Activity analysis at the Findus factory in Helsingborg
by Otto Rydbeck

Introduction
The aim and purpose of the final essay on which this article is based was to analyse the activities of the Findus factory in Helsingborg, focusing on the stockkeeping of the central stockroom and identifying at least one operation improving measure to recommend the factory management. To achieve this I observed factory activities, interviewed key employees, had numerous informal conversations with employees and did research in books and on the Internet.

Background
The core activities at the factory are the following:
- Unpacking of frozen ingredients
- Mixing and seasoning
- Packing the finished products
The facility produces circa 220 different products using 200 different ingredients all together.

In the spring of 2004, Findus carried out an SEK 11 mn investment in the factory. The core of the investment is an automatic mixing station in which seven ingredients can be mixed. The investment also included changes in the starting section of two of the seven lines where, previously, all mixing that was performed in the factory was done manually using numerous relatively small containers. After the investment the changed lines’ starting sections each consisted of two large containers from which mixes made in the automatic mixing station were mixed together. This, in theory, allowed each of the changed lines, and all at once, to mix products containing as much as 14 ingredients.

The investment had two main purposes. One was to be able to cut down the number of employees. This is possible since the temperature in the mixing station room is 18 degrees instead of the -25 degrees in the central stockroom, Room 23, where the lines start and all mixing was previously performed. This, of course, allows each employee to work more. The second main purpose was to provide a better working environment for the employees (again, the temperature difference). A third advantage is that the lines that are rebuilt and adjusted to the mixing station can, all at once, process products with many ingredients, which is an improvement on flexibility.

The essay contains an analysis of factory activities and an identification of problems both related to and not related to the investment. It also contains suggestions on how to solve or improve some of these problems.

Summery of my impressions from the interviews
The interviews were an important part of my research. The following is a summery of my main impressions from these.
1. All food that goes through the mixing station has to do this one day before it goes through the lines and is packed. Today, however, the resulting inflexibility is no large problem since it can be compensated on the other lines.
2. Working at the mixing station is physically heavier than working in the freezer (Room 23 and the other stockroom, Room 24) since it involves lifting more tonnes per day. Many of the employees claim that, in the long run, this will require that it can be rotated with other work. Today the factory don’t have a large enough work force to do this satisfactorily.
3. The ingredients are delivered to the factory packed in three different
ways – in sacks, in large cardboard containers and in small cardboard boxes. The small boxes are without competition the hardest and most time consuming to handle.

4. There has been a discussion about exchanging the 600 kg containers in the beginning of the pack lines to 1000 kg containers and making a corresponding switch of the stockroom containers. This would have a negative impact on the possibility to run small batches. On the other hand it would reduce the number of truck transports and the number of employees by the lines (in Room 23).

5. The quality of the food that the factory produces is generally good. There have been some problems with wood splinters from the stockroom containers in the food.

Analysis
After having done an analysis based on e.g. interviews, my own observations and internal data from the last couple of years, I made a number of conclusions. Here are the most relevant ones.

Development towards products with more ingredients
There are many indications that general flexibility will be increasingly important for Findus and its competitors. E.g. to be able to manufacture more products with smaller volumes per product without loosing productivity or to change a recipe or develop an all new recipe quicker than before.

Hygiene
Hygiene in the mixing station area is, due to the temperature, not quite as good as in the freezer. This, however, is a small problem according to the personnel since the area can be cleaned easily at the same time as the station.

Quality
Findus is satisfied with the quality of their products, though it does happen that wooden splinters from the pallets are found in the food.

The mixing station
The mixing station will be increasingly important if the trend towards more ingredients per product continues. In the long run more personnel will be needed to run it, since working there is physically hard.

Lean manufacturing
The principles of Lean manufacturing are, in no greater extent, applied on the factory today. Since these principles aim to increase flexibility and reduce costs, it is probable that Findus would gain by letting Lean manufacturing be an inspiration more than today.

Larger containers
By introducing larger containers on two production lines and letting for example the ten largest products (one third of the total volume) go through these lines, the number of truck transports would be reduced and the capability to do small batches would be preserved. Naturally this requires that the stockroom container sizes are changed correspondingly. Large and small stockroom containers would have to be stored in separate parts of the room to save space.

Delivery time
The delivery time on ordered ingredients is often two or three years. Thus, the capability to adapt to changes in demand is very small.

Basic problems
The problems and potential difficulties that I identified exist because of the following basic problems.
- Not good enough flexibility to meet future needs.
- Some quality problems occur, e.g., wood splinters in the food.
- Costs are too high.
- Dissatisfied stockroom personnel (risk of decreasing productivity).

Possible measures
I identified the following possible measures trying to improve the current situation.

Better line maintenance
It is most likely possible to increase production line maintenance without losing production pace since the utilization of the lines accessible time is far from 100 percent. This would result in fewer and shorter unplanned stoppages of production and, thus, increased productivity.

Introduce status-indicating lights on the production lines
If the lines were equipped with status-indicating lines, the floor personnel would get faster information about where problems occur. This would lower response time and thereby increase line accessibility.

Introduce a mix of fixed and non-fixed container placing and larger containers
Today no products have fixed places in the stockroom. By introducing fixed container placing for high volume articles, container handling efficiency should increase. If, in addition to this, larger containers were introduced for the same high volume articles (which would be possible if the articles had fixed positions), efficiency would increase still more since fewer truck transports would be required.

Adjust the rest of the lines to the mixing station
There are four main alternatives for how the management can act concerning the mixing station and its continued integration with the rest of the factory. One is to adjust the rest of the production lines to the station and thereby complete the original investment. This, however, is expensive and results in the factory being totally dependent on the mixing station. If there’s a stoppage in the mixing station, all subsequent activities stop.

Shut down the mixing station
To shut down the mixing station is a popular alternative among the factory employees who generally think workload has become too large since the introduction of the station. This alternative, though, is not at all optimal if the trend towards larger product diversification and more ingredients per product is continued.

Keep the mixing station as it is
Today about half of the production volume passes through the mixing station and half of the volume doesn’t. This adds up to a pretty good flexibility balance since flexibility when it comes to the number of ingredients is better on the adjusted production lines, while compensating for unplanned stops or similar is easier on the food that doesn’t pass through the mixing station. The personnel do not like this alternative since they think that the current number of working hours per employee at the mixing station is too high. There simply aren’t enough employees to obtain a satisfying rotating schedule.

Outsource the manning of the mixing station
By outsourcing the manning of the mixing station to an employment service company with a large work force, a satisfying rotation between work at the mixing station and external tasks should be possible to reach.

Introduce container racks and better marking of the stockroom containers
Introducing container racks and a better marking system would simplify container
handling and reduce the amount of time spent on each container and possibly also salaries.

Switch to plastic pallets in the stockroom
The factory has some problems with splinters from the wooden pallets falling down into the food. This could be avoided by introducing plastic pallets instead. The downside of plastic pallets in below zero temperatures is that they tend to be slippery, especially if in contact with food.

No deliveries in small boxes
Foods delivered to the factory arrive packed in three different ways – in containers, in small boxes (1/20 the size of the containers) and in bags. Handling the small boxes is hard and time consuming. Getting rid of these would improve efficiency. If these deliveries came in the shape of containers instead it would probably be worth installing automatic container turners, which would improve efficiency further. This measure would be hard to execute since many suppliers are small companies situated in distant parts of the world and therefore might not have the means to change.

Internal computer network with screens on the trucks and automatic bar-code scanning
There is no continuing registration today of what is stored in and removed from the main stockroom, R23. By labelling each container with a bar-code that is automatically read every time the container is lifted or lowered and equipping all trucks with computers linked to a network, anyone who needs could immediately see which articles were in storage and where they were stored.

Order more than prognosticated need to Bjuv
Many of the products made in the Helsingborg factory are similar in the way that most ingredients are common for several products. These products often differ only by a few “unusual” ingredients. By ordering more than the prognosticated volumes of these ingredients, the company will be able to, on short notice, shift its production focus towards products that sell better than expected. Bearing in mind that the ingredients often are ordered two or three years ahead of production, making it very hard to do accurate forecasts, this improved operation flexibility should be worth a lot.

Evaluation of the possible measures
I made a first evaluation of the possible measures by grading each one of them from nine different criteria using plus and minus points. The nine criteria were the following:

- General flexibility
- Flexibility with regard to the number of ingredients
- Quality
- Running costs
- Personnel satisfaction
- Storage space effect
- Investment cost
- Personnel safety
- Difficulties to carry through with measure because of external factors

Three possible measures, introducing a mix of fixed and non-fixed container placing and larger containers, outsourcing the manning of the mixing station and ordering more than prognosticated need to Bjuv, got a positive final result and were therefore evaluated more thoroughly. Since the latter of these possible measures has its focus on the facility in Bjuv and only concerns the Helsingborg factory indirectly, it is really outside the scope of this essay. Therefore the suggestion is not described or evaluated in detail, but is to be viewed only as guidance.

The second and final evaluation showed that changing the height on one third of the wooden stockroom containers from 125 cm to 208 cm (for the ten largest articles) and
the line container sizes on one new and one 
old line correspondingly, would reduce 
truck transports by circa 12 per cent 
without losing storage capacity. This 
corresponds to SEK 300 000 every year, 
which is more than investment costs would 
be. Introducing fixed placing for these ten 
articles, however, would require too much 
space and is not a realistic option.

To keep the current mixing station 
situation as it is and preserving an 
acceptable working environment, Findus, 
as I see it, has two alternatives; 
outsourcing the manning of the mixing 
station or hiring additional floor personnel. 
The evaluation showed that the 
outsourcing alternative would cost about 
SEK 700 000 a year, while the yearly cost 
of a full time employee is circa SEK 400 
000. Thus, if two or more extra employees 
is necessary to get a satisfactorily rotation, 
outsourcing would be the better alternative.

Conclusion
My opinion is that the factory management 
should change the height on one third of 
the stockroom containers from 125 cm to 
208 cm and container sizes on one old and 
one new production line correspondingly. 
This would reduce salaries by SEK 300 
000 every year. It, however, should not be 
combined with introducing fixed placing 
for the large containers. That would require 
too much space.

Further more, I think that the management 
would have to hire at least two new 
employees to get a satisfactorily personnel 
rotation at the mixing station. If so, 
outsourcing the manning of the station to a 
local employment service company, is a 
less expensive alternative. Thus, doing so 
is what I suggest.

Finally, I propose that Findus investigates 
the potential consequences of ordering 
more than the prognosticated volumes of 
unusual ingredients in otherwise similar 
products. This would allow the company 
to, on short notice, shift its production 
focus towards products that sell better than 
expected. Bearing in mind that the 
ingredients often are ordered two or three 
years ahead of production, making it very 
hard to do correct prognosis, this improved 
operation flexibility should be worth a lot.