

Setting up focus areas – Meat processing company

HANDOUT 1 – tasks

In a meat processing company, after filling in the MFCA sheet for priority flow identification, the following breakdown was obtained. Energy is the most important NPO representing 74% of the total NPOs, followed by raw materials that represent 17% of the total NPOs.

Flow	% of NPO
Raw materials	17%
Packaging	3%
Operating materials	1%
Energy	74%
Water	5%
Total	100%

The current exercise focuses on raw material as priority flow, for which the focus area should be defined (step 1.5 of TEST).

The production process starts from a cold store, where raw meat is kept for processing. Material is transferred to the un-packaging section. Raw meat then goes to a cutting process to be prepared for the subsequent mincing process. Spices and additives are mixed in with the minced meat during the mixing stage, after which the product is put into containers and cooked. Once the product is cooked, it is transferred to the cooling station, followed by quality control and then to the packaging and delivery.

Based on observations at the site and discussion with the company staff, material losses occur at several stages; starting from the cold store section, where roughly 1% of the purchased material is discarded for quality reasons. Within the un-packaging section, packaging material (mainly carton and plastic bags) is discarded, and the company pays a municipal waste management company to collect it. Within the cutting stage, 2% of the input meat is lost, while another 5% is lost during the mincing stage.

During mixing, 3% of the input meat is believed to stick to the mixer walls, and 7% falls to the ground during filling. In cooking the mixture, 20% of the weight is lost (mostly due to evaporation of water within the product), and the quality department indicated that 3% of the cooked products are overcooked and consequently rejected.

Tasks:

- 1. Draw process flow chart for the different processes, Develop the mass balance, illustrating the material losses from each stage, given that the company processes 100 ton of meat/month, and species are input at 2 ton/month.**
- 2. Identify the focus areas where occur the highest losses of materials.**

HANDOUT 2 – possible solutions

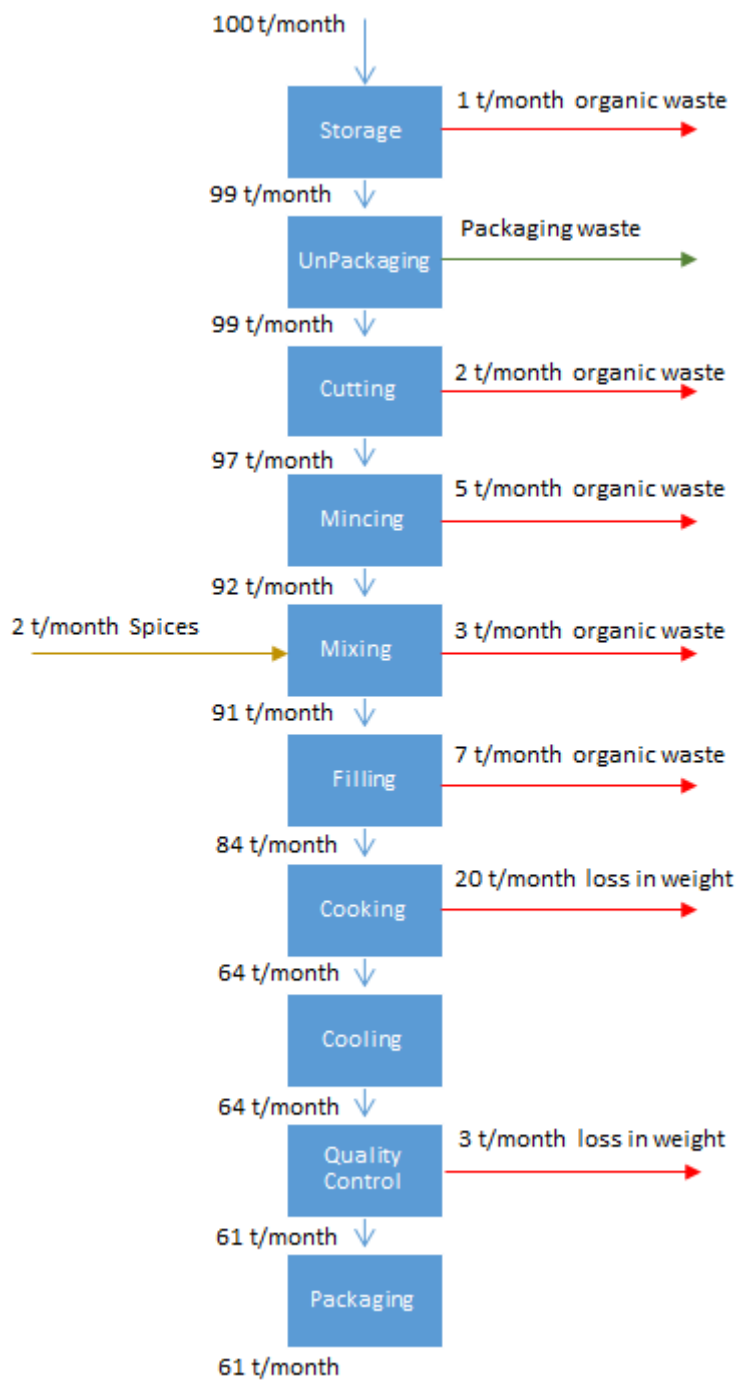
The flow chart below, illustrates the losses from material in each process. Some important remarks include:

- As much as possible, try to keep the distribution of processes according to what is already defined within the company documentation structure (financial documents or ISO documentation for example). If there is a need to deviate from the defined boundaries, this deviation can be discussed with the company TEST team, and the result can be recommendation to review the existing documentation.
- It is often the case that the company doesn't have any quantification for its losses. Observations during a walkthrough or estimates based on experience of company staff can be sufficient at the level of step 1.5. This estimate will be validated during later steps of TEST if found significant.
- In developing the process flow chart or NPO cost breakdown, losses from different flows should not be confused. For example, although we are addressing raw material balance in this example, packaging losses should not be considered as material loss (they fall under the category of packaging flow). Yet, if packaging has traces of raw material sticking to the packaging material, these traces need to be quantified and considered in the raw material balance.

Based on the mass balance, focus areas are:

- **Cooking – 20% loss (49% of material NPO)**
- Filling – 7% loss (17% of material NPO)
- Mincing – 5% loss (12% of material NPO)

You could also select other focus areas based on assumed company priorities and potentials for improvement.



Flowchart of meat production with basic material balance