumens measured in-house on 0% of SKUs with declared figures overstated 18.4% on average, and lifetime basis stated on 0% — the baseline this plan exists to end; driver-attributed returns 78%; field failure 412 per 10,000 at 12 months; BIS-registered SKUs 71%; tender warranty priced into 0% of bids
Year 2	Year 2	₹38.60cr revenue, ₹86L profit; utilisation 62%; lumens measured and published on 84% of SKUs with overstatement down to 4.1%; lifetime basis stated on 91%; first 14 SKUs carrying own LM-80 data; driver life stated separately on 88%; field failure 214; BIS 94%; 6 tenders declined on warranty tail; ROCE 8.3%
Year 3	Year 3	₹58.20cr revenue, ₹3.32cr profit; ROCE 26.3%; utilisation 78%; lumens measured and published 100% with declared-versus-measured overstatement NIL; lifetime basis stated 100% and 31 of 88 SKUs on own LM-80 data; driver life stated separately and lamp warranted at the lower 100%; driver-attributed returns 61%; FIELD FAILURE 96 per 10,000 at 12 months; BIS-registered 100% at ₹34L a year; tender warranty priced into 100% of bids with 14 DECLINED; warranty provision ₹1.48cr at a book age of 2.7 years

12. Financial Plan (Illustrative)

All figures are illustrative model assumptions for an Indian context, shown so the promoter can replace them with live rates. **Line utilisation and the luminaire mix are the levers. Lamp volume is not one — commodity lamps at 19% contribution fill lines and channel shelves, and a plan led by their revenue is describing scale rather than earnings.**

12.1 Project cost & means of finance

Capital requirement	₹
Assembly lines, ageing racks & TEST EQUIPMENT (incl. INTEGRATING SPHERE & LM-80 rig)	3,80,00,000

Working capital (component cycle, channel receivables)	1,92,00,000
Launch & initial operating losses (the utilisation gap)	1,28,00,000
Plant fit-out, ESD, power & facility	88,00,000
Tooling, moulds & fixture development	74,00,000
Channel build, market entry & brand	52,00,000
BIS REGISTRATION, certification & test-report programme	26,00,000
Technology (MES, lot traceability, warranty register)	14,00,000
Deposits, insurance, legal & registrations	6,00,000
Total project cost	9,60,00,000
Promoter contribution	3,20,00,000
Term loan (lines, test equipment, tooling, fit-out)	4,20,00,000
Working-capital facility (component cycle, channel credit)	1,80,00,000
Investor / angel contribution	40,00,000

12.2 Projected Profit & Loss (3 years)

Particulars	Year 1	Year 2	Year 3
LED lamps & bulbs (commodity — trade & retail)	9,84,00,000	16,42,00,000	23,86,00,000
Battens, downlights & panel lights	6,72,00,000	11,58,00,000	17,44,00,000
Commercial & industrial luminaires (specified product)	4,18,00,000	7,84,00,000	12,96,00,000
Street & outdoor lighting (TENDERS — warranty tail priced in)	1,32,00,000	2,26,00,000	3,28,00,000
Contract manufacturing for brands	34,00,000	50,00,000	66,00,000
TOTAL REVENUE	22,40,00,000	38,60,00,000	58,20,00,000
Components & materials (LED, DRIVER, housing, optics)	13,80,00,000	22,96,00,000	34,02,00,000
Direct labour (assembly, EMPLOYED, shift-based)	2,18,00,000	3,48,00,000	5,12,00,000
Sales, distribution & channel	1,20,00,000	1,96,00,000	2,92,00,000
Depreciation (lines, test equipment, tooling, fit-out)	1,28,00,000	1,48,00,000	1,76,00,000
Power & utilities	68,00,000	1,12,00,000	1,62,00,000
WARRANTY PROVISION (2-5 year lamp & tender warranties)	58,00,000	96,00,000	1,48,00,000
Quality, PHOTOMETRIC TEST LAB & BIS certification	54,00,000	88,00,000	1,28,00,000

Marketing & brand	52,00,000	76,00,000	1,02,00,000
Finance cost	62,00,000	78,00,000	84,00,000
Plant rent & facility	46,00,000	56,00,000	76,00,000
Head-office salaries · supervisors & production planning	38,00,000 · 32,00,000	56,00,000 · 52,00,000	82,00,000 · 76,00,000
R&D, DRIVER DESIGN & product development	28,00,000	46,00,000	68,00,000
Logistics & freight · technology (MES, traceability)	30,00,000 · 16,00,000	46,00,000 · 26,00,000	68,00,000 · 38,00,000
Scrap & rework · insurance, legal & audit · training & safety	12,00,000 · 12,00,000 · 10,00,000	20,00,000 · 18,00,000 · 16,00,000	28,00,000 · 24,00,000 · 22,00,000
Total expenses	23,64,00,000	37,74,00,000	54,88,00,000
Net profit / (loss) before tax	(1,24,00,000)	86,00,000	3,32,00,000
Net margin	(5.5%)	2.2%	5.7%
AVERAGE CAPITAL EMPLOYED / RETURN ON CAPITAL EMPLOYED	₹9.20cr / (13.5%)	₹10.40cr / 8.3%	₹12.60cr / 26.3%
LUMENS MEASURED IN-HOUSE & PUBLISHED / average declared-vs-measured overstatement	0% / 18.4%	84% / 4.1%	100% / NIL
LIFETIME BASIS STATED PER SKU / SKUs on our own LM-80 data	0% / 0 of 62	91% / 14 of 74	100% / 31 of 88
DRIVER LIFE STATED SEPARATELY & WARRANTED AT THE LOWER / driver-attributed returns	0% / 78%	88% / 69%	100% / 61%
FIELD FAILURE AT 12 MONTHS (per 10,000) / BIS-registered SKUs / stated cost	412 / 71% / n.a.	214 / 94% / ₹22,00,000	96 / 100% / ₹34,00,000
TENDER WARRANTY PRICED INTO THE BID / tenders declined on the tail / warranty book age	0% / 0 / 0.6 yr	100% / 6 / 1.7 yr	100% / 14 / 2.7 yr
Line utilisation · contribution (lamps vs luminaires) · median operator tenure	41% · 16% vs 34% · 12.4 mo	62% · 18% vs 36% · 16.6 mo	78% · 19% vs 38% · 19.8 mo

12.3 Unit economics & break-even

- **The mix is the business and the revenue line disguises it. Commodity lamps are 41% of revenue at 19% contribution; luminaires are 22% of revenue at 38%. Lamps fill lines, hold channel shelf space and earn very little; luminaires are sold to somebody who reads a specification, which is precisely why they can be sold honestly.**
- **The Year-1 loss is the utilisation gap, as in every manufacturing plan in this library. Lines and test equipment depreciate at ₹1.28 crore whether they run at 41% or 78%, and the path from a 5.5% loss to a 5.7% profit is line-hours sold and mix improved.**
- **The honesty positions cost about ₹1.62 crore a year by Year 3 — the test laboratory at ₹1.28 crore and BIS registration at ₹34 lakh — against a ₹3.32 crore profit. Roughly half of profit is spent proving numbers a competitor simply prints.**

- The warranty book is the deferred cost this industry hides. ₹1.48 crore provisioned at a book age of 2.7 years, on 2-5 year warranties — and a manufacturer not carrying it reports materially more profit while accumulating an obligation that matures after his third-year accounts.
- Break-even: Year 2, thinly, at 62% utilisation. ROCE of 26.3% on a 5.7% margin reflects reasonable asset turnover; it sits above the EMS plan's 21.6% and well below this vertical's asset-light businesses, which is the expected shape.

12.4 Projected Cash Flow — Year 1 (quarterly, illustrative)

Particulars (₹)	Q1	Q2	Q3 (festival)	Q4
Opening balance	1,80,00,000	1,38,00,000	1,06,00,000	78,00,000
Collections (trade on credit, projects in stages, tenders on milestones)	4,86,00,000	5,12,00,000	5,38,00,000	5,66,00,000
Components, wages, power, channel, interest & overheads	5,28,00,000	5,44,00,000	5,66,00,000	5,98,00,000
Closing balance	1,38,00,000	1,06,00,000	78,00,000	46,00,000

The cash problem in lighting manufacture is channel credit, and it is structurally worse than it looks because the trade is where the volume is and the trade is where the credit is demanded. Distributors and dealers expect thirty to sixty days, project business bills in stages against site progress, and tenders pay on milestones after inspection — while components, particularly imported LED packages and driver ICs, are frequently bought against advance or short credit. The result is a business that funds its channel out of its own facility at a 19% contribution on the commodity half of the book, and every rupee of lamp volume growth widens the gap rather than closing it. An operator chasing trade volume to fill lines discovers that utilisation and liquidity move in opposite directions. Three disciplines apply. Channel credit is capped by distributor and priced into the discount structure rather than granted informally, since a distributor's outstanding is a loan the manufacturer never underwrote. The luminaire and project mix is pursued partly for cash: specified work bills in stages against progress rather than sitting on a dealer's shelf for a season. And the facility is sized against the component cycle plus channel outstanding together — ₹1.80 crore against ₹22.40 crore of Year-1 revenue — because sizing it on either alone understates the requirement by roughly half.

12.5 Key Performance Indicators to Monitor

- **Claim integrity:** lumens measured in-house and published; declared-versus-measured overstatement (must reach nil); lifetime basis stated per SKU; SKUs on own LM-80 data.
- **The driver:** driver rated life stated separately; lamp warranted at the lower of the two; driver-attributed share of returns (which should not fall to zero); capacitor grade and temperature named in specification.
- **Field truth:** field failure at 12 and 24 months in service per 10,000; returns analysed rather than replaced; failure mode by SKU family and driver batch.
- **Compliance:** BIS-registered SKU share and stated cost; Legal Metrology declaration accuracy; EPR collection against obligation.
- **Warranty:** provision carried against actual claims; warranty book AGE; tender warranty priced into bids; tenders declined on the tail.
- **Capacity & mix:** line utilisation; contribution per line-hour; luminaire and project share of revenue; commodity lamp share of line-hours.
- **Cash:** channel outstanding by distributor; component advance exposure; project and tender milestone collection.

13. Funding Requirement & Bankability

Total ask: ₹4.20 crore term loan plus a ₹1.80 crore working-capital facility against ₹3.20 crore promoter contribution and ₹40 lakh of investor money. Four points. **First, a material part of the term loan buys a test laboratory rather than production capacity, and a lender should understand why: the integrating sphere and LM-80 rig produce no lamps, and they are the entire basis on which this manufacturer can make a claim a competitor cannot match. Second, the diagnostic is field failure at twelve months, not first-pass yield. A lamp that leaves the line working tells you almost nothing — the whole industry ships working lamps — and 412 falling to 96 per 10,000 is the only externally generated evidence of quality this business produces. Third, examine the warranty book and its age. A manufacturer selling five-year warranties in his second year has issued obligations that mature after the accounts a lender is reading, and one who is not provisioning is reporting a liability as profit — ₹1.48 crore carried here against ₹3.32 crore of earnings. Fourth, ask how many tenders were declined. Street-lighting work fills lines attractively and carries a five-to-seven-year replacement obligation that most bidders price at zero; fourteen declines in Year 3 is evidence that the tail is being priced, and a manufacturer who has never declined a tender is not pricing it.**

13.1 Funding utilisation

Use of funds	₹	% of total
Assembly lines, ageing racks & test equipment (sphere, LM-80 rig)	3,80,00,000	39.6%
Working capital (component cycle, channel receivables)	1,92,00,000	20.0%
Launch & initial operating losses (the utilisation gap)	1,28,00,000	13.3%
Plant fit-out, ESD, power & facility	88,00,000	9.2%
Tooling, moulds & fixture development	74,00,000	7.7%
Channel build, market entry & brand	52,00,000	5.4%
BIS registration, certification & test-report programme	26,00,000	2.7%
Technology (MES, lot traceability, warranty register)	14,00,000	1.5%
Deposits, insurance, legal & registrations	6,00,000	0.6%
Total	9,60,00,000	100%

14. Risk Analysis & Mitigation

Risk	Mitigation
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☐ THE LUMEN AND THE LIFETIME — A CLAIM THAT CANNOT BE FALSIFIED WITHIN THE WARRANTY PERIOD	AN LED LAMP IS SOLD ON THREE NUMBERS — WATTAGE EQUIVALENCE, LUMEN OUTPUT AND "25,000 HOURS" — AND NOT ONE CAN BE CHECKED BY THE BUYER. LUMENS NEED AN INTEGRATING SPHERE SHE DOES NOT HAVE; LIFETIME NEEDS LM-80 MEASUREMENT OVER 6,000 HOURS AND TM-21 EXTRAPOLATION, WHICH MEANS THE LIFETIME CLAIM CANNOT BE TESTED WITHIN THE PRODUCT'S OWN WARRANTY PERIOD AND IS UNFALSIFIABLE BY DESIGN. THIS IS THE WATER-PURIFIER TDS FINDING IN ITS PUREST FORM: A SPECIFICATION THAT LOOKS LIKE EVIDENCE, IS UNIVERSALLY QUOTED, AND CANNOT BE DISPROVED BY ANYONE THE CLAIM IS MADE TO — AND NOBODY SELLING A LAMP IN 2026 KNOWS WHETHER IT WILL RUN 25,000 HOURS, SINCE THAT IS NEARLY THREE YEARS OF CONTINUOUS OPERATION AND THE PRODUCT WILL BE SUPERSEDED TWICE BEFORE ANYONE FINDS OUT → MEASURE AND PUBLISH: LUMEN OUTPUT TESTED IN OUR OWN INTEGRATING SPHERE WITH THE REPORT, THE LABORATORY AND THE DATE ATTACHED TO THE SKU (0%→100%), TAKING AVERAGE DECLARED-VERSUS-MEASURED OVERSTATEMENT FROM 18.4% TO NIL; AND STATE THE LIFETIME BASIS — MEASURED, LM-80 EXTRAPOLATED, OR THE CHIP MAKER'S FIGURE REPEATED — PER SKU RATHER THAN AS A CORPORATE CLAIM, BECAUSE A COMPANY RUNNING LM-80 ON THREE FAMILIES AND REPEATING CHIP DATA ON EIGHTY-FIVE MUST NOT BE ABLE TO DESCRIBE ITSELF AS AN LM-80 MANUFACTURER; own LM-80 data built family by family with THE COUNT PUBLISHED RATHER THAN THE ASPIRATION (0→31 of 88); and THE LED'S RATED LIFE NEVER PRESENTED AS THE LAMP'S, SINCE THE DIE IS THE ONE COMPONENT THAT PROBABLY WILL LAST AND QUOTING ITS NUMBER FOR THE ASSEMBLY IS HOW THE WHOLE INDUSTRY ARRIVES AT A FIGURE IT CANNOT SUPPORT
☐ THE ₹9 CAPACITOR — THE PRODUCT FAILS AT ITS WEAKEST COMPONENT AND THE CLAIM IS MADE FOR ITS STRONGEST	THE LED DIE GENUINELY MAY RUN 25,000 HOURS. THE DRIVER USUALLY DOES NOT — AND A "25,000-HOUR" LAMP DIES AT FOURTEEN MONTHS BECAUSE OF AN ELECTROLYTIC CAPACITOR COSTING NINE RUPEES, SELECTED INVISIBLY IN A BILL OF MATERIALS NOBODY OUTSIDE THE FACTORY EVER SEES. DRIVER-ATTRIBUTED FAILURES ARE 78% OF WARRANTY RETURNS, AND THE COST SAVING FROM A LOWER-GRADE CAPACITOR IS REAL, IMMEDIATE AND COMPLETELY UNDETECTABLE AT PURCHASE → THE DRIVER'S RATED LIFE STATED SEPARATELY FROM THE LED'S AND THE LAMP WARRANTED AT THE LOWER OF THE TWO (0%→100%); CAPACITOR GRADE AND TEMPERATURE RATING NAMED IN THE PUBLISHED SPECIFICATION rather than delegated to a driver supplier; DRIVER DESIGN CARRIED IN-HOUSE as an R&D function rather than bought on price; and DRIVER-ATTRIBUTED RETURNS PUBLISHED AND FALLING TO 61% BUT NEVER TO ZERO, BECAUSE THE DRIVER REMAINS THE WEAKEST ELEMENT AND A MANUFACTURER REPORTING OTHERWISE HAS STOPPED ANALYSING RETURNS. GENERALISES ACROSS THE LIBRARY: WHEREVER A PRODUCT'S HEADLINE CLAIM DESCRIBES ONE COMPONENT AND ITS FAILURE MODE LIVES IN ANOTHER, STATE BOTH AND WARRANT THE WEAKER
☐ THE HONEST NUMBER LOOKS WORSE ON THE SHELF	A MEASURED 806-LUMEN LAMP SITS BESIDE A DECLARED 1,000-LUMEN LAMP OF THE SAME WATTAGE FROM AN UNREGISTERED ASSEMBLER, AT A LOWER PRICE. THE SECOND LAMP IS NOT BETTER; IT IS A SMALLER NUMBER PRINTED LARGER — AND THERE IS NO MECHANISM AT THE POINT OF SALE BY WHICH THE CUSTOMER CAN DISCOVER THAT. THE HONEST MANUFACTURER IS PUNISHED PRECISELY IN PROPORTION TO HIS HONESTY, WHICH IS THE SHARPEST VERSION IN THIS LIBRARY OF A MARKET WHERE ACCURATE DISCLOSURE IS A COMPETITIVE DISADVANTAGE → PUBLISH THE MEASUREMENT RATHER THAN THE CLAIM — report, laboratory and date — BECAUSE A COMPETITOR CAN PRINT A BIGGER NUMBER BUT CANNOT PRODUCE A SPHERE TRACE, AND THE ASYMMETRY BECOMES VISIBLE THE MOMENT ANYBODY ASKS FOR EVIDENCE; migrate deliberately toward SEGMENTS THAT READ — consultants, facility managers, institutional buyers and technically evaluated tenders — with luminaires at 22% of revenue and 38% contribution; and COMPETE IN THE COMMODITY SEGMENT ON THE TWELVE-MONTH FIELD FAILURE RATE RATHER THAN ON THE CARTON, BECAUSE A TRADE DISTRIBUTOR WHO HAS HANDLED 412 RETURNS PER 10,000 FROM ONE SUPPLIER AND 96 FROM ANOTHER HAS THE ONLY COMPARISON THIS MARKET EVER ACTUALLY GENERATES

□ THE TENDER THAT SELECTS FOR THE BIDDER LEAST ABLE TO HONOUR IT	STREET-LIGHTING TENDERS ARRIVE IN VOLUME, FILL CAPACITY, CARRY A PUBLIC COUNTERPARTY AND ARE AWARDED ON LOWEST PRICE — WHILE OBLIGING THE SUPPLIER TO REPLACE FAILED FIXTURES FOR FIVE TO SEVEN YEARS, ON POLES, ACROSS A CITY, AT HIS OWN COST. A BIDDER PRICING THAT HONESTLY ADDS MATERIALLY TO HIS NUMBER AND LOSES; A BIDDER PRICING IT AT ZERO WINS AND IS OFTEN RIGHT TO, BECAUSE THE ENTITY THAT MUST HONOUR IT IN YEAR SIX MAY NOT EXIST — THIS INDUSTRY'S MORTALITY IS HIGH AND THE WARRANTY FOLLOWS THE COMPANY RATHER THAN THE PRODUCT. THE TENDER THEREFORE SELECTS, STRUCTURALLY, FOR THE BIDDER LEAST ABLE TO HONOUR IT → the warranty tail COSTED INTO EVERY BID AS A PROVISIONED LIABILITY rather than treated as a contingency (0%→100%), WHICH IS WHY TENDER REVENUE STAYS A DELIBERATE 5.6% OF THE BOOK RATHER THAN THE 20% THIS CAPACITY COULD ABSORB; BIDS DECLINED WHERE THE TAIL CANNOT BE PRICED AND THE COUNT REPORTED (0→14), SINCE A MANUFACTURER WHO NEVER DECLINES A TENDER IS NOT PRICING THE WARRANTY; and won tenders TRACKED BY INSTALLED LOCATION AND BATCH, BECAUSE A WARRANTY OBLIGATION THE SUPPLIER CANNOT LOCATE IS ONE HE WILL MEET BY ARGUMENT RATHER THAN BY REPLACEMENT
□ BIS REGISTRATION IS MARKET ACCESS, NOT PAPERWORK	COMPULSORY REGISTRATION UNDER THE CRO COVERS LED LAMPS, LUMINAIRES AND CONTROL GEAR; MANUFACTURE OR SALE OF UNREGISTERED PRODUCT IS AN OFFENCE, REGISTRATION IS PER MODEL AND PER FACTORY — AND THE INDIAN MARKET NONETHELESS CARRIES VERY LARGE VOLUMES OF UNREGISTERED LAMPS THROUGH TRADE CHANNELS WHERE NOBODY CHECKS, WHICH MEANS THE COMPLIANT MANUFACTURER CARRIES A COST HIS PRINCIPAL COMPETITORS DO NOT. AND IS 16102 SETS PHOTOMETRIC DECLARATION REQUIREMENTS, SO AN OVERSTATED LUMEN FIGURE IS A STANDARDS QUESTION RATHER THAN MERELY A MARKETING ONE → 100% OF SKUs REGISTERED PER MODEL AND PER FACTORY with the cost STATED (₹34L a year) rather than absorbed; declarations aligned to LEGAL METROLOGY, since wattage, lumens, colour temperature and lifetime ON A CARTON ARE DECLARED QUANTITIES AND NOT ADVERTISING COPY; and registration status verified per SKU at launch rather than assumed from a prior model
□ A FIVE-YEAR WARRANTY FROM A THREE-YEAR-OLD COMPANY	THE PEST-CONTROL PATTERN, IN A CATEGORY WHERE IT IS UNIVERSAL: 2-5 YEAR LAMP WARRANTIES AND 5-7 YEAR TENDER OBLIGATIONS ARE WRITTEN BY MANUFACTURERS WHOSE MEDIAN LIFE IS SHORTER, TO BUYERS WHO CANNOT PRICE THAT RISK — AND THE OBLIGATION MATURES AFTER THE ACCOUNTS ANY LENDER OR BUYER IS CURRENTLY READING. A MANUFACTURER NOT PROVISIONING REPORTS MATERIALLY MORE PROFIT WHILE ACCUMULATING A LIABILITY THAT IS INVISIBLE UNTIL IT IS DUE → warranty PROVISIONED (₹58L→₹1.48cr) against a ₹3.32cr Y3 profit; THE WARRANTY BOOK'S AGE REPORTED (0.6→2.7 YEARS), BECAUSE A YOUNG BOOK CONCEALS ITS OWN LIABILITY AND A THREE-YEAR-OLD MANUFACTURER HAS NOT YET MET HIS FIRST REAL CLAIM YEAR; provision tested against ACTUAL claims annually rather than set once; and the warranty term set to WHAT THE DRIVER SUPPORTS rather than to what the market advertises
Utilisation, mix and the channel that eats the cash	LINES AND TEST EQUIPMENT DEPRECIATE AT ₹1.28cr WHETHER THEY RUN AT 41% OR 78%, SO THE YEAR-1 LOSS IS THE UTILISATION GAP — AND THE OBVIOUS FIX, COMMODITY LAMP VOLUME, IS THE WORST ONE: LAMPS CONTRIBUTE 19% AGAINST LUMINAIRES AT 38%, AND THE TRADE THAT BUYS THEM DEMANDS 30-60 DAYS WHILE IMPORTED LED PACKAGES AND DRIVER ICs ARE BOUGHT AGAINST ADVANCE OR SHORT CREDIT. AN OPERATOR CHASING TRADE VOLUME TO FILL LINES DISCOVERS THAT UTILISATION AND LIQUIDITY MOVE IN OPPOSITE DIRECTIONS → contribution per line-hour governs acceptance; the LUMINAIRE AND PROJECT MIX pursued for margin AND for cash, since specified work bills in stages against progress rather than sitting on a dealer's shelf for a season; CHANNEL CREDIT CAPPED BY DISTRIBUTOR AND PRICED INTO THE DISCOUNT STRUCTURE, SINCE A DISTRIBUTOR'S OUTSTANDING IS A LOAN THE MANUFACTURER NEVER UNDERWROTE; and the facility sized against THE COMPONENT CYCLE PLUS CHANNEL OUTSTANDING TOGETHER, BECAUSE SIZING IT ON EITHER ALONE UNDERSTATES THE REQUIREMENT BY ROUGHLY HALF

Vertical-inherited (see the electronics-retail-store anchor & the EMS plan)	THE MARGIN ON COMMODITY PRODUCT IS SET BY SOMEBODY ELSE → here by the LED package market and trade price expectations; the response is to earn on what is added — driver design, optics, photometric evidence and luminaire engineering — rather than on assembly. ELECTRONICS DEPRECIATES WHILE IT SITS → LED packages and finished-lamp inventory aged and provisioned, since chip prices fall continuously and a season-old lamp is worth less than its BOM implies. REPORT ROCE BESIDE NET MARGIN → 5.7% net at 26.3% ROCE. From the EMS plan: A BLOCK IS NOT A POLICY → driver-component substitution requires engineering sign-off against the stated specification and cannot be authorised by procurement; REPORT REQUESTS ALONGSIDE APPROVALS; AN INSPECTION REGIME FINDING NOTHING IS NOT INSPECTING. Compliance: E-WASTE AND EPR ON LAMPS AS A COVERED CATEGORY, widely ignored in this trade; RoHS-equivalent limits on incoming components; Factories Act solder-fume exposure; hazardous-waste routing of scrap drivers; EPF/ESI and POSH, WITH EMPLOYMENT ALSO A TRACEABILITY REQUIREMENT SINCE DRIVER-BATCH-TO-LAMP-SERIAL RECORDS CANNOT SURVIVE ROTATING CONTRACT LABOUR
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15. SWOT Analysis

Strengths Lumens measured in-house and published with the test report — a competitor can print a bigger number but cannot produce a sphere trace; the lifetime basis stated per SKU and the LED's life never quoted as the lamp's; driver life stated separately with the lamp warranted at the lower; capacitor grade named; field failure at 12 months published and falling to 96 per 10,000; 100% BIS registration; tender warranty priced and 14 bids declined.	Weaknesses Honest numbers that look worse on the shelf than invented ones, at a higher price; ₹1.62 crore a year spent proving numbers a competitor simply prints; 41% of revenue in commodity lamps at 19% contribution; channel credit funding distributors out of the facility; a warranty book maturing after the current accounts; utilisation-driven economics.
Opportunities Replacement demand driven by product failure, which rewards a manufacturer whose products do not fail; commercial and industrial luminaires specified by consultants who read photometric files; municipal and institutional programmes with technical evaluation; contract manufacture for brands wanting registered, tested product; and a trade channel that eventually notices return rates.	Threats A large unorganised sector selling unregistered lamps on invented specifications at lower prices; national brands with scale, channel depth and their own laboratories; LED package and driver IC price and supply volatility straight through 58% of cost; tender awards to bidders pricing the warranty tail at zero; imported finished lamps; and a single field-failure episode in a tendered street-lighting population.

16. Recommended AiSevak Tools for This Business

This manufacturer would use AiSevak's Electronics vertical tools in operations:

- **Claim integrity: photometric test-report capture per SKU with laboratory and date published to the data sheet and carton, declared-versus-measured variance tracking, and a lifetime-basis field (measured / LM-80 extrapolated / chip figure) mandatory on every SKU release.**
- **Driver governance: driver specification register with capacitor grade and temperature rating as mandatory fields, driver rated life recorded separately from LED life, warranty term auto-set to the lower of the two.**
- **Field truth: returns analysis workflow routed to quality rather than sales, failure-mode attribution by SKU family and driver batch, field failure at 12 and 24 months per 10,000 published.**

- **Compliance:** BIS registration register per model and factory with launch-gate verification, Legal Metrology declaration checks, EPR collection tracking against obligation.
- **Warranty & tender:** warranty provision against actual claims with book-age reporting, tender warranty-tail costing model, declined-tender register.
- **Capacity & cash:** line utilisation and contribution per line-hour, luminaire versus commodity mix, channel outstanding by distributor, component advance exposure.

17. Key Assumptions & Notes

- LED-lighting manufacturing: plant producing LED lamps, battens, downlights and panel lights alongside commercial and industrial luminaires, selling through trade channels, institutional accounts and street-lighting tenders, with an in-house photometric and reliability laboratory and lot-level traceability from driver batch to lamp serial. **Fourth plan in the electronics vertical (44) and its second manufacturing plan, carrying UTILISATION x CONTRIBUTION. The electronics-retail-store anchor's conventions and the EMS plan's manufacturing conventions are INHERITED AND CROSS-REFERENCED rather than re-derived.**
- **△ CONVENTIONS SET HERE: (a) □ A CLAIM THAT CANNOT BE FALSIFIED WITHIN THE WARRANTY PERIOD IS MARKETING UNLESS THE OPERATOR PUBLISHES THE MEASUREMENT BEHIND IT. Lifetime needs LM-80 over 6,000 hours and TM-21 extrapolation, so "25,000 HOURS" IS UNFALSIFIABLE BY DESIGN — the water-purifier TDS finding in its purest form. THE CLAIM ITSELF CANNOT BE MADE HONEST; ONLY ITS PROVENANCE CAN. (b) □ STATE THE BASIS, NOT JUST THE NUMBER — measured, extrapolated, or repeated from a supplier — AND STATE IT PER SKU RATHER THAN AS A CORPORATE CLAIM, BECAUSE A COMPANY RUNNING LM-80 ON THREE FAMILIES AND REPEATING CHIP DATA ON EIGHTY-FIVE MUST NOT BE ABLE TO CALL ITSELF AN LM-80 MANUFACTURER. (c) □ THE PRODUCT FAILS AT ITS WEAKEST COMPONENT AND THE CLAIM IS MADE FOR ITS STRONGEST — the LED die may last 25,000 hours and the ₹9 electrolytic capacitor in the driver does not. GENERALISES LIBRARY-WIDE: WHEREVER A HEADLINE CLAIM DESCRIBES ONE COMPONENT AND THE FAILURE MODE LIVES IN ANOTHER, STATE BOTH AND WARRANT THE WEAKER. (d) □ PUBLISH THE FAILURE ATTRIBUTION AND EXPECT IT NOT TO REACH ZERO — driver-attributed returns fall 78%→61%, AND A MANUFACTURER REPORTING OTHERWISE HAS STOPPED ANALYSING RETURNS. (e) □ WHERE ACCURATE DISCLOSURE IS A COMPETITIVE DISADVANTAGE, PUBLISH THE MEASUREMENT RATHER THAN ARGUE THE CLAIM — a competitor can print a bigger number BUT CANNOT PRODUCE A SPHERE TRACE. (f) □ COMPETE ON THE FIELD FAILURE RATE WHERE THE SPEC CANNOT BE CHECKED — the distributor's return experience IS THE ONLY COMPARISON THE MARKET EVER GENERATES. (g) □ A TENDER AWARDED ON LOWEST PRICE WITH A LONG WARRANTY TAIL SELECTS, STRUCTURALLY, FOR THE BIDDER LEAST ABLE TO HONOUR IT — price the tail, DECLINE WHERE IT CANNOT BE PRICED, AND REPORT THE DECLINES, SINCE A MANUFACTURER WHO NEVER DECLINES A TENDER IS NOT PRICING THE WARRANTY. (h) □ REPORT THE WARRANTY BOOK'S AGE — a young book conceals its own liability.**
- Economics & cash — **THE MIX IS THE BUSINESS AND THE REVENUE LINE DISGUISES IT: COMMODITY LAMPS ARE 41% OF REVENUE AT 19% CONTRIBUTION WHILE LUMINAIRES ARE 22% OF REVENUE AT 38% — LAMPS FILL LINES, HOLD CHANNEL SHELF SPACE AND EARN VERY LITTLE, WHILE LUMINAIRES ARE SOLD TO SOMEBODY WHO READS A SPECIFICATION, WHICH IS PRECISELY WHY THEY CAN BE SOLD HONESTLY (Y1 —₹1.24cr → Y2 +₹86L → Y3 +₹3.32cr; revenue ₹22.40cr→₹58.20cr; line utilisation 41%→78% AND THE YEAR-1 LOSS IS THAT GAP; lumens measured and published 0%→100% with overstatement 18.4%→NIL; lifetime basis stated 0%→100% and own LM-80 data 0→31 of 88 SKUs; driver life stated separately and lamp warranted at the lower 0%→100% with driver-attributed returns 78%→61%; FIELD FAILURE AT 12 MONTHS 412→96 PER 10,000; BIS-registered SKUs 71%→100% at ₹34L a year; tender warranty priced into bids 0%→100% with 14 DECLINED; warranty provision**

₹58L→₹1.48cr at a book age of 0.6→2.7 years; operator tenure 12.4→19.8 months; ROCE (13.5%)→26.3%; **BREAK-EVEN YEAR 2 AT 62% UTILISATION; THE HONESTY POSITIONS COST ~₹1.62cr A YEAR — THE TEST LAB AT ₹1.28cr AND BIS AT ₹34L — AGAINST A ₹3.32cr PROFIT, SO ROUGHLY HALF OF PROFIT IS SPENT PROVING NUMBERS A COMPETITOR SIMPLY PRINTS; AND CHANNEL CREDIT IS THE CASH TRAP — THE TRADE DEMANDS 30-60 DAYS WHILE IMPORTED LED PACKAGES AND DRIVER ICs ARE BOUGHT AGAINST ADVANCE, SO AN OPERATOR CHASING TRADE VOLUME TO FILL LINES DISCOVERS THAT UTILISATION AND LIQUIDITY MOVE IN OPPOSITE DIRECTIONS**). Regulatory (section 9): **BIS COMPULSORY REGISTRATION PER MODEL AND PER FACTORY, WITH MANUFACTURE OR SALE OF UNREGISTERED PRODUCT AN OFFENCE AND THE MARKET NONETHELESS FULL OF IT**; IS 16102 / IS 16103 / IS 10322 SETTING PHOTOMETRIC DECLARATION REQUIREMENTS, **SO AN OVERSTATED LUMEN FIGURE IS A STANDARDS QUESTION RATHER THAN MERELY A MARKETING ONE**, LEGAL METROLOGY, SINCE WATTAGE, LUMENS, COLOUR TEMPERATURE AND LIFETIME ON A CARTON ARE DECLARED QUANTITIES; consumer protection on performance and warranty representations; E-WASTE AND EPR ON LAMPS AS A COVERED CATEGORY; RoHS-equivalent limits; Factories Act solder-fume exposure; GST; EPF/ESI and POSH. Lender note (section 13): **A MATERIAL PART OF THE TERM LOAN BUYS A TEST LABORATORY RATHER THAN PRODUCTION CAPACITY, AND THAT IS THE POINT — THE SPHERE AND LM-80 RIG PRODUCE NO LAMPS AND ARE THE ENTIRE BASIS OF A CLAIM COMPETITORS CANNOT MATCH; THE DIAGNOSTIC IS FIELD FAILURE AT TWELVE MONTHS, NOT FIRST-PASS YIELD — THE WHOLE INDUSTRY SHIPS WORKING LAMPS; EXAMINE THE WARRANTY BOOK AND ITS AGE, SINCE OBLIGATIONS MATURE AFTER THE ACCOUNTS BEING READ**; and **ASK HOW MANY TENDERS WERE DECLINED, BECAUSE A MANUFACTURER WHO HAS NEVER DECLINED ONE IS NOT PRICING THE TAIL**. ₹9.60cr; utilisation 41%→78%; revenue ₹22.40→58.20cr; 194→494 staff; ROCE (13.5%)→26.3%. Figures illustrative, exclude GST.

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