

Innovation Thru Energy

save today for tomorrow



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Introduction



ITE is an energy efficiency solutions company providing leading technologies to assist businesses save energy, reduce their environmental impact and in-turn, reduce their utility bills. We offer energy consultancy and technical consultancy service to help manage, monitor and reduce energy consumption. Our energy consultants take a hands on approach to providing energy management services and energy saving solutions to businesses looking to save energy within their organization. Through our relationships with technology providers and funding partners alike we bring innovative technologies & funding solutions to the market. We are not tied to any specific products either, so we only recommend something if it's right for you.



What is Aircosaver

Energy saver for air conditioning systems

Air conditioning has a huge potential for efficiency improvements.

Air conditioning is one of the largest energy consumers in the residential, commercial and industrial sector. Thousands of air conditioners put high demands on our electricity networks. On a smaller scale, air conditioning probably accounts for a significant part of your energy bill.

Most existing air conditioning units waste a significant part of the consumed electricity because they are not controlled in a smart way. They use old and quite inefficient technology. Although improved technology has become available in more expensive systems (e.g. inverter technology), the payback time of these systems is still very long and most of this technology is not suitable as an easy and economical aftermarket fit to existing systems.

Making existing air conditioning systems more energy efficient is by far the quickest, most affordable and most effective way to reduce your CO2 emissions and lower your energy bills.

The Aircosaver



- is a retrofit electronic control unit that adds intelligence to existing air conditioning systems and improves their energy efficiency.
- is a proven product with a large installed base that has been growing rapidly each year since 2001. Worldwide, the Aircosaver has been tested and installed successfully by various prestigious blue chip clients and leading authorities.
- achieves average energy savings of between 20 - 30% (often more, depending on local conditions) resulting in a short payback period.
- is 100% engineered & manufactured to highest quality standards in Germany to give you peace of mind.

Often copied, never reached. The Aircosaver is the genuine original that has been setting the standard in this product category ever since the first generation Aircosaver was introduced in 2001. Several competitors have tried to copy the Aircosaver but have never invested a similar amount of R&D, testing and engineering.

Typical Energy Savings

AC usage & Aircosaver savings Calculator						
Results			Convert SEER to EER		AC Annual Hours Calculator	
EER		11.70	SEER	13	Description	Units
AC Tons		5	EER	11.70	Hours per Day	12
AC KW usage		5.128			Days per Week	7
Annual hours of Operation		4368			Weeks per Year	52
AC Annual KWh usage		22,400.0			Annual Hours	4368
KWh rate		\$0.100				
Annual KWh rate increase		2.50%				
Annual Cost of AC		\$2,240.00				
Aircosaver Saving %		24.0%				
1st Year \$ Savings =	\$537.60	Cumulative				
2nd Year \$ Savings =	\$551.04	\$1,088.64				
3rd Year \$ Savings =	\$564.82	\$1,653.46				
4th Year \$ Savings =	\$578.94	\$2,232.39				
5th Year \$ Savings =	\$593.41	\$2,825.80				
6th Year \$ Savings =	\$608.25	\$3,434.05				
7th Year \$ Savings =	\$623.45	\$4,057.50				
8th Year \$ Savings =	\$639.04	\$4,696.54				
9th Year \$ Savings =	\$655.01	\$5,351.55				
10th Year \$ Savings =	\$671.39	\$6,022.94				

ROI Calculation	
Installed Cost of Aircosaver:	\$599.00
Return on Investment:	1.1 Years

AC Make:	ICP
AC Model #:	PHF06L000E
AC Serial #:	G053141115

Estimated Yearly Savings

Yearly Savings

Based on \$0.11/Kwh - ROI <1- Year
Energy savings 26%

\$1k

1 x 5-ton RTUs - 20 hrs/day 52 weeks/yr

\$5k

5 x 5-ton RTUs - 20 hrs/day 52 weeks/yr

\$10k

10 x 5-ton RTUs - 20 hrs/day 52 weeks/yr

\$50k

50 x 5-ton RTUs - 20 hrs/day 52 weeks/yr

Gross Lease Example

- 100 x A/C units
- Saving \$1000 per A/C unit / year
- Savings per year \$100,000
- \$2,000,000 savings over 20 years

For Landlords who pay all property charges including Utilities this model adds profit straight to the bottom line and increases the resale value of any development.

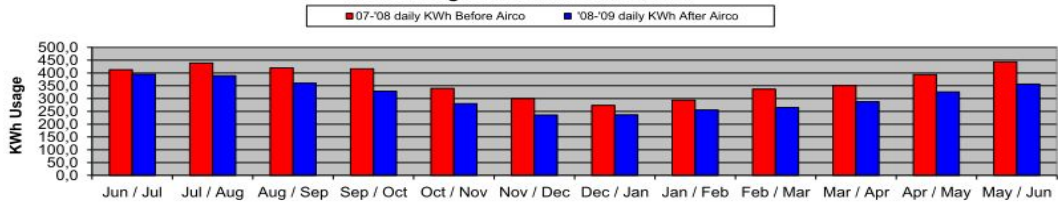
Lower Operating Cost = Increased NOI =
Value Enhancement and Marketability

Domino's AircoSaver Test Store 6711 - 3022 Thousand Oaks, San Antonio, TX 78247

Airco was installed on Jun 20, 2008 at the end of the May/Jul 2008 billing cycle. (Data included for comparison only)		May/Jul 2008		May/Jul 2007		daily KWh difference		% change	
T KWh	days	daily KWh	T KWh	days	daily KWh				
13280	30	442.7	13200	33	400.0	42.7	9.6%		
Mean temperature daily average		86		79		7	8.1%		
Jul/Aug 2008		Jul/Aug 2007		daily KWh difference		% change			
11280	29	389.0	12720	29	438.6	-49.6	-12.8%		
Mean temperature daily average		85		83		2	2.4%		
Sep/Oct 2008		Sep/Oct 2007		daily KWh difference		% change			
10520	32	328.8	11640	28	415.7	-87.0	-26.5%		
Mean temperature daily average		76		80		-4	-5.3%		
Nov/Dec 2008		Nov/Dec 2007		daily KWh difference		% change			
6840	29	235.9	8680	29	299.3	-63.4	-26.9%		
Mean temperature daily average		56		58		-2	-3.8%		
Jan/Feb '09		Jan/Feb '08		daily KWh difference		% change			
7400	29	255.2	8520	29	293.8	-38.6	-15.1%		
Mean temperature daily average		60		58		2	3.3%		
Mar/Apr '09		Mar/Apr '08		daily KWh difference		% change			
8920	31	287.7	10160	29	350.3	-62.6	-21.8%		
Mean temperature daily average		68		69		-1	-1.9%		
Apr/May '09		Apr/May '08		daily KWh difference		% change			
9440	29	325.5	12600	32	393.8	-68.2	-21.0%		
Mean temperature daily average		68		76		-8	-10.5%		
Annual Totals		Annual Totals		daily KWh difference		% change			
9420	30	310	11167	30	368	-58	-19.4%		
Mean temperature daily average		66.0		65.8		0.2	0.3%		

Annual Savings for AircoSaver Installed on Jun 20, 2008
-19.4% KWh Reduction

KWh Savings for Domino's store 6711



Savings over 5000 stores

- 5000 stores
- Average Cost KWh \$0.12
- Saving \$182.16 / store / month
- Saving \$2185.92 / store / year
- Savings per month over 5000 stores **\$910,800.00**

Savings per year if Domino's installed Aircosaver in 5000 restaurant

\$10,929,600.00

Benefits of the Aircosaver

Quick & easy to install

- Separate versions for all main power supplies (230V, 110V, 24V) available to make installation easier and cheaper (no need to fit an additional transformer).
- Significantly increased switching power (12A / 120A inrush) - no need to install an additional relay.
- Now available with or without strain relief for the wiring to enable internal or external mounting of the Aircosaver.

Higher savings & guaranteed cooling comfort due to improved software

- Optimized parameter settings for higher savings at no noticeable decrease in cooling comfort.
- Savings algorithm of the standard Aircosaver optimised for systems up to 10 tons (please contact us for special versions for larger cooling systems).
- Aircosaver quickly understands the current cooling situations and constantly adapts to ensure best possible savings at full cooling comfort.

Better protection for your air conditioning unit

- Improved anti short cycling protection and overall compressor protection.
- Protection against short and potentially damaging power outages.

Further product features

- New housing made of non-flammable, shock-proof polycarbonate (UL94-V0).
- Compliant to UL and CE regulations.
- Developed and manufactured in Germany to highest quality standards.

Typical cooling cycle

When switched on, typical air conditioning systems operate continuously until the room thermostat senses the desired temperature and turns the system off. As the room warms up, the thermostat switches the air conditioner back on and the cycle repeats.

Most air conditioning units are oversized for the majority of operating conditions

Air conditioning systems are usually dimensioned to cope with the extreme cooling demands of the few hottest days of the year (plus a safety margin).

However, in most operational conditions, this maximum output is not required and the system is oversized. So running the system continuously until the room thermostat switches it off means that the system operates with excess capacity most of the time.

A typical cooling cycle with excess capacity looks like this:

- When the cycle starts, the compressor pushes cooling energy into the heat exchanger which acts as an energy storage. At this stage, the system works with high efficiency because compressors operate most efficiently when fully loaded.
- In normal weather conditions, the energy storage is soon fully "charged up". From this point onwards, the compressor provides more cooling energy than the heat exchanger can take up (**thermodynamic saturation**).
- **Running the compressor beyond this stage does not increase the cooling effect any more. It's just a waste of energy!**

How Aircosaver improves efficiency



The air conditioning energy saver compensates the shortcomings of typical AC units and adds intelligence to your AC system

The Aircosaver's sensor-driven software algorithms are designed to detect thermodynamic saturation and to optimize the compressor accordingly. When overcapacity is detected, the Aircosaver switches the compressor off and avoids inefficient overcooling.

Your unit switches into "saver mode". The fan keeps running and your system makes maximum use of the stored cooling energy in the heat exchanger. Once the stored energy is used up, the compressor can work efficiently again and is switched back on.

The set room temperature is reached **without the inefficient parts of the cooling cycle**. This results in significant energy savings without compromising cooling comfort.

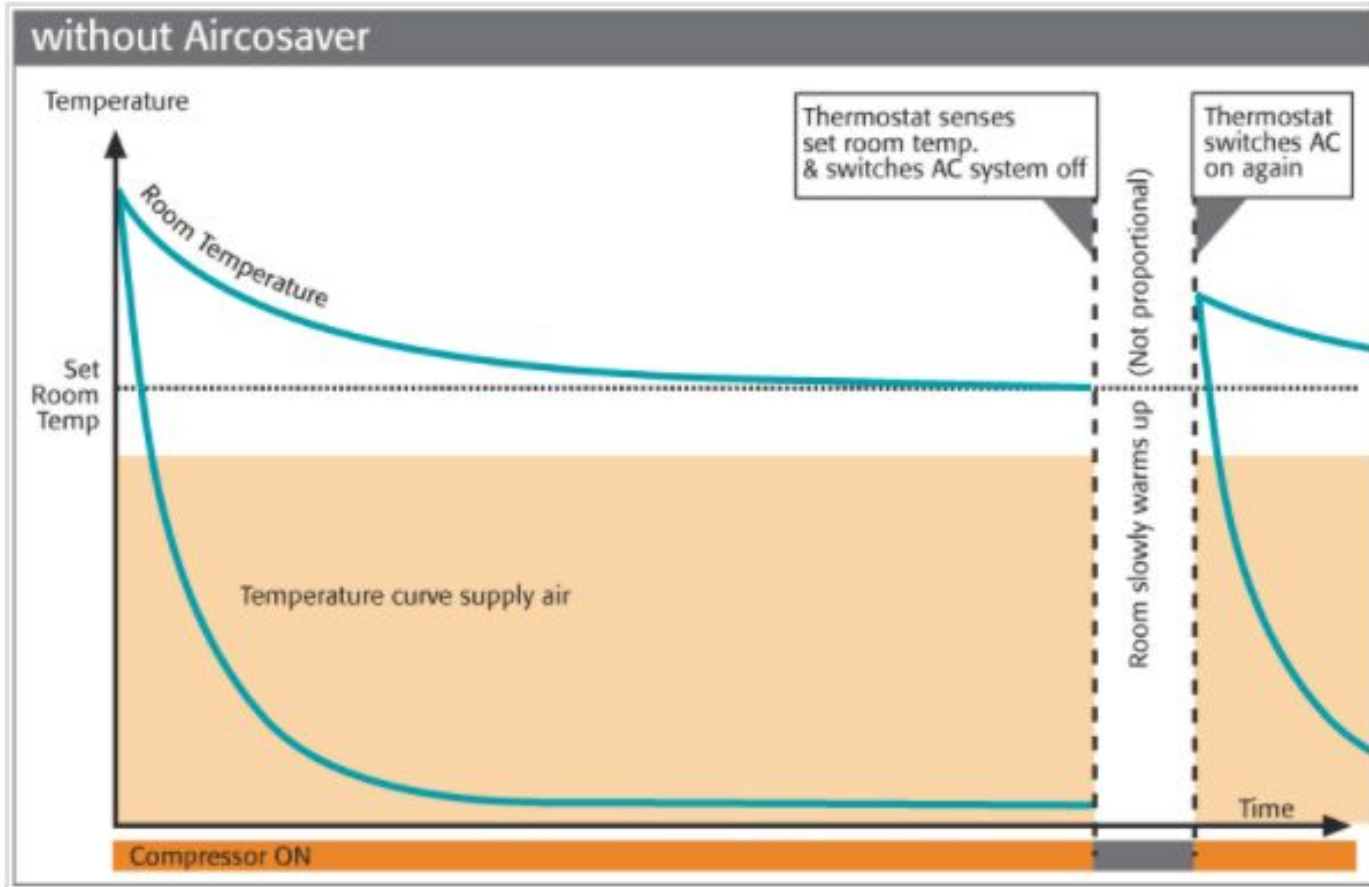
Since the correct point to switch the compressor varies from unit to unit and changes with different weather conditions, the Aircosaver is constantly monitoring the cooling status of your aircon unit and adapting its settings to ensure efficient operation of your air conditioning system at all times.

Protecting your unit against short cycling

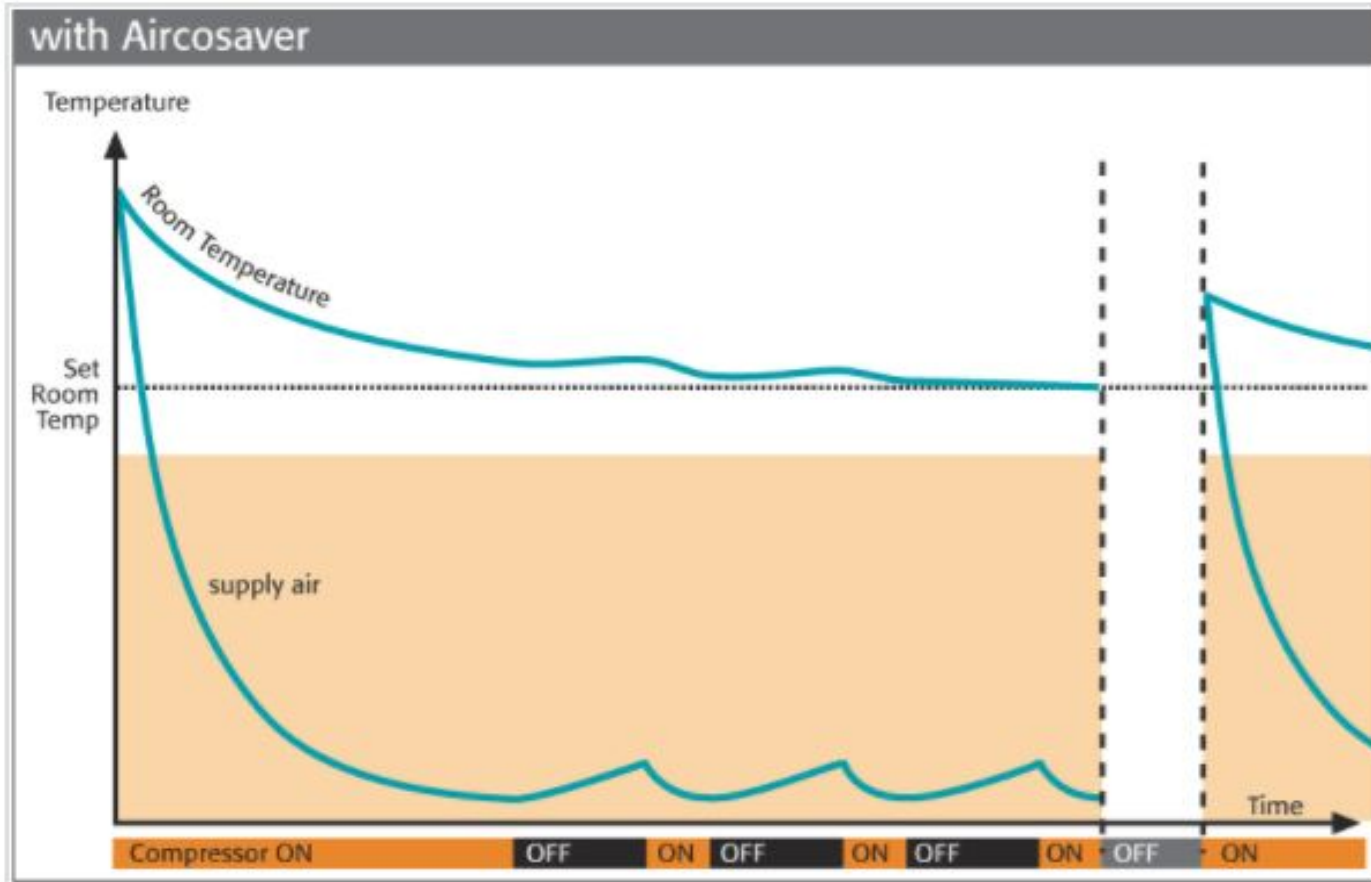
Cycling the compressor too frequently in too short time intervals may harm the compressor and must be avoided. For this reason, the Aircosaver features a built-in **anti short cycling protection**.

Besides the continuous anti short cycling protection, the Aircosaver also adds a delay upon power-on to your unit. This valuable feature protects your aircon unit against damages from short power outages like they are common in many developing countries.

Without Aircosaver



With Aircosaver



What we do



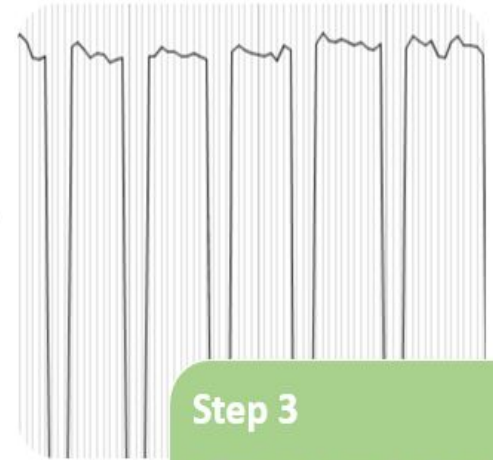
Step 1

- Check A/C Unit is in good working condition.
- Remove access covers to expose control section.
- Install monitoring equipment.
- Reinstall access covers.



Step 2

- Isolate Power
- Remove access covers to expose control section.
- Install Airco Saver as per instructions supplied.
- Reinstall access covers.
- Reinstall power.



Step 3

- Remove monitoring equipment.
- Download Data.
- Analyze recorded parameters to determine energy savings.
- Present report of savings & ROI

Installation

The Aircosaver is designed to be installed into existing systems as an aftermarket product. Installation is simple and takes approximately 30 minutes (depending on local situations). A detailed step-by-step installation manual is provided with each Aircosaver.

Installation overview

For clarity's sake the images below illustrate the installation of an Aircosaver into a small window unit. However, the installation steps are basically the same for many other types of air conditioning units. The Aircosaver is suited for a wide range of air conditioning types such as single-split systems, packaged units or small central aircon units.

Please note: Installing and servicing air conditioning equipment can be hazardous due to system pressures and electrical components. Although Aircosaver installation is quick and simple, it should only be conducted by trained electricians or HVAC contractors to ensure proper system setup and maximum savings

Installation



1. Provided material.



2. Additional required material.



3. Disconnect power and remove covers.



4. Find a suitable location.



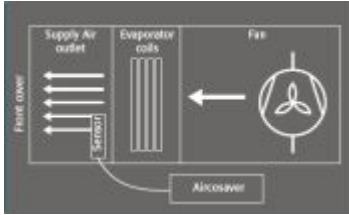
5. Check for a wiring diagram.



6. Interrupt compressor (or compressor contactor) switching wire. This is the cable through which the thermostat tells the compressor to run or stop.



7. Route this wire through the Aircosaver (i.e. the Aircosaver is now logically in series with the thermostat). Connect power to the Aircosaver.



8. Position sensor in supply air stream (schematic).



9. Position sensor in air supply stream (example).



10. Replace covers.

Suitability for Aircosaver

The standard version is suitable for most residential and light commercial DX (direct expansion) AC systems, e.g. window units, wall-mounted units, single splits and small packaged units.

If you would like to use it on larger systems, industrial units or on different applications such as reverse cycle air conditioning (incl. heating) or cold storage cooling, please contact us for customized versions.

Where should you **NOT** install a Aircosaver? The standard Aircosaver is **NOT** suitable for:

- Chilled water systems.
- Evaporative cooling systems.
- Inverter type split systems.
- Multi split systems.
- Also, some Mitsubishi models (e.g. the Mr. Slim range) are NOT suitable for installation due to extensive built-in monitoring functions which can cause problems under some operating conditions.

Business Sectors

- ❑ **Commercial Office Space**
- ❑ **Multi Tenanted Office Space**
- ❑ **Education**
- ❑ **Manufacturing**
- ❑ **Retail Stores Food**
- ❑ **Retail Stores Non-Food**
- ❑ **Hospitality Industry**
- ❑ **Gas Stations**
- ❑ **Auto Dealers**
- ❑ **Municipalities**
- ❑ **Parking Lots**
- ❑ **Healthcare**
- ❑ **Restaurants**
- ❑ **IT Rooms / Data Centers**

Clients





Thank You

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