

FRIDGEBOX TECHNOLOGY

The FRIDGEBOX frigidaire compressor motor control system product provides a solution to the full controlled management of your frigidaire & motor controlled systems irrespective of the make, motor size, or type of compressor within your structure and irrespective of the system pressure.

FRIDGEBOX

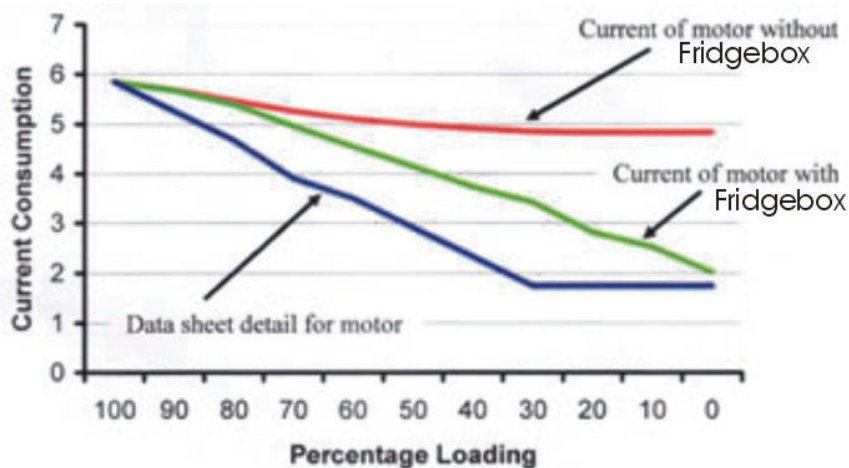
• TECH

The Problem

Most industries use compressed air however they do not generally have integrated systems which are designed to not only meet their peak demands but also to

accommodate the low demand periods. During the varying demands of most manufacturing days a manufacturer's compressed air supply will be wasting energy by over production of air, over pressurisation of air systems and poor controls.

With typically 10% of energy consumption on a site being related directly to the generation of compressed air, this waste is a significant part of manufacturing costs



Fridgebox systems address this management problem and integrates all forms of compressors, irrespective of manufacturer or type, (screw, piston, vane or VSD control screw), and irrespective of size so as to ensure that at all times only the optimum conditions are met to meet your manufacturing demands commensurate with best utilisation of systems that are available.

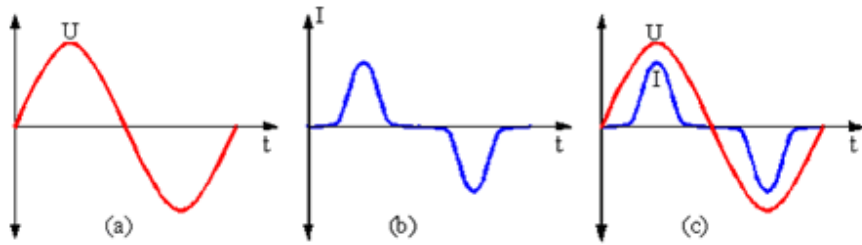
In this way pressure is maximized to your needs without excess generation through close control of reservoir pressure virtually eliminating hysteresis. Savings to be gained in this way provide typically 5% reduction of running costs.

The close management of pressure reduces dramatically the leakage losses in a system, (typical losses in industry amount to 18%), this figure can be reduced to provide savings of up to 5% of running costs.

Charge rate management to ensure that only that air flow that is required from the reservoir is being provided by the compressors to the reservoir. Careful management of the systems in this area adds a further 3 - 5% savings.

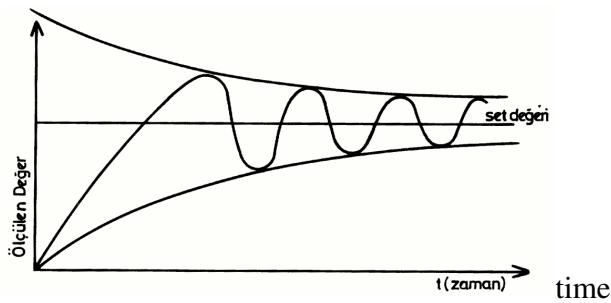
Best compressor utilization ensures that only that compressor or compressors that are required to meet demand are running at any given time.

The system is fully dynamic and adjusts according to the conditions at whatever time. In conjunction with use of Motor Energy Control Systems so as to ensure minimal "over-run and run-on times" as well as providing on and off load motor energy consumption savings overall system **savings of 20-35% are typically achieved.**



FRIDGEBOX corrects this inefficiency. The units, designed to be simply fitted to single or three phase motors, will give soft start, energy control, soft stop, improved reliability and increased productivity.

In addition, the systems have been developed with knowledge of the climatic problems associated with operations in a tropical or sub-tropical environment so offer rugged protection against high humidity and wide ranging temperatures.



Motors can consume electricity at more than ten times their capital cost each year. By giving you control over your motor, FRIDGEBOX can save between 15% and 35% of your electricity costs; without reducing speed, without any loss of power and without detriment to your motor or load.

Refrigeration

Refrigeration compressors are by far the most common use for AC induction motors. FRIDGEBOX provides energy management solutions from commercial kitchen fridges and freezers through to heavy industrial refrigeration systems such as the cold water compressor shown.

Savings range from typically 10 – 30% for the two or threephase systems giving pay back periods of 12 – 15 months. Savings of up to 30% on single phase systems, such as Bottle Coolers, have been achieved giving paybacks of less than 12 months.

In all applications FRIDGEBOX accommodates and manages the high starting torque demands of certain systems ensuring reliable starting and control of power at all times.

Heat in the motor is also reduced by use of fridgebox thereby diminishing waste and improving pull-down times in all applications.

Fridgebox has also been designed to provide long life ; components have been selected with reliability in mind and have generally been over-rated for the power of the unit manufactured. Using the standard IQA (Institute of Quality Assurance) methodologies the expected life time of Fridgebox is rated 100,000 hours continuous use, (eleven and a half years).

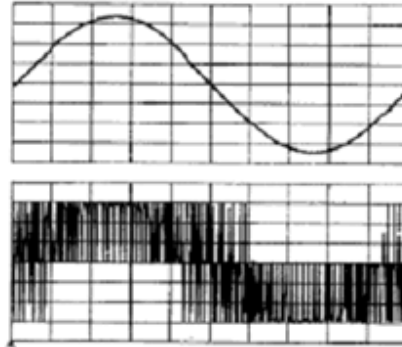
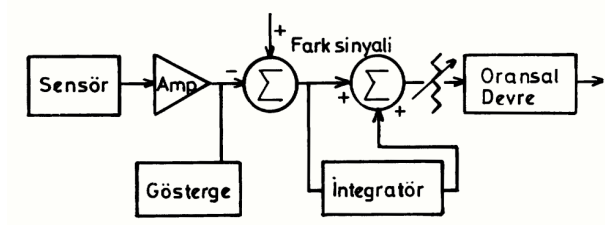
Features

The fridgebox is a high specification digital soft-start, motor energy control available in models suitable for motors up to 10A

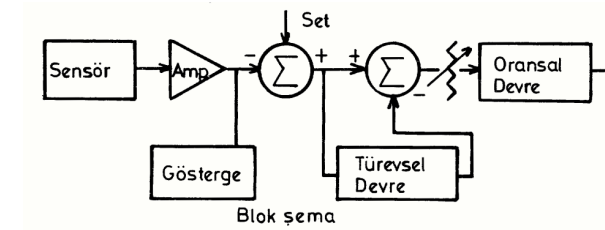
In addition to the provision of a soft-start, the Fridgebox incorporates state of the art motor energy control technology to substantially reduce the electricity consumption of synchronous electric induction motors whilst they are operating at less than their full load capacity.

- FULLY AUTOMATIC energy control, (BOTH FULLY AUTOMATIC)
- SOFT START.
- DOL START TO OVERCOME HIGH INERTIA LOADS.
- FULL AUTOMATIC OPERATION.
- SIMPLE TO INSTALL.
- RUGGED HOUSING , IP43 NEMA1. ABS plastic box
- Prolong life span of devices.
- Advanced P.I.D (Proportional integral derivative) algorithms.

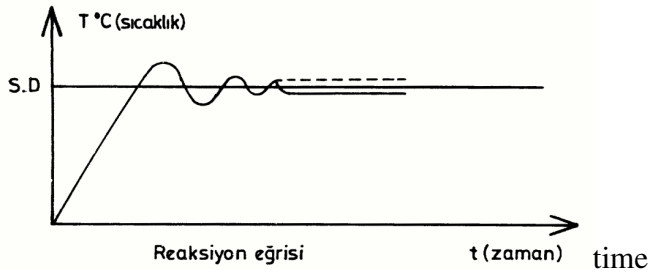
ENERGY CONTROL



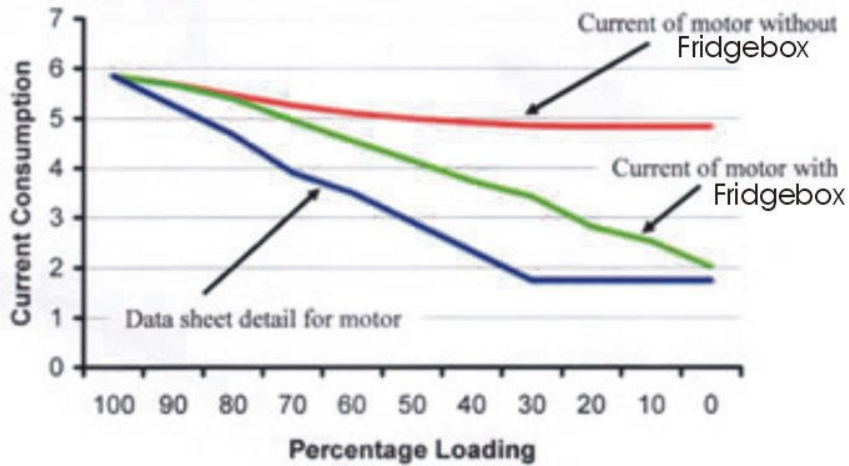
PWM



Blok şema



Compressor motor Reaction graph



$$S^2 = P^2 + Q^2$$

$$P = S \cos \phi = VI \cos \phi$$

POWER FORMULA

FRIDGEBOX CİHAZI TASARRUF TESTİ



En az 1 günlük test yapılarak ; 1 gün içerisinde buzdolanın harcadığı normal enerji tespit edilir.

FRIDGEBOX CİHAZI TASARRUF TESTİ

1



Fridgebox takıldıktan sonra 1 gün süreli yeni bir enerji harcaması ölçümü yapılır. Sağlanan tasarruf gözlemlenir.

FRIDGEBOX CİHAZI TASARRUF TESTİ

2



Fridgebox takıldıktan sonra 1 gün süreli yeni bir enerji harcaması ölçümü yapılır. Sağlanan tasarruf gözlemlenir.

Energy saving test...

Note: We propose minimum 1 day test for observation maximum energy saving..
(it's also possible to test for 1-2 hours)

- If the lights (inside the frigidaire) using electronic ballast circuits ; You must install the Fridgebox inside the Frigidaire; after the light power connection. (please contact for detailed wiring diagrams)
- If your frigidaire have RUNNING CAPACITOR ; You must install the Fridgebox inside the Frigidaire;after the start capacitor connection. (please contact for detailed wiring diagrams)
- Fridge box designed for 2000 watt maximum power . But you must check the RMS power when the motor starting....We propose to apply for maximum 1200 watt powered frigidaire or total 1200 watt power.. If you d'ont look to the frigidaire power label ; When motor start the INRUSH current (RMS starting power) can burn the FRIDGEBOX.. !!!!!

FOR MORE INFORMATION PLEASE CALL + 90 232 489 34 65

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www.senerlabs.com

FRIDGEBOX™

Patented

USE YOUR FRIGIDAIRE WITH LESS COST

2000 WATT gücüne kadar olan tüm ev tipi ve sanayi tipi buzdolaplarında kullanılır. Kompresör ömrünü uzatır.

Enerjinin optimum performansla kullanılmasına olanak sağlar.

Montajı son derece kolaydır. Fridgebox Dünyanın en gelişmiş motor enerji tasarruf cihazlarından biridir. %25 oranında enerji tasarrufu sağlar. Akıllı P.I.D algoritmaları sayesinde faz kayması, yüksek ve alçak gerilim darbelerine karşı motorları korur ve kullanım sürelerini uzatır.



**BUZDOLAPLARINDA
% 25 ENERJİ TASARRUFU**



CE