Customized Thermal Energy Efficiency Solutions

Need for Energy Solutions on Thermal Side in Industries

5-10% annual CO₂ reduction targets

5-30% costs attributed to energy in industry depending on sectors

Highest consumers of thermal energy in industries
1. Steam generation
2. Heat treatment processes
3. Cooling processes

Energy cost reduction through efficient utilization of utilities
Customized Thermal Energy Efficiency Solutions

About Bosch Energy and Building Solutions

We are a solid partner
to entrust turnkey projects, for reliable and guaranteed results.

We are an ESCO
offering the most efficient solutions as we are technology neutral.

We guarantee financial and environmental savings by assuring real and measurable benefits.

Energy Savings

Demand Side

Supply Side
Customized Thermal Energy Efficiency Solutions
Our Solution Portfolio and Approach

End-to-end solution provider for innovative energy solutions

Energy Efficiency Solutions

Solar PV Solutions

Best Tech Award Supporting Energy Efficiency 2018
Best Rooftop Solar Integrator in India Awards REI Awards and Solar Quarter

Intersolar Award for Best Solar Project in India twice

2017 Winner of National EC Award for Energy Efficient Technology & Impact Created

World’s First Airport to be completely powered by solar energy – Cochin International Airport

Fastest executed solar project in India (within 4 months) – Bagmane Tech Park

Project Approach

Incubate | Analyze | Design | Implement | Demonstrate

BUREAU OF ENERGY EFFICIENCY
Government of India, Ministry of Power

Highest rating of Grade 1 ESCO for Energy Efficiency related offerings

GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY

Highest rating of SP1A Channel Partner for on-grid and off-grid Solar PV installations

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Clean Energy for Sustainable Facilities

- Car-parking Solar PV Solutions
- Sheet-roof Solar PV Solutions
- Ground-mounted Solar PV Solutions
- Flat-roof Solar PV Solutions

Reliable Solar PV Solutions

Increasing the reliability of power supply for facilities in a clean, affordable and sustainable manner.
Customized Thermal Energy Efficiency Solutions

Customized Solutions for Real Cost Savings

Customized Energy Efficiency Solutions

Reducing energy consumption in industrial and commercial facilities by combining customized solutions, intelligent systems, connected sensors and sustainable operation.
Customized Thermal Energy Efficiency Solutions

Energy Solutions Customized to your Facility

- Office Building
- Healthcare
- Hotels
- Pharma
- FMCG
- Dairy
- Consumer Appliances
- Food Processing
- Manufacturing
- Transportation
- Auto & Auto Ancillary
- Engineering
- Textile & Dyeing
- Agro
More than 200 enterprises have benefitted from partnering with Bosch Energy.

- **CO₂**: Equivalent of 300,000 tons of CO₂ emissions offset till date. Same as that absorbed by 15 million trees every year.
- **₢**: Rs 330 crores in energy costs saved till date.
- **Energy**: Over 500 million units of clean power generated till date.

Customized Thermal Energy Efficiency Solutions

IMPACT CREATED SO FAR
User-Centric Approach to Solution Development

Design thinking Approach

Design review based on Design Review Based on Failure Mode principle

Preparation of robust design
Customized Thermal Energy Efficiency Solutions

Transparent M&V Procedure for Savings Demonstration

- **Pre-Implementation Period**
  - Define scope of M&V procedure
  - Design M&V procedure
  - Data collection with smart meters for baselining

- **Post Installation Period**
  - Collection of post installation data
  - Normalization of the baseline (production, ambient condition)
  - Verify the savings realized

Complete M&V Procedure based on International Performance Measurement and Verification Protocol (IPMVP) for complete transparency
## Customized Thermal Energy Efficiency Solutions

### Successful Partnerships across Sectors – Energy Efficiency

<table>
<thead>
<tr>
<th>#</th>
<th>Customer</th>
<th>Location</th>
<th>Sector</th>
<th>Solution</th>
<th>Model</th>
<th>Energy Savings</th>
<th>Ticket Size (INR)</th>
<th>Payback Period</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>IQRAA Hospital</td>
<td>Calicut</td>
<td>Healthcare</td>
<td>HVAC Efficiency Improvement</td>
<td>Gtd. Savings</td>
<td>28%</td>
<td>&gt;50 lakhs</td>
<td>2.5 years</td>
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<tr>
<td>2</td>
<td>Triton Valves</td>
<td>Mysore</td>
<td>Manufacturing</td>
<td>Steam Distribution Optimization</td>
<td>Gtd. Savings</td>
<td>30%</td>
<td>75 - 100 lakhs</td>
<td>2.2 years</td>
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<tr>
<td>3</td>
<td>Baby Memorial Hospital</td>
<td>Calicut</td>
<td>Healthcare</td>
<td>HVAC Efficiency Improvement</td>
<td>Gtd. Savings</td>
<td>12%</td>
<td>75 - 100 lakhs</td>
<td>2.4 years</td>
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<tr>
<td>4</td>
<td>Hatsun Dairy</td>
<td>Kanchipuram</td>
<td>Dairy</td>
<td>Steam Distribution Optimization</td>
<td>Gtd. Savings</td>
<td>14%</td>
<td>100 - 150 lakhs</td>
<td>2.6 years</td>
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<tr>
<td>5</td>
<td>Narayana Hrudayalaya</td>
<td>Bangalore</td>
<td>Healthcare</td>
<td>HVAC Efficiency Improvement</td>
<td>Gtd. Savings</td>
<td>14-18%</td>
<td>75 - 100 lakhs</td>
<td>2.5 years</td>
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<td>6</td>
<td>Sri Mahalakshmi Dairy</td>
<td>Coimbatore</td>
<td>Dairy</td>
<td>Steam Distribution Optimization</td>
<td>Gtd. Savings</td>
<td>14%</td>
<td>75 - 100 lakhs</td>
<td>2.2 years</td>
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<td>7</td>
<td>Lear Automotive</td>
<td>Chennai</td>
<td>Auto ancillary</td>
<td>Steam Distribution Optimization</td>
<td>Gtd. Savings</td>
<td>45%</td>
<td>100 - 150 lakhs</td>
<td>2.5 years</td>
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<tr>
<td>8</td>
<td>Volvo Eicher</td>
<td>Indore</td>
<td>Automotive</td>
<td>Integrated Heating &amp; Cooling</td>
<td>Gtd. Savings</td>
<td>50%</td>
<td>60 - 70 lakhs</td>
<td>2.4 years</td>
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<td>9</td>
<td>Renault Nissan</td>
<td>Chennai</td>
<td>Automotive</td>
<td>Integrated Heating &amp; Cooling</td>
<td>Gtd. Savings</td>
<td>59%</td>
<td>50 - 75 lakhs</td>
<td>1.9 years</td>
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<td>10</td>
<td>Best Colour Solutions</td>
<td>Erode</td>
<td>Textile &amp; Dyeing</td>
<td>Steam Distribution Optimization</td>
<td>Gtd. Savings</td>
<td>25%</td>
<td>100 - 150 lakhs</td>
<td>2.2 years</td>
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<td>11</td>
<td>Mypol</td>
<td>Mysore</td>
<td>Manufacturing</td>
<td>Steam Distribution Optimization</td>
<td>Gtd. Savings</td>
<td>18%</td>
<td>150 - 200 lakhs</td>
<td>1.8 years</td>
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<tr>
<td>12</td>
<td>Honda Motorcycles</td>
<td>Manesar</td>
<td>Automotive</td>
<td>Integrated Heating &amp; Cooling</td>
<td>Gtd. Savings</td>
<td>50%</td>
<td>&lt;25 lakhs</td>
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<td>13</td>
<td>Nilons</td>
<td>Jalgaon</td>
<td>Food</td>
<td>Steam Distribution Optimization</td>
<td>Gtd. Savings</td>
<td>17%</td>
<td>150 - 200 lakhs</td>
<td>2.7 years</td>
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</tbody>
</table>
CASE STUDY

STEAM DISTRIBUTION OPTIMIZATION
CASE STUDY – STEAM DISTRIBUTION OPTIMIZATION

SRI MAHALAKSHMI DAIRY

Sri Mahalakshmi Dairy, Coimbatore
14% savings in overall process energy consumption

600,000 per year

3.6 million per year

509 tons per year

Steam Distribution Optimization Solution

AMAZING FACT
Energy platform connecting 30 sensors across the plant provides critical alarms and energy insights to the managers!
Customer Pain Points

- Heating and cooling equipment running at sub-optimal levels
- Imbalance between steam and hot water generation and end-use requirements
- Incomplete recovery of steam condensate
- Loss of flash steam in the condensate line
- Lack of transparency in monitoring critical process and energy parameters
CASE STUDY – STEAM DISTRIBUTION OPTIMIZATION

SRI MAHALAKSHMI DAIRY

Our solution

- Switch low-medium temperature process requirements from steam to pressurized hot water
- Integration of energy efficient heat pumps
- Integration of custom-designed stratification tanks for aggregation and re-distribution of heat sources as per process requirements
- Balancing plant-wide heating and cooling systems for synchronous operations
- Integration of tailor-made energy monitoring platform
- Designed for retrofit approach and easy maintenance
- Energy assessment by in-house energy experts
- Energy baselining and demonstration of savings with the help of advanced smart meters
- Model: Guaranteed Savings Model

Advantages for the client

- 14% Cost saving on the energy bill from this process thanks to the solution
- 600,000 kWh Annual reduction of electricity consumption annually compared to previous situation
- 509t Reduced CO₂e emissions annually thanks to the solution implemented
- 2.1 years Solution customized to specific process need providing short payback period
Customized Thermal Energy Efficiency Solutions

Reliable ESCOs Derive Measureable Results

Partner with Reliable ESCOs for Measurable Value

1. Rely on ESCO’s ECM implementation experience across various sectors, while you focus on your core operations.

2. Ask the ESCO for sectoral/solution-based reference projects for a working proof of concept.

3. Derive real value from an ESCO that has a technology neutral approach and provides guaranteed savings.

4. Insist on working with an ESCO that maintains a transparent and systematic M&V procedure (based on IPMVP).

5. Pick an ESCO that will maintain the highest quality and safety standards while working at your facility.

6. Ensure that the ESCO has experience in managing retrofit projects without interrupting customer operations.

Pre-condition: Rising energy costs

Reduced energy costs

Saved energy costs used to invest in energy efficiency solution

Investment pay back between 2 to 3 years

Continued energy cost savings post investment pay back
Our goal is to make our customers’ lives safer, more convenient, and more energy efficient – in other words, to help improve their quality of life.
“I have always acted according to the principle that I would rather lose money than trust. The integrity of my promises, the belief in the value of my products and of my word of honor have always had a higher priority to me than a transitory profit.”

ROBERT BOSCH