

New Efficiency Tech Showcase:

**The next generation of efficient power strips:
Embortec, Inc.**



Who is Embertec?

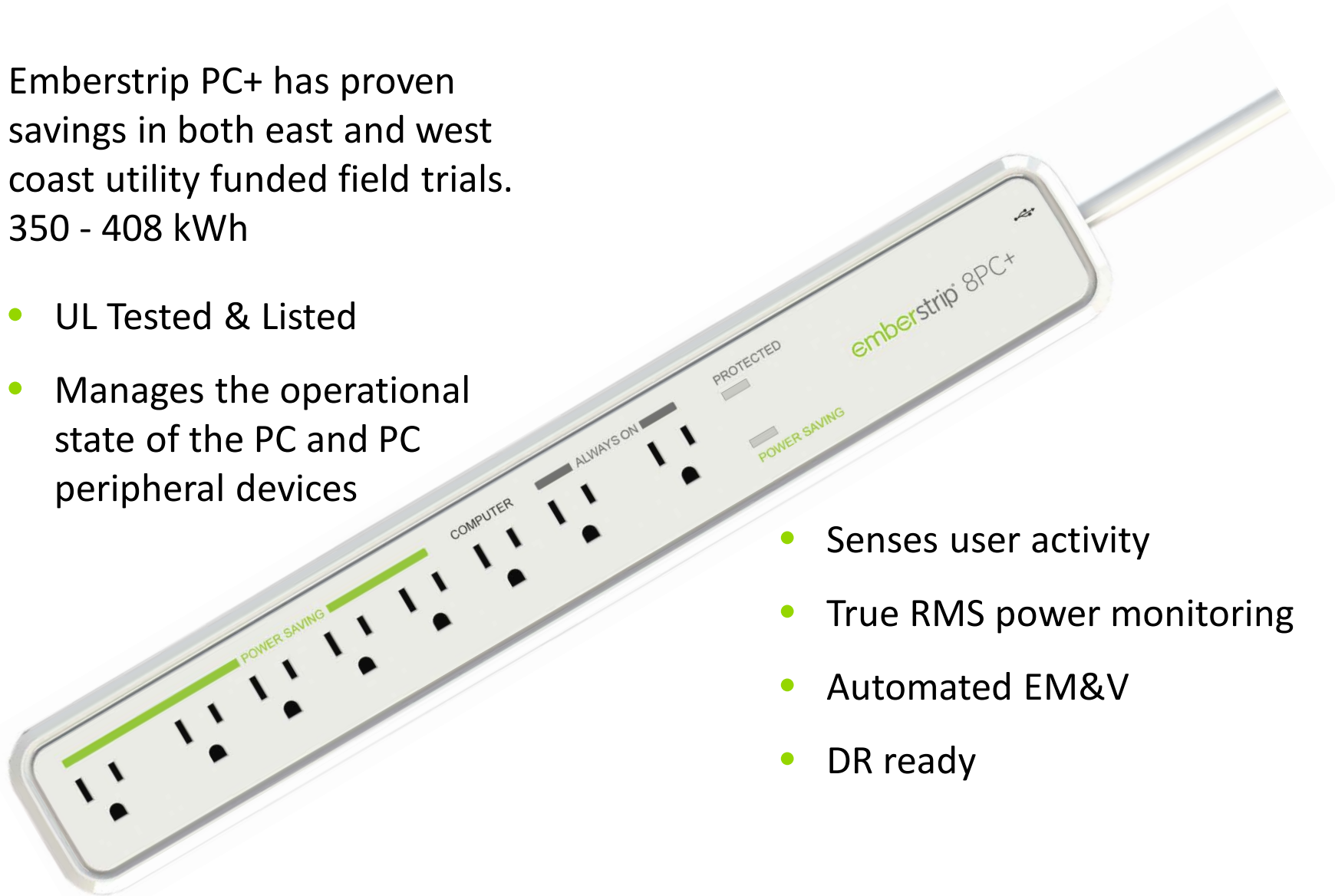
- Australian Energy Efficiency Technology company
- Founded in 2004
- **Inventors** of Tier 2 Advanced Power Strips
- Experienced leaders from the technology, computer science, energy and manufacturing industries.
- Comprehensive development and production capability
- All products are fully designed and engineered in house
- <http://www.embertec.com>

Emberstrip 8PC+

Emberstrip PC+ has proven savings in both east and west coast utility funded field trials.
350 - 408 kWh

- UL Tested & Listed
- Manages the operational state of the PC and PC peripheral devices

- Senses user activity
- True RMS power monitoring
- Automated EM&V
- DR ready



Commercial Offices

Plug load is the second largest energy efficiency opportunity in the work place. Lighting being the first.

- ③ Office workers are busy individuals with two things on their mind at work, getting the job done and getting home.
- ③ Behavior change for achieving energy efficiency in the office setting is harder than in the home (they don't pay the electricity bill).
- ③ Office workers often leave their work stations unoccupied and equipment running while away at meetings and on nights and weekends.

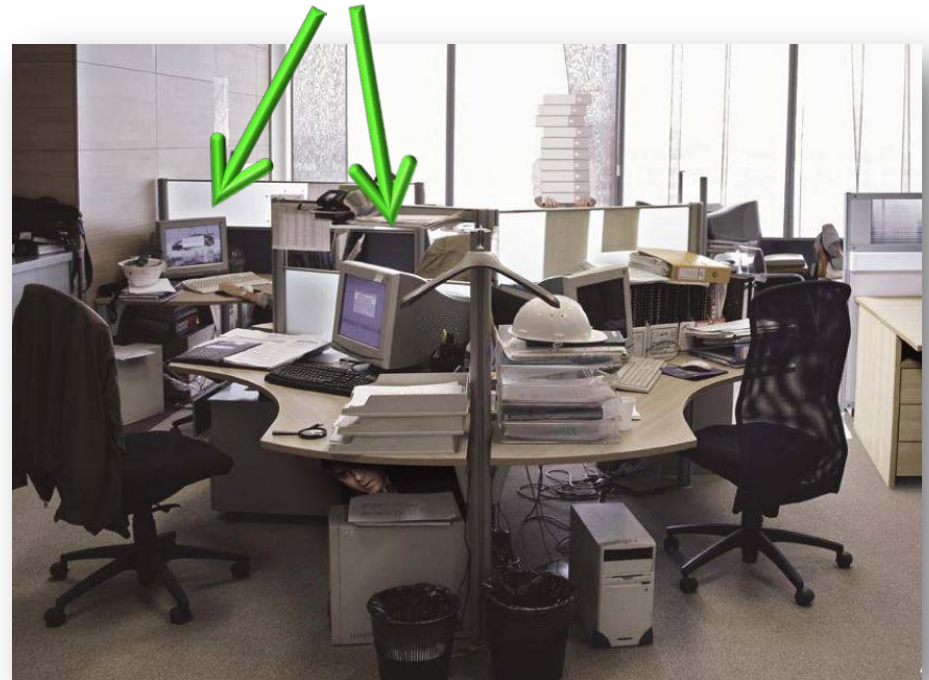


Active Power Waste

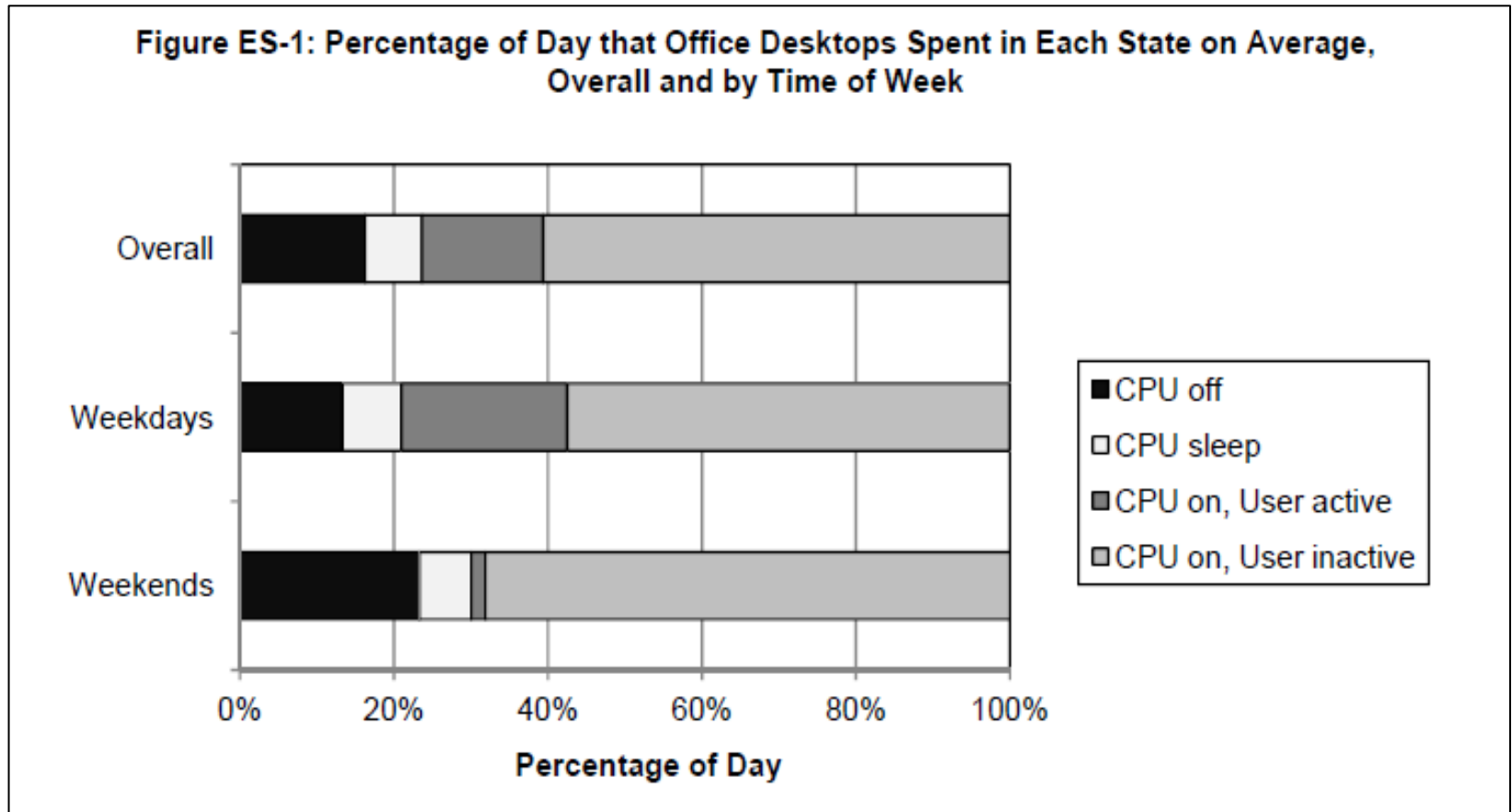
The Opportunity for Savings

- ② Reduce plug load energy wastage
- ② Computers and peripherals waste power in two distinct ways:
 - **Active Power Waste:** Where the device is on but not performing its main function (e.g. Computer and peripherals are on but not being used)
 - **Passive Standby Waste:** Where power is used by peripheral products to keep it ready to switch on.
- ② An ideal energy saving device would reduce both types of waste through intelligent activity monitoring.

Left on during lunch, meetings, breaks, and overnight/weekends

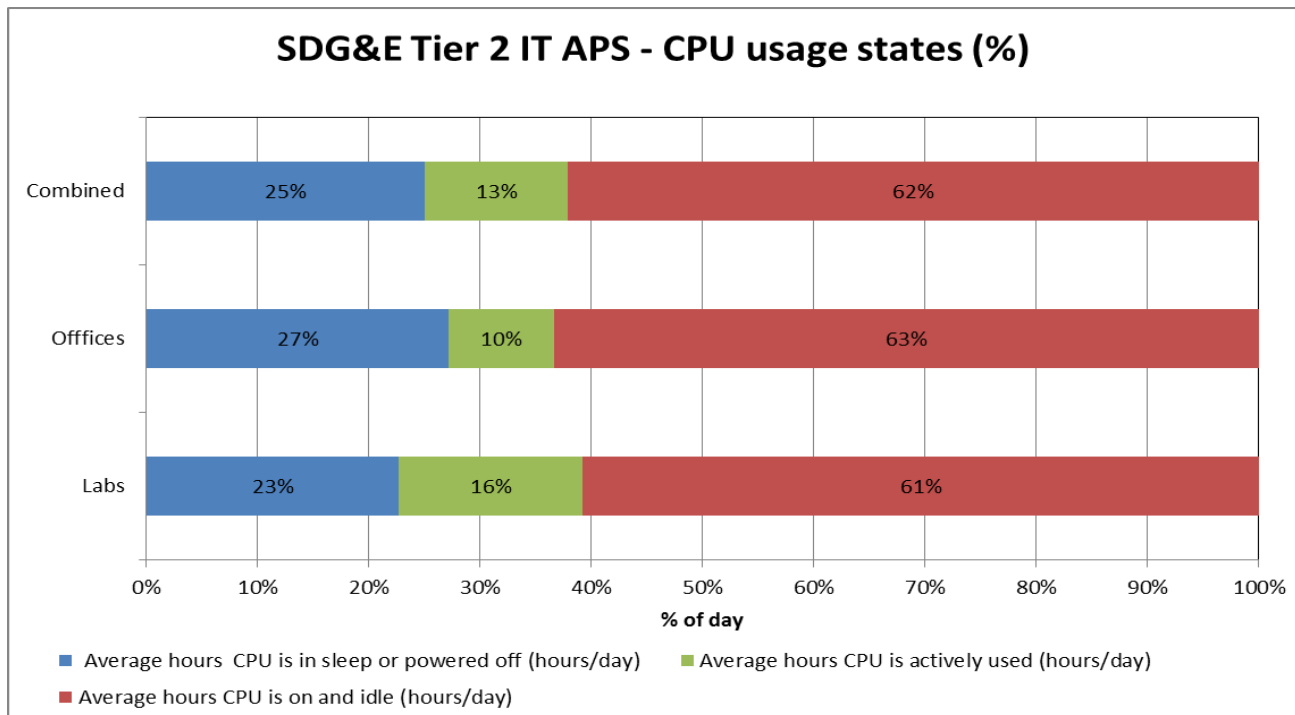


CalPlug (University of Irvine) Research



Source: Pixley, Joy E.; Stuart A. Ross. (University of California, Irvine). 2014. *Monitoring Computer Power Modes Usage in a University Population*. California Energy Commission. Publication number: CEC-500-2014-092.

SDG&E Field Trial




- Less than 3% variation in CPU usage state across CalPlug office evaluation and SDG&E field trial.
- This highlights a significant plug load management opportunity in commercial offices.

Intelligent Activity Sensing

- ④ Utilizing intelligent activity monitoring avoids the typical challenges associated with optical motion sensing due to false reading from “walk-bys”, sunlight, artificial light, shadows and false turn offs when body motion is not detected.
- ④ In addition intelligent activity monitoring allows you to save energy by managing the computers active waste instead of just peripheral device energy waste which traditional optical occupancy sensors are limited to.

Emberstrip PC +

- Desktop and Laptop compatible
- Real world field trials
- NEEP/ERS Field Trial 408 kWh
- SDG&E 371 kWh
- CalPlug 350 kWh savings
- Addresses both peripheral and PC energy wastage as opposed to only addressing peripheral energy waste and standby power



SDG&E Commercial Field Trial

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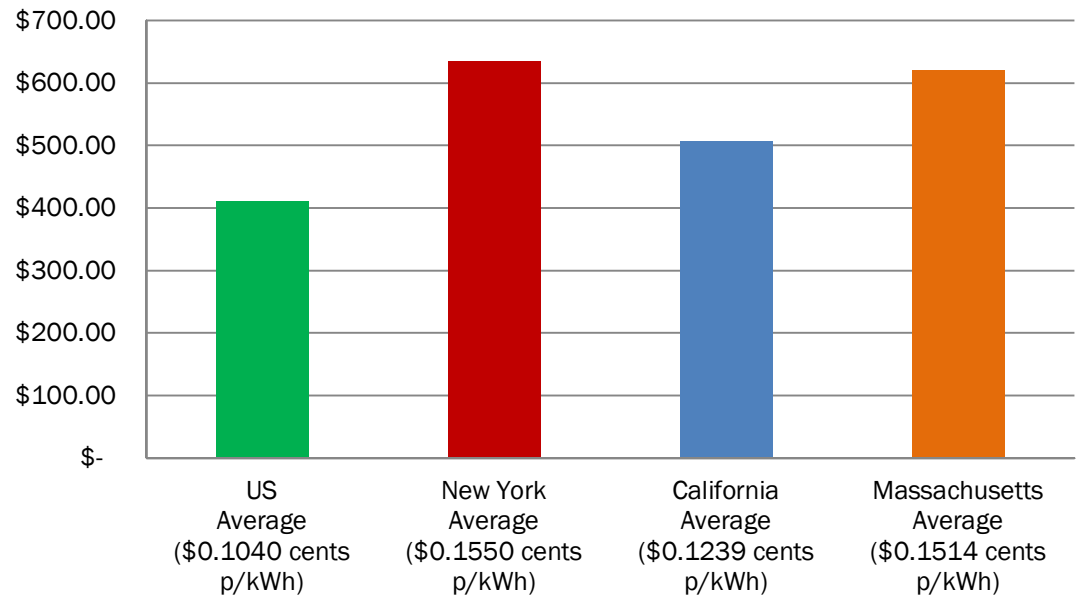
DATASET	Monitored Time [Days]	Weekly Active Usetime [Hours]	Baseline Annual Usage [kWh]	Annual Energy Savings [kWh]	% Savings
Office Settings	12	19.6	621.5	494.0	79.5%
Computer Lab Settings	13	28.3	342.9	253.5	73.9%
Combined	13	24.0	479.5	371.4	77.5%

Tier 2 APS Follow Up 3/5/2015

Emberstrip™ PC+ Savings

Approximate PC installation energy savings over ten years		
Average kWh Savings*	Annual Savings 408 kWh	10 years 4080 kWh
US Average ** (\$0.1040 cents p/kWh)	\$ 41.16	\$ 411.00
New York Average ** (\$0.1550 cents p/kWh)	\$ 63.55	\$ 635.00
California Average** (\$0.1239 cents p/kWh)	\$ 50.79	\$ 507.00
Massachusetts Average** (\$0.1514 cents p/kWh)	\$ 62.07	\$ 620.00

Approximate Savings Over Ten Years



* These savings are based on energy savings recorded in independent US field trials in commercial environments using Embertec technology.

** Based on US energy prices in commercial sector published by eia.gov dated Feb 2013.

IT APS Product Comparison

The recent SDG&E field trial enabled a comparison between 3 types of commercial APS devices:

- Tier 1 APS – Requires the PC to be placed into a lower energy state to **save power to the peripheral devices only**
- Motion Sensing APS – Requires there to be no user activity to **save power to the peripheral devices only**
- Tier 2 APS – Adjusts to user activity automatically to **save power to the PC and the PC peripheral devices**

Utility field trial data evaluation demonstrated that Embertec PC+ delivered nearly 5 times the energy savings of the next best PC control alternative.

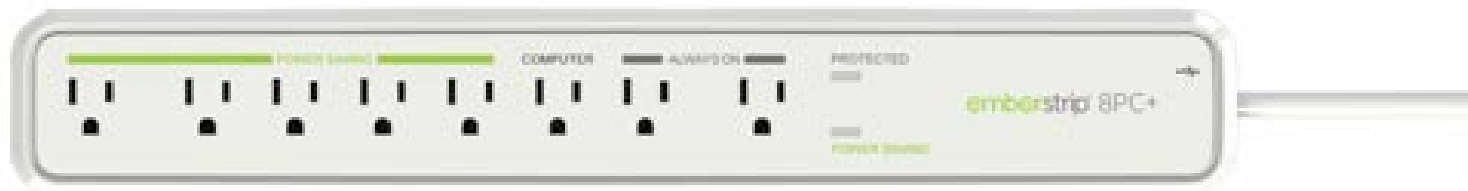
Embertec PC+

Embertec PC+ places the PC into standby mode and cuts power to connected equipment after 30 minutes (adjustable) of inactivity, if it has not detected any PC usage.

Detects and switches off standby power to connected equipment when your PC equipment is left in standby mode or off.

Quickly powers-up your equipment when the PC is switched on or exits standby mode in the normal way.

- ④ Emberstrip UL 1449-3 and UL 1363
- ④ Joules 1147j
- ④ Lifetime manufacturer warranty
- ④ \$20,000 connected equipment warranty



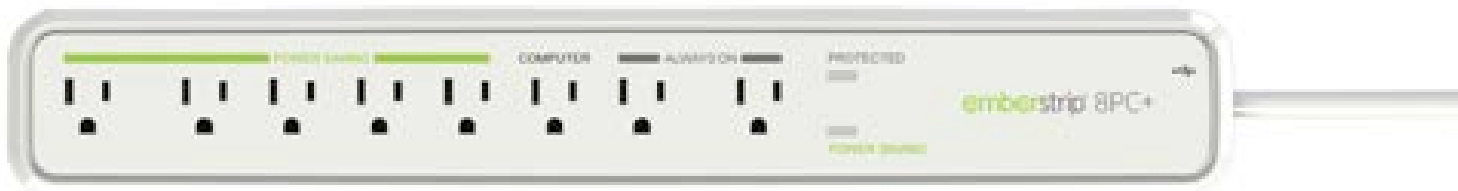
Integrated

- ④ Emberstrip PC+ is a software/hardware solution
- ④ Using Automatic Power Down™ it senses when the connected PC is not in use, by monitoring multiple parameters and provides user feedback when energy saving actions will soon occur, placing the PC into sleep mode and removing power to all peripherals in the Energy Saving sockets.
- ④ If the user is present, simple interaction with the PC (mouse or keyboard usage) delays the energy saving event.



Embertec PC+

- Desktop and Laptop compatible
- Independent utility funded field trials - validating energy savings
- San Diego Gas & Electric - 371 kWh savings per annum average
- CalPlug deemed 350 kWh savings
- 60% + savings over baseline usage
- The only solution to addresses both peripheral and PC energy waste.



Key Benefits of Embertec PC+

Ⓜ EASY SETUP

Plug and use for everyday people. Simple software, no tweaking. Automatically senses user activity of the connected PC and connected device power states.

Ⓜ EXCEPTIONAL CONVENIENCE

No habit change. Determines when additional energy savings can be delivered, over and above existing system settings, without requiring user input.

Ⓜ EVERYDAY VERSATILITY

Works seamlessly and automatically with all devices.

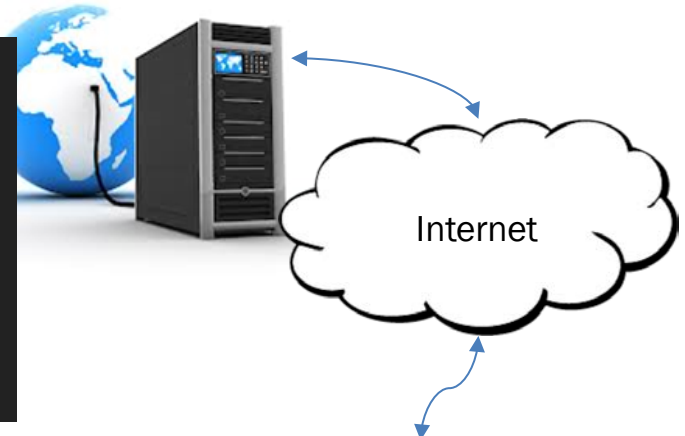
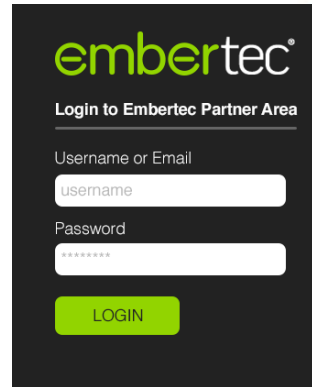
Demand Response capability providing additional value beyond energy efficiency to users.

PC+ Enterprise Features

Overview

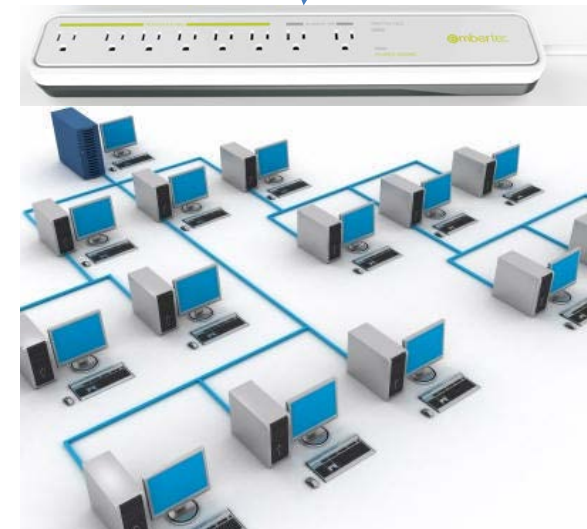
PC+ Enterprise Solution allows for large scale software deployment via the IT administrator.

A cloud based service is then used to configure and manage all enterprise PCs, coupled with software installed directly on to the PCs connected to the Embertec PC+ unit.



Key Features

- Allows IT administration to centrally install, update and manage Embertec PC+ software and hardware.
- Enables PCs connected to the corporate intranet to be individually identified and optionally grouped together.
 - *All PCs in a lab/office can be identified & managed together*
- Enables creation of multiple configuration (wake up sessions) to be created and then assigned to individual or groups of PCs.
 - *PCs will then wake up when required for essential system maintenance and security*
- Provides a report on power usage both by individual PCs and collectively as a group such as in a computer lab, room, building or campus.
- Enables PCs to be remotely put to sleep on demand – if the PC is not being used, thus saving additional power.



Enterprise PC +

Ⓢ™ **CLOUD SERVICE**

Upgraded software allowing visibility of energy savings to IT administrators.

Ⓢ™ **POWER PROFILES**

Continuous measurement of power draw with usage profile alerts – i.e. electric heater usage after office hours

Ⓢ™ **ENERGY GRID PARTICIPATION**

Participation in energy grid stability and usage of renewable energy resources.

PC+ Enterprise Security

- ④ A PC installed with PC+ is identified by its assigned Computer Name and Domain name (for example: EMBER-PC19.ember.local)
- ④ Data transfer between PC+ and the Embertec Cloud is secured using HTTPS (TLS 1.2)
- ④ User access to Cloud controlled with OAuth 2.0 and strong password policy
- ④ Cloud Data Centre operations comply with industry standards, and are accredited under:
 - ISO 27001 Information Security Management
 - SOC 1 and SOC 2 /SSAE 16/ISAE 3402 (Service Organization Controls)
 - Federal Information Security Management (FISMA) Moderate
- ④ Sensitive data in the database can be encrypted using AES encryption (256 bit key).
- ④ Username of current logged in user can be recorded in the database, primarily to facilitate IT support to end-user if required. Username can be omitted if greater anonymity is desired. IT managers are able to look up who was logged in via the Windows event log.

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www.embertec.com