

Translation (Key Parts):

**1600 Tons/Day new technology corn
germ extracting production line of
Shandong Borun Industrial Co., Ltd**

Contract Bid

Project number: BR-2010-01

Project name: 1600 Ton/Day new technology corn germ extracting
production line of Shandong Borun Industrial Co., Ltd

Bidding company: Henan Province Lushan County Wantongtong
Machine Manufacturing Co., Ltd

Date: 2010/06/10

The main content of the bidding files:

Section One –The advantage of the new technology steam temperature-maintaining system:

- a) The corn is fed into a temperature-maintaining warehouse after steam dampened, where the corn will be kept for 30 minutes under the humidity of about 60. The corn will be sent to the next corn germ extracting procedure when the water content of the corn skin reaches 18-19% and the temperature of it reaches 38-42 °C.
- b) The corn dealt with under the above mentioned method, will not ice up or frost up in the winter, thus can make corn germ's tenacity reaches the best state, and increase the germ extraction ratio and germ purity.

Section Two –The disadvantage of the old corn soaking technology:

- a) The soaking pot needs to be very large for the corn is soaked in water under normal temperature. With the long soaking duration of about 24-40 hours, the cost is much high. The water supply system can't operate well under the temperature of -5°C during the winter. These remarkably increase the land acquisition cost, construction cost, water and electricity consumption, and labor cost.
- b) The corn need to be soaked two days before it can be sent to germ extracting procedure. That makes it difficult to maintain the production procedure continuously.
- c) The soaking duration fluctuate when soaking the corn under normal temperature, which easily leads to the problem of high or low water content of corn, and finally affect the germ extraction ratio and germ purity. High water content corn is mushy, and can easily block the germ-extracting machine. Low water content corn is fragile, which decrease the corn germ extraction ratio.

Section Three – Advantages of corn germ extraction, germ selection, flaking, flat sifting systems under the NEW process

1. Advantages of the corn germ extraction (degerming) machine

The corn germ extraction machine was built based on an imported technology from the Italian company 奥克姆 in 2005. Its advantages include: smooth grinding, small amount of dusts, high proportion of germ in granular form, low spinning speed, long economic life. The 1600 tons/day corn germ extraction equipments are used in a group of 16, requires power of 352kw in total.

Chart: Structure of the corn germ extraction machine (omitted).

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Chart: Application and usage of the corn germ extraction machine within the whole process:

Steam conditioning of corn -> Corn germ extraction machine -> mixing -> sifting -> 3-hole per sq inch sieve to germ extraction, 8-hole per sq inch sieve to germ selection, 8-hole per sq inch sieve to grinding.

2. Advantages of the germ sifting machine machine

The specialized corn germ selection machine is designed and built based on the working theory/process of the gravity-based Stone Removal Machine. This machine finishes raw germ selection through weight-based separation, pneumatic separation, floating of the material processed and filtered by two different sieves.

Chart: Application of germ sifting machine within the whole process (omitted)

3. Refining process of raw germ

Chart omitted

Four – Disadvantages/flaws of corn germ extraction, flaking, sifting under the OLD process

1. Disadvantages of the corn germ extraction machine

A transmission shaft, jointed with a piece of flat steel, is installed to the horizontal grinding machine. The characteristic of this machine is: high spinning speed, high germ grinding ratio. The 1600 tons/day corn germ extraction equipments are used in a group of 14, requires power of 660kw in total. According to a test, 15% of the corn germ is grinded to powder, thus affect the germ extraction yield. The grinded mixture is sent into a sole 8-hole per sq inch sieve. The material below the sieve is sent to the flaking procedure without going a germ selection system.

2. Disadvantages of the germ flaking machine

The old technology flaking machine is actually a powdering machine for it integrates crushing with powdering. After the first time flaking, the material (germ and endosperm) above the 8-hole per sq inch sieve is sent into the powdering machine and powdered. This causes an additional loss of the germ.

3. Disadvantages of the second time germ flaking machine

After the first time flaking and the first time sifting with a 10-hole per sq inch sieve, the material below the sieve is sent into crushing machine. The mixture of germ and endosperm above the sieve is sent into the second time flaking machine (powdering machine). Again it is sifted and loses some part of the germ after the flaking. The raw germ is then sent into a pneumatic separation machine. The finally obtained germ has a low purity and a low germ extraction ratio of only 10-13%. The germ contains many endosperm or skin and is easily to block the oil-milling machine, which lower the yield of oil and ethanol. These disadvantages also causes high soaking machine investment and high electricity consumption.

4. The old processing procedure:

Clearing the impurities -> Clearing the stones -> Soaking in water under normal temperature -> Grinding -> Sifting -> First time crushing and powdering -> Sifting ->

Pneumatic separation -> Second time crushing and powdering -> Sifting -> Pneumatic separation -> Low extraction ratio and low purity germ -> Drying -> Oil soaking -> Recycling of oil waste

5. The OLD process usually uses:

- a) Grinding machine
- b)Wheat powdering machine
- c)High quadrate flat sieve
- d) Pneumatic separation machine
- e)Feeding machine

Due to its cheap cost and simple technical design, the old machine is full of old textbook techniques. Due to the low health consciousness toward edible corn oil of Chinese people prior to its entry into the WTO, most research institutes failed to consider improving/upgrading the corn germ extraction technique, resulting in the laggard status of such technique.

spect of corn oil.