BECIS
Energy as a Service

HVAC Opportunity in Commercial Sector -Case Study

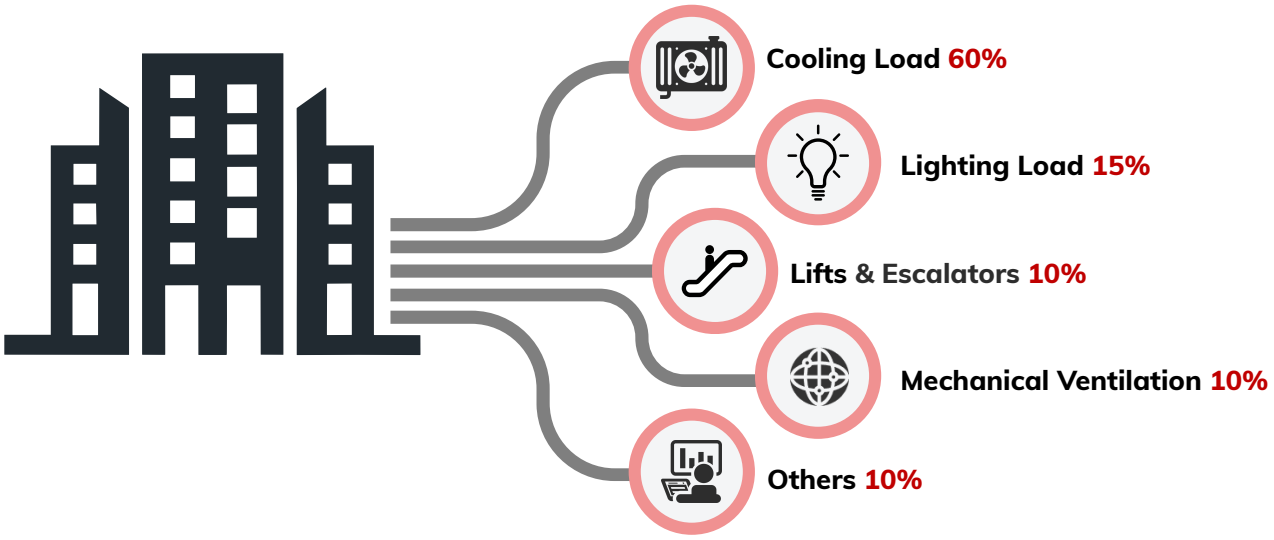
Background

Shopping malls serve as a primary channel for retail, drive economic growth, and contribute to social and cultural life at a location. They offer a convenient and diverse shopping experience, attract tourism, and contribute to infrastructure development.

HVAC is one of the most crucial systems of a shopping mall and is integral to successful operations of the shopping mall providing comfortable environment for customers and employees. They ensure optimal temperature which are essential for attracting and retaining shoppers, boosting employee well-being, and maximizing building energy efficiency.

Research suggests around 50% to 60% of a typical commercial spaces energy consumption comes from HVAC systems, therefore highlighting the need for improved efficiency to reduce carbon emissions and reduce costs. We would like to highlight a case study where we came across a shopping mall with ailing HVAC system.

Typical Energy Consumption in Commercial Building



SOURCE: M.SAFI ZADEH. THEORETICAL AND EXPERIMENTAL ANALYSES OF A SOLAR/WASTE HEAT ASSISTED AIR-CONDITIONING SYSTEM FOR APPLICATIONS IN TROPICAL CLIMATES.

Customer Pain Area:

1. Existing equipment in the chiller plant including chillers, pumps, cooling towers are at the end of design life resulting in
    - Unreliable plant operation due to unavailability of critical spares.
    - High energy consumption along with high electricity tariffs for commercial category customers.
    - Frequent breakdowns impacting quality of cooling the shopping mall.
2. Water scarcity in the region forced use of STP water for chiller operations. Lack of suitable water treatment of makeup water resulted in rapid duration of cooling tower and chillers.
3. Lack of automation and remote monitoring makes it difficult to monitor and optimise performance of the chiller plant.
4. Existing system is unable to address increase in cooling load in the shopping mall over the years

The solution

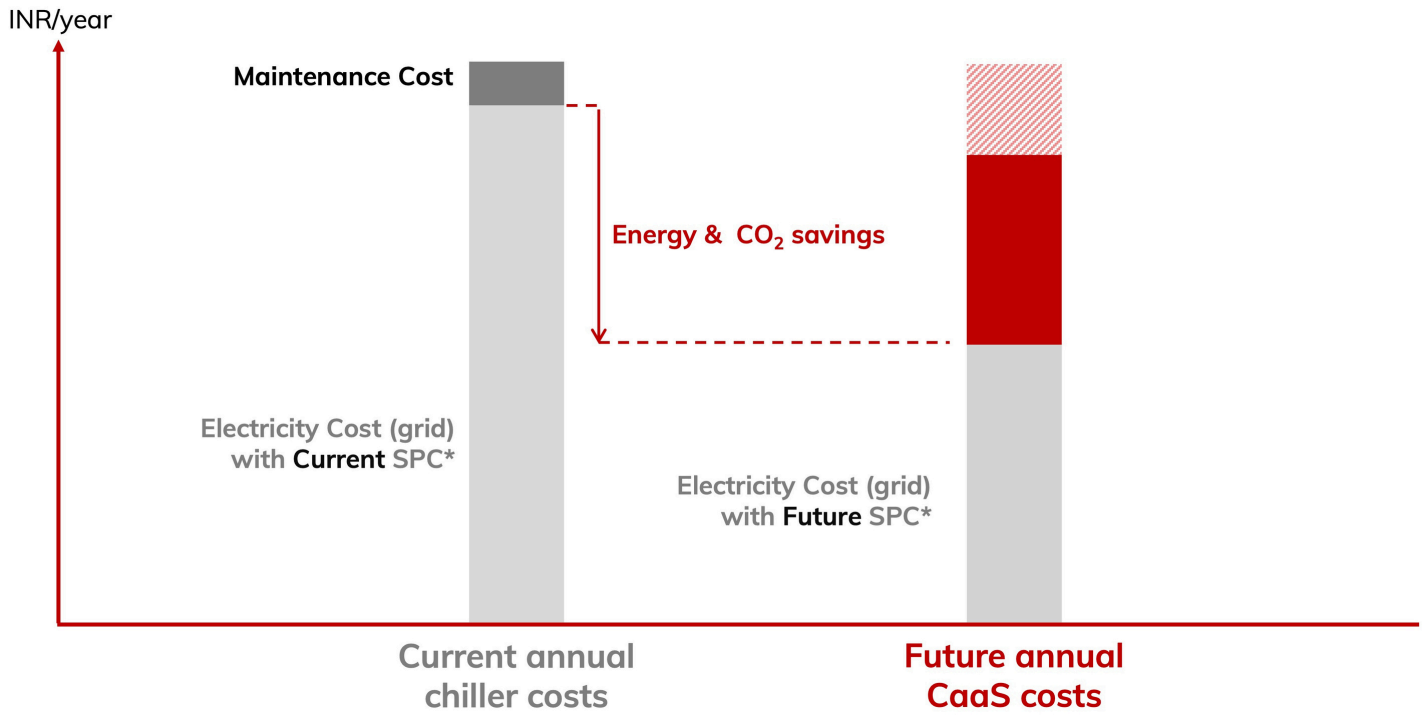
BECIS provides high efficiency sustainable cooling solutions under invest-build-execute-own-operate-maintain-optimise model. Entire upfront investment is by BECIS while customer pays based on actual consumption. BECIS provided following solution to the customer:-

- Replacement of existing old chillers with new high-efficiency centrifugal chillers. Installation of Automatic Tube Cleaning System
- Replacement of select derated auxiliary equipment based on audit report
- Suitable water treatment facility based on the quality of water at the site
- Advanced chiller plant automation system for optimum performance of the chiller plant
- Remote monitoring of important operational parameters for quick diagnostics and decision making. Team of experts from BECIS undertake routine performance assessment based on this data
- Skilled manpower to be deployed at site to ensure reliable operation of chiller plant
- Guarantee on chiller plant performance efficiency for Term of up to 15 years

Benefits accrued to the shopping mall:-

- Commercial savings with reduction in electricity consumption and demand charges.
- No upfront investment from the customer. Payment starts only after commissioning of chiller plant
- Save management bandwidth for other important operations in the shopping mall
- Automated operations and remote monitoring for performance monitoring
- Regular reports on chiller plant performance provided by BECIS

Commercial Saving from CaaS Model



SPC: *Specific Power Consumption*
CaaS: *Cooling as a Service*

- Cooling as a Service model consists of installation of chiller plants at customer's greenfield and brownfield facility including chillers, pumps, cooling towers, smart controls and online monitoring
- BECIS will provide long-term performance guarantee to ensure that electricity consumption is within limits
- Customer will accrue savings due to reduction in total operating cost

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