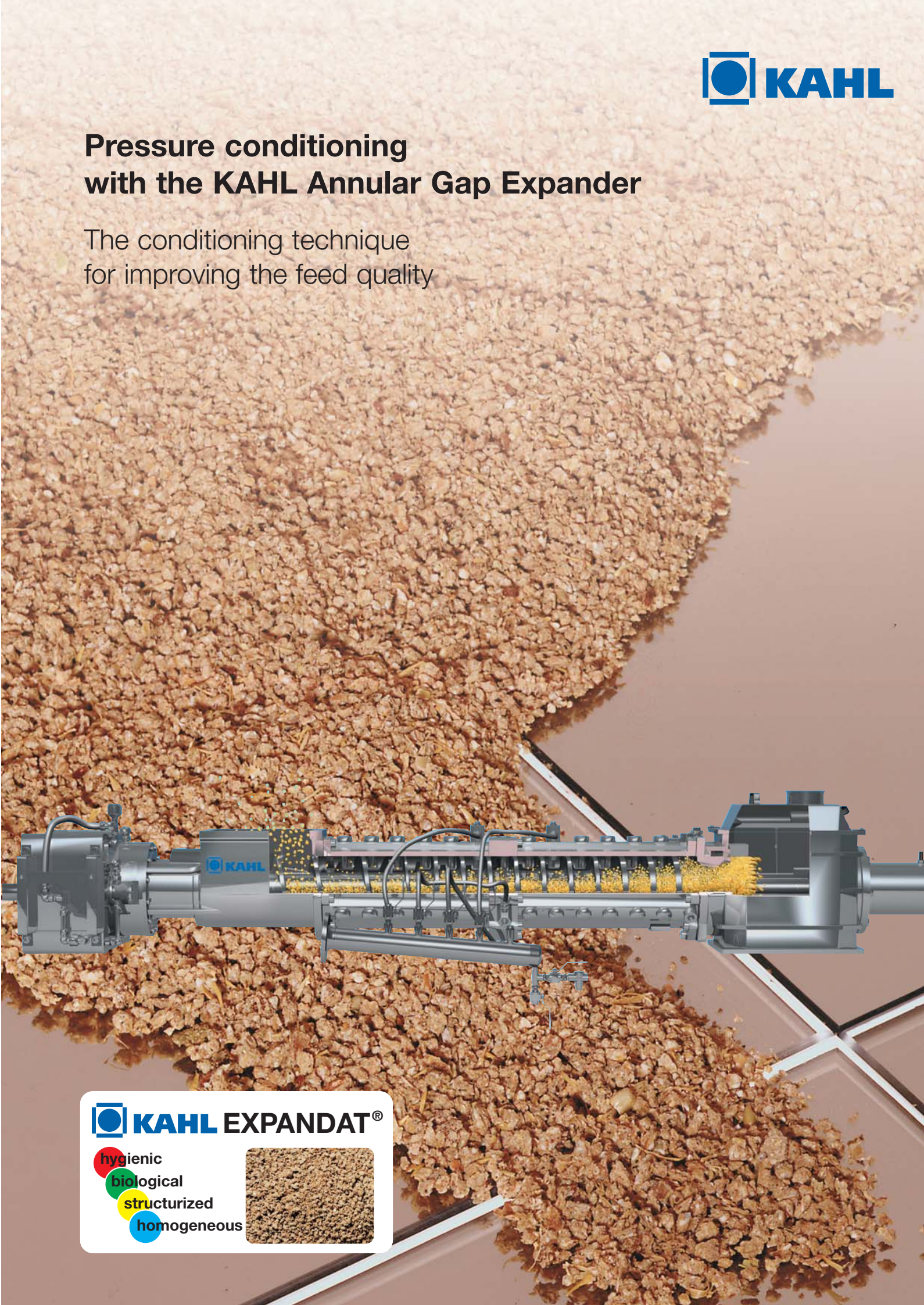
Pressure conditioning with the KAHL Annular Gap Expander

The conditioning technique
for improving the feed quality



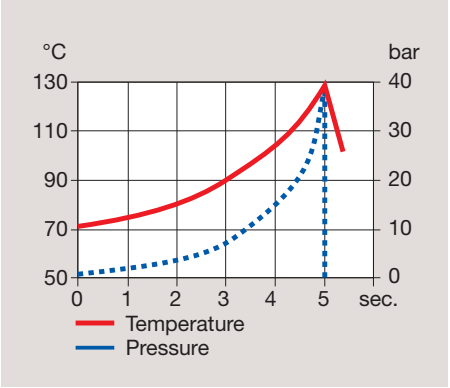
The Annular Gap Expander improves the product quality and the efficiency of the compound feed production

The expander technology is one of the best and most comprehensive conditioning methods for compound feed and individual components.

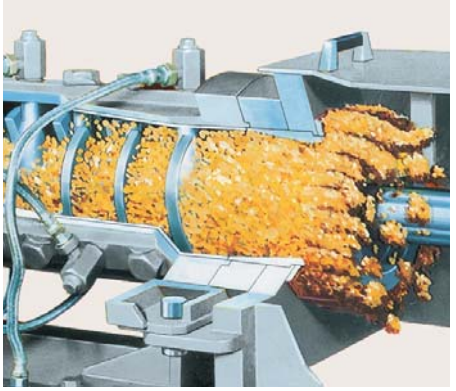
Process technology of the Annular Gap Expander:
The Annular Gap Expander consists of a thick-walled mixing tube with replaceable liners and a cantilevered shaft which is fitted with proportioning, mixing and kneading elements.

The hydraulically adjustable cone at the outlet together with the outlet ring form the patented annular gap. By means of adjusting the cone, the pressure, the intensity of kneading, the product heating, and the energy consumption can be controlled and programmed continuously and instantaneously.

The maximum pressure is about 40 bar, the operating temperatures at the expander outlet are between 90 and 140 °C. At the outlet the pressure drops spontaneously, the material expands, and part of the added water evaporates (flash evaporation). Subsequent drying is not required. The particle size of the expanded product can be determined by means of the downstream crushing device.



Pressure and temperature build-up with the KAHL expander technology.

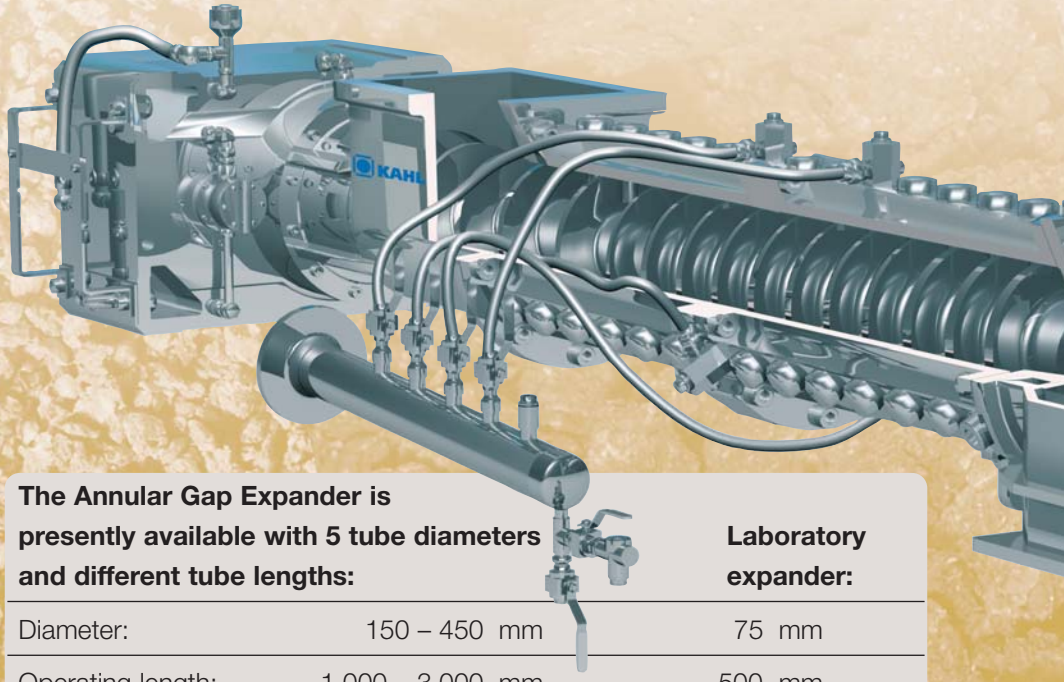


At the expander outlet the pressure drops spontaneously, the product is expanded.

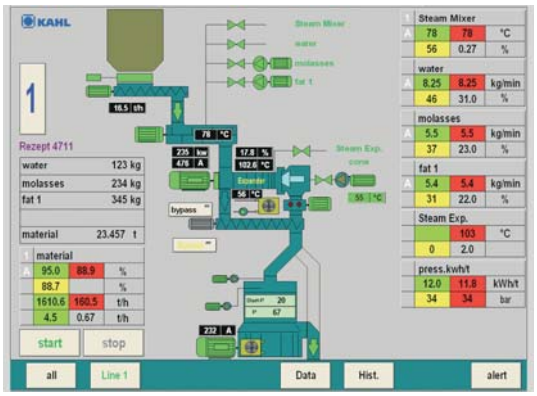
Advantages resulting from the use of the Annular Gap Expander:

- Improvement of pellet quality and increase of press capacity
- Use of components difficult to pellet
- Addition of large quantities of liquids
- Inactivation of harmful substances
- Elimination of salmonellae
- Improvement of the feed value
- Production of Expandat®
- Reduction of the production costs

The particle size of the expanded product can be determined by means of the downstream crushing device.



The Annular Gap Expander is presently available with 5 tube diameters and different tube lengths:		**Laboratory expander:**
Diameter:	150 – 450 mm	75 mm
Operating length:	1,000 – 3,000 mm	500 mm
Drive motor:	55 – 600 kW	15 kW
Capacity:	2 – 60 t/h	300 kg/h



ESEP is the KAHL control and regulation system for automatic operation of the expander.

The multiple possibilities of variation concerning size and drive power allow for an optimum design of the KAHL expander for the requested production capacity.

Addition of large quantities of liquids

Larger quantities of liquids, such as fat, molasses, vinasse and fish solubles, can be added to the expander.

Effects on pelleting

Expanded mixtures increase the press capacity. Pellet hardness and fines can be controlled by adjusting the parameters.

Starch modification

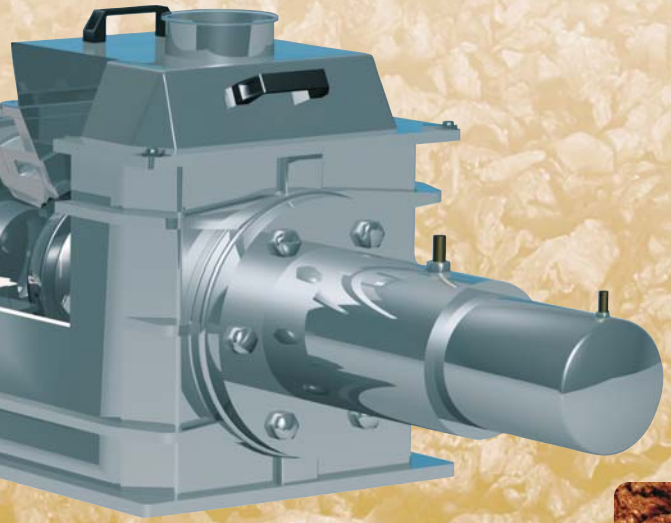
The treatment of the product under pressure, at high temperatures, and with a high moisture content modifies starch.

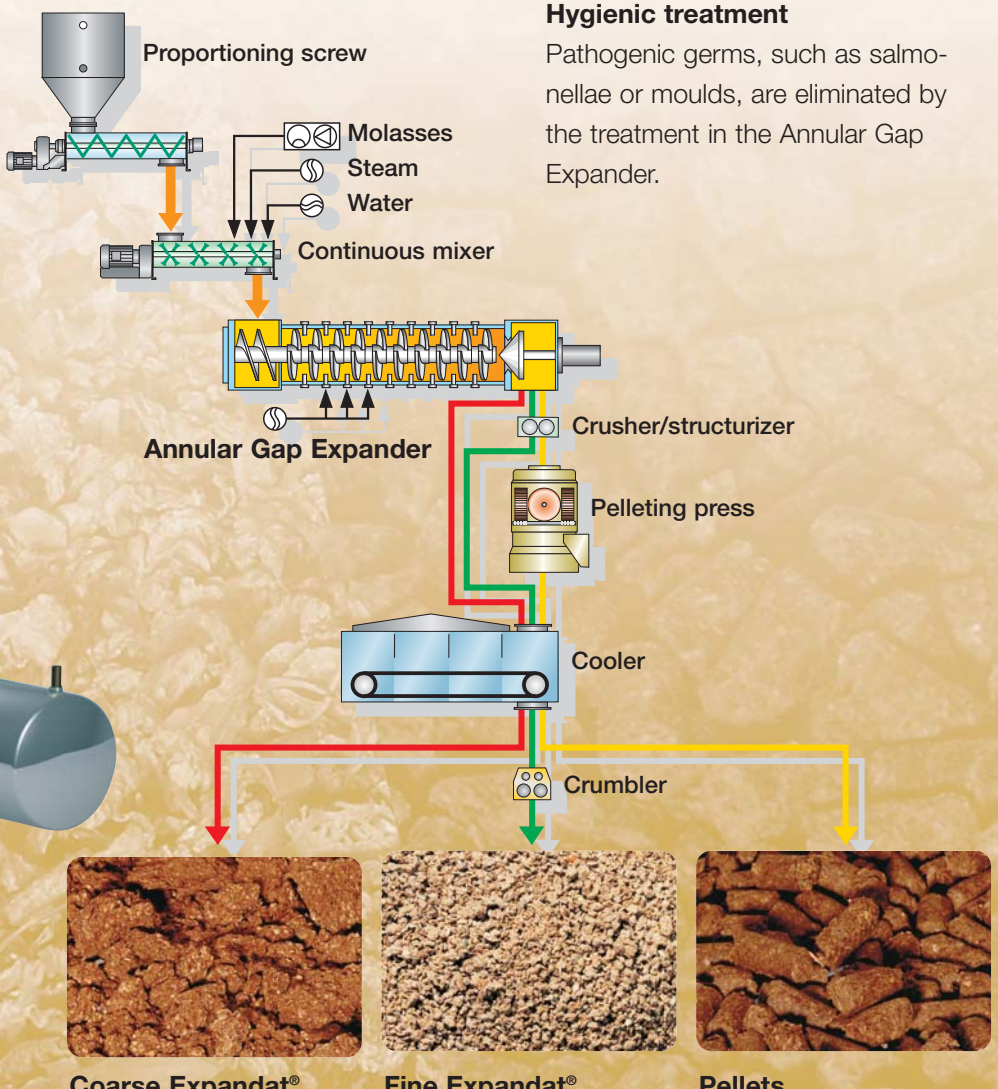
Saving of proteins, vitamins, and additives

On account of the precisely controllable process, value-determining ingredients are not damaged.

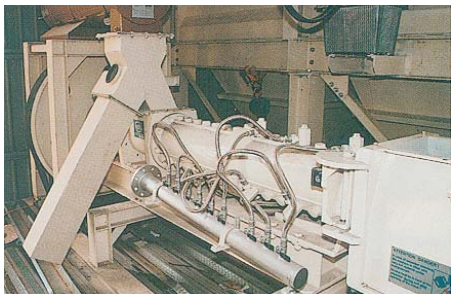
Hygienic treatment

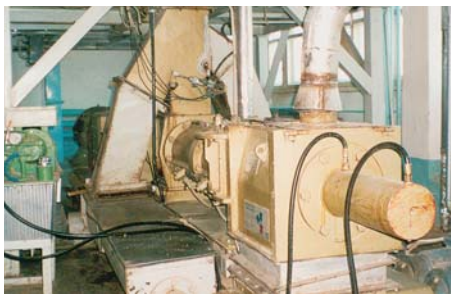
Pathogenic germs, such as salmonellae or moulds, are eliminated by the treatment in the Annular Gap Expander.





A special KAHL service:
Process and product development for practical operation



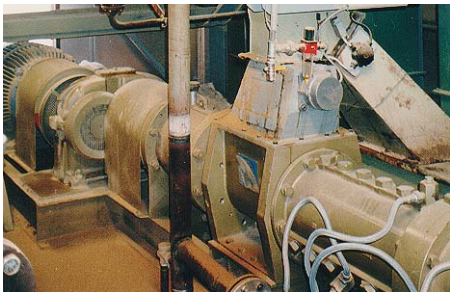


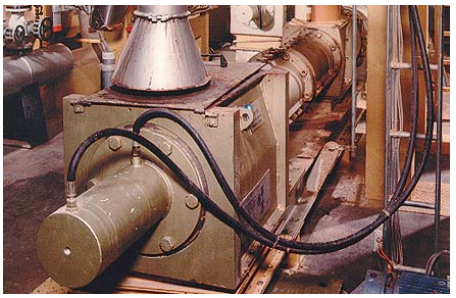
Customers and prospective buyers can test the Annular Gap Expander in our pilot plant with their own mixtures.

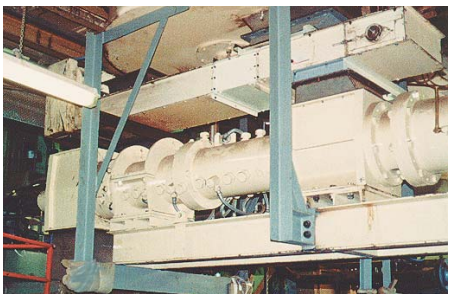
Our network of co-operations goes far beyond machine and plant construction. We did a lot of research work for the development of the expander technology and dispose of research results for almost every animal species, from the nutritional as well as economic point of view.

Our network comprises:

- Universities
- Research institutes
- Freelance consultants
- Research by customers and industry
- Own laboratory and pilot plant







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