

Su-Kam Case Study: Category Creation 1988–2019

Category creation, indigenous R&D, and global scale in Indian hardware — with discussion questions

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Teaching case · Prepared for classroom use from primary essays on kunwersachdev.com · Protagonist: Kunwer Sachdev, Founder & MD (1988–2019) · Audience: B-school faculty, strategy & operations researchers, hardware founders

How an unorganised Indian power-backup trade became a branded hardware category — MOSFET and DSP sine-wave products, a GE Plastics casing, plants in Gurugram and Baddi, and an export map into 90+ countries — before CIRP in 2018 treated 77 granted patents as a file rather than a programme.

How to use this case. Assign Sections 1–4 to students. Keep Section 5 (discussion questions) for class. The instructor block at the end is optional. This is not a complete patent docket: six Indian grants that match the public table on [the Innovation Archive](#) illustrate a 77-patent going concern. Do not treat the table as the portfolio. Kunwer Sachdev exited Su-Kam in 2019 and is not current management.

1. Executive Summary & Industry Baseline

In 1998 Kunwer Sachdev shut a profitable Delhi cable-TV business and put ₹10,000 and a soldering iron into power backup. He had named the firm years earlier; the inverter company was Su-Kam Power Systems. The founding capital and the decision to leave cable are on the record in [the founding essay](#) and in the [India Today profile of 18 December 2017](#).

The market he entered was not “energy storage” as a slide. It was an unorganised Indian trade. Local assemblers sold metal boxes that failed in humidity, voltage swing, and theft-prone neighbourhoods. Square-wave and modified-sine units were cheaper to build than grid-quality sine wave; they hummed in fans and stressed appliances. Wiring and components were often substandard. There was no national brand a household could point to the way it could point to a refrigerator. Sachdev’s published account of those years is that he spent nights in high theft-of-power areas to understand why inverters died — then forced a cleanup by competing on reliability rather than on a grey-market price.

The origin texture matters for a strategy class. Before inverters there was cable TV in Delhi — the same founder, the same Su-Kam name, a recognised local brand he later walked away from because household power cuts looked like the larger industry. That sequence is in the India Today feature and in [the cable-TV origin essay](#). Students should not treat 1998 as a first startup. It was a category switch by someone who already knew dealers, cash collection, and field failure. The “unorganised sector” baseline is therefore not ignorance of business. It is a hardware market that had not yet been forced to organise around a brand, a sine-wave spec, and a service promise.

Category creation, in this case, is not a slogan. Su-Kam taught Indian homes that backup power could be a named product — later a “Home UPS,” combining inverter and UPS functions — and taught dealers that a warranty was something you could stand behind. The rest of the industry adopted the language. That claim is in the India Today feature and in the first-person product essays on this site. It is the baseline against which later technology and export moves should be judged.

By the time banks filed at the National Company Law Tribunal in 2018, the same founder’s public numbers for the going concern were: about 5,000 people at organisational scale, shipments into 90 countries, 77 granted patents, and a running manufacturer generating about ₹600 crore. Those figures are published in [The Manufacturing Mirage, Part 1](#). This case stops the operating story in 2018, when Corporate Insolvency Resolution Process (CIRP) began and the founder’s operational role ended. It does not invent an NCLT case number, a jobs census, or a list of all 77 patent families.

An entrepreneur's spirit is not bound to a corporate name. This case is the Su-Kam years (1988–2019). The wreckage after 2018 is a different assignment — [The Manufacturing Mirage](#).

2. The Technological Inflection: MOSFET, DSP Sine Wave, and the Chic Plastic Inverter

Hardware category creation in India in the 2000s was not software-defined. It was device physics, magnetics, firmware on a 16-bit chip, and a casing that would not electrocute a child on a wet floor.

2.1 MOSFET and DSP sine wave

India Today's 2017 feature listed Su-Kam's technical markers as MOSFET switching, microcontroller-based control, and DSP sine-wave output, plus the Home UPS combination of UPS and inverter. The sine-wave move mattered because Indian appliances were designed for the grid's waveform. Cheap inverters used square or stepped waves because they were cheaper to manufacture. Sachdev's later technical writing on this site treats pure sine wave as the only defensible household output — not a marketing adjective.

Those choices compounded. A DSP-controlled online UPS with remote monitoring, an automatic failure-detection system for single-phase inverter/UPS, a heavy-duty three-phase inverter for telecom, and a high-frequency lead-acid charger are not a complete technology map. They are among six granted Indian patents tabled in Section 4 — rows that match [the Innovation Archive](#) — and they show the lab was already writing claims the rest of the industry would later ship as “smart UPS” and “hybrid” language. Two well-known 2007–2008 filings, an FPGA-based high-frequency three-phase inverter (906/DEL/2008) and a sine-wave line-interactive UPS with a bidirectional converter (2279/DEL/2007), remain **Pending** on that docket; this case does not teach them as grants. The MPPT solar charge controller (Indian Patent 292773, application 940/DEL/2008, filed 10 April 2008) is the solar hinge: the same founder later published it as India's first DSP-based high-voltage solar MPPT charge controller in [the MPPT essay](#).

2.2 Chic and GE Plastics

In 2003 Su-Kam launched **Chic**, the first plastic-body inverter in India (and, in the founder's account, among the first anywhere). The trigger was safety: a metal chassis in a home, rain, and a child. Ordinary plastic would melt at inverter temperatures. The published design response — in [the Chic essay](#) and in [the Su-Kam legacy essay](#) — was threefold: change the internal circuitry, add a temperature cut-off if the unit was boxed without ventilation, and partner with **GE Plastics** on an engineering-grade **PC-ABS** compound rated to about 120°C, little used in Indian consumer power electronics at the time.

India Today later named the plastic-body inverter an Innovation of the Decade. Customers, in the founder's telling, ran Chic units for the better part of twenty years. The follow-on design, the Fairy Queen locomotive-shaped inverter meant for bedrooms, failed commercially. Faculty should not skip that failure: category creation is a portfolio of bets, not a single SKU.

YourStory's 2015 profile independently records the GE Plastics conversation and the Chic award. This case treats those as corroboration of the primary essays, not as a second set of invented numbers.

3. The Global Footprint: 90+ Emerging Markets

Su-Kam's export claim, as published by the founder after 2017, is **90+ countries**, with particular weight in power-deficit grids in **Africa, the Middle East, and South-East Asia**. The India Today snapshot of December 2017 said **70 countries** — a magazine number at a point in time, not a contradiction to be “fixed.” This case uses 90+ as the later,

tighter public figure and 70 as the 2017 press figure. It does not invent regional revenue shares or African/Middle-East percentage tables; Part 1 of The Manufacturing Mirage explicitly refuses those tables.

What can be taught is the product-market fit. An inverter designed for Indian voltage collapse, brownouts, and dealer service is not the same SKU as a European grid-tie toy. Emerging-market utilities, dealers, and approvals were a moat. The founder's export memoir on this site records Su-Kam as the first Indian inverter company to earn the CE mark, and a founder who travelled to markets others treated as too hard. Distribution, in the memoir chapters, scaled from door-to-door selling toward hundreds of distributors and tens of thousands of dealers. This case does not treat those channel counts as a government census. They are the founder's operating picture of how hardware reaches a town that still has eight-hour cuts.



Dealer meeting — the channel that carried Home UPS and inverter SKUs into towns that still had long cuts. Not a government census of distributors.

Export here is not a diversification footnote. It is the same MOSFET/DSP stack meeting a different utility. A bidirectional sine-wave UPS filing and an FPGA three-phase inverter filing are the kinds of claims you file when you are already selling into three-phase workshops and clinics, not only into a Delhi bedroom — and both of those applications are still Pending on the public docket. Faculty should pair this section with the patent table in Section 4: the 2007–2008 Delhi grants (and the 2004 charger grant) sit in the same years the company was pushing beyond a single domestic SKU. Do not invent an Africa-versus-Gulf revenue split; the honest statement is the map (90+ countries; Africa, Middle East, South-East Asia named) without a percentage pie.

The 2018–2024 sequel — Chinese inverter brands Growatt, Sungrow, Solis, Huawei, and Goodwe moving from a negligible Indian presence to majority share, with trade press linked from the [Hybrid GTI essay](#) — is outside the 1988–2019 operating window, but it is the exam question after the case: what happens to an export map when CIRP removes the people who could still ship it?

4. Operational Scaling & Vertical Integration: Udyog Vihar and Himachal

Su-Kam was not a trading desk with a logo. Plants ran. The operational base published on this site is **Plot 54, Udyog Vihar Phase VI, Gurugram** — headquarters and the primary inverter plant — supported by a **battery manufacturing facility in Baddi, Himachal Pradesh**, staffed for in-house testing. Vertical integration from power electronics to batteries is the operations lesson: when you cannot trust a vendor's cycle life in Indian heat and deep discharge, you bring the chemistry inside. The Baddi tubular-gel work is told as a factory story on this site (find battery flaws in months, not years). Transformer vendors, casing shops, and PCB houses in the Gurugram–Baddi shed economy were the supplier book. This case will not invent a vendor census; it will say the ecosystem was real and Indian.



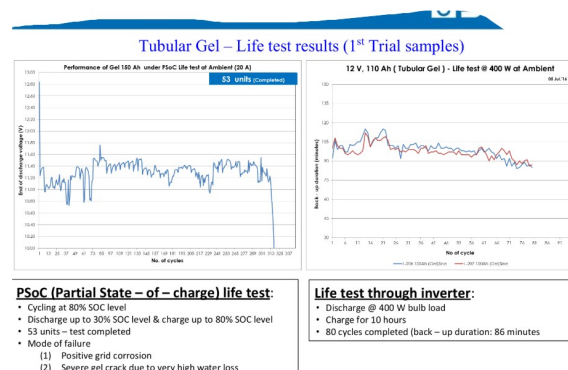
Inverter assembly — a living line, not a trading desk. CIRP is a legal calendar; this is the physical one.



In-house test lab (Katha) — cycle life and field failure were meant to be found in months, not years.



Battery plant floor — vertical integration from electronics to chemistry, not a bought-in kit with a logo.



Tubular-gel life-test record already in the quality file — the lab's job was to break samples before the field did.





People at a Su-Kam facility. This photograph is not a jobs census.

The India Today 2017 feature records 2006 investments from **Reliance Power** and **Temasek Holdings**, and honours including a Marico Foundation innovation award (2001–05). Those are magazine facts. They are not a valuation of the 2018 going concern. The going-concern number used in the later CIRP essays is about **₹600 crore** of generation when the filing came — a stressed manufacturer asking for time, not a sick unit with a zero order book, in the founder’s telling. Lead banker delay (IDBI, eight months) and a consortium fracture (SBI filing after one month of default) are in **Inside the CIRP**. This case does not relitigate commercial wisdom. It asks operations students to notice the clock mismatch: CIRP is a legal calendar; a factory is a physical one.

ISO fights, export crates, night shifts, and firmware revision control are the unglamorous texture of indigenous R&D. Part 1 of The Manufacturing Mirage describes two hundred-plus products in the going company — not a single hero inverter. A teaching case that only studies Chic will miss the operations problem: variant explosion, spare parts, dealer training, and a battery chemistry that had to survive Indian heat. The patent lag is part of that texture: India Today recorded a high-frequency lead-acid charger filed in 2004 and granted in 2017, by which time the technology had aged. Hardware IP in India is slow. That is a policy variable, not a founder personality trait.



Quality lab — Spectro Lab measurement on the line. ISO and incoming inspection were operations, not a slide.

4.1 Six verified grants (not the 77)

The national figure is **77 granted patents** in the going company. How they were filed is a **separate essay**. The table below is six Indian grants whose application numbers, filing dates, and grant numbers match **the 102-row Innovation Archive** (source: solarmanofindia.com/patents). Faculty must not present it as the portfolio. Patents did not vanish from a registry when CIRP began; the programme and the people did.

Title	Technology	Application	Filed	Grant	Status
Automatic Failure Detection System for Single Phase Inverter/UPS	Power Electronics	1743/DEL/2007	2007-08-16	274370	Granted
DSP Controlled Triple Conversion Online UPS with Remote Monitoring	Power Electronics	1785/DEL/2007	2007-08-21	284856	Granted
MPPT Based Solar Charge Controller	Solar Systems	940/DEL/2008	2008-04-10	292773	Granted
A Heavy-Duty Three Phase Inverter Particularly Used for an Application in the Telecom Industry	Power Electronics	2651/DEL/2007	2007-12-18	275276	Granted
Electro-Pneumatically Operable Core Stacking Machine	Mechanical & Chassis	2048/DEL/2008	2008-08-29	291664	Granted
A High Frequency Lead Acid Battery Charger	Energy Storage & BESS	2491/DEL/2004	2004-12-15	286639	Granted

Notice the mechanical grant (core stacking). Vertical integration is not only firmware. A plant that stacks transformer cores in-house is making a different make-or-buy choice than a brand that imports kits and applies stickers.

5. Pedagogical Takeaways & Discussion Questions

Takeaways

1. **Category creation in hardware is slow compounding.** MOSFET, sine wave, Home UPS, and a plastic chassis each removed a reason for the customer to stay with the grey market. None of them is a “blitzscale” story.
2. **Industrial design can be a safety technology.** Chic was PC-ABS and thermal cut-off, not a colour refresh. GE Plastics was a supply-chain partner, not a logo on a slide.
3. **Export of power electronics follows grid pain.** 90+ countries, with Africa and the Middle East in the founder’s map, is a product designed for deficit — then a dealer who can service it.
4. **Vertical integration is an information system.** Udyog Vihar electronics plus Baddi batteries shortened the feedback loop on field failures. CIRP later broke that loop; that is the sequel case.
5. **Patents are not a programme.** Six grants illustrate 77. Files remain on a register after people leave. Do not teach “IP auction” as the Su-Kam story; the published wreckage is R&D dispersal and a founder barred by Section 29A from bidding for the company he had built.

Discussion questions (student)

1. Was “Home UPS” a genuine new category or a rebrand of inverter-plus-charger? What evidence in the case would you demand in a board meeting?
2. Map the Chic decision on a design–risk matrix: child safety, melt risk, GE Plastics compound, temperature sensor, dealer training. Where does most of the value sit?
3. Why might a patent cluster (failure detection, DSP online UPS, telecom three-phase, MPPT, lead-acid charger, core-stacking machine) be a better signal of indigenous R&D than a single “hero” SKU? What do you do, as a case writer, with two 2007–2008 filings that are still Pending?
4. India Today (2017) said 70 export countries; later essays say 90+. How should a case writer handle two founder-consistent snapshots without inventing a regional mix?

5. Compare make-or-buy: transformer cores and batteries in Himachal versus importing Chinese kits. What breaks first under a 180-day CIRP freeze — the register of patents, or the shed economy in Gurugram and Baddi?
6. Section 29A made the founder ineligible to bid. If you were on the Committee of Creditors in 2018, what operating information would you have needed that a Resolution Professional's first morning could not supply?
7. After 2018, Chinese inverter brands took majority Indian share by 2024 (founder essays + linked trade press). Is that proof that Su-Kam would have held the market, or only proof that a going technology stack was taken off the field? Argue from the case, not from patriotism.

Sources (primary, on this site unless noted)

- Founding Su-Kam — ₹10,000
- Chic, Fairy Queen, GE Plastics / PC-ABS
- Udyog Vihar Plot 54; Baddi, Himachal; Chic × GE Plastics
- MPPT — Patent 292773 / 940/DEL/2008
- How 77 patents were filed
- Innovation Archive (102 IPO rows from solarmanofindia.com/patents; six teaching grants in Section 4 are a subset)
- India Today, 18 December 2017 (70-country snapshot; MOSFET / DSP / Home UPS; Reliance–Temasek 2006)
- Manufacturing Mirage, Part 1 (77 patents, 90 countries, CIRP sequel)
- Hybrid GTI (post-2018 Chinese brand shift; trade press)
- YourStory, August 2015 (GE Plastics; Chic)

Word count is a teaching-case length, not a magazine feature. Photographs are from the Su-Kam quality and factory record already on this site. The live patent table is [/innovation-archive/](#) — 102 public-docket rows, not 77 chemistries.