



ENERGY EFFICIENCY SERVICES LIMITED

A JV of PSUs under Ministry of Power, Government of India

INNOVATING ENERGY

Making cooling energy efficient

May, 2024



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Editor's note

Dear Readers,

As we navigate through a blisteringly hot summer, the escalating demand for cooling is more apparent than ever. Projections indicate that this demand will continue to rise sharply in the coming years, driven by rising temperatures, population growth, and rapid urbanisation. In light of these trends, sustainable cooling has become a critical imperative.

India has demonstrated foresight in addressing this challenge, becoming the first nation to develop an integrated action plan for cooling. The India Cooling Action Plan (ICAP) is a comprehensive strategy aimed at making cooling greener and more energy-efficient. According to ICAP, the demand for space cooling in buildings is expected to increase 11-fold between 2018 and 2038. The overarching goal of ICAP is to provide sustainable cooling and thermal comfort for all while securing environmental and socio-economic benefits for society. This initiative will also help in reducing both direct and indirect emissions.

Against this backdrop, we have kept the theme of this edition of our newsletter as "Making Cooling Energy Efficient." In the newsletter, we shall explore various solutions that can make cooling more sustainable, and discuss the changing nature of India's cooling landscape, with a particular focus on energy-efficient air conditioners (ACs) and brushless direct current (BLDC) fans. Higher efficiency in cooling appliances leads to lower energy consumption, which translates into reduced power demand. This reduction in power demand brings numerous benefits, including peak demand avoidance and emission reductions.

In "EESLmart: Effective and Green Cooling, Now at Your Fingertips," we delve into EESLmart, the innovative online marketplace introduced by Energy Efficiency Services Limited (EESL). EESLmart offers a wide range of green cooling products and other energy-efficient appliances, aiming to reduce India's

energy demand, cut energy costs, and lower carbon emissions.

"Cool, Convenient, Cost-Effective, and Environment-Friendly:

BLDC Fans Offer Benefits Like None Other" highlights the numerous advantages of BLDC fans. These fans are particularly attractive to consumers as heat levels rise, offering an energy-efficient and cost-effective cooling solution.

"Let's Beat the Summer Heat with Super-Efficient Air Conditioners" explores how EESL's super-efficient ACs can improve energy efficiency, air quality, and thermal comfort, providing a robust solution for the intense summer heat.

"Energy Efficiency in Cooling Can Usher in Environmental Sustainability and Support National Energy Conservation Efforts," we discuss the pivotal role of energy efficiency in cooling. By leveraging innovative technologies, business models, and concerted policy interventions, India can address the challenges of rising cooling demand while advancing the agenda of sustainable development.

Finally, in "Empowering rural India with energy efficiency products and solutions through the e-Mitra initiative", we discuss how RajComs e-Mitra initiative in collaboration with EESL aims to promote the use of affordable, energy-efficient appliances to reduce electricity bills and foster sustainable practices. The initiative exemplifies the impactful integration of technology and strategic partnerships in driving positive change in rural India.

We hope you find this edition insightful and inspiring as we continue our journey towards a more sustainable and energy-efficient future.



By
Nitin Bhatt,
Deputy General
Manager,
PR & Sales,
EESL

CEO's desk

The True Cost of Comfort: Navigating India's Air Conditioning Landscape



By
Mr. Vishal Kapoor,
CEO, EESL

As income levels rise and aspirations soar, air conditioning has transitioned from a luxury to a commonplace amenity in Indian households. With more people embracing space cooling, projections indicate that a substantial 60% of India's future energy demand will stem from cooling requirements in the coming years.

While enjoying the comfort of air conditioning, it's vital to acknowledge its multifaceted costs. These include the initial purchase price of the unit and the ongoing electricity expenses. Moreover, the surge in electricity demand has significant implications for climate change on both national and international levels.

Consumer decisions on air conditioning impact personal finances and broader environmental and economic factors. While lower upfront costs may seem attractive, they often result in higher operational expenses over time. This parallels the deceptive allure of cheap printers with expensive cartridges, where the true cost extends beyond the initial price tag.

To safeguard the future, we must focus on lifetime expenses rather than immediate costs. This raises the question: are lower-cost, lower-rated air conditioners truly economical when considering long-term efficiency and environmental impact?

When choosing split AC units, it's crucial to verify that products meet their advertised specifications. For example, a 1.5-ton AC unit must provide the

promised cooling capacity. Enticing price tags can blind consumers to these critical details, leading to suboptimal purchases. Sometimes, a higher efficiency, lower tonnage air conditioner might better suit individual needs, but marketing tactics often overshadow such considerations.

Furthermore, relying solely on simplistic volume-based tonnage assessments neglects nuanced factors influencing air conditioner efficiency, especially amidst a market inundated with diverse products and promotional strategies. Additionally, understanding that air conditioners operate at varying efficiency levels under different loads and environmental conditions is crucial. Efficiency fluctuates with ambient temperature and humidity, impacting overall performance across seasons.

A recent encounter with misleading information about 5-star ACs highlights the need for clear consumer guidance. Selecting the right air conditioner is both an art and a science. At EESL, we advance India's energy efficiency agenda by promoting solutions like Super Efficient Air Conditioners on our e-marketplace.

In navigating India's evolving air conditioning landscape, let us embrace informed choices that balance comfort, efficiency, and environmental stewardship.

Empowering rural India with energy efficiency products and solutions through the e-Mitra initiative



By
Mr. Umesh Chand,
SA (Jt. Director),
DOIT&C

In the heart of rural India, where access to modern conveniences can often be limited, the e-Mitra application of Government of Rajasthan is making a significant impact. The e-Mitra, managed by the Department of IT & Communications (DoIT&C) Government of Rajasthan and implemented by RajComp Info Services Ltd. (RISL), is an integrated IT-enabled platform designed to deliver various services and information to the masses under a single roof at their door-step.

This ambitious project spans across all 50 districts of Rajasthan, boasting an impressive network of over 78,000 registered kiosks. These kiosks, known as e-Mitras, serve as crucial touchpoints for citizens, facilitating a wide array of services (500+) including bill payments, government scheme applications and now, energy efficiency education as well.

One of the standout achievements of the e-Mitra initiative is its role in disseminating knowledge about energy efficiency solutions. By leveraging its extensive network, e-Mitra kiosks are perfectly positioned to educate rural populations about the benefits of energy-efficient appliances and practices. This is particularly important in areas where access to reliable electricity can be inconsistent, and where energy savings can translate directly into cost savings for families.

Energy Efficiency Services Limited (EESL) is a pivotal partner in this endeavor. EESL's product portfolio which includes a range of energy-efficient appliances such as LED bulbs, tube lights, and ceiling fans, are designed to consume less power, reduce electricity bills, thereby contributing to a greener environment. The unique

selling proposition (USP) of EESL's products lies in their affordability and high efficiency, making them accessible to a broader population.

The partnership between EESL and RajComp Info Services Ltd. is a testament to the power of collaboration in achieving common goals. Previously, RajComp distributed over 57 Lakhs LED bulbs (7-watt) under the DELP Programme and 22 Lakhs LED bulbs (9-watt) under the UJALA Programme. Additionally, more than 1.20 Lakhs tube lights and over 35,000 ceiling fans were distributed through the e-Mitra network under the UJALA scheme. This initiative not only promoted the use of energy-efficient appliances but also created awareness about energy conservation among rural households.

Given the success of this partnership, a renewed proposal is under consideration to get RajComp Info Services Ltd. re-engaged as a distribution partner for EESL's energy-efficient appliances. This collaboration aims to further expand the reach of these products, ensuring that more households can benefit from reduced energy consumption and lower electricity bills. The e-Mitra platform of Government of Rajasthan stands as a remarkable example of how technology and strategic partnerships can drive positive change in rural India. By integrating energy efficiency education into its wide array of services, e-Mitra is helping to build a more sustainable and energy-conscious future. As the initiative continues to grow and evolve, it promises to bring even greater benefits to the rural communities it serves, empowering them with the knowledge and tools needed to embrace energy efficiency and its myriad advantages.

Super-efficient ACs for a sustainable future

As average temperatures rise steadily across the globe, millions of people are at risk of dying prematurely from heat waves in the coming decades. In a country like ours, which faces increasingly hot summers every year, cooling solutions are not a luxury but a necessity. However, it is also necessary that the solutions we adopt consume as little energy and make as small an impact on the environment as possible. Hence the need for energy-efficient fans and air conditioners (ACs). Although fans continue to be the predominant cooling appliance in Indian households, ACs are rapidly growing in numbers, both in homes and in commercial and public establishments.

Energy-efficient cooling is going to be one of the key elements of India's efforts to decarbonize its economy. In 2019, India became one of the first countries in the world to release a cooling action plan. The plan lays down an ambitious and comprehensive approach to meeting the country's cooling needs while reducing climate impact. The announcement was followed by policies that aimed to reduce cooling energy requirements by 25-40 percent by the years 2037-38 through effective, affordable, energy-efficient cooling solutions.

The India Cooling Action Plan estimates that India's demand for cooling solutions will increase ninefold between the years 2018 and 2037, contributing to a fivefold increase in energy consumption in a business-as-usual scenario. Wide-scale adoption of energy efficiency is essential for addressing the twin needs of cooling and climate action.

At the commercial level, we can improve energy efficiency, air quality, and thermal comfort in old buildings – all at once – simply by retrofitting their AC systems. The energy-saving potential in such cases is in the range of 30-50 percent. Under the Building Energy Efficiency Program (BEEP), EESL conducts energy audits and assessments of commercial and public buildings; identifies areas of inefficiency; and provides customized solutions to optimize energy utilization. BEEP is transforming commercial as well as government buildings in India into energy-efficient complexes.

At the domestic level, the first and simplest step we can

take is to replace fans and ACs with their respective energy-efficient variants. Energy-efficient ACs can yield significant energy and monetary savings

while providing the same levels of comfort as regular ones. EESL's 1.5 TR super-efficient inverter split ACs are available at prices similar to that of regular BEE 5-star and 3-star ACs in the market, but they reduce energy consumption by 20-50 percent in comparison.

Whatever the type of AC, there are some simple steps we can take to improve its energy efficiency further and prevent energy wastage.

While setting the temperature, bear in mind that most ACs can handle only up to a 20-degree-fahrenheit difference between the outside and inside air temperatures. If you set the temperature too low, it could cause the AC to wear down faster. The temperature range of 24-26 degree Celsius is great for both indoor comfort and optimum electricity consumption.

Remember to turn off the AC when you are not home. If there is a programmable thermostat, set it so that the AC turns on 30 minutes before your arrival, so that the interiors are pleasantly cool when you enter.

Use the AC and the fan in conjunction for faster and more even cooling. This helps in cooling all corners of the room equally and reduces energy consumption.

The high pollution levels in Indian cities means that there is a high concentration of particulate matter and dust in the air. This can quickly clog the filters in your AC. Get your AC serviced and the air filter thoroughly cleaned at regular intervals, at least twice a year.

Take care of yourself this summer. Stay cool, and remember to use electricity responsibly.



By
Mr. Adesh Saxena,
General Manager
(Technical), EESL

Exploring the world of BLDC fans

Cool, convenient, cost-effective, and environment-friendly: BLDC fans offer benefit like none other



By
Mr. Ashish Malviya,
Deputy
General Manager
(Technical),
EESL

The ceiling fan has always been an integral part of Indian households, even before temperatures started soaring on account of global warming. Fans run for hours every day, in all types of weather. Because of this, they account for a major part of our electricity bills. About 40 million ceiling fans are sold in India every year, on average. The Bureau of Energy Efficiency made the Standard and Labelling programme mandatory for ceiling fans from 2023. Earlier, it was voluntary. According to a CEEW survey in 2020, only 3% of Indian households with fans used star-rated models. The new rule, which laid down a minimum energy performance standard for ceiling fans, had a transformative effect on the market. Since then, all Indian fan-makers have added star-rated fan models to their catalogues. Even a 1-star fan delivers significantly better energy performance than a conventional fan. As a result, the overall energy performance of fans sold in India has improved by several notches.

The cooling performance of a fan is largely a function of its blade design while the energy efficiency is governed by the motor design. Growing consumer awareness about climate change and sharper focus on energy savings has, in recent years, led to a rise in demand for super energy-efficient fans, or BEE 5-star rated fans – a segment that is largely catered to by brushless direct current (BLDC) fans.

There are mainly two types of BLDC fans – the remote-controlled BLDC variety, which is great for domestic use, and the wall-mounted regulator

type, which is better suited to commercial establishments such as schools, colleges, and offices. EESL promotes BLDC fans as a part of its multi-pronged energy efficiency initiatives. Under the Energy Efficient Fan program, EESL has committed to distributing 1 crore BLDC fans across the country.

There are several factors that make BLDC fans very attractive for consumers. First and foremost, they are highly energy efficient, consuming up to 60% less electricity as compared to conventional fans. While an induction-based fan will typically consume 55-90 watts of electricity, a BLDC fan will deliver the same level of cooling with only 28 watts. This means significantly lower electricity bills. Secondly, BLDC fans have a longer lifespan. Thirdly, they are equipped with electronic control systems, which enable consumers to operate them with a remote control and enjoy the convenience of features such as a timer and a 'sleep mode'. Last, but not least, BLDC fans operate almost noiselessly, as opposed to conventional ceiling fans which start making noise as they undergo wear-and-tear.

While BLDC fans do indeed entail a higher upfront cost as compared to conventional fans, they more than make up for the cost difference within two years. In the medium-to-long term, the cost of ownership of a BLDC fan is much lower than that of a conventional fan. With an unbeatable combination of cost savings and thermal comfort, BLDC fans present a very attractive value proposition for Indian consumers.

Energy efficiency in cooling can usher in environmental sustainability and support national energy conservation efforts



By
Mr. Girja Shankar,
General Manager
(Corporate Driven
Programme &
Consultancy),
EESL

While soaring demand for space cooling is a critical developmental and social imperative, it also represents one of the largest ends-of-use risks to climate. To improve lives and achieve climate targets, “climate friendly cooling” that are both energy efficient and use climate friendly refrigerants are the need of the hour. In 2016, the signatories to the Montreal Protocol adopted the Kigali Amendment, which aims to phase down HFCs and stresses the importance of combining refrigerant management with the energy-efficiency aspects of cooling. Energy efficiency in cooling is a pivotal component in the pursuit of environmental sustainability and bolstering national energy conservation endeavors. In light of the escalating demand for cooling in India and the consequential surge in electricity consumption, there is a need for concerted efforts towards sustainable cooling solutions.

Rising cooling demand in India:

India's climatic landscape is witnessing a notable shift characterized by soaring temperatures and escalating heatwaves. This meteorological transformation is accompanied by a surge in the ownership of cooling appliances, particularly air conditioners (ACs).

The year 2023, marked by the El Nino phenomenon, witnessed a series of scorching heatwaves in India, culminating in record-breaking peak electricity demand. Consequently, the country has experienced a steady annual increase of approximately 4% in peak electricity demand over

the past decade. The low penetration of energy efficient active cooling technologies, including fans and ACs, exacerbated the strain on the power grid. Only 3% of Indian households use energy efficient ceiling fans, which currently often entail a higher upfront cost but consume 50% less energy than conventional models.

Impact of temperature on electricity demand

Empirical evidence indicates a direct correlation between temperature fluctuations and electricity demand, particularly during the summer months of May and June. For every 1°C increase in the average daily temperature above 24°C, there is a corresponding 2% surge in electricity demand. Between 2019 and 2023, India experienced a staggering 28% surge in hourly electricity demand on days characterized by scorching temperatures exceeding 36°C. Moreover, distinct peaks in electricity consumption are observed during morning and evening hours, further straining the power infrastructure.

Challenges and vulnerable section

Despite the escalating demand for cooling solutions, a significant portion of the population, especially those engaged in heat-exposed sectors such as agriculture, mining, and construction, lacks access to adequate cooling facilities. Ensuring thermal comfort for all citizens while effectively managing peak electricity demand poses a formidable challenge.

Efforts towards sustainable cooling

In recognition of these challenges, India has embarked on a comprehensive approach to tackle the issue through initiatives like the India Cooling Action Plan (ICAP). This strategic framework emphasizes the imperative of fostering research and development endeavors aimed at promoting innovative and sustainable cooling solutions, including the adoption of climate-friendly refrigerants and technologies. Furthermore, ICAP endeavors to raise public awareness regarding the significance of sustainable cooling practices and the pivotal role of energy efficiency in mitigating the environmental impact of cooling operations.

Energy Efficiency Services Limited (EESL) is at the forefront of this transformative journey, offering super-efficient air-conditioners and super efficient BLDC ceiling fans on the India's only energy efficiency commercial portal <https://eeslmart.in/> that boast impressive energy-saving capabilities without compromising on performance. Choosing the right cooling equipment and determining its

capacity are critical factors, which depend on multiple factors like the size & type of the space, how long it's in use, the ratio of windows to walls, and the surrounding conditions. Exploring business models like Cooling As A Service (CaaS) adds another layer of consideration. This decision is pivotal for ensuring commercial success, as well as achieving energy efficiency and cost-effectiveness. These innovative solutions not only alleviate the burden on the power grid on account of ramping cooling demand but also contribute to significant reductions in emissions, thereby advancing the cause of environmental sustainability.

Energy efficiency in cooling emerges as a key imperative in the pursuit of environmental sustainability and the realization of national energy conservation objectives. By leveraging innovative technologies, business model and concerted policy interventions, India can navigate the challenges posed by escalating cooling demand while simultaneously advancing the agenda of sustainable development.



Key EESL event highlights

EESL at Carbon Policy Development 2024

Converging Green Solutions with Carbon Markets to
Achieve India's Net-Zero Targets

Nitin Bhatt, Deputy General Manager, PR & Sales, EESL shared his
views on the launch of India Clean Cooking Alliance



Summer Energy Wisdom



'I try to consume less fuel by using electric scooter for daily commute'

Mr. Anil Agarwal,
Deputy Manager, EESL

”



'While AC is on, I ensure the doors and windows are closed. Use of timer in night prevent extra cooling and conserve energy'

Mr. Anil Kumar Chaudhary,
Chief General Manager & Head Operations, EESL

”



'I keep my AC temperature at 26 degrees as it helps in saving 12% of energy'

Mr. Girja Shankar,
General Manager (Corporate Driven Programme & Consultancy),
EESL

”



'I have upgraded to BLDC fans in my home, which come with a remote control. When I set the speed to levels 2 or 3, the power consumption is just 28 watts'

Mr. Manoj Modi,
CGM , Head -Operations (Growth), EESL

”



'I prioritize natural ventilation during the day, and only resort to using the air conditioning at night for a few hours to ensure comfort. Once the room is cool enough, I turn off the AC as this helps me reduce my energy consumption'

Ms. Meena Verma,
Assistant PR, EESL

”



'In summer, I use the AC at the optimum temperature ranging from 22 degree Celsius to 25 degree Celsius'

Ms. Anjali Yadav,
PR Officer, EESL

”

Noteworthy Energy Developments

India overtook Japan to become world's 3rd largest solar power generator in 2023

Rapid solar energy deployment in India pushed the country past Japan to become the world's third-largest solar power generator in 2023, according to a new report. The report by global energy think tank Ember said India ranked ninth in solar energy deployment in 2015. Solar produced a record 5.5 per cent of global electricity in 2023. In line with the global trend, India generated 5.8 per cent of its electricity from solar last year, as reported in Ember's "Global Electricity Review".

PM Surya Ghar Muft Bijli Yojana jobs boost! 1 lakh people to be trained to install solar panels in homes

PM Surya Ghar Muft Bijli Yojana set to create jobs! The government is preparing to train a workforce of 100,000 individuals in the installation and maintenance of solar panels to aid its initiative of assisting 10 million households in transitioning to solar energy. Sources familiar with the development told ET that the ministries of renewable energy and skill development and entrepreneurship have collaboratively developed a "skilling plan" for the 'PM Surya Ghar: Muft Bijli Yojana', a government rooftop solar project designed to enable households to generate 300 units of electricity through grid-connected solar panels.

Finance Ministry to keep tax on hybrid cars unchanged, boost for electric vehicle sector

It may be seen as positive news for Indian automobile giants such as Mahindra and Mahindra and Tata Motors that the Finance Ministry is not expected to discuss granting tax concessions to hybrid cars in the upcoming GST council meeting. The ministry chaired by Nirmala Sitharaman is against providing these tax concessions. Gadkari urged the Finance Ministry to bring down the GST on hybrid cars to 12%. As reducing the GST on hybrid vehicles would not only promote eco-friendly transportation but also help in reducing pollution levels in the country. Currently, there is 28% GST levied on ICE vehicles including hybrids and with the inclusion of cess. The tax rate for certain vehicles exceeds 40%.

Noteworthy Energy Developments

Bureau of Energy Efficiency plans norms to make more products energy efficient

The Bureau of Energy Efficiency (BEE) plans to introduce energy efficiency norms for a range of additional products such as electric irons, room heaters, LED batten and evaporator coolers, and launch them under the voluntary labelling scheme so that manufacturers can mention the energy-saving potential of the appliance for consumers to make an informed buying decision, said director general Abhay Bakre. The power ministry body, which works on improving energy efficiency of electronic products, also plans to revise the energy efficiency levels of ten existing star-rated products such as refrigerators, ceiling fans, room ACs and distribution transformers this year to push manufacturers to launch more energy-efficient products. Over the next three years, it will make energy labelling norms compulsory for products such as LPG stoves, microwave ovens and induction hobs, which are voluntary at present, said Bakre.

India's peak power demand nears 235 GW amid severe heatwave

India's peak power demand has been hovering close to the projected 235 gigawatts (GW) this month, driven by a severe heat wave sweeping across the country. The intense heat has led to a substantial increase in the use of air conditioning and cooling appliances, significantly boosting electricity consumption. According to data from the Central Electricity Authority (CEA), the demand reached an all-time high of 234 GW in mid-May, testing the resilience of the national power grid. The soaring temperatures have put immense pressure on power generation and distribution systems.



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