

A photograph of a person sitting at a desk in a control room or office. The person is seen from the side, looking at a computer monitor. The desk has several other monitors and equipment. In the background, there is a large wall-mounted map with many red and green markers. The lighting is dim, with a bright light source from above.

The Intrepid Innovator

Acme Tele Power's business saga is unique. Unlike most start-ups, it grew like lightning thanks to a slew of blockbuster product innovations. Then it hit a wall—growth and revenues slowed dramatically. Can Manoj Kumar Upadhyay put the mojo back into the company?

BY SHREYASI SINGH
PHOTOGRAPH BY SUBHOJIT PAUL

Manoj Kumar Upadhyay blazed on to the business scene in 2003 with a Power Interface Unit (PIU).

This was an innovative energy management system for cell towers that dramatically altered the operational costs for telecom companies. It helped players like Bharti Airtel cut fuel bills for gensets, and contributed significantly in helping them execute their grand infrastructure expansion plans. It also ensured that Upadhyay's company, Acme Tele Power, grew over 6,500 times in a span of six years, swelling from a ₹30-lakh turnover in 2003 to roughly ₹2,000 crore in 2009. With telecom, Upadhyay defined what smart thinking and being in the right place at the right time could do for a company. Today, that exponential growth is a tough legacy to live up to. The market has completely changed—there's little, if any new demand for telecom infrastructure in India. Over the last three years, Upadhyay has diversified his business. He knows it's the only way to grow even half as fast as he's been used to. Today, Acme Tele Power is dabbling in solar energy, rural electrification and energy management to come up with radically new technology solutions. But is Upadhyay anywhere close to his "next-big-thing"?

Manoj Kumar Upadhyay befriended outlandish ideas as a child. When he was just seven, he tried his hand at inventing a new family of medicines—combining allopathy and homeopathy. "I used to wonder why we couldn't mix the two, and make a medicine which had the benefits of both," he recalls. So he put his ingenious ideas to test. Alas, the formulation was a disaster. But young Upadhyay had spent his month's pocket money on it. So, to cut his losses, he tried to sell the concoction to cattle farmers in Basti, his hometown, pitching to them the benefits of "refined" human medicine. Unfortunately, the sales efforts came to a naught. Yet, the setback did nothing to dampen Upadhyay's curiosity. At 12, he dismantled a bicycle because he believed the pull mechanism wasn't perfect. He tried, but couldn't reinvent a better system. Instead, he was left with a heap of parts he couldn't put back together.

Most of his family and friends thought he was crazy, says 41-year-old Upadhyay. But they are easily forgiven now. After all, nobody could have forecast how far this precociousness would take Upadhyay. Today, as founder, chairman and MD of Acme Telepower, he has to his credit several patents in energy management and passive telecom infrastructure. In less than eight years since he founded the company, its products have been installed at more than 1,50,000 telecom sites across India, Sri Lanka, Bangladesh,



A Range of Solutions (from top left) Green Shelter, their prefabricated units for cell sites; solar thermal plant in Bikaner, Rajasthan; photovoltaic solar panels at the plant in Gujarat

and a clutch of African nations. Acme is also a keenly-watched solar power player in India with 30 MW either commissioned or in the works. Its green energy solutions help generate carbon emission savings of nearly 2.2 million tonnes a year.

The Blockbuster Innovation

In 2003, telecom in India was beginning to enter its turbo-charged phase. The government was allotting what in industry parlance is called “circles”—essentially licences for particular geographic regions to telecom companies. Bharti Airtel was a key player at the time. It had huge growth plans but was beset by anxieties on how it would ramp up its network of cell sites. Most of the infrastructure was imported from European manufacturers. But this equipment wasn’t able to withstand Indian conditions like erratic power supply and near-bipolar fluctuations. “Power generator sets in Bharti’s cell towers in Delhi were fraught with problems. When Delhi was like this, there were huge worries about what the situation would be in other places,” remembers Upadhyay, who Bharti Airtel had brought on as a consultant to figure out what to do about the problem.

Upadhyay had just sold his entire stake in his first business venture, a lightning protection systems company, to his co-founder for ₹20 lakh. Bharti Airtel thought his experience with lightning and power protection systems could help them. Upad-

hyay put together a project report, and they approached GE for a solution. “What they suggested was not doable, or implementable. It’s then that I started thinking—can I do this? The customer is in trouble. Can I create something that has never been made before?”

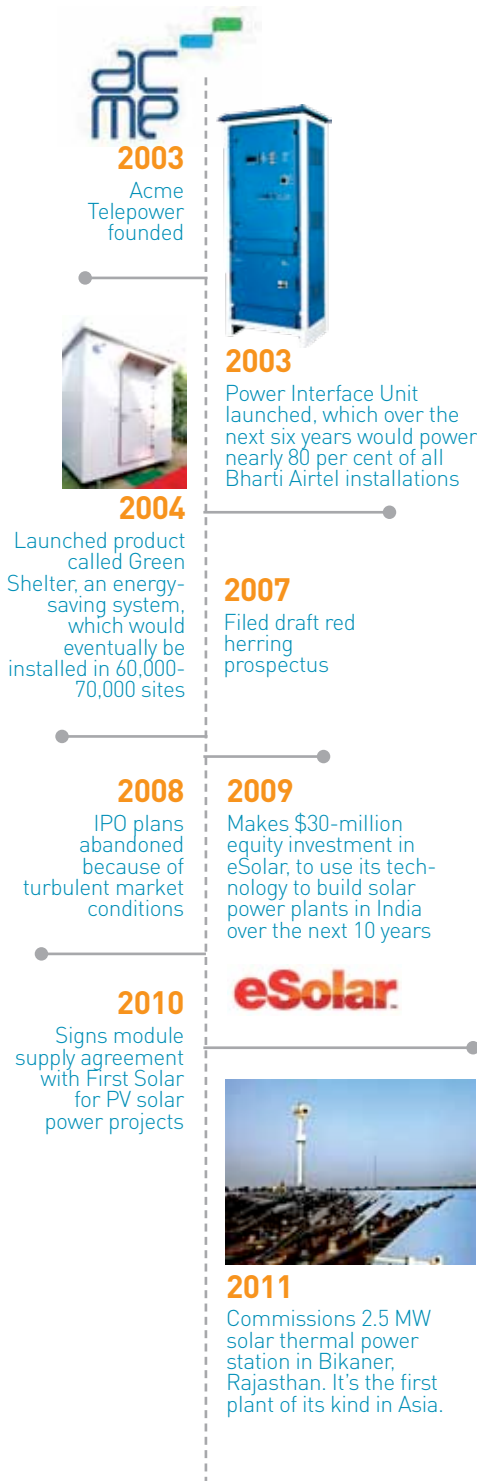
reminisces Upadhyay.

It took him 17 days, 12 of which were spent without a wink of sleep, as he tried to come up with his innovation—the Power Interface Unit, a power management system that minimised diesel usage and maximised utilisations of mains power. Bharti lapped up the product because it upped cell tower uptime from an 80 to 90 per cent to close to 97 per cent. It also resulted in huge energy savings. “We did nearly 80 per cent of Bharti Airtel’s total roll-out from 2003-2009,” says Upadhyay. How important a role that was is evi-

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dent from Bharti Airtel’s growth trajectory in those days. “We grew from 12,000 sites in 2005 to 1,50,000 in just six years,” adds S. Asokan, executive director, supply chain, Bharti Airtel.

Important milestones in Acme's journey



Asokan credits Acme for quickly identifying a “sweet spot”. “They saw the opportunity and used it. Basically, they combined many power conditioning equipments available back then to create the PIU,” elaborates Asokan. “I’m very good at putting things together to create new things. It’s not about being the smartest engineer. To create, you need to know what will make a useful product,” adds Upadhyay.

The PIU, which was later patented, became a “household name”, says Upadhyay. It also brought him right to the centre of the kind of business he wanted to run—massive and scalable. “I had a huge vision. I’d left Adhunik Power Systems, my lightning company, because I knew it couldn’t scale up to ₹2,000 crore. That was my filter for a business-worth-doing,” Upadhyay says.

Incredibly, he actually got there. Acme started with ₹20 lakh as seed capital, and by 2009, it was a ₹2,000-crore company. The early successes also helped Upadhyay secure a place in history. “I’ve played a critical role in the telecom revolution,” he says with pride. “By bringing down fuel costs, we brought down operational costs. We all know the benefits of the telecom revolution in India. It feels great that we’ve played a role in this, and left a social impact by the amount of diesel we helped cut down,” says Upadhyay.

The Twist

Acme followed up the PIU with a range of successful products such as the Green Shelter (a pre-fabricated, integrated energy management solution which houses the electronics and energy-efficient components at telecom sites), Phase Change Material (a solution for storing thermal energy in off-peak hours that reduces fuel consumption by more than 6,500 litres per annum per site) and Free Cooling Units (reduces AC running hours on telecom sites). “They didn’t stop at their first product. Every year, they kept widening the gap between them and their nearest competitor,” adds Bharti Airtel’s Asokan. Even now, roughly 70 per cent of all Bharti Airtel cell sites use one, or more of these products.

Imitation is the best form of flattery, it’s often said. Acme got heaps of compliments in the guise of the many patent wars they had to fight as other telecom vendors copied their products. Within its first five years, Acme had become a comprehensive wireless telecom energy management company. Thanks to Upadhyay’s itch to constantly experiment, they had also begun to dabble in alternative energy solutions like solar power. In November 2007, the company filed a red herring prospectus to go public. CRISIL gave Acme’s keenly-anticipated IPO a 5/5 rating. Acme wanted to raise ₹1,000 crore from the market to invest in bolstering their manufacturing and research capacity. But that wasn’t going to be. With the global economic collapse in early 2008, Upadhyay had to abandon these plans. This unplanned turn of events was symbolic of the twists the company would have to begin negotiating.

Bharti Airtel’s Asokan says Upadhyay always seemed to him to be more of a technology leader than a driven businessman. There may be a kernel of truth in that. Surely a wiser entrepreneur, especially one who is so technologically sharp, wouldn’t hoard all his eggs in one basket. In Acme’s case, this spelt double trouble. Not only did all the



A Backstory: Fit for Bollywood

With the benefit of hindsight, Manoj Kumar Upadhyay's life makes perfect sense. Pieces of a larger puzzle were strewn across his early years—mirroring the pattern his life now follows. They also lend themselves to a dramatic achiever story.

Son of a jute factory worker, he spent his early years in Kolkata. His family had to move to their hometown in Basti, Uttar Pradesh, after the CPM movement gained strength in West Bengal in the late 70s, leading to the closure of all industrial units. Upadhyay stood apart from his family. As others aspired to become bankers, teachers and engineers, Upadhyay remembers wanting to be a businessman ever since he was eight years old.

products cater to telecom, a lion's share of the business was conducted with one client—Bharti Airtel. Once the frenzy of cell tower construction was over, Acme's main business was in trouble.

An R&D junkie by nature, it isn't that Upadhyay wasn't trying to come up with industry-transforming innovations even when things were going like a song with telecom. But the wastewater treatment plant he conceptualised that could recycle a household's waste water, and produce clean, usable water, ran into choppy currents. After spending ₹30-40 crore on research, Acme wrapped up these plans. "To install these, every house would need two plumbing lines. Nobody was going to break their house to get that done," explains Upadhyay.

"Nobody in my entire family was in business. I always wanted to do something different." That contrarian streak prompted him to give up admission in an engineering college, and join a technical polytechnic in Shahajahanpur, Uttar Pradesh. "Somebody had told me that in a polytechnic, you actually did something with your own hands. It wasn't about getting theoretical knowledge. I wanted to be both—a scientist and a labourer." At this institute, Upadhyay quickly acquired a gravitas beyond his position. He began taking classes to fill in for teachers that never showed up. Although he was studying electronics engineering, he took classes in mechanical and production engineering as well. "It was great learning. I had to do lots of research to be able to teach." Through the three years there, Upadhyay pushed himself hard. For the examinations, students were asked to answer five out of the 10 questions on paper. "I used to challenge myself—could I answer all 10?" recalls Upadhyay. He also led some "bizarre" research projects, none of which saw the light of day

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—Manoj Kumar Upadhyay

(see box on next page). Yet, the overreaching wasn't self-destructive. Upadhyay created academic history in the institute by becoming the state topper. "Nobody has managed to match those marks till today," he says, with pride.

Although his big-business dreams remained constant, Upadhyay took up a job in a German engineering firm after getting his polytechnic diploma. He moved to Germany and within two years, was made head of a department despite being "totally wild", he says. "I was full of ideas. I'd keep giving feedback, asking questions, sometimes not realising I could be fired because of the suggestions I was giving." The German firm soon moved him to India to lead the indigenisation of their machines for the market here. He recounts a fun anecdote from those days. "When I moved back to India, I told them I'll leave the company exactly three years later to start my own company. I gave them a three-year notice period. They probably didn't take me seriously because they were all shocked the day I left," laughs Upadhyay. And, thus began his entrepreneurial journey. 1999, first with Adhunik Power Systems, and then Acme Tele Pwower in 2003.

Similarly, in 2007, Acme worked on a thermal cooling technology which could store and transport vegetables, ensuring they wouldn't perish before reaching consumers. The lack of cold chain and refrigeration facility is responsible for a lot of produce going waste in India, says Upadhyay. So, they developed hawker carts that could keep the vegetables cool, and farmed a new company called Cold Chain. Although they managed to transport 210 tonnes of vegetables from many states, the company was eventually closed down. "We were too ahead in technology and time with this one. Also, we couldn't manage the daily give and take of cash. We'd have to become an operational company from a technology company to do this," explains Upadhyay. Again, they lost nearly

₹60 crore. Upadhyay philosophises, “No success comes without paying a price, especially when you try to work on disruptive technologies.” He continues, “For one thing to succeed, you have to try 20 other things. From the outside, people can only see the successes. They don’t know how many products we worked on that could never materialise. I was lucky that my first, second and third products were super successful. I had to work much harder for my fourth, and thereafter.”

The Future

Not surprisingly, Upadhyay is an impatient man today, as he waits for another innovation from his stable to storm the market. S.S. Kohli, vice president of R&D at Acme uses a sports analogy to describe the performance pressure. “It’s like asking Sachin Tendulkar’s son to give us as many centuries,” he says jokingly.

“It isn’t that we are not growing. We’re still growing 50 per cent year on year. But nobody wants to see a dip. Fifty per cent isn’t great compared to the triple digits we were used to,” confesses Sandeep Sethi, Acme’s CEO. Today, the company has a new set of priority

areas—coming up with innovative energy management solutions for the telecom sector, targeting Africa as a big export market for their products (compared to India’s 55 per cent, the continent has a tele density of just 33 per cent, says Sethi), and becoming a leading player in solar power, and other alternative energy areas.

Going back to the drawing board has been great, adds Sandeep Kanwar, the company’s chief operating officer. “We have matured a lot in the last four years,” he says. “We’ve been able to take stock and zero in on long-haul, sustainable opportunities. The cornerstone of this evolution has been diversification,” he adds.

Each of the opportunities they have laid out certainly has potential. “We see Africa as being seven years behind India in terms of telecom maturity. In three years, we’ve grown our business there from \$16 million to \$80 million a year,” adds Sethi. With about 4,00,000 existing telecom sites, and energy costs amounting to 60 per cent of the operating costs of a telecom operator, Sethi adds that energy management, operations and maintenance is about a ₹15,000-crore market, of which they currently have less than five per cent. Bharti Airtel’s Asokan agrees that there’s definite promise. “There can be

efficiencies in generation, utilisation and monitoring. In their next birth, companies like Acme can cater to the very real need to manage these three fronts.” He cuts out the task for Acme, though. “What would make us happy is if they do this with speed. They have to come up with superior products quickly, and make sure they’re easily adaptable.”

Upadhyay plays a key role in the company’s new R&D initiatives. It’s part of his non-negotiable morning routine, in fact. “When I come into office, the first thing I do is spend an hour with the R&D team. That gives me the energy to work throughout the day.” He worries that because he “doesn’t actually work with his own hands” on the technology, things don’t get executed as well. “I need a model where the wheels run faster like they used to. Our product pipeline must be robust.”

Kohli, who heads the R&D function, deconstructs the morning meetings. “We’re slowly learning the culture of how he works. He fires away with a lot of ideas. We’re trying to build a culture of technology. Manoj wants to make R&D a process—how do we as a company make sure we think like that?”

Failed Innovations: Great ideas, alright. But they didn’t go anywhere.

Upadhyay knows coming up with brilliant solutions is a factor of constantly trying, and not succeeding. Failure isn’t a word that is part of his vocabulary, he asserts. Over the last few decades, first as a student, and later as a professional and entrepreneur, Upadhyay has always allowed his imagination to fly. “You have to keep trying. If you try 20 things, one will work.” Here are some of his efforts that didn’t work out—some didn’t get out of the science lab at all, others cost him several crore rupees.

Hydroplant, Shahjahanpur Polytechnic, 1991:

A bunch of us thought we could create a hydroplant that would collect the rain between the earth and the sky. The channelled water would then run through the turbine. We identified the Khasi Garo Jayantia mountain range in Meghalaya for the project because it’s large and it gets a lot of rain. This idea travelled up the government departments. IIT Roorkee and IIT Kanpur were brought in to see what they thought of this “bizarre” idea. Eventually, it was rejected because if the channel broke, all of Assam and

Meghalaya would get washed out. The risk was bigger than the idea.

Foldable televisions, Shahjahanpur Polytechnic, 1991:

I always wondered if there could be a foldable television—could one fold the TV like a newspaper? This was before LCD screens became popular.

Wastewater Treatment, Acme Telepower, 2008:

Because so many houses in India are not connected to sewage, I thought every house should have their own wastewater treatment plant. We developed through research a washing machine-like contraption that could be fitted in every house. It would treat all the waste water and give back fresh water. We spent ₹30-40 crore on this research. But, to install this machine, every house would need two different plumbing lines which most houses didn’t have. And nobody would break their houses to rework the plumbing. So we wound the idea up although we still manufacture this for use in defence.

His Entrepreneurial Heroes

Upadhyay does seem incredibly self-sufficient, admitting frankly that role models change. “Sometimes, you admire people with great awe at one stage. But it might not always carry on.” But he does credit these four superstar entrepreneurs for valuable lessons he always keeps in mind—in business and life.

Steve Jobs

I’ve always looked up to Steve Jobs as far as technology is concerned. There are many people smarter than him in Caltech or Stanford. But they remain core engineering or numbers people, they can’t understand how technology can be used.



Dhirubhai Ambani

I admire the entire company’s ability to manage huge projects. Now that we are working on solar, I understand the importance of that skill.



Sunil Bharti Mittal

I’ve seen him work up, close and personal. I really admire the way he built his team. He was totally hands on, always clued in.



N. R. Narayana Murthy

He showed everybody how to make an Indian company thrive on transparency and good corporate governance practices.



Even as Acme tries to do all of that, you get the feeling that it’s solar power which gets Upadhyay most excited these days. In April 2011, Acme commissioned a 2.5 MW plant—which is connected to the grid—in Bikaner, Rajasthan. In Gujarat, their 15 MW plant is ready and is likely to be connected to the grid within a month. On the back of the Jawaharlal Nehru National Solar Mission—which has mandated 20,000 MW of solar power in India by 2022, pledging \$19-billion government funding—the solar power sector is abuzz with new plants and activity. A host of companies have entered the fray to capitalise on the policy push by state governments like Rajasthan, Gujarat and Punjab.

Still, Anindya Das, industry manager, energy & power systems practice for South Asia, Middle East and North Africa, Frost & Sullivan, believes Acme already stands out from the pack. Their Bikaner plant, which works on solar thermal power plant, is the first of its kind in Asia, and only the fourth in the world. “Concentrated solar power (CSP) plants become viable if they’re larger than 15 MW. The technology is tough to adapt to smaller projects. Acme has been brave to do that,” says Das. Most solar projects in India work with photovoltaic (PV) modules—it’s an established technology, and therefore simpler to execute, adds Das. “Everybody is on to PV including large companies like Reliance and Tata. It’s too early to say how successful Acme will be, but with

solar thermal, they’ve again shown their intention to be niche, pioneering players.”

Kanwar affirms these ambitions. “We want to be in the top three solar players wherever there’s any opportunity. We were the first movers in solar. When we started talking solar, at the end of 2008, the solar mission wasn’t formed. But solar at a MW-scale doesn’t happen overtime.” In March 2009, they signed an exclusive licensing agreement with eSolar, a leading US-based solar producer, to build 1,000 MW of solar thermal power plants over the next 10 years. In fact, Acme made a \$30-million equity investment in eSolar, a rare move by an Indian player, says Frost & Sullivan’s Das. “They haven’t just become eSolar’s distributors. It’s a strategic initiative—to be part of the R&D itself.”

COO Kanwar, who has been with the organisation through the last four years, says smart thinking like this, shows how much distance Upadhyay has covered as an entrepreneur. “When he began, this was a telecom company. The approach was one-size-fits-all even for the other business verticals that came up. Today, he looks at each business differently.”

With solar power, though, project financing and access to debt capital is likely to be a pain point. Right now, Upadhyay says, Acme is largely debt free. Can the warmth of solar power help the company reclaim its scorching past? **Q**