

Identification of Single Phase Motor Energy Control Applications

A single phase motor energy control survey is relatively straight forward compared to a three phase survey as electrical measurements are not needed. Most applications have standard size motors and on/off load percentages, all you need to be able to do identify the applications and tally the amount present.

Refrigeration Systems

The most important differentiation in this category is the identification of “integral”, or “stand alone” and “remote” refrigeration compressor fridge, freezer and bottle cooler systems

Category One (With Integral Compressors Units)

Fridges: Under Counter (1 - 3 Door); Upright (1 - 2 Door).

Freezers: Under Counter (1 - 3 Door); Upright (1 - 2 Door); Chest.

Bottle Coolers (1 - 3 Door)

Salad Chillers

Vending Machines

Ice Making Machines

In-Line Beer and Soft Drinks Coolers

These fridges and freezers have the compressors within the confines of the cabinet. They need ventilation as the compressors create heat which needs to be dispersed.

The indication of a "stand alone" fridge or freezer is that there is a ventilation grill somewhere on the cabinet; chest freezer usually on the side; bottle cooler usually via a thin grill on front most times on the bottom; under-counter fridges and freezers tend to have the grills on the front usually on the bottom; upright fridges and freezers tend to have the grills on the front, almost always on the bottom.

Category Two (With Remote Compressor Units)

Fridges: Walk-in; Display

Freezer: Walk-in; Display

Bottle Cooler: Under Counter (1 – 3 Door)

Cellar Chillers

Split Air Conditioning Systems

These fridges and freezers have compressors that are remote in some way from the cabinet or display or functioning system. The compressor will be mounted remotely, (sometimes on a roof, or outside), but will be traceable by the lagged piping leading from the chiller to the display. The displays or cabinets of fridges and freezers of this type will generally have no ventilation visible on them as they do not have to get rid of any heat local to the display. It is quite possible in this type of system that one refrigeration compressor will service more than one fridge or freezer display.

This type of installation is the most cost effective way of operating refrigeration equipment but far more expensive to install as it involves a good deal of piping, lagging and control gear to manage the remote refrigeration compressor service.

The number of doors on the fridges and freezers is not indicative of whether the units are remote or stand alone.

Please also note that you can't install an EnviroStart unit on domestic fridges or freezers, only commercial ones. Commercial fridge and freezers are normally larger, made of stainless steel (but not always) and normally have a temperature gauge somewhere on them.



Remote Compressor (No Ventilation Grills)



“Integral” Compressor (Ventilation Grills)



Remote Compressor (No Ventilation Grills)



“Integral” Compressor (Ventilation Grills)

Integral refrigeration compressor fridges and freezers can also be recognised because they almost always have a stepped shelf at the bottom of the cabinet behind which the compressor sits. This is not however always the case as there are some fridge and freezer manufacturers who place their compressors and control gear at the top of the cabinet.

Walk-in Fridges and Freezers

These are much larger than other fridges and freezers and are large enough for someone to “walk in”. Be careful when auditing these systems as they can also be three phase.



Ice Making Machine

Usually found in cellars, store rooms or bars though in many hotels they can also be located on the various floors to provide ice for the guests in their rooms.

Units vary in size from compressors of a few Amps through to larger units like that shown to the right which would have a compressor of 10 – 12A rating.

These units are operating all of the time and are therefore ideal applications for the EnviroStart unit



Cellar Chiller

Cellar chillers look a bit like air conditioning units, they are normally located in the bar or hotel cellar and normally attached to a wall. The unit provides chilled air to keep the cellar cool. It is worth paying extra attention to the electrical detail plate to be found on the cellar chiller as they may be three phase rather than single phase.



In Line Drinks Cooler (Python)

These units will generally be found in the cellar near to the beer barrels as its job is to cool the drink on its way to the bar. The same systems will be used for cooling soft drinks as for cooling beer.

The systems can be readily identified because there will be many pipes coming out of the cooler unit

Smaller drinks coolers can also be found under the bar for extra chilled beers such as Carling Extra Cold, Guinness Extra Cold and Fosters Super Chilled. An EnviroStart unit can be fitted per extra cold chiller unit. If in doubt which beers are “extra chilled” and how many chiller units there are, ask the barman.



Chilled Food Display Cabinets and Salad Coolers

These units can be found both in the kitchens and the buffet areas of restaurants. Mostly the systems are fitted with integral compressors however there are display systems available where the compressor is located under the display in a decorative cabinet.



Chilled Product Vending Machine

Vending machines are becoming more widespread and cater now for not only chilled drinks but also perishable foodstuffs such as sandwiches and confectionary. Many factories as well as leisure centres, hotels other public places have vending machines.

Many such machines are owned by the company whose product they display or by a local “vending machine” company; it is worth checking that you are not violating any conditions of use by proposing that EnviroStart units be fitted. Always remember however that the machine may not be owned by the company or facility where it is placed however they ARE paying for the electricity so may be really interested in fitting effective energy saving systems.



Split Air Conditioning Units (6,000 – 15,000BTU, 7 – 15A)

Split Air Conditioning systems are now becoming commonplace in commercial, retail and even domestic environments. They range in size from 6,000BTU capacity through to typically a maximum of 15,000BTU as this is the limit of a typical single phase ring circuit, (15A per outlet). There are however some units around which are larger than this, care should be taken to read the compressor rating plate which will be on the remote part of the AC.

When looking at the systems always consider the additional control features of the EnviroAC such as the ability to turn the units off at specific times and through specific days. Minimum savings that will be achieved with the EnviroAC are 35% which gives good return to the user even where energy costs are low.



Non Refrigeration System Applications

Clutch Operated Sewing Machine

There are many millions of clutch operated sewing machines operating in the world in the garment and textile industries. The motors are usually very low grade 2.9A and 4A units which are characterized by their being engaged with the sewing machine drive mechanism by a clutch which is usually foot or knee operated.

Such motors spend around 50% of their working life running off load, (even with the most productive and skilled of operators), and as such they provide an ideal environment for EnviroStart units.



Miscellaneous 4Amp, 10Amp, and 15Amp Units

If you find any other applications which are not detailed above, check the motor size, it will normally fall into the category of being <4A, <10A or <15A. Make a note of the motor size and the hours a day and days per year that the appliance runs. (Note that extractor fans or any fans with a variable speed control are NOT suitable for EnviroStart units).