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EXPANDER TECHNOLOGY

"An absolute addition to a modern feed mill"

by Almex, Triott Group

The global growing demand for high quality feeds made of a wide range of available raw materials is to the advantage of the expander



Several scientific studies and proven results at clients such as UFA, Deuka, Fanon, Agravis, Vitelia, Mironovsky and others show that expander technology is an absolute addition to a modern feed mill as a tool to fulfill the wide range of needs at clients to supply different feedstuffs for the different life stages of animals. Besides traditional meal and pellets, farmers ask for crumbled feed, expanded pelleted feeds and mono-components that have been treated with expander technology for example for use in TMR feeding.

In the fields of nutritional value, digestibility and feed utilization interesting results have been achieved with expander technology in feed for high yielding dairy cattle, broiler and pigfeed. (Table 1)

A recent trial at the well-known UFA-Bühl research farm showed interesting results in daily gain in advantage to expanded feed compared to traditional meal.

One such company who provide this kind of technology is "Almex". Almex has been a leading supplier of expanding technology since the early 1970's. Since 2014 they have been a part of the Triott group, and as such, can now supply complete pelleting lines including automation.

The designs of the distinguished Almex Expanders are considered reliable and notably robust. These are just a few of the many unique selling points of the product, such as the Active Disc System and the lower energy costs.

The lower energy costs can be explained by the power input for the expander, depending on the type of feed. In general this power input is between 8-15 kW per ton. For special applications such as by-pass protected protein energy input can even be up to 20-30 kW per ton. This is important at these applications, as is that the counter flow cooler is oversized to ensure the proper cooling of these types of products.

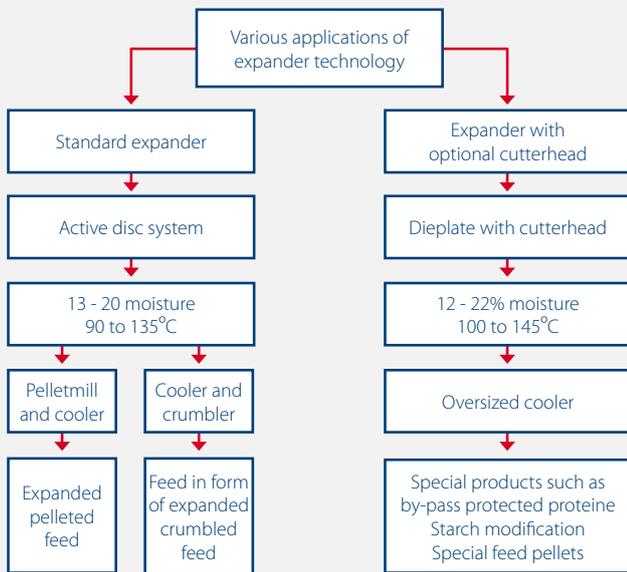
The Almex expander is equipped with the unique Active Disc system in order to control the product output and to

Table 1: An overview of specific energy consumption and temperature
Source: Extruders and Expanders in Pet Food, Aquatic and Livestock Feeds by Mr. Mian N. Riaz

	Property	°C Conditioner	°C Expander	kWh/t Expander	kWh/t Pellet Mill
Layer feed	Not pelleted	75	95	8-10	-
Broiler fattening feed	Rich in fat	75-80	100-105	12-15	2-3
Broiler starter feed	Low in fat, structured	80-85	100-105	10	-
Piglet starter feed	With milk powder	60	80	8	2
Pig fattening feed	Expandat structure	80 - 85	100 - 105	8 - 10	-
Pig fattening feed	Pellets	80 - 85	100 - 105	10	2 - 3
Cattle feed	Rich in crude fibers	75 - 80	105 - 110	15	2 - 3
Dairy cattle feed	By-pass protein pellets	80 + steam in expander	130	15 - 18	2 - 3
Dairy cattle feed	By-pass protein expander for TMR	80 + steam in expander	130 - 140	15 - 18	-
Starch modification	>60%	80 - 90	120 - 130	20 - 30	-
UDP increase	By-pass protein soya/rape meal	80 + steam in expander	130	15 - 25	-

Table 2: Range of Almex Expanders

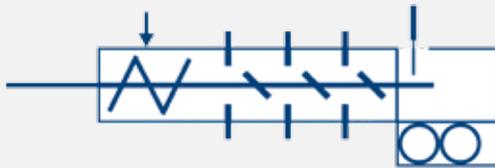
Type	Main motor (Kw)	Motor slide adjustment (Kw)	Expander barrel diameter (mm)	Capacity (ton/hour)
AL150	45-75	0,55	150	1 - 6
AL200	75-132	0,55	200	5 - 10
AL300	132-315	0,75	300	10 - 30
AL350	315	0,75	350	30 - 45



Flow 1: Expanders for different applications in the compound feed production

Figure 2: Active Disc System

Almex Expander Design:
 mixing pins, screw segments, AD Active Disc (slide) outlet, crusher (shear and pressure)



Expander Pelleting line equipped with Feeder, Conditioner and Counterflow cooler taken at Feed Design Lab

assure the quality of the product. The slide of the Active Disc enables introduction of shear forces and frictional heat into the product. This enables the expander to eliminate heat sensitive bacteria (salmonella). The AD system is designed together with Feedmill operators, as users they are happy with the performance and easy access to the system for maintenance and exchange of wear parts.

The expander can be used for the production of expanded crumbs in combination with a crumbler. Or in a feedline with or without a pellet mill or with a by-pass in the production line (Flow 1.) In cases where retention time is required, an expander can be used in combination with a RTB (Retention-Time-Barrel).

To summarise, difficult raw materials that in the past only could be handled by double pelleting can now be processed easily by means of an expander. Higher fats and liquid inclusions are possible. The die of the pellet mill can be thinner and in general less wear costs arise at the pellet mill in combination with expander. ☺



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