MSE Hiller Centrifuge Equipment in the Potato Industry

Applications fall into four main areas :-

1. Starch dewatering
2. Effluent treatment
3. Potato meal
4. Wash water cleaning (Soil / mud dewatering).

Starch dewatering

Units are installed to recover saleable starch from the wash water used in the cutting or slicing process at Crisp and Chip manufacturers.

We find that 100 tonnes of potatoes processed produces approximately 2 - 3 tonnes of saleable starch, and a solids cake discharge of 60% dry solids can be produced.

The starch yield is less in the case of straight cut chips and we find that approximately 0.3 - 0.5% of the potato tonnage being processed presents itself as starch which can be recovered at 60% dry solids.

The MSE Hiller centrifuge is well suited to cold water starch dewatering and there are several incentives to remove the starch from the effluent :-

1. To sell the dewatered starch
2. To reduce effluent costs
3. Recycle centrate to the pre-wash area
4. Reduce usage of fresh water.

Effluent Treatment

A typical example from a site - after grit removal and primary sedimentation, the underflow was thickened in a cone thickener prior to land disposal by tanker.

A centrifuge was installed and cakes of up to 40 - 55% ds were easily achieved without flocculant addition. The product was saleable to farmers as an animal feed additive. In this case abrasive peelers were used in the process.

Similar results have been achieved from sludges derived from Dissolved air floatation (DAF) units at potato processing factories and factories where no pre thickening takes place at all.

When steam peeling is used one cannot expect such a high dry solids content of the cake, nevertheless the resultant cake 20 - 25% is still truckable.

Some factories do nothing more than screen to 7 mm and pump the whole flow of factory effluent through the decanter centrifuge which has the result of removing 98 - 99% of suspended solids and a reduction of 50 - 60% in COD.

Conclusion

The MSE Hiller centrifuge is ideally suited for effluent derived from potato processing. Clients who have used belt presses have complained of high maintenance costs in comparison to centrifuges.

It is to be noted that centrifuges have also replaced rotary vacuum filters and plate and frame presses at several sites for similar reasons.

Nevertheless, there are still many potential clients who do not consolidate their effluent and incur high charges from their Water Authority.

Potato Meal

Peelings, reject potatoes and substandard products can be pulverised to form a slurry. At this point water is added and the slurry can be centrifuged to produce a cake of 40 - 55% dry solids.

This commands a higher price than the waste in its original form.

The dryness of the cake is largely influenced by the proportion of cooked potato in the feed.

Potato Wash Water Cleaning

Use of the Hiller Decapress centrifuge on a closed loop to the potato pre-washer or potato flume/transport water leads to the continuous removal of earth, mud, soil, potato debris etc. from the washing water.

The solids are discharged as a stackable cake at 45 – 60 % ds.

The cleaned liquid discharge is returned to the washer for reuse thus reducing the amount of water used at plant and allowing the washer to be run for extended periods before emptying.

It is also reduces maintenance costs on pumps and wash nozzles.

The addition of polyelectrolyte is not normally required but may be used to improve the superfines capture. If used it is possible to achieve centrates of <100 ppm suspended solids.

Example of a Hiller model DP45-422 centrifuge on mud / soil dewatering.