

Our Innovation
Your Success



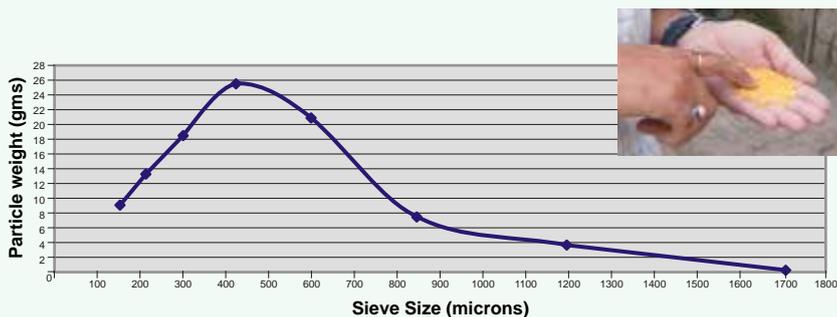
Feed Milling Solutions



www.larkengco.com



**Full Screen Hammer Mill
10-250 HP**



Weight of Sample taken = 100gms
Geometric Mean Diameter = 459 mic
Geometric Standard Deviation = 1.749

The uniformity of particle size is described by Geometric Standard Deviation(GSD), a small GSD representing higher uniformity

SIGNIFICANCE OF PROPER GRINDING

Both the average size of particles as well as uniformity of size in the feed product affect animal feed efficiency, gut health, and feed manufacturing cost.

Average particle size: Research suggests that how feed particle size affects digestion- Finer particles improve nutrient absorption but can encourage keratinisation or erosion of digestive tract tissues, possibly leading to ulceration and pathogenic bacteria.

While a coarsely ground ration changes the physio chemical and microbial properties of stomach contents, which decreases the survival of pathogenic micro organisms such as salmonella.

Uniformity of grind: Uniform grinding or particle size distribution is of utmost importance as it allows better absorption of enzymes for better digestion. Production of feeds with better uniformity is the outcome of design parameters of the equipment.

Besides feed efficiency and gut health, particle size characteristics play a role in nutrient excretion. "Proper processing of feeds represents a very practical means to positively impact nutrient excretion through improvements in feed digestibility. Particle size is an area where producers can significantly improve feed efficiency."

TECHNOLOGY TO ACHIEVE PROPER GRINDING

Our Patented QGA- Technology

Patent Application No. 1993/DEL/2007

Inventing this technology is one more feather to our cap and a total grinding solution for all types of grinding. "Quick-Gap-Adjustment" QGA, as its name implies this technology is a boon for grinding different sizes of products as fine/ Medium/ coarse by quick change of gap between hammer tip and screen, thus creating ideal parameters for optimum grinding of product.

YOUR GAINS/BENEFITS

a) Due to use of optimum screening area per kw, higher tip speed and direct coupled motor, these hammer mills are highly energy efficient and power consumption per ton of grinding is very low.

b) The gap between tip of hammer mill and screen plays a very important role for efficiency as well as quality of grinding. Our hammer mills are having the provision to adjust the gap suitable for fine grinding and coarse grinding. This results in quality of grinding to be more uniform, increases the efficiency, no jamming of screens and allows wide variety of products to grind.

c) The design is very much user friendly as the changing of screen is very easy and quick. Similarly removal of rotor for main bearing changing is also very easy and quick.



Hammer Mill Feeder

Our modified feeder has long vanes converted into multiple cups that provide instead of 6 discharge points to 24 or more depending on size, which results more even feed rate and distribution of material across full width of mill intake.



Hammer Mill Feeder Drive Panel

In this panel, variable frequency drive (VFD) is used to control the speed of feeder. It has following features:

In auto mode VFD controls the feeding rate automatically with respect to load of main motor. This drive communicates the "Load" or "Amperage" of hammer mill main drive motor to the feeder motor to adjust the feeder speed. This ensures that the feeder does not supply the mill more material than Hammer Mill main drive motor can tolerate.

In manual mode, we can control feeding manually through a potentiometer.

In case of any major problem in electronic Feeder Drive Panel, we have provided a direct mechanical bypass mechanism which allows gravity feeding through slide gate control to keep the plant running.



SIGNIFICANCE OF MIXING

Mixing is one of the most important operations in manufacturing of animal feeds and mixer is considered to be the heart of feed milling operation.

The need for uniformity in a complete feed is a must in order to satisfy nutritional requirements of the animal to achieve growth, production and good health.

Those associated with animal feed production realize that if feed ingredients particularly micro- ingredients such as vitamins, amino acids, trace elements and drugs are not properly blended, overall animal performance will be reduced and wide variation within the group of animals will exist. It is also possible to create a toxic situation if some ingredients are not properly mixed. Most feed additives, such as fat soluble vitamins, trace minerals, antibiotics and growth promoters will not perform their intended function if they are not properly blended in the feed

During the manufacture of feeds there are several factors which create or contribute to incomplete mixing. Some of these are related to the machine i.e. type of mixer, design of mixing elements and mixing parameters etc and some are related to the physical properties of the ingredients like particle size, particle shape, density, hygroscopicity, static charge and adhesiveness.

For production of animal feed, mixers with different designs of mixing elements namely Paddle type, Double Ribbon screw, Double Shaft Paddle mixers are available. After knowing the advantages and limitations of each design, we can select the best mixer for our specific need



Double Ribbon Screw Mixer
500 Kg/batch - 3000 Kg/batch

SMART DOUBLE RIBBON SCREW MIXERS

Lark Engineering introduces smart double ribbon screw mixers with its patented (Appln. No. 1544/DEL/2007) world advanced ribbon design which can perform mixing at much faster rate using minimum of power.

Our patented design

Double ribbon screw mixer is being manufactured in this world from the last many decades with common design features of inner and outer blades. One or more of following problems are generally faced in these designs :

1. Bending of ribbon and arms particularly near to side walls.
2. Excessive product heating.
3. Longer mixing time.
4. More power per ton of mixing.
5. Mixing not up to the mark.

In our patented design, both outer and inner ribbons are having variable cross section area i.e., wider at the start of the ribbon and narrower at the end, both ribbons are having end relief. With these modifications, we have achieved following results:-

1. Breakage and bending of ribbons completely eliminated.
2. Very less heat is generated.
3. Mixing Efficiency: Due to the usage of much wider blades, more pitch of blades, higher rpm, the mixing efficiency of these mixers is the highest in its class world over.

For achieving same mixing result on any other mixer in its class it will at least save 25-35% of time, similarly at least 25-35% power is saved.

DOUBLE SHAFT PADDLE MIXER

Technology : This machine is based on Weight less Zone or Fluidized Zone mixing technology with many modifications at Lark Engg. Co. (India). In this machine, two shafts are positioned in a double drum housing on which series of blades (generally 14 on each shaft) are fixed. The two shafts rotate at a specific peripheral speed in opposite direction while paddles on each shaft overlap in the middle of mixing drum.

This lift all the ingredients in the middle and creates fluidized zone by neutralizing gravitational forces working on particles of different ingredients having different shapes, sizes & density. Hence, a very homogeneous product is received. The next step is to discharge the highly homogenized material from the mixer without segregation. For this, material is discharged very quickly with the help of two pneumatically operated large bottom discharge doors.

Our Double Shaft Paddle Mixer has following strong points:

Mixing Quality : Homogeneous mixing of different ingredients irrespective of density, shape and size of ingredients in shortest time (CV< 5% is easily achieved within 30 Sec. to 180 sec).

Product Heating : Due to large particle movement in Fluidized Zone and a relatively low speed counter rotating shafts very low friction and shear forces are generated, hence heating as well as mechanical abrasion on product is greatly avoided which make it suitable for even for fragile products.

Economy of Mixing : Power consumption per ton of the product mixed is very low. Similarly with negligible wear and tear, maintenance and running cost is also very low.

Segregation at discharge : As the mixer is discharged quickly, so segregation at discharge is avoided and there is minimum of residue in mixer.

Cleaning : Due to large access doors, cleaning is easy.



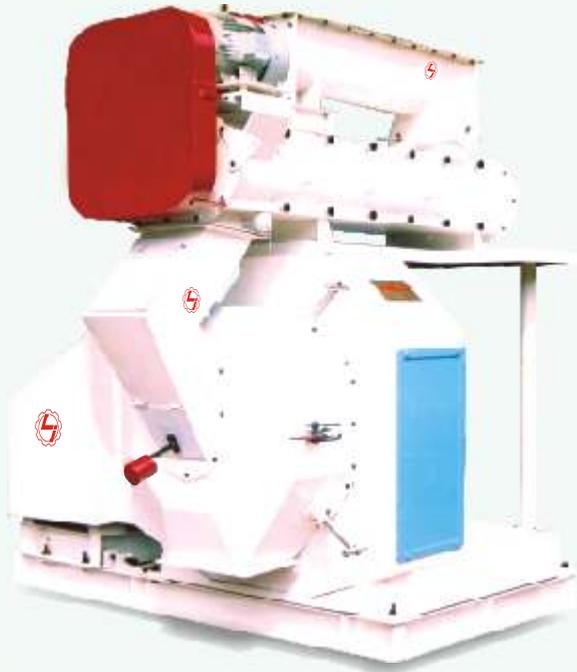
Double Shaft Paddle Mixer
50 Kg/batch - 3000 Kg/batch



Working Principle



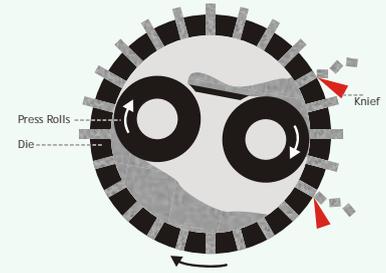
Liquid Addition System



Pellet Mill 2 ton/hr to 20 ton/hr

PELLETING

Pelleting is a process in which mixed feed in powder form is converted into pellets by mechanical compression in combination with moisture and heat. Process is achieved by a set of rolls and die of suitable hole size and shape. As the die & roll rotate, the product passes through the nip of roll and die and pressed into die holes to make pellets.



FEATURES

- ◆ Pellet Chamber or front door is made of corrosion/wear resistant, single wall, heavy duty, SS-304 grade stainless steel for longer life. Hinges on Pellet Chamber may be fitted for left or right opening as per requirement
- ◆ Feed chute which supplies conditioned mash from Conditioner to Pellet Mill Die is also made of Stainless Steel and fitted with powerful magnets to remove iron particles entering the Pellet Mill Die.
- ◆ The cut off knives for breaking pellets from die are fitted on separate segment of pellet mill door to ensure quick opening of door in case of emergency.
- ◆ T-shaft is of alloy steel, forged, one piece without welding joints for higher reliability.
- ◆ Lark Pellet Mills are equipped with V-Belt drive for noise less operation. Heavy
- ◆ Flywheel pulley is provided to cope with sudden variation in load. Power from motor is transmitted through direct coupling to counter shaft arrangement.
- ◆ All our Pellet Mills are supplied with positive action Shear pin type safety arrangement which stop the Pellet Mill in case of sudden overload.
- ◆ Proper gap between Die & Rolls is critical to the operation of Pellet Mill. Our pellet mills are equipped with quick, reliable & easy Roller gap adjustment which reduces periodic adjustments.
- ◆ T-Shaft Housing is of split type design for easy & quick removal of main shaft.
- ◆ Superior quality oil seals used with hardened wear sleeves.
- ◆ Robust knife design with stainless post & carbide knife tip.
- ◆ Heavy duty self aligning spherical roller bearings.

CONDITIONING

Conditioning is a process in which heat, moisture & liquid is introduced to the feed. It has been generally recognized that proper conditioning will provide following changes:

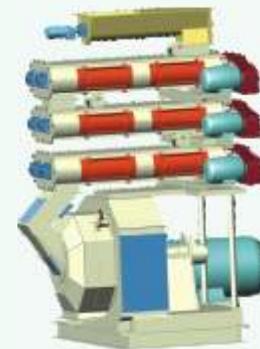
- ★ Product becomes more pliable for pelleting which results higher output with low power consumption, better pellet quality and enhanced Dielife.
- ★ Increase starch gelatinization.
- ★ Increased feed temperature promotes the reduction of harmful bacteria such as salmonella.

GELATINIZATION

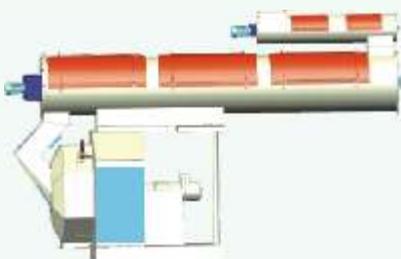
Gelatinization is defined as the irreversible destruction of the crystalline order in a starch granule so that the surface of every molecule is made accessible to solvents or reactants.

As a result of gelatinization of starch, digestibility is improved considerably, because:

- ★ Gelatinization enhances the ability of starches to absorb large quantities of water and this leads to improved digestibility in almost all cases and to improved feed conversion in many cases.
- ★ Gelatinization increases the speed at which enzymes(amyases) can break down the linkages of starch to convert it into simpler and more soluble carbohydrates, including blood sugars(glucose).



Single or Double Barrel Conditioners



Long Term Conditioners

LONG TERM CONDITIONER :

It will have following features :

- a) Designed to provide retention time of 30 to 120 seconds or upto 240 sec, which can be selected directly from panel.
- b) Precise control of temperature through automatic control of steam.
- c) Design will be helicoid screw type which will guarantee first in first out and uniform thermal treatment to each particle.
- d) All feed contacting parts will be in SS304 construction for higher sanitation and low wearing.
- e) Up to 20% less energy consumption of the pellet mills as compare to conventional conditioners due to better conditioning.
- f) Better physical (hardness and durability) and chemical (gelatinization, pathogenic germs, etc.) quality of the pellets
- g) Better performance of the animals (production as well as health status)

COUNTER FLOW COOLER

Hot pellets coming out from Pellet Mill are required to be cooled near ambient temperature to remove excess moisture and heat to improve the shelf life.

In Counter flow coolers product continuously moves downward direction in a bed of product in "first in first out manner" while cool air passes through product in upward direction. By the time product and air pass each other, they exchange heat & moisture.

FEATURES

Product Distributor A stationary or rotating product distributor is installed to evenly distribute the entering product over product bed.

I D Fan Fitted with well designed heavy duty I. D. Fan with balanced rotor. Atmospheric air is sucked through the product layer by I. D. Fan which has butterfly valve to control the optimum volume of air required for cooling. Air can also be controlled by using a variable frequency A.C. Drive by altering the RPM of Blower.

Level Sensor

Level Sensor can be adjusted up or down to control the height of bed of pellets inside the cooling chamber to adjust the retention time for moisture removal from the core of pellets and avoid cooling shock.



CRUMBLER

Crumbling is the process of breaking pellets in small pieces by passing these through rolls rotating at different speeds having grooves on surface. After the hot pellets are cooled to the ambient temperature, the pellets may require breaking into small pieces to feed day-old chicks and grower flock.

Features :

Crumbler is equipped with gap adjustment between rolls to get required particle size of feed. One roll is fixed and is driving one while other is moveable for gap adjustment.

Crumbler is also supplied with pellet spreader for full width feeding and rotary feeder for uniform feeding for optimum crumbling performance with minimum fines.

Every Crumbler is fitted with by-pass mechanism to opt for passing through with or without crumbling.

Crumbler is fitted with heavy duty bearings for prolonged life and adjusting roll is spring loaded for protection from foreign object.



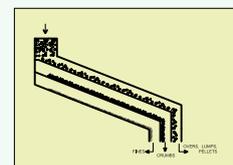
VIBRATORY SCREENER

The pellets & crumbs are usually screened to separate fines & over size particles before final packing. For removing fines only, we require single deck screener. For removing both the over size & fines, we need double deck screener. Our screeners are fitted with separate frames over which wire mesh is clamped and are designed for quick change of different mesh screens.

FEATURES

Vibratory Motor with special Bearings For prolonged life

Fitted with Flow Eveners or Product Spreader to give better screening effect



AUTO BATCHING / PROPORTIONING

Auto Batching/Proportioning System

For the production of quality feed, it is of utmost importance that all the ingredients and micro ingredients (vitamins, additives and trace elements) are measured in weight with high precision so that the desired percentage of each can be ensured in final feed.

As the no. of ingredients and volume of production increases, it necessitates that the automatic weighing of all the ingredients is carried out.

It generally consists of two set of proportioning bins with individual weighing hopper scale, one for major ingredients and second for minor ingredients. There may be any no. of bin from 2 to 20 for each set with suitable capacity and higher accuracy of weighing is required for minor ingredients. Auto weighing of liquids, fat, and oil can also be incorporated to the mixer.



AUTO BAGGING

BAGGING

Our bagging machine is designed for automatic filling of material in open mouth bags. The machine is net filling type and in this, material to be bagged is weighed in a weigh hopper and is emptied into bag.

Electronic Control Unit

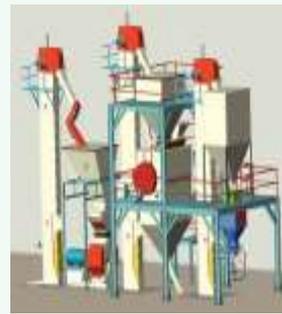
Electronic control unit is wall mounting equipment which controls the bagging operations. The dust proof unit can be located at a convenient place near mechanical unit. The unit is having LED display and keypad which are visible through a lockable glass cover. The key pad is accessible only on opening the front glass door. During the operation cycle the display indicates the weight data and the status of operation like coarse feed, fine feed, errors etc. The key pad is used to enter operational data like the set points, fine feed margins, in-flight margins etc. Non volatile memory is used to retain data during power failure. Provision is given to store 9 set points. Nine independent locations are given to enter fine feed and in-flight margins corresponding to 9 different types of materials. The front door of the unit is provided with the membrane type switches to select the required set point and type of material.



4-6 MT/hr Mash Feed Plant



14-16 MT/hr Mash Feed Plant



14-16 MT/hr Mash Feed Plant with Auto Bagging



4-6 MT/hr Pellet Feed Plant



8-10 MT/hr Mash Feed Plant



8-10 MT/hr Pellet Feed Plant

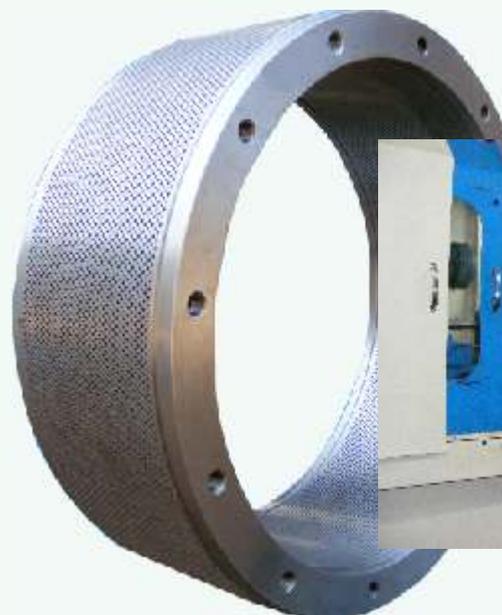


4-6 MT/hr Fully Computerised Automatic Pellet Feed Plant

" Others judge us by what we have already done while we judge ourselves by what we are capable of "



Multiple Line Pellet Feed Plant



In house, Computerised Gun-Drilling Facility imported from Germany for quality dies.





www.larkenggco.com

 **Lark Engineering Co. (India)**

SASOULI ROAD, JAGADHRI WORKSHOP,
YAMUNA NAGAR - 135 102 (HARYANA) INDIA
E-mail : info@larkenggco.com
Website : larkenggco.com

Tel. : 91-1732-254685
: 91-1732-259685
: 91-1732-328084
Fax : 91-1732-259685

SOUTH : 09215359685
EAST :
WEST :
NORTH : 01732254685