

System contingency is vital in ensuring that a Food Service Refrigeration installation provides the maximum level of operational performance...

Hotels and restaurants in 2015 incorporate a variety of important and critical building services and one of the main areas of technical design focus is that of ensuring that the temperature in the building meets the guest requirements 365 days per year.

Air conditioning is treated with the highest priority and is designed to ensure that optimum performance and reliability are delivered with efficient equipment, robust system design and the highest levels of contingency, which are all geared towards ensuring that the comfort within the guest areas is maintained.

Air-Conditioning Refrigeration is treated as one of the highest priorities in terms of engineering system design and ensures that an Air-Conditioning system cannot experience a 100% failure.

However can we say that the same level of engineering design focus is placed on the Food Service Refrigeration system?

The answer is NO...

Food Service Refrigeration is not treated with the same level of priority as Air-Conditioning.

Design briefs do not, as the norm, ensure that a centralised refrigeration system cannot experience a 100% failure if one item of plant fails.

Unfortunately it is a fact that the majority of refrigeration systems specified and installed within the UK food service sector could actually be designed with a higher level of performance and integrity, which would provide the user with greater levels of contingency and higher levels of efficiency.

What do we mean by this?

Loss of refrigeration creates the potential for a huge financial impact on food service operations.

To understand this point better we should look at two examples, which show standard practice when applying refrigeration to Hotels and Restaurants in the UK...

Example 1. Air-Conditioning Refrigeration

For example a Hotel requires 800kW of Centralised Air-Conditioning Refrigeration capacity, this system capacity would be provided by at least 2 x Individual 500kW Cooling units providing class-leading efficiency (with 2 x compressors per unit).

But more importantly this twin individual cooling unit design means that if 1 x 500kW Cooling unit were to fail the Hotel will still have 1 x 500kW Cooling unit operational, this unit would be able to provide Air-Conditioning to critical areas of the building even if one unit were to fail.

This twin individual unit specification is standard mechanical design practice and reflects one of the key specification demands of the Hotel or Restaurant...this being that the Air-Conditioning system must not be reliant on one Cooling unit due to it being such a critical service to the Hotel or Restaurant and it cannot experience a 100% failure.

Equipment specified:

800kW centralised capacity required, equipment specified 2 x 500kW Cooling units to provide the highest level of equipment contingency i.e. the system is not reliant on one single item of plant.

Each 500kW Cooling unit has 2 x refrigeration compressors, this multi compressor design provides individual unit contingency.

Summary:

The 2 x Individual 500kW Cooling units provide the operator with the knowledge and guarantee that if one cooling unit fails the other unit will still be operational i.e. the full Air-Conditioning system would not stop working due to a single mechanical or electrical plant failure.

The multi (two) compressor design within each individual 500kW cooling unit provides back up in that if 1 x compressor fails that particular unit will still operate at 50% capacity.

However if a central component on that particular unit were to fail or a refrigerant leak were to occur on that system then the unit could not operate regardless of how many compressors it contained.

Hence the main requirement is to have 2 x Individual 500kW Air-Conditioning Cooling units in order the Hotel will not lose 100% of capacity in the event that one unit fails.

Example 2. Food Service Refrigeration

For example a Hotel or Restaurant requires 40kW of Food Service Refrigeration capacity, this capacity is normally provided by 1 x 50kW centralised refrigeration pack with 4 x compressors to provide contingency i.e. if one compressor were to fail the unit would still operate.

But does this system provide an acceptable level of contingency?

The answer is definitely NO if we apply the same design criteria that is applied to Air-Conditioning refrigeration.

This is because the Food Service Refrigeration system is 100% reliant on just one Refrigeration Pack/system rather than having the insurance of 2 x individual units.

What are the consequences of the Food Service Refrigeration system single pack failing?

The restaurant(s) would be forced to close with the resultant angry and dissatisfied guests and a significant loss of income and reputation.

So what is the answer...?

It is actually very simple...a twin refrigeration system should be installed to provide real contingency and integrity.

This provides the operator with the knowledge that the whole Food Service Refrigeration system will not stop working if one item of plant fails i.e. the Hotel/Restaurant(s) can still function and remain open, reputations will be maintained and income will not be affected.

As per current common design practice, a multi compressor Refrigeration Pack does not provide an adequate level of contingency where a high income Hotel or Restaurant is concerned i.e. the refrigeration system relies on one item of plant regardless of the fact that it contains multiple compressors.

Is Air-Conditioning Refrigeration more critical to the operation of a Hotel or Restaurant than Food Service Refrigeration?

The answer is clearly NO.

In fact the loss of a Food Service Refrigeration system can be much more expensive than a temporary loss of Air Conditioning.

So how can Food Service Refrigeration design be practically and cost effectively improved?

By specifying a Food Service Refrigeration system that is designed to provide the maximum level of contingency and efficiency.... a refrigeration system that meets the requirements of a 2015 Hotel/Restaurant installation.

Why is this not done now?

Historically centralised packaged refrigeration units (Packs) applied within the food service sector are designed for single system use only and have not allowed a specifier/designer to easily configure a system which offers a practical means of providing contingency with a 2 x individual unit approach.

Green Cooling has recognised this requirement for contingency and now provides their innovative Contingency Plus Food Service Refrigeration system (GC-CP range).

The GC Contingency Plus range provides all the benefits of 2 x Twin Refrigeration units with a multi compressor design, but importantly packaged with one easy to specify system i.e. 2 x Refrigeration Systems in one easy to specify packaged unit.

This enables the specifier to provide the operator/client with not only the most efficient system BUT now a system that incorporates the maximum level of contingency with two separate refrigeration systems.

The industry does not have to hear in 2015 that a Hotel or Restaurant operator has lost 100% of their centralised refrigeration capacity and due to this failure they have had to close a restaurant or multiple restaurants within a hotel.

Food Service Refrigeration System designers and specifiers can now provide the Hotel or Restaurant operator with the same levels of contingency that would be found within other areas of refrigeration such as Air-Conditioning.

One plant failure will now mean that over 50% of the refrigeration system will still remain operational, as opposed to a single Pack where one plant failure means that 100% of the system would be lost.

***The GC Contingency Plus range (GC-CP range)...
Why risk specifying 1 x Refrigeration Pack when it is just as straightforward to design & specify a GC-CP system that has 2 x Individual Refrigeration Systems within one packaged unit...***

GC Contingency PLUS - designed for 2015, designed to deliver the highest level of operational performance.