LG’s Green, Smart, and Eco friendly Solutions represent our core product and successful examples.
Introduction of LG Electronics

Core Products

Green Concept

Successful examples
# LG Electronics AC Company

- **Global Total HVAC and Energy Solution Company**
- **Design comfort through green technology**

## HVAC solution
- Residential Air Conditioning
- Commercial Air Conditioning

## Energy solution
- Solar Energy
- Lighting
- Solution

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**Business Partner & Customer**

**Environment Friendly**
Introduction of LGE Energy Solutions

- **Green, High efficient and Convenient solution**

**HVAC Solution**
- Multi V (Electric Heat Pump)

**Power Generate Solution**
- Mono Crystalline
- Multi Crystalline

**BEMS Solution**
- V-net Facility Control System

**Lighting Solution**
- LED Lights
  - PR16 (replace halogen)
  - PAR Type
  - Bulb (replace Incandescent)
Green Home

Photovoltaic Power Generate
- Power Generate: 3kW

Solar-powered heating
- 25~80% energy saving than incandescent, fluorescent lamp

LED Lighting
- 25~80% energy saving than incandescent, fluorescent lamp

HEMS (Home Energy Management System)
- 5~15% energy saving
- Scheduled operation
- Occupancy Sensors

Indoor unit
- HP Water heater

HRV (Heat Recovery Ventilation)
- 33% energy saving than using ventilation fans

Multi V Geothermal
- 50% energy saving than EHP
- 75% energy saving than Electric heater
- 40% smaller footprint than competitor

Monthly Operating Power Consumption

- Power Generate: 300kWh (33.7%)
- Device, ETC: 295.8kWh (33.2%)
- HVAC, Water Heater: 225kWh (25.2%)
- Lights: 66kWh (7.4%)
- Device, ETC: 191kWh (21.4%)
Green School (Actual Example)

**Multi V III (Aerothermal Heat Pump)**
- Individual zone control
- 20% higher COP than competitor
- 30% less installation space
- Continuous heating operation

**Solar Energy**
- Power Generate: 15kW

**LED Lighting**
- 25~80% energy saving than incandescent, fluorescent lamp

**HRV (Heat Recovery Ventilation)**
- 33% energy saving than using ventilation fans

**Multi V Geothermal**
- 50% energy saving than EHP
- 75% energy saving than Electric heater
- 40% smaller footprint than competitor

**AHU (For Large Space)**
- Total IAQ (Indoor Air Quality) management
- 60~70% energy saving by heat recovery

**BEMS (Building Energy Management System)**
- 5~15% energy saving
- Using Temp. Lock, Schedule, Dimming Control
- Efficiency use with interlocked Sensors

**Introduction-LGE Product**
- Green Concept Examples Vision

**Vision**
- Heater, A/C 22,000kwh 61.8%
- Lights 2,574kwh 7.3%
- HVAC, Water Heater 10,846kwh 30.5%
- LED 383.4kwh 1.1%
- Generate 1,500kwh 4.2%

**Monthly Operating Power Consumption**
- 46.4%
- 53.6%

**Total IAQ management**
- 60~70% energy saving by heat recovery
**Green Building**

**Photovoltaic Power Generate**
- Power Generate: 15kW

**Chiller**
- Cooling for large open space
- 15% Smaller footprint than competitor

**Multi V Geothermal**
- 50% energy saving than conventional heat pump

**BEMS (Building Energy Management System)**
- 5~15% energy saving
- Using Temp. Lock, Schedule, Dimming Control
- Efficiency use with interlocked Sensors

**Multi V III (inverter Heat Pump)**
- Individual zone control
- 20% higher COP than competitor
- 30% less installation space
- Continuous heating operation

**LED Lighting**
- Comparing with incandescent, fluorescent lamp
- 25~80% energy saving

**AHU (Air Handling Unit)**
- Total IAQ (Indoor Air Quality) management
- 60~70% energy saving by heat recovery

**Monthly Operating Power Consumption**

- **Heater, A/C 60MWh**
  - 61.8% of total energy consumption
- **Lights 26,080kwh**
  - 20.7% of total energy consumption
- **HVAC, Water Heater 29,580kwh**
  - 23.5% of total energy consumption
- **Device, ETC 40,000kwh**
  - 31.7% of total energy consumption
- **LED 3,077kwh**
  - 2.4% of total energy consumption
- **Generate 1,500kwh**
  - 1.2% of total energy consumption

**Photovoltaic Power Generate**
- 100% of energy generated from renewable sources
- **48.3%** of total energy consumption

- **51.7%** of total energy consumption

**Photovoltaic Power Generate**
- 100% of energy generated from renewable sources
- **48.3%** of total energy consumption

- **51.7%** of total energy consumption
Green Hospital

AHU (Air Handling Unit)
- Total IAQ (Indoor Air Quality) management
- 60~70% energy saving by heat recovery

BEMS (Building Energy Management System)
- 5~15% energy saving
- Scheduled operation
- Occupancy Sensors

HRV (Heat Recovery Ventilation)
- 33% energy saving than using ventilation fans

Multi V Geothermal
- 50% energy saving than EHP
- 75% energy saving than Electric heater

LED Lighting
- 25~80% energy saving than incandescent, fluorescent lamp

Photovoltaic Power Generate
- Power Generate : 15kW

Introduction

Monthly Operating Power Consumption

Heater, A/C
96MWh
39.2%

Lights
58,680kwh
24%

HVAC, Water Heater
47,328kwh
19.3%

Device, ETC
90,000kwh
36.8%

LED
6,923kwh
2.8%

Device, ETC
76,500kwh
31.3%

Generate
1,500kwh
0.6%

Photovoltaic Power Generate

53.4%

46.6%
Yul-myeon High School

**Successful example applied Geothermal, BEMS System**

**Information**
- Name: Yul-myeon High School
- Location: 545 Godang-ri, Yul-myeon Icheon Gyeonggi-do
- Size: 4 story building
- Usage: Educational facility
- Gross Floor Area: 3,545 m²
- Completion: September 2009

**System Overview**

Geothermal Heat Pump System (Water to Air)
- (A) Nominal Capacity: 58 kW x 11ea, 29 kW x 3ea
- (B) Cooling Capacity: 725 kW
- (C) Heating Capacity: 813 kW
- (D) IDU: Ceiling Cassette
- (E) Pipe: Vertical closed (150M x 70EA)

Building Energy Management System (FCS)
- Monitoring/Controlling IDU and geothermal system

**Installation results**

- **Initial investment Cost**
  - Geo HP + IDU: $110,250
  - Absorption chiller heater + FCU: $760,725

- **Annual operating cost**
  - Geo HP + IDU: $3,660
  - Absorption chiller heater + FCU: $20,000

- **CO2 emission**
  - Geo HP + IDU: 4,599 kg
  - Absorption chiller heater + FCU: 10,348 kg
Seoul Children’s grand park

**Successful example applied Geothermal, BEMS System**

**Information**

- **Name**: Seoul Children’s grand park
- **Location**: Neung-dong Gwangjin-gu, Seoul Korea
- **Size**: Green house (large space)
- **Usage**: Botanic Garden
- **Gross Floor Area**: 1,944 m²
- **Completion**: Oct 2009

**System Overview**

*Geothermal Heat Pump System (Water to Air)*

(A) **ODU Capacity**
- 87kW x 4ea, 58kW x 3ea, 29kW x 2ea

(B) **Cooling Capacity**: 580kW

(C) **Heating Capacity**: 652kW

(D) **IDU**: Ceiling concealed duct, AHU

(E) **Pipe**: Vertical closed (200M x 40EA)

*Building Energy Management System (FCS)*

Monitoring/Controlling IDU and geothermal system

**Installation results**

- **Initial investment Cost**
  - Geo HP + IDU, AHU: $882,000
  - Geo HP + IDU, AHU, radiator /Electric heater: $336,000
  - Boiler + AHU, radiator /Electric heater: $16,000

- **Annual operating cost**
  - Geo HP + IDU, AHU: $476,000
  - Geo HP + IDU, AHU, radiator /Electric heater: $16,000

- **CO2 emission**
  - Geo HP + IDU, AHU: 512% (18,836kg)
  - Boiler + AHU, radiator /Electric heater: 512% (18,836kg)