

# Telkonet SmartEnergy Overview

Enables Property Owners to Improve Energy Efficiency and Reduce Energy Consumption

## Energy Costs

Energy costs associated with heating, ventilation and air conditioning (HVAC) comprise one of the largest operating expenses for property owners, with guest/owner usage representing a large portion of a facility's overall utility bill. Usage studies have shown that rooms are unoccupied an average of 12 or more hours per day, with air conditioning or heating running most of the time. Being able to control HVAC usage can improve energy efficiency and reduce energy consumption.

## Telkonet SmartEnergy

Telkonet SmartEnergy (TSE) uses intelligent programmable thermostats, packaged terminal air conditioner (PTAC) controllers and wireless occupancy sensors to adjust and maintain a room's temperature. Patented algorithms within the thermostats and controllers enable property managers to set the thermostat's recovery time. The temperature setting will be allowed to increase or decrease within a specific range that will enable the room to return to the occupant-set temperature within a prescribed number of minutes.

Upon occupying the room, the temperature setting may be adjusted by the guest for their comfort. With SmartSystem Setback, when the room is vacant, the thermostat automatically reduces the energy consumption

on the HVAC according to that room's thermal load and HVAC unit efficiency. This takes into consideration room conditions, such as if window coverings are open or closed and the direction the window faces. The thermostat constantly calculates how far the temperature can vary to guarantee that the guest's comfort temperature setting will be achieved within minutes upon their return to the room. This process delivers energy savings while ensuring guest comfort.

TSE also offers custom programming for deeper temperature setbacks for extended periods of non-occupancy, dry versus humid environments and extreme temperatures. For example, the thermostat can learn the day-to-day occupancy patterns of the room and recover in advance of the expected arrival as well as setback more deeply after a typical departure, such as in an office or school setting.

Energy management reports can be produced by either downloading data directly from the thermostat or controller to a laptop computer in the room or through central controls from the front desk. The reports can provide savings and consumption information, HVAC and PTAC runtime savings, operational status and efficiency, occupancy statistics and ROI calculations.

## Benefits

- Reduces energy consumption by up to 30% or more by achieving energy efficiencies and HVAC control
- Eliminates wasted energy from heating and cooling unoccupied rooms, while ensuring the guest's comfort upon their return
- Reduces wear and tear on HVAC units, ensuring longer life and lower operating and repair costs
- Quick, simple, non-disruptive installation by using a wireless communication link between the sensor and controller
- Assures humidity control, efficient operation, while maintaining comfortable room temperatures
- Automatic learning and monitoring of occupancy patterns and room characteristics
- Eligibility for rebates

### SmartSystem Setback

SmartSystem Setback varies each room's temperature depending on its room condition. For each room, it constantly evaluates how far the temperature can vary when the room is vacant, considering the room's unique heating and cooling needs in real-time, as well as the efficiency of the HVAC system. SmartSystem Setback guarantees the guest's comfort temperature will be achieved within minutes upon their return to the room, achieving maximum savings per room. In contrast, with a fixed setback system, the temperature is set to one fixed amount in all rooms, regardless of the room condition.

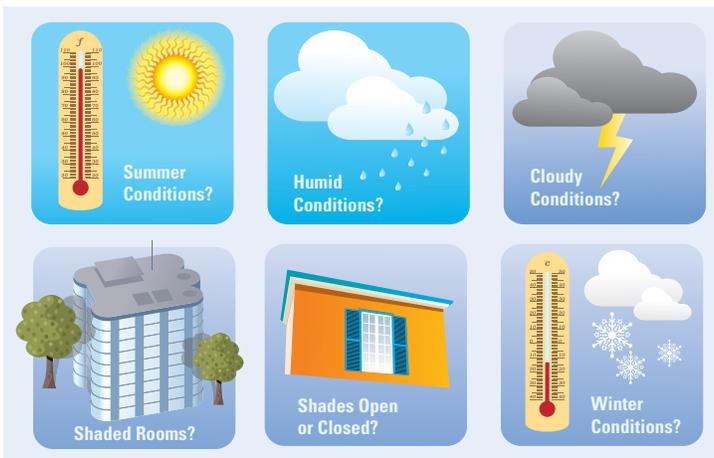


Figure 1. SmartSystem Setback adjusts each room's temperature based on weather and room conditions.

Figure 2 illustrates the differences between a fixed setback system and SmartSystem Setback when guests set the room temperature to 72 degrees. With a fixed setback system, the 82 degree temperature in rooms 1, 2 and 3 could have been set higher to maximize energy savings. In addition, the 82 degree temperature in rooms 3 through 11 is set too high, resulting in an uncomfortable temperature when the guest returns. In comparison, SmartSystem Setback adjusts each individual room temperature for optimum savings and guest comfort

Fixed Setback System										
82°	82°	82°	82°	82°	82°	82°	82°	82°	82°	82°
Room #1	Room #2	Room #3	Room #4	Room #5	Room #6	Room #7	Room #8	Room #9	Room #10	Room #11

SmartSystem Setback										
87°	89°	85°	79°	79°	78°	78°	75°	74°	72°	73°
Room #1	Room #2	Room #3	Room #4	Room #5	Room #6	Room #7	Room #8	Room #9	Room #10	Room #11

Figure 2. Temperature variances: Fixed Setback System versus SmartSystem Setback

### SmartSystem Setback Features and Benefits

- **Guaranteed recovery time**
  - When a guest returns to the room, the temperature is brought back to the guest's setpoint within minutes
  - The room temperature varies exactly far enough to achieve maximum savings while ensuring quick recovery time set by the management
- **Reduces HVAC-related guest complaints**
  - The room never takes too long to heat or cool, regardless of the weather conditions
- **Room-by-room savings**
  - SmartSystem Setback calculates each individual room's unique heating and cooling needs
- **Inexpensive, quick installation**
  - Battery-operated, motion/infrared occupancy sensor communicates to the controller via radio frequency
  - Easy to maintain
- **PC downloadable data**
  - Savings analysis reports can be produced, showing HVAC system efficiency data, occupancy statistics, runtime savings, etc.
  - Provides payback information, ROI, proof of savings
  - Is a maintenance troubleshooting tool

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