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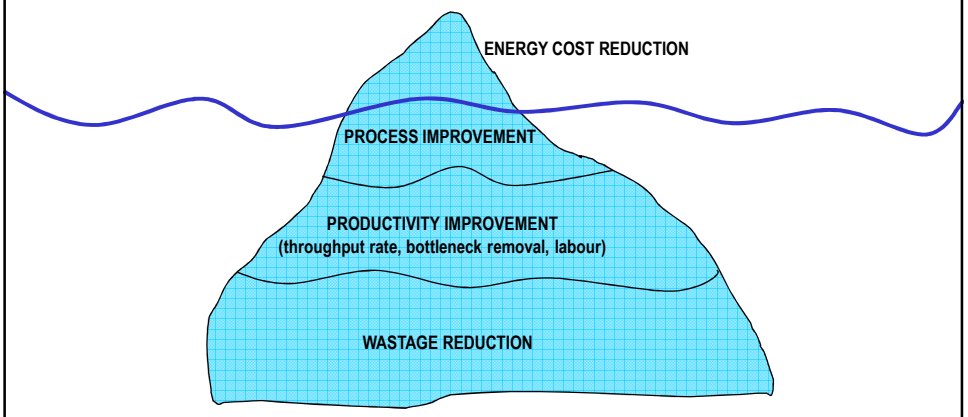
Sudnya Industrial Services Pvt. Ltd., Pune

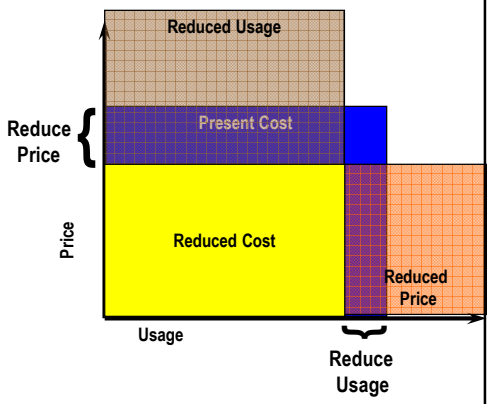
Challenges and Opportunities in HVAC

The Tip of the Iceberg



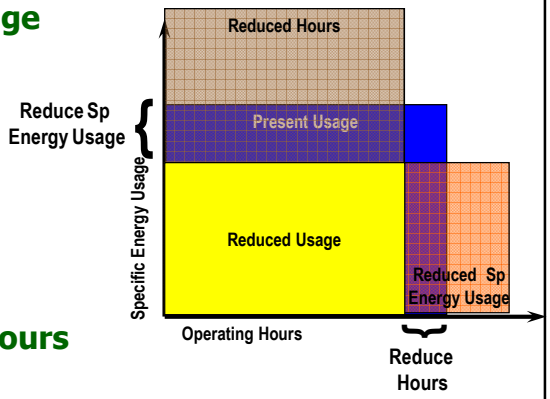
Energy Cost Reduction

- Reduce Price through
  - Negotiation
  - Substitution
    - Shift to Off-Peak Tariff Rates
    - Reduce Peak Loads
    - Cogenerate Heat & Electricity
- Reduce Usage
  - Reduce Wastage
  - Reduce Losses
    - Improve Efficiency
    - Increase Throughput Rate



Usage Reduction

- Reduce Specific Usage
  - Improve Designs
  - Change specification
  - Improve Efficiencies
- Reduce Operating Hours
  - Change Set Points
  - Improve Controls



High Side HVAC Opportunities

- Chillers
  - Central Systems
  - Water Cooled Chillers
- Cooling Towers
  - Low Approach Design
  - Efficient Fans
- Cooling Water Pumping
  - Pipe Sizes and Layout
  - Efficient Pumps

Low Side HVAC Opportunities

- Chilled Water Pumping
  - Variable water flow systems
  - Primary – Secondary Pumping
  - Pipe Sizing and Layout
  - Efficient Pumps
- Variable Air Volume Systems
- Constant Air Volume Systems
  - Heat Ex between Exhaust and Incoming Air
  - Dehumidification of Outside Air
  - Liquid Dessicant Cooling & Dehumidification
  - Duct Sizing and layout
- Under-floor Air distribution system

Improve Implementation

- Construction
  - Control Leakages
  - Avoid uncontrolled Air ingress
- Commissioning
  - Not restricted to merely mechanical and electrical operation
  - Performance Measurement and related adjustments is the key
  - Air Balancing
  - Water Balancing
  - Valve & Damper Positions

Improve Controls

- Switch off when not in use
- Economiser mode of operation
- Usage dependent Set point adjustments
  - Temperature reset during unoccupied hours
- Variable water flow systems

HVAC Challenges

- Building Design Improvements
  - Prevent Heat Ingress
  - Improve Day-lighting
  - Improve Natural Ventilation to avoid HVAC
- Old Buildings
  - Multi-Owner Buildings
    - Old Office Complexes
    - Residential Buildings

System Challenges

- Thermal Storage
  - Small storages
  - Storage space
- Cogeneration/ Tri-generation Challenges
  - Gas availability
  - Space
  - Noise

Management Challenges

- Management awareness
  - Energy cost is a small proportion of total costs
  - Energy Costs are controllable
- Operator Training
- Maintenance
- Performance Measurement
  - Standard: what should we be using?
  - How much do we use?

Contact Us

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