

Milk powder proposal for Eritrea

As discussed in our recent teleconference, please see below, the facts and benefits of producing milk powder from excess fresh milk, and the 2 equipment options presented.

Powdered milk is used in everyday life for a variety of uses and has historically also been used in feeding schemes and to supplement nutrition, and where refrigeration is an issue. Powdered milk can be used for:

- ✓ Milk recombination.
- ✓ Milk chocolate production in the chocolate business.
- ✓ Ice cream production
- ✓ Animal Feed
- ✓ Yoghurt
- ✓ Mozzarella
- ✓ Cottage cheese
- ✓ Dairy whitener is commonly used in the preparation of tea and coffee, and it comes in a variety of fat variations. Milk powder is used to make cakes, chocolates, and other baked goods.

Milk powder is consumed by people of all ages, particularly by young children

With milk powder, the shelf life of milk is extended to at least 12 months, and the powder can be reconstituted to drinking milk using boiled or filtered water whenever milk is needed. This is an excellent solution for very rural areas, and areas where electricity for the storage of fresh milk is unreliable.

Transporting powdered milk is also more effective than transporting fresh milk as it is a concentrated formatted. This means you can transport a higher volume at a lower cost, having less of a carbon footprint.

In the November training held in Eritrea, it was proposed that a gas powdered spray dryer should be purchased and set up in Asmara. Processors could then book days on the machine to spray dry excess milk into powdered milk.

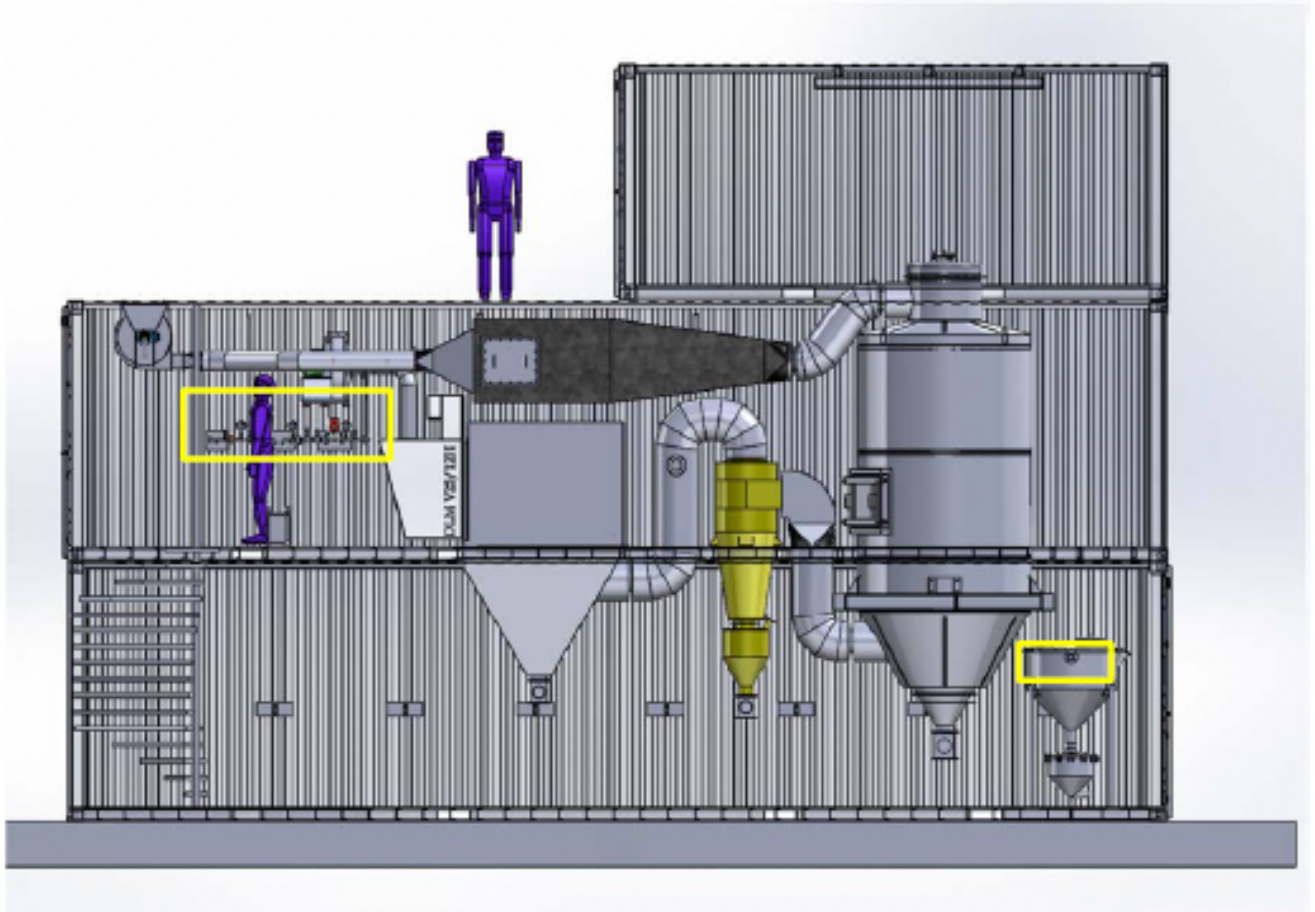
The capacity of the machine is to convert 75kg of fresh milk into 15kg of powdered milk per hour.

The machine can also spray dry whey / Birah into whey powder which can be used to enrich animal feed. This requires minimal setting changes.

Details of the Spray Drying machine:

- This is a micro spray drying machine
- This plant is available in South Africa, at a cost approximately €73 500 installed and commissioned, with training. Freight would cost approximately €30 000 = total of €103500.
- Capacity is 75kg fresh milk per hour with an output of 15kg powdered milk per hour.
- The plant is gas powdered and does not rely on electricity.

- It would stand 3 containers high, and would be the length and width of a 40 foot container.
- Whey can also be run through the spray dryer, giving whey powder which is high in protein and can be used to enrich yoghurts or drinking yoghurts.



Spray drying machine

As an alternative support to outlying zoba's, drum dryers could be purchased to process milk into powdered milk at milk collection centers. Here again, processors in outlying zoba's could book a day to utilize the drum dry and convert fresh excess milk into powder milk, especially during the fasting period. This milk could be sold as powdered milk, or saved for busier periods, and reconstituted back into milk and used to produce yoghurt or cheese during busy times.

Drum drying alternative

- A thin film of concentrated milk is applied upon the smooth surface of a continuously rotating steam heated metal drum. This is maintained at 150 degree centigrade.
- The thin film of dried milk is continuously scraped off by a stationary knife, angled at 15 to 30 degrees, located opposite to the point of application of the milk .
- The drum rotates at a speed of 14-19 rpm.

- The thin film of milk stays in contact with the heated drum for a period of 3 secs or less, for 3/4 or 7/8 of a revolution and is then scrapped off and ground to obtain a fine powder.
- Machine requires a smaller floor space and is movable.
- Easy to operate.
- Suitable for operating small quantities of milk.
- Produces milk powder of better keeping quality as the milk is slightly more “cooked”.
- Electrically operated
- Cost €41 000 including installation and commissioning.



Drum drying machine