Common Causes for Inefficiency in the Ice Cream Industry*

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A general survey of many ice cream plants in all parts of the United States in the past few years indicates that many are operating with very inefficient methods. This is particularly true of plants of 500,000 gallons or less. It is encouraging to note that many are beginning to recognize this condition and are planning to modernize their operations. Such improvements will benefit the entire industry. Public confidence and acceptance always follow better operating methods and rigid products control.

There are, however, other reasons why methods of operation must be improved. Competition is sure to be very keen in the years to come. New firms will enter the field with considerable money and new ideas. There is much speculation as to who will comprise the ice cream industry of the future. Regardless of what happens, there will always be room for the efficient, well managed plant, large or small.

More stringent health regulations may be expected in the near future. Wages and hour laws will be enforced and modified to affect all types of work. In the past when competition became keen the usual practice was to reduce wages and quality. In the future it may be impossible to do such things at will. Wages and quality regulations are here to stay. It is doubtful if the industry can expect to maintain wide operating margins in the future. Efficient plant operations and narrow operating margins will be the practice followed by successful operators.

There are many reasons why inefficiency exists in the ice cream industry, but in general it will fall into these categories:

1. The industry is still comparatively young. Many plants grew up from very small beginnings and have operated with little capital.

2. Until recent years there were few technically trained men in the industry. Many of these were young men and have spent the past 3-4 years in the military forces. Few trained men are old enough to influence policies as they will in the future.

3. Health officials have been rather lax in setting up and enforcing regulations in many sections of the country.

4. Quality control has not been fully understood by many ice cream manufacturers. They have been inclined to think of it as an expensive luxury rather than an essential part of their business.

The reasons why these inefficiencies exist were stated above. The following practices are the causes of these inefficiencies:

1. Personnel.

Personnel relations have not been good in the ice cream industry. Conditions have existed which did not attract good employees. Wages have been too low in comparison with other trades and hours have been long. Many jobs were unnecessarily a drudgery and a monotony. In spite of the

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wages paid they prove costly in the end. The type of employees used were not adapted to the work. Better employees would have produced more work per dollar of wages.

Good dairy employees must be naturally clean and careful workers. They must be fairly intelligent to understand the handling of dairy products. Just as great care should be used in selecting employees as purchasing equipment. Unfortunately this is not always done. Good employees are the most valuable asset any business can possess. Without them the finest plant and equipment in the world will produce nothing.

Better understanding must exist between employer and employee in the future as to what each can expect of the other. Employees should understand that to be successful, a business must be able to merchandise products at a profit (at a price the public will pay).

Employers must realize that employees are most productive when they have economic security, wages that provide a fair standard of living, pleasant surroundings, and protection from accidents. Surely they cannot be expected to be satisfied with conversation and promises.


Many ice cream plants just grew up as Topsy. The business was started in a small plant and additions were made as needed. Little attention was paid to engineering and future plans. A great many plants were never intended for ice cream plants and are difficult to keep sanitary. The result in the end is always an awkward and costly operation.

Numerous plants have operations that do not synchronize properly. Either the homogenizer is too small for the cooler, the freezer is too far from the hardening room, or some other arrangement causes an awkward condition. Refrigeration systems are inadequate in many plants; lack flexibility in others.

One story buildings are preferred to multi-stores. They are more flexible and require less supervision. More floor space is obtained per square foot of building. The idea of having materials flow by gravity is not necessarily efficient or economical. Buildings should be constructed of impervious materials so they can be easily maintained and kept in a sanitary condition. Good lighting and ventilation should be provided. Departments should be so laid out that materials flow smoothly from one to the other. Getting ice cream into the hardening room quickly from the freezers is an important factor.

Better products and lower costs are obtained with line production methods. Each employee has a definite assigned job and lost motion is reduced to a minimum.

3. Plant operations.

All plant managers have not learned the importance of planning their work in advance. Operations are started each morning and changed during the day to meet conditions. When somebody discovers a certain item is out of stock production is switched to that item. The result is a lot of confusion and last minute changes. Such changes cause wash-ups and delays. Production costs are increased by reducing the production per hour. Occasionally plants still operate seven days per week. Careful planning could reduce this to 5-6 days per week. Cleaning and sterilizing are expensive operations. It costs no more to clean up a freezer after a thousand gallons are frozen than if only one gallon had been frozen. This costly practice should be closely watched in the winter time.

Good plant managers learn to plan their work in advance. A man who sits down at his desk each day and plans is worth twice as much as one who works with his hands all day. Few flavors each day and everything in readiness on time is the secret to smooth, low cost production.
4. **Hardening rooms.**

Small hardening rooms cause many operations to be very inefficient. No amount of planning could make such plants operate economically. Sufficient stock cannot be carried and a variety of flavors must be frozen each day. Unfortunately such operations usually result in poor quality because the ice cream is not properly hardened before it goes out to the trade. Sufficient hardening space is not expensive.

Capacity of a hardening room should be at least five days maximum production. A maximum day production is about 1 percent of the total production for a year. Ice cream should be properly hardened in 12–14 hours.

Self-defrosting refrigeration units save space and labor in hardening rooms.

5. **Maintenance**

Preventive maintenance is not practiced in many plants. Many operators make the mistake of expecting their plant superintendents to be also a mechanic. Few men can be both good dairymen and mechanics. They are entirely different fields and require men of definite abilities.

Regular inspections and lubrication schedules should be set up for all equipment. It is better to prevent a breakdown than to have it. Temporary repairs are far too common in this industry. Good maintenance applies to buildings as well as to equipment.

Regular mechanics should be employed for engineering and maintenance work.

6. **Conveyors.**

Ice cream is handled without conveyors in too many plants. There are several good reasons why conveyors should be used, but the most important is to get ice cream into the hardening room faster when conveyors are used.

Some operators have the erroneous idea that conveyors are extra expense. Man cannot compete with electricity when moving materials. The average man can only generate 1/7 h.p. per hour. At that rate he can only earn about 10¢ a day when doing work that can be done by a motor.

Plant operations are better synchronized and standardized with conveyors. Products are conveyed exactly where wanted and brought to the operator without any thinking on his part. Extensive economies can be effected in refrigeration by conveying through small openings that can be air locked.

7. **Supervision.**

Plant operators make the mistake of not giving the superintendent authority equal to his responsibility. He cannot be held responsible for products and costs when he shares the operation of the plant with several people. Many operators hold the engineer and maintenance men only responsible to them. This leaves an opening for shifting responsibility because of split authority and is definitely a mistake.

A production man has many and important duties. To function properly he must have complete charge over everything pertaining to the plant.

8. **Cleaning operations.**

Washing and sterilizing operations are sadly neglected in far too many ice cream plants. The work is often assigned to a poor class of labor without any supervision. Materials and time are wasted and the desired results are not obtained.

The job is a chore and nobody likes to do it. The nature of the work makes it difficult to get anyone to supervise the work, much less do the work correctly. We must recognize that no operation contributes more to the quality of the final product. It can also contribute heavily to the cost of manufacturing.

Methods and materials should be adapted to each cleaning operation. Water softeners would be helpful in many plants. A planned sanitary pro-
gram is the most satisfactory. Employees should be given definite instructions for each job as to what and how much material to use.

Cleaning should be done by a regular crew assigned to that job. It is seldom correctly done when the regular day crew are required to do their own cleaning, unless they are allotted enough time. It requires time to disassemble, clean, and reassemble equipment and sterilize it. Take for example a continuous freezer.

Sterilizing solution should be checked daily to make certain the proper strength solution is used. It is a check on the material used and whether or not it is correctly done.


Ice cream plants go from one extreme to another in using plant reports. Either they keep no records or use such an elaborate system nobody understands it. Many operators were taught the importance of proper records during the rationing period. Simple, accurate plant reports are the underlying basis of all cost reports.

In many instances cost reports are prepared showing an overall product cost. It is true they do furnish management with some information; however it does not point out the profitable and unprofitable items. Cost reports should show management where variations do exist.

The plant reports should account for all butterfat, serum solids, sugar, and other raw materials used. Accurate overrun reports on all products are a must. A systematic count of all products going in and out of the hardening room is necessary to prevent serious losses. Neglect of these basic reports causes serious discrepancies in many ice cream plants and also distorted cost reports. Inaccurate cost reports can lead to serious financial trouble.

Good accounting eliminates wastes, points out causes of variation in profits, and provides a check of quality standards.

10. Quality control.

Quality control seems to be generally misunderstood by ice cream manufacturers. Many seem to have the erroneous idea that it means installing a laboratory and employing a technician, no thought being given to the fact that laboratory tests are only measuring sticks to apply on the product. No definite plan is set up for controlling all processes and materials. The laboratory in these plants is used more or less as a cure all. In many instances laboratories are required to perform tests which are never used.

There are many practices which affect quality, but time will permit the mentioning of only a few.

Weighing and testing raw materials is overlooked by many ice cream plants. General procedure seems to be to assume a certain weight and test per can. Experienced dairymen know that weights and tests vary from day to day and can to can. The plant that practices such methods will never obtain uniform products and costs.

Products should be weighed and tested as received. All products should be weighed into a mix. If the proper weighing and testing procedures were used, many manufacturers would find that they could use raw materials they now feel they cannot afford.

Overrun control is a very necessary part of quality control. It affects both quality and costs. Many plants still do not realize the importance of overrun scales. They check overrun by volume determining the total ice cream made from the mix used. No attention is paid to individual items. One unit may have 120 percent overrun, another only 75 percent. Nobody knows whether the freezer man added ten gallons of water to the mix to get his volume or not. Purchasing and manufacturing on a volume basis is very dangerous. It is very easy to make up volume with water. Water cannot be used to replace butterfat and serum solids when a plant operates on a weight basis.

The most satisfactory method to con-
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trol overrun is by the use of scales. They should be placed directly in the production line where they are convenient to use. A 30-pound dial scale for bulk and a 2-pound scale divided into quarter ounces for packages are most satisfactory. A good practice is to weigh individual packages and cans, instead of large packages and bundles.

A common error that is made is to operate freezer in tandem and check only the composite overrun. The composite sample may show the correct overrun. Yet one freezer may be operating at too high an overrun and another at too low an overrun. The result is ice cream of different color, body, and texture. To insure good quality it is a good policy to check individual freezer occasionally.

Another mistake made is to assume a certain weight per gallon of mix, usually 9 pounds because that figure is convenient. The average ice cream mix weighs 9.1–9.2 pounds per gallon. This may seem a small item but in a plant making 100,000 gallons of mix a year it would amount to a difference of 2,174 gallons. Correct weight standards are also important in checking overrun at the freezer. If a pint of ice cream is calculated to be made from a 9.0 lb. mix and actually made from 9.2 lb. mix, a 100 percent overrun pint would really have about 104 percent overrun.

Fruits and flavors are used in many plants without any check on the amount used. These items should be carefully checked and reported. Using varying amounts results in poor uniformity and excessive costs. These items must also be considered when calculating overrun.

These and many more things affect quality and costs. Many industries practice quality control for protective measures. None need it more than the ice cream industry, because the product is so perishable and delicate in flavor. Operating without quality control is like flying an airplane without instruments. Everything is lovely until bad weather arrives.

Summary

Many more things could be said about the inefficiencies in the ice cream industry. Most of the points mentioned may seem very elementary to the average operator. They are basic and the very foundation of a good operation. Most ice cream manufacturers believe they do all these things correctly. A thorough investigation would probably show that one thing or another is neglected because it seems so simple.