ISO 22000: 2018 Implementation (FSMS)

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ABSTRACT

The ISO 22000/FSMS is the most advanced universal management system for food safety. Implementing this standard will help any organization to achieve top notch safety and will be able to eliminate all hazards way before creating any kind of waste, accidents or any customer complaints. This paper indicates the initial documentation and implementation of FSMS standard in plastic molding industry.

Keywords— FSMS- Food safety management system

1. PROBLEM STATEMENT

The company has an increasing demand in the product line of food and automotive. The company wants to increase its revenue by getting more clients from food and automotive domain, which requires ISO 22000 certification for product approval. Becoming certified to ISO 22000 allows the company to show their customers that they have a food safety management system in place. This provides customer confidence in the product. This is becoming more and more important in food product domain as customers demand safe food product which is free from any form of hazard.

2. OBJECTIVE

The company wants to open their doors of production line and get as many clients as possible and create a monopoly in their specific region in all the product lines of food and pharmaceutical industry.

3. LITERATURE REVIEW

ISO certification certifies that a management system, manufacturing process, service, or documentation procedure has all the requirements for standardization and quality assurance. ISO (International Organization for Standardization) is an independent, non-governmental, international organization that develops standards to ensure the quality, safety, and efficiency of products, services, and systems. As mentioned above, ISO refers to the International Organization for Standardization. This organization develops the standards, and it does in order to certify businesses or organizations. Certification is handled third-party and tested annually.

4. METHODOLOGY

Steps in implementing ISO 22000:2018

1. Nomination of the food safety team
2. Setting up prerequisite programmes (PRP’s)
3. Development of HACCP plan
4. Documentation
5. Training, awareness generation and implementation
6. Internal FSMS audit
7. Management review
8. Certification (Third party audit)

The ISO 22000:2018 standard consists of overall 10 clauses which is as follows:

1. Scope
2. Normative reference
3. Terms and definition
4. Context of the organisation
5. Leadership
6. Planning
7. Support

ISO certifications exist in many areas of industry, from energy management and social responsibility to medical devices and energy management. ISO standards are in place to ensure consistency. Each certification has separate standards and criteria and is classified numerically.

All in all, the training timeline will depend on numerous factors including the understanding of the requirements, the preparedness of an organization, and the size and complexity of the organization. Still, most can expect to receive their ISO 9001:2015 certification in three to six months. Remember, individuals cannot become ISO certified. Only businesses and organizations can. It's also worth noting that ISO doesn't provide the certification. Instead, certification is made possible through third party organizations. ISO 22000 is a Food Safety Management System that can be applied to any organization in the food chain, farm to fork. Becoming certified to ISO 22000 allows a company to show their customers that they have a food safety management system in place. This provides customer confidence in the product. This is becoming more and more important as customers demand safe food and food processors require that ingredients obtained from their suppliers to be safe.
5. CONTEXT OF THE ORGANISATION

5.1 Clause states
To understand the internal and external issues of Amerco packaging solutions and also identify the needs and expectations of the interested parties (employee, govt. bodies, supplier, customers etc).

5.2 Implementation
Our basic aim is to understand identify the internal and external issues of the company and identify the needs and expectations of the interested parties (employee, govt. bodies, supplier, customers etc), which will help to generate proper objectives of the company.

Amerco packaging solutions has determined the External & Internal Issues that are relevant to its purpose and strategic direction and that affects organization’s ability to achieve the intended results of its FSMS.

ISSUES → IMPACT (if negative) → OBJECTIVES

External Issues
- High Market Competition
- Economic environment- Raw material pricing fluctuations
- Market recession

Internal Issues
- Less skilled man power
- No proper system is followed for processing food grade products
- No hazard is identified for any process
- Improper layout of the production cell
- For a huge order, chances of delivering defective parts to customer
- Lot of over processing and overproduction
- No emergency preparedness plan exists

5.3 Vision of the company
Amerco packaging solutions shall be world class manufacturing unit, providing complete solutions of packaging to all Multinational companies with global presence in 10 countries achieving ₹100cr by 2024. Objectives established from issues:
(a) To create high quality products.
(b) To create monopoly in the respective zone.
(c) To create the most efficient work infrastructure and environment.
(d) To work with competent and potential people.

Scope of the food safety management system (FSMS): Amerco packaging solutions supply different types of Caps & Closures, Flip Top Caps, Spouts & Caps and HDPE bottles to Food Industry, Edible Oil, FMCG, Pharma, Petroleum Industries & Cosmetics by implementing lean manufacturing system, adhering to Quality, on time delivery and continual improvement. The company mainly deals with injection and blow moulding operations.

6. LEADERSHIP

6.1 Clause states:
- According to this clause the top management (MD, board of members) should ensure commitment and leadership towards implementation of FSMS in Amerco packaging solutions.
- Management review meeting (MRM) should be led by top management.
- Establishing the food safety policy and its communication.
- FSMS roles and responsibilities should be understood by everyone in Amerco packaging solutions.

6.2 Implementation
Amerco packaging solutions is committed towards continual improvement in every process. Along with the team FSMS policy, objectives and resources were documented effectively to implement FSMS in Amerco packaging solutions.

6.3 FSMS roles and responsibilities
FSMS project team leader allotted was Mr. Hiralal who was responsible to give the updates of the FSMS implementation to the top management.
7. PLANNING

7.1 Clause states

- Planning to address risk and opportunities generated from the issues raised in the 4th clause should be done.
- Planning to mitigate the risk and increase the opportunities.
- Planning to address risk and opportunities generated from objectives.
- Planning of how will Amerco packaging solutions deal with changes done in FSMS.

7.2 Implementation

After reviewing the internal issues of the organisation there is a high chance of creating risks which will have a negative impact on the company growth. The internal issues discussed earlier were:

Internal Issues:

- Less skilled man power
- Improper layout of the production cell
- For a huge order, chances of delivering defective parts to customer
- Lot of overproduction
- For some parts not exact count of production items are known.

The company deals with three phases of quality which includes Quality plan, in-process inspection, and finally pre-dispatch inspection. In order to reduce the defects a good quality plan is established (For a huge order, chances of delivering defective parts to customer) for 8.6 mm cap.

- Quality plan for 8.6mm red cap

### Quality Plan

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Inspection Stage</th>
<th>Sampling Method</th>
<th>Parameters to be checked</th>
<th>Method/Equipment</th>
<th>Records to be maintained</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>First sample approval</td>
<td>round sample of all sample</td>
<td>Total height</td>
<td>8.6 mm &amp; 2.00 mm</td>
<td>First sample report</td>
</tr>
<tr>
<td>2</td>
<td>In-process inspection</td>
<td>round sample of all sample</td>
<td>Total height</td>
<td>8.6 mm &amp; 2.00 mm</td>
<td>In-process inspection report</td>
</tr>
<tr>
<td>3</td>
<td>Final inspection</td>
<td>5% of all</td>
<td>Total height</td>
<td>8.6 mm &amp; 2.00 mm</td>
<td>Final inspection report</td>
</tr>
</tbody>
</table>

- In-process inspection report
- Final inspection report (Pre-dispatch inspection (PDI) report).
- New plan layout is ready will be taken for main changes. (Improper layout of the production cell).
8. SUPPORT

8.1 Clause states
- To implement the FSMS in the organisation, the company should provide support in all the possible ways.
- Support in terms of resources, people, infrastructure, work environment, as well as awareness and communication of the FSMS with documented information.
- Documented information about every work instruction, raw material storage and process is needed.
- Competent people are mandatory for implementation of FSMS.
- Documented information about daily production count is needed.

8.2 Implementation
Proper technology already exists in the organisation. Everyone is treated without any discrimination. The name and manufacturing location of the machines are listed below:
- Injection moulding machines (4)- Nova servo 150 (Milacron)
- Injection moulding machines (2)- Nova servo 110 (Milacron)
- Injection moulding machines (2)- Nova servo 200 (Milacron)
- Injection moulding machines (2)- Nova servo 80 (Milacron)
- Extrusion blow moulding machines (4)- 2000-H-2 (200,500 ml / 1.2 litres) (Mega machinery product)
- Assembly machine (1) (KEN)
- Grinder machine (2)
- WAD machine (1)
- Competency matrix of the organisation for successful implementation of FSMS:

**Efficiency = actual / standard (column values)**
- Evidence (documented information) of raw material and finished goods storage:

- Evidence (documented information) about daily production updates (daily production report) and process is given below:
Closing stock represents the present stock while the opening stock represents the stock which is carried forward from previous month.

9. OPERATION (PRP AND HACCP IMPLEMENTATION)

9.1. Nomination of food safety team
The FSMS implementation team included the staff as well as the machine operators. The basic idea about the FSMS objectives and goals were shared with the working people in the company.

9.2. Setting up prerequisite programs (PRP’s)
PRP’s are the basic pre-requisite programs, for example personal hygiene, procurement of raw materials, general cleaning approved procedures, air, surface and water equipment monitoring, timely medical examination of employees, training and awareness. It is the foundation of HACCP program. PRP’s applies to all operations, it also contributes to the reduction of hazard, its failure does not necessarily mean that product is unsafe, and it is not measurable in real time. Prerequisite programs expect the following changes:

- Premises- proper ventilation inside the premises, proper lighting, hand washing stations and sanitizing installations.
- Storage space- proper temperature control of storage area and a proper ventilation.
- Equipment- proper maintenance and calibration of the equipment is done.
- Personnel- general food hygiene training program is conducted once in a three-months.
- Sanitation and pest control- Working on a good pest control and sanitation procedures.
- Product Recall planning- Product coding and labelling is done and procedures for testing and recalling with a good traceability plan is in process. Near to 70% of the work is done.

Also, the company is in process to ensure highest safety while processing raw material in the machine using proper food safety kit like gloves and hair caps which counts as a major GMP (good manufacturing process).

Proper lighting and ventilation exists

Proper storage space for finished goods

Dispatch boxes with proper coding to trace the lot number of the finished item
10. PERFORMANCE EVALUATION

10.1 Clause states

- Organisation should ensure customer satisfaction and ensure that their needs and expectations are fulfilled.
- Organisation should conduct internal audit at regular intervals.
- MRM should be conducted to ensure effectiveness of FSMS.

10.2 Implementation

- Customer complaint chart

<table>
<thead>
<tr>
<th>No.</th>
<th>Serial No.</th>
<th>Customer Complaint Register</th>
<th>Description of Complaint</th>
<th>Root Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-435</td>
<td>Cake Topped with egg</td>
<td>22 mm deep cut</td>
<td>Supplier</td>
<td>Made Egg Discontinued</td>
</tr>
<tr>
<td>2</td>
<td>1-436</td>
<td>Cake/ Muffin</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>3</td>
<td>1-437</td>
<td>Brownie</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>4</td>
<td>1-438</td>
<td>Ice Cream</td>
<td>10 mm ice cream</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>5</td>
<td>1-439</td>
<td>Brownie</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>6</td>
<td>1-440</td>
<td>Cake</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>7</td>
<td>1-441</td>
<td>Cake</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>8</td>
<td>1-442</td>
<td>Brownie</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>9</td>
<td>1-443</td>
<td>Ice Cream</td>
<td>10 mm ice cream</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>10</td>
<td>1-444</td>
<td>Brownie</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>11</td>
<td>1-445</td>
<td>Cake</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>12</td>
<td>1-446</td>
<td>Brownie</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>13</td>
<td>1-447</td>
<td>Ice Cream</td>
<td>10 mm ice cream</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>14</td>
<td>1-448</td>
<td>Brownie</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>15</td>
<td>1-449</td>
<td>Cake</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
<tr>
<td>16</td>
<td>1-450</td>
<td>Brownie</td>
<td>Baked with 1% Below</td>
<td>Supplier</td>
<td>None Added</td>
</tr>
</tbody>
</table>

- Internal audit summary/ NCR Report

- MRM details
11. IMPROVEMENT

11.1 Clause states:
- All the non-conformities should be closed, corrective actions should be implemented.
- Organisation should adapt continual improvement approach (kaizens, poka-yoke, visual management, 5S etc.).
- Organisation should institutionalise all the improved methods.

11.2 Implementation

12. CONCLUSION

After successful implementation and making these processes a company standard for daily basis, the organisation will achieve its required targets of quality and customer satisfaction.

13. REFERENCES
[1] Reasons and constraints to implementing an ISO 22000 food safety management system: Evidence from Spain
[2] HACCP effectiveness in ISO 22000 certified and non-certified dairy companies