

FlexMAX[®]



Erie
Technical
Systems Inc.

FlexMAX[®] Flexible Screw Conveyor with Optional Portable Cart
and Premier Fixed Speed Controller

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A. Flexible Screw Conveyor Principle of Operation

The FlexMAX® flexible screw conveyor from Erie Technical Systems is designed to transport dry solids from one location to another. While it often moves materials from floor level to an elevated inlet of another machine or process, it can also convey materials horizontally. This conveyor uses a center-less auger that floats freely within a flexible casing. The auger is secured at the discharge end with a drive shaft and J-bolts. As material begins to flow, the auger self-centers within the casing, allowing for higher capacities in smaller diameter conveyors due to the absence of a center shaft. With various casing diameters and auger profiles, this type of conveyor can address many material handling challenges. The use of a UHMW casing makes these conveyors flexible, allowing them to fit into spaces where rigid conveyors cannot.

B. FlexMAX® Overview

The FlexMAX® conveyor system offers various configurations to suit your material handling requirements. It features three standard auger profiles and four casing and auger sizes: 3", 4", 5", and 6". Each unit includes a helical auger made from 304 Stainless Steel and FDA-approved UHMW flexible casings. The FlexMAX® is designed for easy disassembly and cleaning. The FastFLO™ hopper corners are rounded to prevent material build-up and bridging. Standard hopper sizes are 4, 8, and 12 cubic feet, with 60-degree hopper walls and a 2B finish. Custom configurations and sizes are available upon request.

- Capacities up to 450 cubic feet per hour
- Low cost
- Food grade
- Minimal maintenance
- Easy parts replacement
- Easily disassembled for cleaning or maintenance
- Flexible mounting
- Multiple configurations to adapt to any process.



C. Hoppers with FastFLO™ Corners

All our standard hoppers feature the FastFLO corner design, incorporating a 1" radius in the hopper sides. This design maximizes material flow in the corners, promoting mass flow and eliminating bridging. The 60° side angles are welded in the center of the side wall and ground smooth, ensuring no areas for material restriction. With various options available, these hoppers can be configured to meet your specific process needs.



Curved Fast-FLO(TM) Corners promote material flow out of the hopper.

- 4 ft³, 8 ft³, and 12 ft³ hopper sizes are standard.
- 304 SS Material of construction FastFLO™ hopper corners
- Food Grade TIG Welds for all seams ground and polished.
- Multiple Flow Aids Available
 - Electric Vibrator
 - Pneumatic Vibrator
 - Pneumatic aeration pads
 - Augers with motor and gearbox
- 10" Tube stub inlet port
- 3" Tube stub dust collection port
- 2" x 2" Safety Grate (bolted in)
- Quick Release clamps for cover
- Food Grade dust seal between hopper top and hopper body
- Optional Hinged Lid & Slitter Shelf
- Optional Low- and High-Level Switches



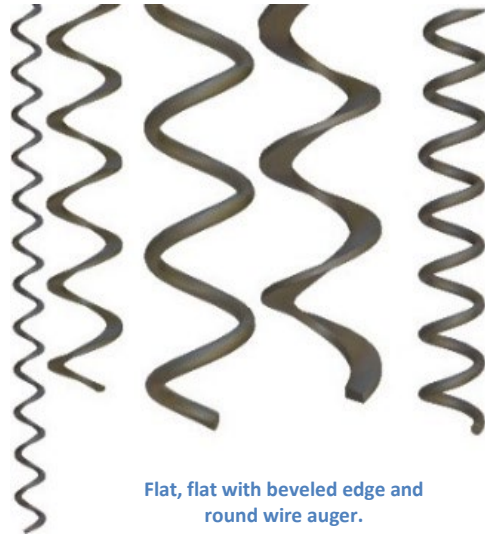
Rotary Electric Vibrator for 8 cubic foot feed hopper.

D. Augers and Casings

The auger and casing combination are crucial components that must work together effectively to convey products. The clearances between the auger outer diameter (OD) and the casing inner diameter (ID) are critical. These clearances must be precise to ensure proper product conveyance and to prevent mechanical failure of the conveyor. Accurate product information is essential for selecting the appropriate auger and casing combination.

We have a comprehensive test lab equipped with various conveyor and auger configurations. We will test your product to ensure it conveys effectively before shipping your machine. If necessary, Erie Technical Systems can also create custom augers to meet your specific needs.

- Standard Casings made from White FDA approved UHMW polyethylene material with 304SS casings optional.
- Sizes 3,4,5,6" effective diameters
- Conveyance rates up to 450 Ft3/Hr
- Round, flat, square, and beveled edge flat augers are typical for most applications.
- Custom augers available
- 304 SS material of construction
- Final length determined by application.



Flat, flat with beveled edge and round wire auger.



Auger and UHMW casing

E. Discharge Head

The discharge head connects the auger to the drive shaft and includes motor mounting and an isolation seal plate between the gearbox and the product flow path. The Teflon packing seal prevents debris from entering the material flow path. Thumb screws allow for easy removal of the discharge head's top, providing quick access to the driveshaft and auger connection. This design facilitates easy auger removal and cleaning. The discharge cone is designed to be parallel with the floor and is available in two configurations: the standard square design and the clean flow design.



Standard Discharge head with in-line gearbox and motor.

- 304 SS construction
- Receivers for auger casing
- Removable top cover and discharge spout
- UHMW PE seal plate with Teflon packing
- Inline or 90° gearbox
- TEFC, inverter duty (10:1 speed range is typical), premium efficiency motor.
- 4 feet of food grade flexible duct included.
- Food Grade TIG welds
- 304 SS Auger Drive Shaft

F. Portable Bases

There are portable bases available for any of the FlexMAX[®] conveyor sizes. The length and discharge height of the conveyor will dictate if the portable base is available.

- Carbon Steel with painted external surface standard
- 304 SS available
- Allows for mobility when not in use.
- Can be fitted with larger hoppers.
- Available with or without casters
- Available with or without forklift pockets
- Tilting conveyor option available for ease of cleanout and maintenance



Flexible screw conveyor with low profile inlet box and portable cart.

G. Controls

Erie Technical Systems offers two versions of standard controllers for the FlexMAX[®] conveyors – Premier Controllers and Enterprise Controllers. Our controllers are optimized for use with our FlexMAX[®] flexible screw conveyors. They are available in 240V or 480V 3-phase models standard.

Premier Controllers

The Premier Controllers include a NEMA 4/12 enclosure with a lockable fused local disconnect, branch circuit protection and discreet pushbuttons for conveyor control and an estop operator. These variable speed units provide a properly sized and configured AC drive and a display for frequency.



Premier Controller

Enterprise Controllers

The Enterprise Controllers provide all the features of the premier variable speed controllers in a larger NEMA 4/12 enclosure to accommodate optional hardware. Control power in the Enterprise controllers is 24VDC provided by an included power supply. Interlocks for remote start/stop or high level/low level control are provided. Optional items that can be added are control of pneumatic aeration pads, control of a rotary electric vibrator and control of a hopper agitator.



Enterprise Controller

Custom Configured Solutions are available from a team of expert engineers. Flexible screw conveyor controls can interlock with upstream and downstream equipment. Discreet control packages as well as complete PLC based solutions are available.

Examples include:

- Fill to Target Weight
- Loss-In-Weight
- Monitoring Hopper High and Low Levels



Custom PLC Based Controller



Custom FlexMAX[™] Controller with
Level and Status Lights.

H. Standard Flow Aids

As with each piece of equipment made at Erie Technical Systems Inc., a large variety of customizable options are available for the Flexible Screw Conveyors. A detailed description of each option can be found below. If you have a specific need that is not covered by any of the options, our engineering team can design a solution to fit your application.

Rotary or Pneumatic Electric Vibrator

In order to promote the flow of materials that may otherwise pack or cake up, a vibrator can be added to the hopper. We will include a 480V, 3,800RPM vibrator on a timing relay to send timed pulses of vibration through the hopper, shaking loose the material inside. We will also introduce new motor protection in the controls for the new equipment.



Electric Rotary Vibrator on Hopper

Fluidizer Pads

The introduction of directional air flow along the walls of the hopper bin will push the material into the auger screw, encouraging stronger flow. The airflow is pushed in behind rubber pads which will act as a seal when air is not flowing.

Ribbon Agitator

If the material is clumping together, it may be necessary to include a strong, physical agitator inside of the hopper. We accomplish this by installing a screw-like weldment directly into the hopper, powered by a 1/2HP 480V motor. The agitator is most useful to protect against bridging or material over the auger inlet.



Ribbon Agitator in Hopper