Processing of pulper waste

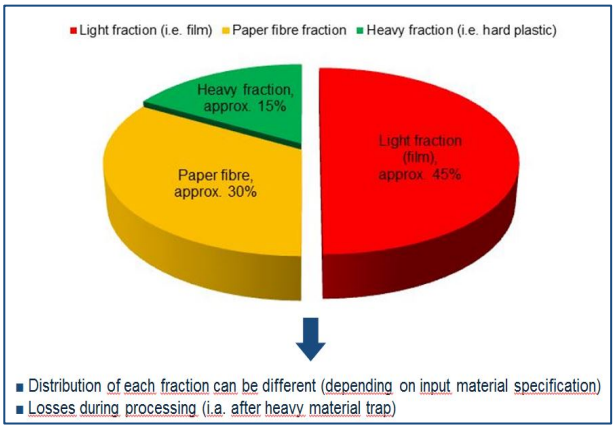
Generation of usable and sellable product

Problem:

Paper Waste is the part of the production in the paper mill which will be not used and therefore ejected. The main process of the paper mill is the dissolving of the old/used paper in the pulper with water. The non-paper fraction or unpulpable solution will be ejected through a large opening on the bottom/side of the pulper and collected by a junker. Depending on the quality of the old paper big amount of paper fibers will be also ejected as pulper waste.

The paper mills don't have a real solution for this and are going the way with disposal to landfill. The higher the capacity of the production, the higher the amount of pulper waste and therefore the higher the costs for landfill! (e.g. 120 Euro / ton.). But this ejected material includes also recyclable fractions, which can be separated and "recycled".

Depending on the processing and input material specification the composition can be as follows:



The composition of pulper reject can be different. Therefore the amount of each fraction must be determined after a test with customer's original material.

Solution:

We have developed a process which allows to revalue the pulper waste. We have verified our solution with several tests and different materials from different customers.

Our solution is presented in figure 1 with a sample installation drawing. It consists of following main steps:

1) **Shredder** for pre-sizing of the material. In this case we have tried in tests with different screen sizes for an optimum result and defined finally the best setting.
2) Afterwards we process the material through a **heavy contamination separator** to protect the following equipment from small stones, metals, etc. as well as soaking the material in water to increase separation effect in the dry cleaner.
3) **Dry cleaner** can be mentioned as the main equipment in this process as it separates the paper fiber (Figure 3) from the residual material. Depending on the amount of paper fibre in the input material the installation of an additional dry cleaner in series can be necessary to reach a high separation effect (Figure 1).
4) The remaining material, which is consisting of a light and heavy fraction, is forwarded by the dry cleaner to the **air stream separator**. Here the separation is done by the specific weight of these materials. The light fraction is mainly film and the heavy fraction is consisting of different amount of wood, metals and rigid plastics. Optionally this can be further processed in a separation tank in order to separate e.g. plastic caps from residual material.
5) The light / mixed film fraction is forwarded to a **plast-compactor unit** in order to produce agglomerate (Figure 2) with high bulk density and good bulk handling properties.

Figure 1: Sample installation drawing

Figure 2: Agglomerate of mixed film fraction

Figure 3: Paper fibre

Customer benefit

- Recycle instead of disposal and produce further sellable product
- Mainly dry cleaning process
- High cost saving: Operation costs can be up to 5x lower than costs for disposal
  → Fast payback period of the investment
- Compact design of the line
  → Not much space needed
- Possibility of high input capacities, e.g. 3,5 t/h
  → The higher the input capacity the higher the profit