2ND ANNUAL REFRIGERATION CONFERENCE 2018

Best practices in consultancy food refrigeration

BEST PRACTICES IN CONSULTANCY AND CONTRACTING - RELATED CHALLENGES IN FOOD SAFETY

1. **Facts to consider**
   a. Refrigeration is different from air conditioning in application.
   b. A refrigeration system is considered a tool to achieve our target.
   c. Germs, moulds, micro-organisms, insects, etc. cause food deterioration.
   d. The nature of modern life makes food preservation a necessity.
   e. To preserve the food, we need to control temperature, humidity, oxygen and airborne contaminants.
   f. The vast majority of the above variables' control can be achieved by refrigeration.

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2. **Have clear vision of your objectives**
   a. Type of business you plan to do
   b. Size of the intended facility
   c. Commodities you want to handle
   d. Source of commodities & how they will arrive at your facility.
   e. Do you intend to distribute foodstuff to end users (refrigerated trucks/vehicles).

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3. **Do not overdo nor underestimate minor issues.**
4. **Carry smart and not cheap negotiations.**
5. **Look at possible loss before possible profit**
6. **Estimate life cycle cost and not just initial cost.**
7. **Consult experts before taking a decision.**

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Knowledge solves half of the problem

Why we need to refrigerate the food

a. To stop or minimize deterioration

b. Fermentation

c. To stop or minimize weight loss

d. To preserve taste and tenderness

How to achieve above goals

- Control "T" . (Chill/freeze/pasteurize/ cook)
- Control humidity
- Control O_2 and/or fumigate
- Quick chill and/or Quick freeze
- Filter the air and/or keep the place clean

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Applications and related concerns

1. **At consumer level – home appliances**
   a. Does not require consultants nor contractors.
   b. It requires awareness of food safety importance & how to achieve same.
   c. Keep condensers ventilated.
   d. Keep the appliance interior air tight.
   e. Avoid frost accumulation.
   f. Keep it clean.
   g. Adjust temperature as and when need arises.
   h. Do not melt frozen products & re-freeze them again.
   i. Avoid mixing many products.

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2. **Public food courts (restaurants)**
   a. Sizes and variety even with large restaurants are considered commercial applications. Do not need a consultant (Supplier and/or contractor will do).
   b. Keep place and appliances clean and well ventilated. Hygiene is a necessity
   c. Use separate display cases for different products.
   d. Use either individual condensing units or pool them on a rack with common condenser and high side components.
   e. Pay special attention to delta T and number of fins on the low side.
   f. All above also apply to walk-in units.

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2. **Public food courts (restaurants)**
   g. Use energy efficient compressors.
   h. Use environmental friendly refrigerants
   i. For big restaurants, appoint PIC & subject him to training, education and certification. (Dealing w/public health.)
   j. Keep proper records (computerized or manual). Use calibrated measuring tools.
   k. Have an expert examine & analyze records and recommend required actions periodically.
   l. Keep track of industry & legislations, and advancements and changes, then apply as much as possible.

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3. **Food outlets (supermarkets/groceries)**

3.1- For small and medium size, treat them same like restaurants.

3.2- Large size supermarket can be divided to the following sections:

a. Display areas (canned and dry food, dairy products, fruits and vegetables,

b. Preparation areas (meat, poultry & seafood)

c. Storage area (all chilled & frozen)

d. Receiving and handling area (docks, inspection, packing, packaging, sorting, etc.)

e. Possible ice production facility (Crushed, flakes, cubes, etc.) for the use of the supermarket only

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3. **Food outlets (supermarkets/groceries)**

   3.3- Requirements for each area

   a. Display areas – principles are the same. Do not change due to size.

   b. Preparation areas. Contain air movement. No further chilling.

   c. Storage area; use state-of-the-art centralized systems with BMS/DCS or SCADA, plus natural refrigerants.

   d. Receiving and handling area: air Conditioned clean air.

   e. Possible ice production facility (Mainly for seafood)

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4. **Wholesale cold stores**

   Similar to the cold store section of large supermarkets. They also include possible fumigation, pre-cooling & ripening of banana & tropical fruits.

5. **Refrigerated transport**

   A huge subject on its own. Inland distribution will be discussed after the coffee break.

6. **At the source**

   a. Pre-cooling/chilling/freezing (all kinds)

   b. Sorting, grading, cleaning, packaging

Thank you