



Aquatic Feed

Clextral twin screw extruders process over 40% of the fish and shrimp feed marketed worldwide.

With good reason.

Clextral systems produce high energy feed, achieving a delicate balance of proteins, oils and carbohydrates, processed for total digestibility with no waste. It's the right formula for high quality products that "turn feed into flesh."



 **CLEXTRAL**

Over 800,000 tonnes of aquatic feed are produced each year on Clextral twin screw extruders. Our dedication to advancing aquatic feed technology gives our customers specific technological and production advantages:

Exceptional nutrition and digestibility

- Accurate and independently variable control of production parameters assures complete cooking and optimum starch gelatinization
- Protein-enriched feeds with very high oil content may be processed
- Specialized barrel designs allow degassing or the addition of heat sensitive nutrients at final processing

Complete flexibility

- Process a wide range of floating and sinking feed without changes in screw configuration
- Product size range from 0.5 mm to 30 mm
- Ingredient flexibility to process virtually any vegetable proteins, cereal grain and granulation which is a key factor in feed cost optimization

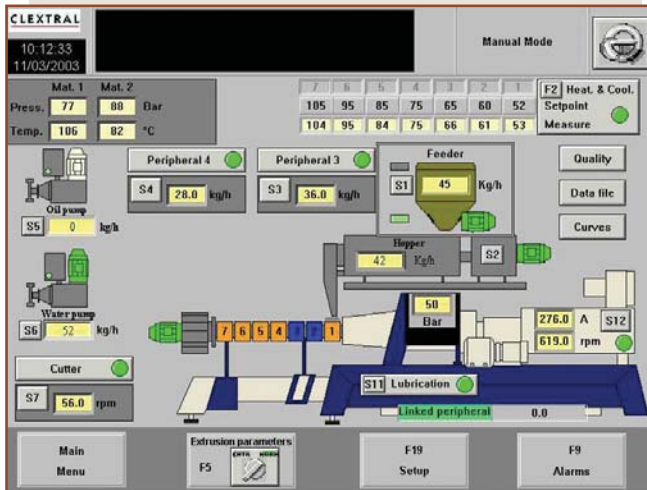
Consistently high quality

- Extruders easily adjust to varying production conditions, allowing the production of high quality feed from various grades of raw ingredients
- Perfect control of the temperature profile, with advanced internal cooling system

Output from 25 to 25,000 kg/h

- Advanced control systems assure accurate process control for uniform product

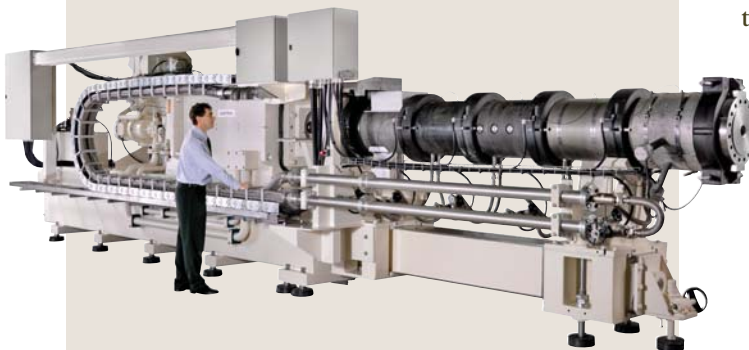
From 25 to 25,000 kg/h



Control and automation



Clextral twin screw extruder EVOLUM 32



Clextral twin screw extruder BC160

Aquatic feed production systems

Typical raw ingredients used in aquatic feed include fish meal, wheat flour, vegetable proteins, fat, binding agents, oils and a pre-mix of minerals and vitamins. The dry ingredients are hydrated with steam or other liquids in the preconditioner. The twin shaft unit assures proper moisture dispersion and precooks the material. The prehydrated mixture is fed to the extruder, where internal temperature, pressure, moisture and residence time are accurately controlled. It is important to achieve a delicate balance of optimum starch gelatinization and oil binding properties. Additional ingredients, including liquids and slurries, fat and steam may be added to the product during processing through ports in the extruder barrel. Degassing offers good alternatives for the production of high density pellets. The product is shaped as it is forced through the die and cut by a high capacity rotary cutter. The feed enters a dryer which gently decreases the moisture content. A final coating of oil can increase the total oil content up to 40% for the finished product. The finished product is cooled and transferred to packaging.



Clextral twin screw extruder EVOLUM 145

CLEXTRAL

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