Since 1883

Beet Pulp Pelleting

Ï EFFICIENT Ï

Ï RELIABLE Ï

Ï COMPACT Ï

Ï USER-FRIENDLY Ï

Ï ROBUST Ï

Ï WORLD WIDE SERVICE Ï

Endurable

THE CPM ADVANTAGE

Innovative engineering and design have been combined with the latest manufacturing technology to provide the highest quality pellet mills in the world with the best production levels ever achieved, along with excellent pellet quality.

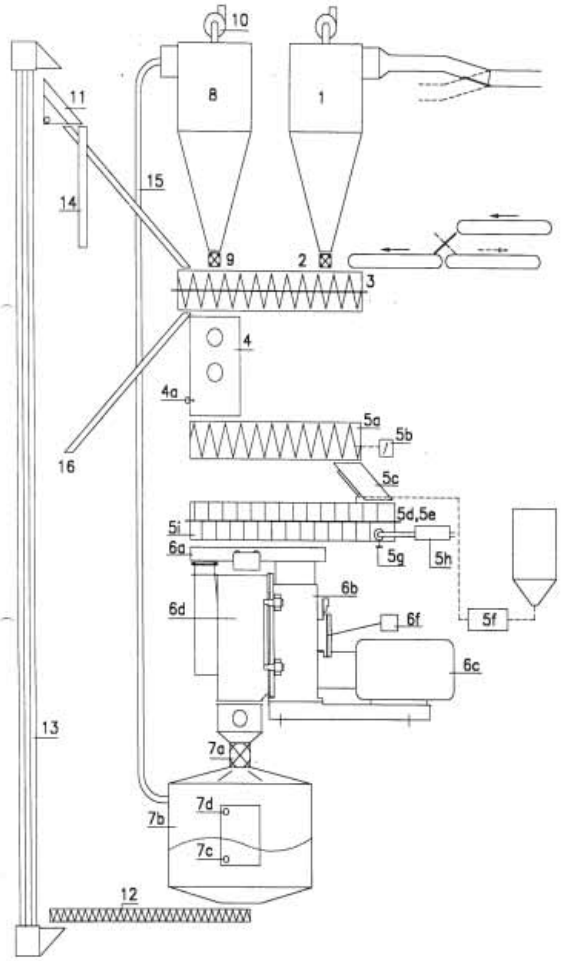
■ HIGH PERFORMANCES ■ LOW COST MAINTENANCE ■ MAXIMUM SAFETY

Since 1883

Your partner

GENERAL

Dry sugar beet pulp is not an easy material with respect to storage and transport because of the low specific weight and the bad flow characteristics. For this reason there are some specific requirements on the feeding equipment to the pellet mill's feeder screw.
The two drawings show some solutions which assure a continuous flow of material. Besides difficult to handle, the dry sugar beet is also quite abrasive and aggressive. For this reason CPM has chosen for high quality stainless steel (SS316) for most parts which are in touch with the product. As an additional problem the fibrous material requires a lot of mechanical energy for pelleting, which is putting a heavy load on the pellet mill. A strong ring die type of pellet mill with a cast iron gearbox has given the best results so far. V belt driven pellet mills with welded sheet metal boxes do not provide proper bearing support. Besides this power transmission with V belts is less efficient.
Flat die pellet mills are more difficult to maintain and show excessive die and roller wear, because of friction due to speed differences between the inner and outer edges of the rollers.



TRANSPORT FROM DRYER TO PELLETING INSTALLATION

Both drawings show a pneumatic transport system with a cyclone and a rotary seal and as an alternative a system with a belt transporter.

BY PASS

The first item that needs to be present is a possibility to by pass the pellet line. When for some reason (f.e. maintenance) the supply of pulp to the pelleting line should be stopped, the sugar beet pulp should by pass the pelleting line and be transported straight to a storehouse. Both drawings give an example of how to create such a by-pass, both for a supply by means of pneumatic or for conveyor belt transportation. The dotted lines represent the flow of the raw material when the by-pass is in use.

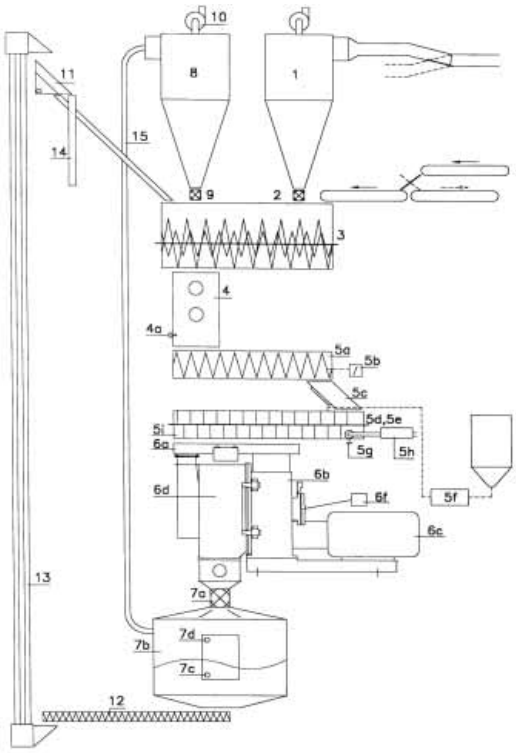
SYSTEMS TO ASSURE CONTINUOUS SUPPLY TO THE FEEDER SCREW

For the following two reasons is important that the feeder screw is always 100% filled with material. Feeder screw is used for volumetric dosing. This system is only reliable when the screw is full because only then we know that a certain speed of the feeder screw relates to a certain volume. The feeder screw acts as a seal for the steam which is added in the mixer/conditioner. If not 100% full the steam will enter the system above the screw and condenses on the cold walls. The dry beet pulp will than stick on the wet walls.

SYSTEM A (SYSTEM WITH BATCH MIXER)

In this system two buffers are created to guarantee supply to the feeder screw of the pellet mill. One buffer is the small hopper under the batch mixer, and the other buffer is the batch mixer itself. The function of the small hopper under the batch mixer is to guarantee supply to the feeder screw. It should therefore always be filled. To prevent the pulp from getting stuck, the walls of this hopper should be straight and not V-shaped.
The minimum height is approx. 1 meter. The Maihawk level-sensor should be installed at the bottom of this small hopper. This level sensor should be included in the interlocking sequence. If no material, the feeder screw should stop. This also means that the steam and molasses supply to the mixer should be shut off. A sight glass in this bin will also provide the possibility to check availability of material.
The batch mixer acts as a storage/buffer bin on top of the small hopper. The lint screw in the mixer will transport the material to the inlet of the small hopper and keeps the material moving to prevent bridging. Size of batch mixer is depending on local conditions, but should at least be sufficient for about 30 minutes production.

in productivity



SYSTEM B (WITH TRANSPORT ELEMENT AND OVER-CHUTE)

In this system only one small buffer is created. It is the same as the small hopper in the other system. The difference is the method by which the fullness of this hopper is guaranteed.
A screw or chain conveyor provides the small hopper with a constant flow of raw material. As long as this flow is greater than the demand of the pellet mill, the small hopper remains full. Any excess material which doesn't fall into the small hopper, overflows at the end of the screw conveyor through a pipe to a storage facility. From this storage material can be recycled back into the system.

SMALL HOPPER ON TOP OF FEEDER SCREW

As already said before this hopper should have straight walls !!

FEEDER SCREW

The stainless steel feeder screw is driven by a geared motor with frequency converter. The speed is regulated a result of the pellet mill main motor load (manual or automatic)

MAGNET SPOUT

Between the feeder and the conditioner a magnet spout is mounted to remove ferrous metals from the dry meal.

MIXER/CONDITIONER

In the stainless steel conditioner steam and (if required) molasses is added)

STEAM ADDITION

The addition of steam is required to obtain a good pellet quality and a good capacity. Steam supply from the boiler to the pelleting factory should be 6-10 bar dry steam. One of the attached drawings gives instructions about the lay-out of the piping system between the boiler and the steam set. The steam set should be located as close as possible to the pellet mill. This so called steam set will reduce the pressure to 1,5-2 bar and keep this pressure stable. Besides this besides this the steam set will take out any condensate. On the mixer a regulating valve is mounted to control the steam quantity which is fed to the mixer. Average steam consumption is up to 5% of the pellet mill capacity.

MOLASSES ADDITION

Molasses can be added to the beet pulp by means of a pump and a flow meter. Molasses addition may have a positive effect on capacity and quality. Please see attached graph. Molasses is stored in a heated day tank. Upper level of this tank should be lower as the mixer inlet. Otherwise a valve is required to prevent free molasses flow from the tank to the mixer. Pipes should have large diameter (3"). Pump and flow meter can be located on pellet mill level.

DIE HOIST

On the bigger pellet mills a build on die and roller hoist is required. On smaller mills a die hoist truck will do.

PELLET MILL

The heavy duty pellet mill will press the beet pulp to pellets. Pellet size is depending on die choice. (For sugar beet usually 6, 8 or 10 mm.)

ROTARY SEAL ON TOP OF THE COOLER

For the intake of pellets in to the cooler without air leakage.

COUNTER FLOW COOLER

Box type cooler with stainless steel walls and top for efficient pellet cooling with ambient air.

CYCLONE AND ROTARY SEAL

Cooling air is cleaned by means of a cyclone and rotary seal. Dust coming from rotary seals goes back into the system.

FAN

Clean air fan for sucking the cold ambient air through the layer of warm pellets.

SIFTER

For the separation of dust from the pellets.. Fines go back into the system.

Since 1883

Beet Pulp Pelleting


Engineering


Production


Customer Service


Application technology


Service Teams Worldwide


Sales


Support


Die plant

WORLD-WIDE

CPM offers service through a world wide network of local agents in nearly every country. They get supported directly from the regional headquarters by teams of pelleting technology specialists.

SALES DEPARTMENTS

Our establishments are staffed with qualified sales, engineering and service personnel and are well stocked with dies, parts and accessories. This ensures prompt efficient processing of all customer service requirements.

CONTACT

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