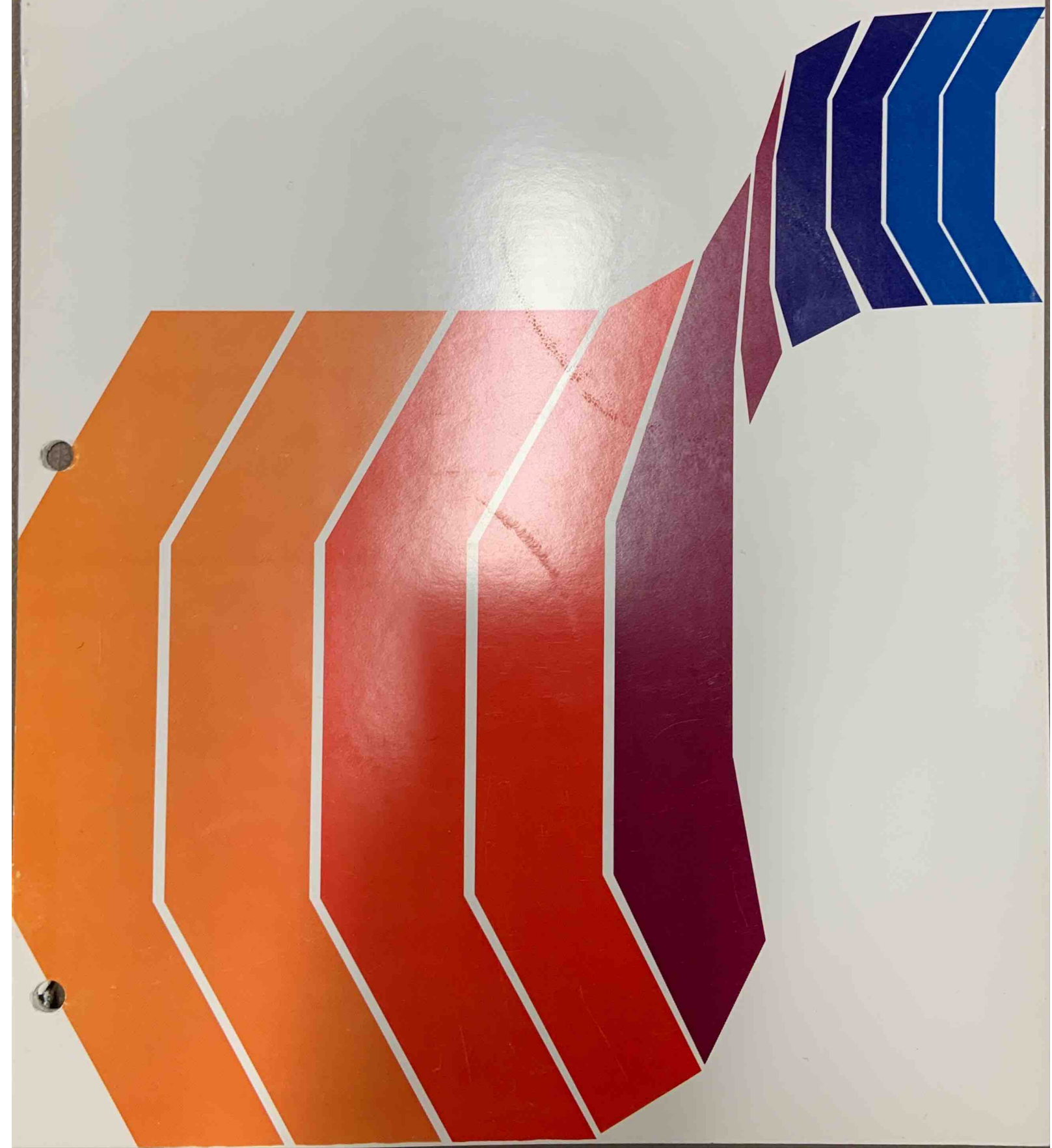
SERPENTIX®
CONVEYOR CORPORATION



The Conveyor System

Serpentix is the only mechanical conveyor that can transport material, regardless of consistency, flowability and size, on an open conveying surface that bends in every plane while making a continuous path.

The conveyor belt is made of rubber belt pans, which are joined together to form a watertight surface. Each belt pan has a one and one-half inch high rubber crossfold. Steel stiffeners molded into each pan impart a 20° troughing angle to both edges of the belt, which eliminate the need for carrying idlers.

The crossfolds permit the Serpentix belt to make horizontal and helical turns. When turning, the inner side of the belt fold is compressed and the outer side is expanded. The troughs, formed between the belt's crossfolds and angled sides, allow the Serpentix belt to transport material ranging from near-liquids to 12-inch lumps, and to perform light to heavy hauling at up to 400 TPH. As the crossfolds pass over the terminal, the belt stretches flat, cleaning off loose material. When required, the stretching permits continuous scraping of sticky material.

These unique features give Serpentix conveyors the ability to incline and decline steeply and to make continuous horizontal, helical and vertical curves. These capabilities permit a single Serpentix conveyor to perform the work of multiple conventional conveying devices.

The Serpentix conveyor originated in Europe in 1953, and has been manufactured in the United States since 1969. During that time, many space-cramped plants have utilized the unique system to modernize existing facilities without increasing plant size. In addition, the wide range of Serpentix capabilities, applied to new plant construction, have resulted in lower construction and operating costs, reduced installation costs, and provided safer and cleaner plants.

Solving Problems

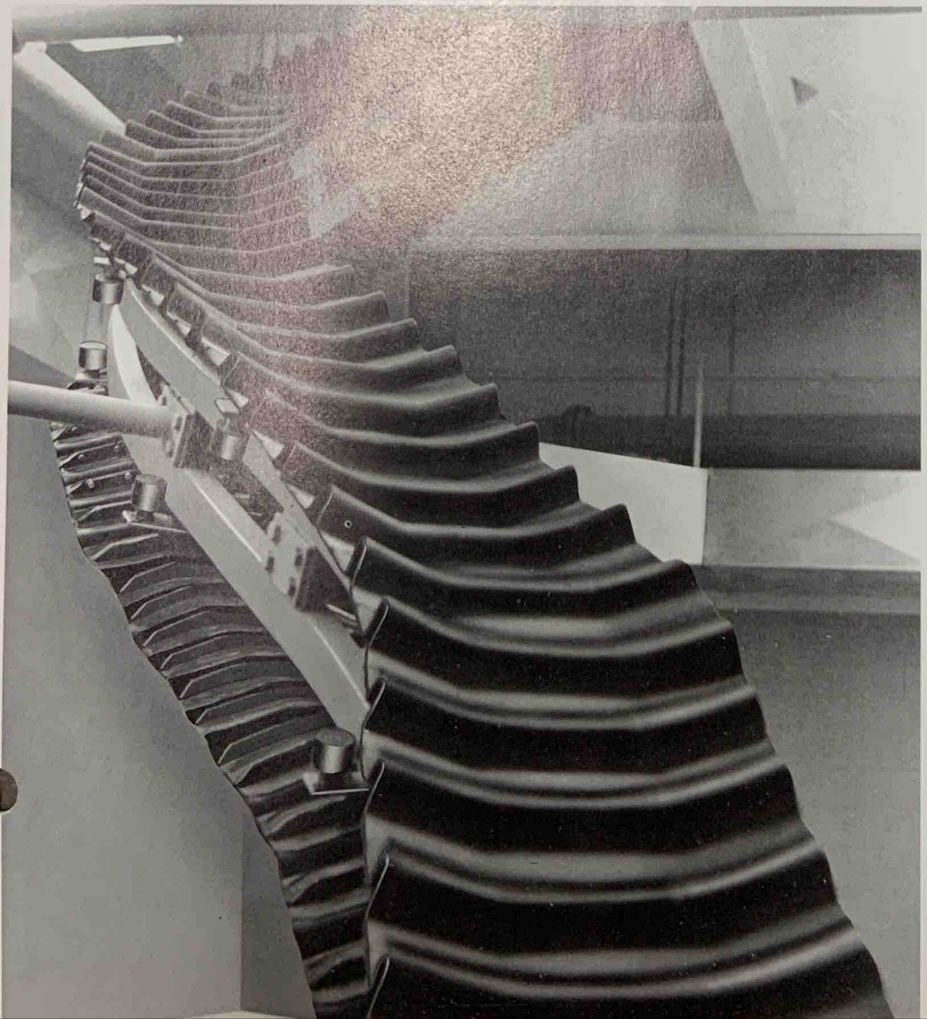
The wide range of problems being solved by Serpentix conveyors continues to expand. The system functions well in highly abrasive and corrosive environments, in temperatures as low as -25° F and, with belt pans of certain rubber compounds, can withstand conveyed product temperatures as high as 350° F.

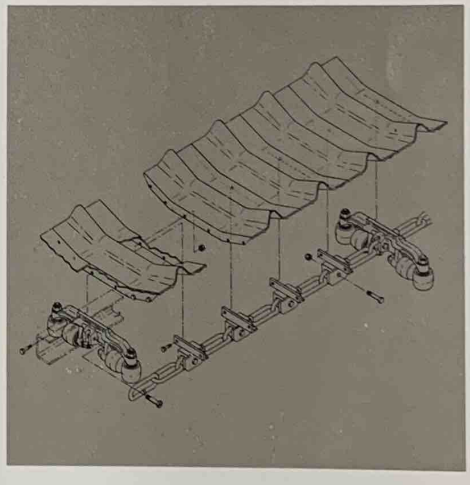
A Serpentix conveyor can form a continuous conveying path between two points because it can make vertical, horizontal and helical curves. This permits it to avoid obstacles and to receive and discharge on a level, regardless of intermediate changes of direction.

The ability to elevate most materials at twice the incline of conventional troughed conveyors is possible because of the folds in the Serpentix belt. Also, free flowing materials can be elevated at up to 75° by attaching flite plates or pockets to the modular belt. This lets the Serpentix function as a combination belt/bucket elevator.

Duties performed by Serpentix in addition to standard conveying include:

Live storage of bulk material; accumulation (jogging); use as an inspection and/or assembly loop; metering for blending; slow movement to cool or coagulate material; intermediate side discharging without terminating the conveyor; operating in reverse; making load bearing returns; flexing to follow a continuous underground miner.





Advantages of Serpentix

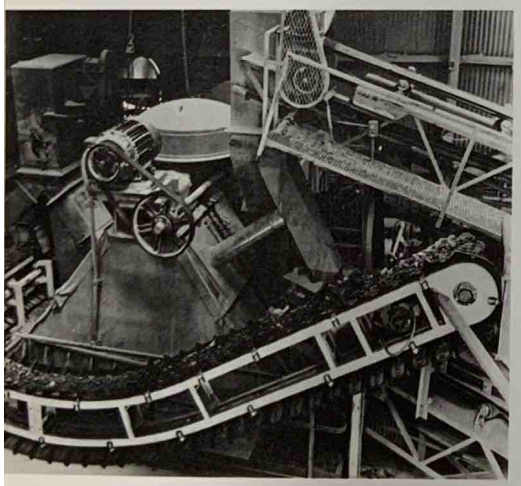
Basic features, which give Serpentix users the advantages of a multiple unit system without the costs and operating problems, include turning, looping, inclining-declining, belt cleaning, return run rollovers, side discharging and track flexing. Also, all installations require only one drive station.

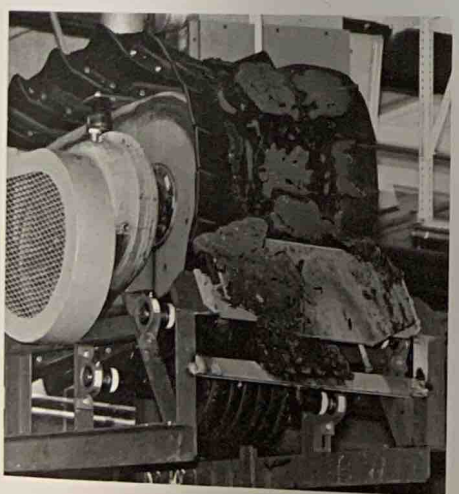
Turning
Of all belt conveyors, only the Serpentix belt surface can make horizontal or helical turns. Radii of horizontal turns can be as small as six feet, with close roller carriage spacing (see design information). Vertical turns are also accomplished on small radii.

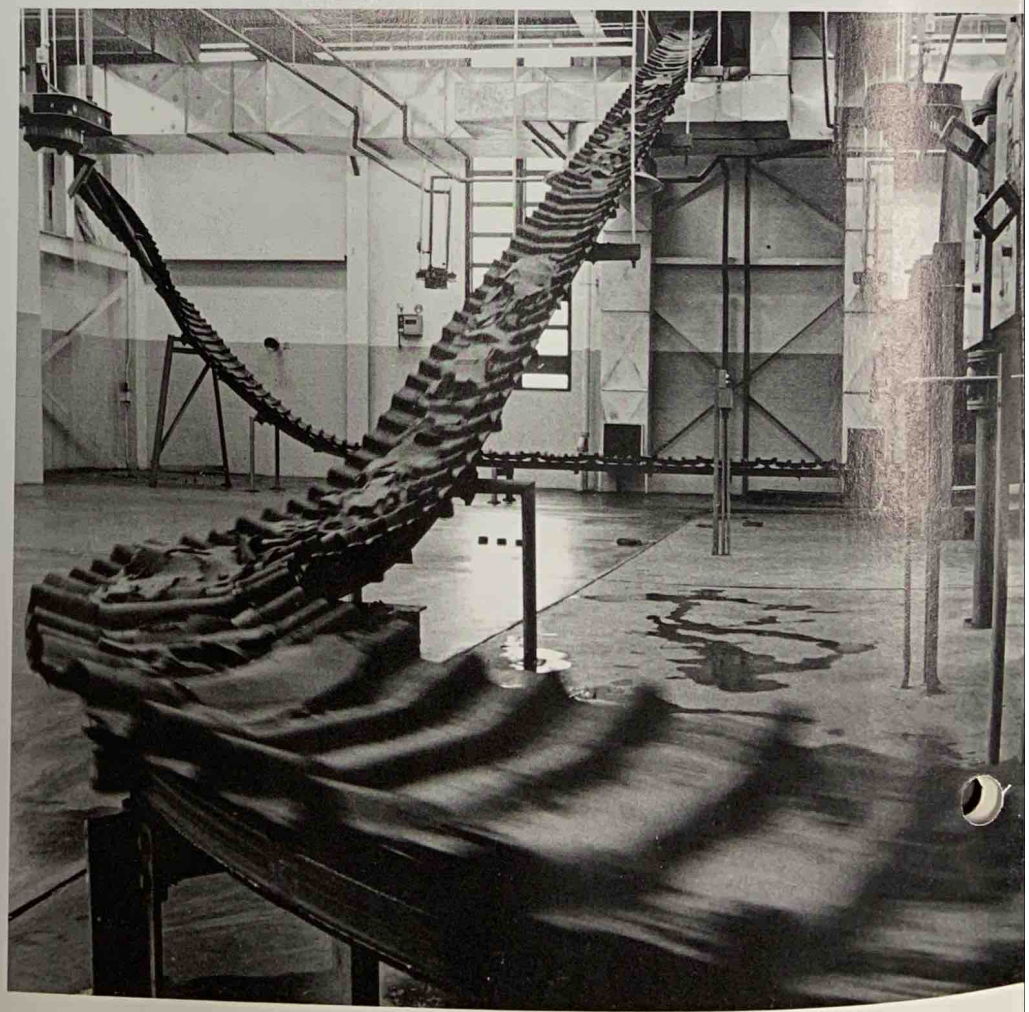
Looping
This capability permits the most efficient use of the Serpentix because all the surface is load carrying at all points except near the combination drive/tension terminal.

Inclining-Declining
The standard folded belt without attachments will convey sewage sludge at inclines greater than 45° and free flowing materials at up to 30°, depending on the product angle of surcharge and lump size. Additional belt attachments allows transporting of 12" lumps up 75° inclines.

Belt Cleaning
Because the crossfolds of the belt flatten as they pass over the conveyor terminal, the conveying surface must be scraped, brushed, or sprayed. For most dry materials, the belt flattening is sufficient for total self-cleaning.





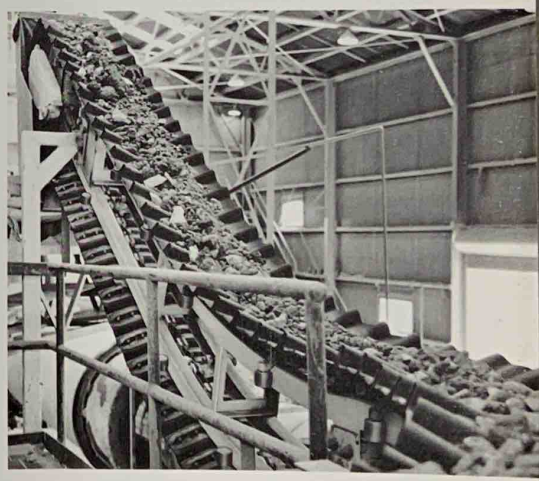


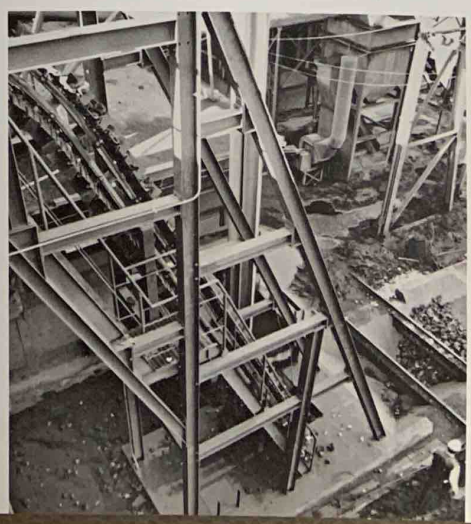
Advantages of Serpentix

Return Rollovers
When space permits, the return side of the belt can be rotated 180° so that the need for drip pans underneath most of the conveyor is eliminated. Also, the rotated return run can serve as a load bearing surface.

Flexible Track
The patented, flexible track is made of interlocking steel sections. This permits the Serpentix track to make horizontal curves on a radius as small as 15 feet, and the radius can be altered.

Side Discharges
Material can be dumped along the conveyor's length without terminating the belt. Side dumps are either fixed or made variable by the use of a special flexible interlocking track, which twists under command.





Operating and Maintenance

The Serpentix conveyor is based on a single principle --- simplicity. It is made up of a pulling chain, the belt, a channel rail track system, and drive and tension stations.

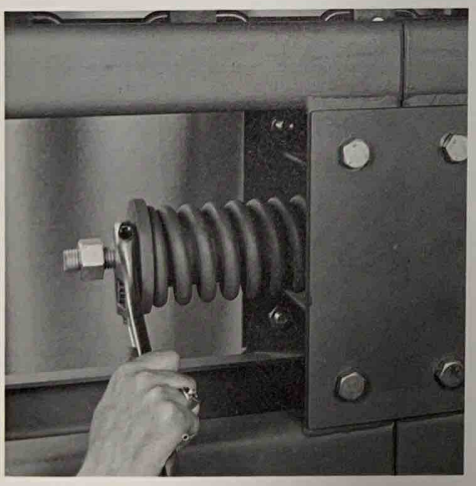
The belt is made of belt pan modules, which attach to supporting roller carriages. In turn, the belt modules and carriages attach to the chain. The assembly is pulled through the channel rail track, with the belt being guided and supported by the roller carriages. Positive horizontal and vertical stability of the conveying surface is maintained by the roller carriages. Because the chain does the pulling, the conveyor can operate continuously even if some sections of the belt are damaged.

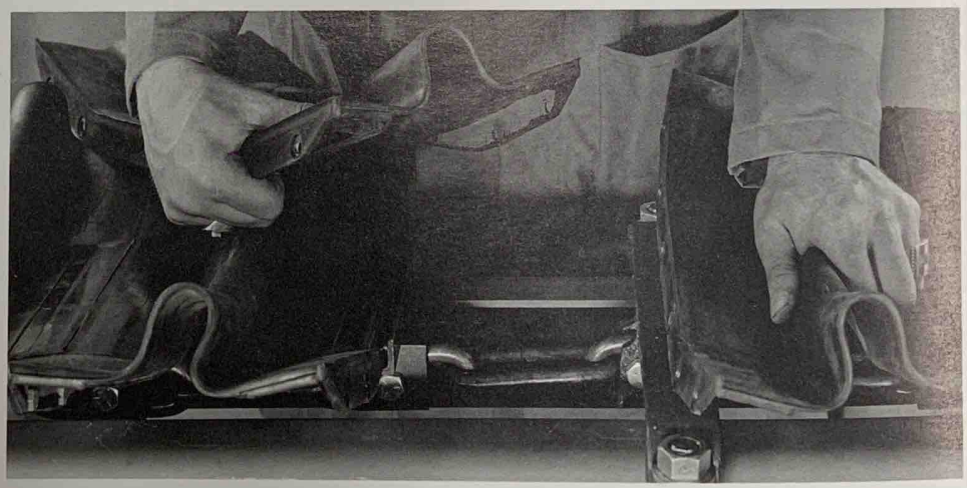
Power is transmitted to the chain by the drive station sprocket. Only one drive is needed per Serpentix, which results in lower power requirements than conventional systems which use multiple drives. The single drive eliminates the need for electrical interlocking.

Housekeeping is reduced by Serpentix because spillage is minimal due to the 20° troughing and elimination of intermediate transfer points. Folds in the belt hold material in place even if the conveyor stops under full load on a steep incline.

Maintenance is reduced because there are no intermediate transfers which would normally require dust hoods and evacuation systems for compliance with OSHA regulations. The noise level is comparable to that generated by conventional belt conveyors.

A special feature of Serpentix is its adaptability. Because of the conveyor's modular construction, Serpentix sections can be moved easily to re-route the path. Addition or subtraction of Serpentix sections can be made at any time.





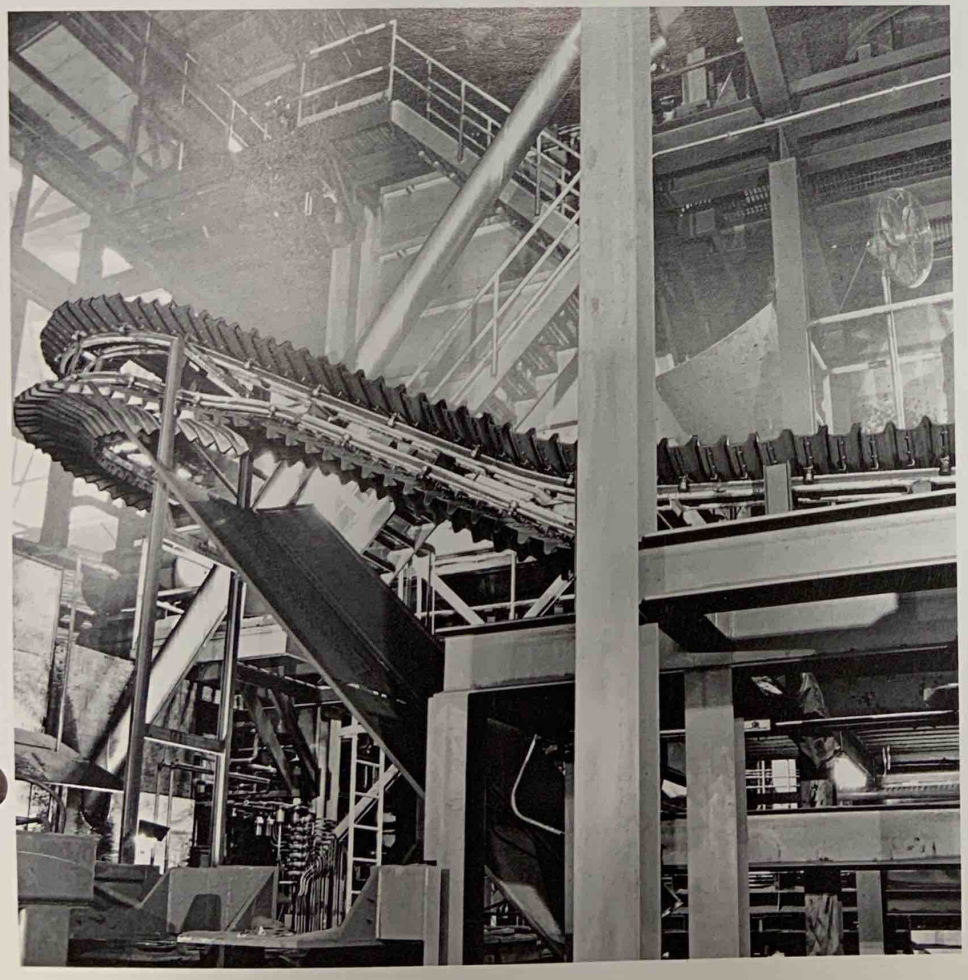
Operating and Maintenance

Many safety features are offered for selection, including automatic shutdown if the chain tension changes abruptly, torque overload drive protection, backstop to lock the conveying surface in place when power is off, metal guards, and emergency chain-hold devices.

Serpentix maintenance also is less because of its design simplicity.

All moving parts come to any one point each conveyor cycle --- there are no stationary parts along its length that require maintenance. Therefore, catwalks along the conveyor are not required. Damaged belt pans can be changed in 15 minutes. A roller carriage can be replaced in 10 minutes. Work on any section of the belt is quick and simple since all tensioning is on the pulling chain --- not the belt. The chain itself seldom needs attention. Chain life depends upon the number of cycles around the sprocket, and even the most severe application will show years of operating life.

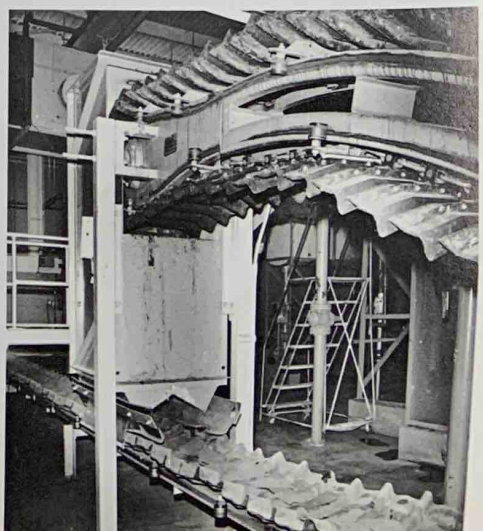
Chain take up is simple since only four inches of tail station movement is required for even the longest Serpentix. Realignment of a Serpentix is not needed. The roller carriages, guided in steel tracks, cannot drift, ensuring perfect tracking at any speed.



Total Systems Responsibility

Serpentix conveyors are manufactured in Denver, Colorado. They are sold throughout the American continents by a network of materials handling specialists, and serviced by factory trained experts. Sales offices are in the major metropolitan areas.

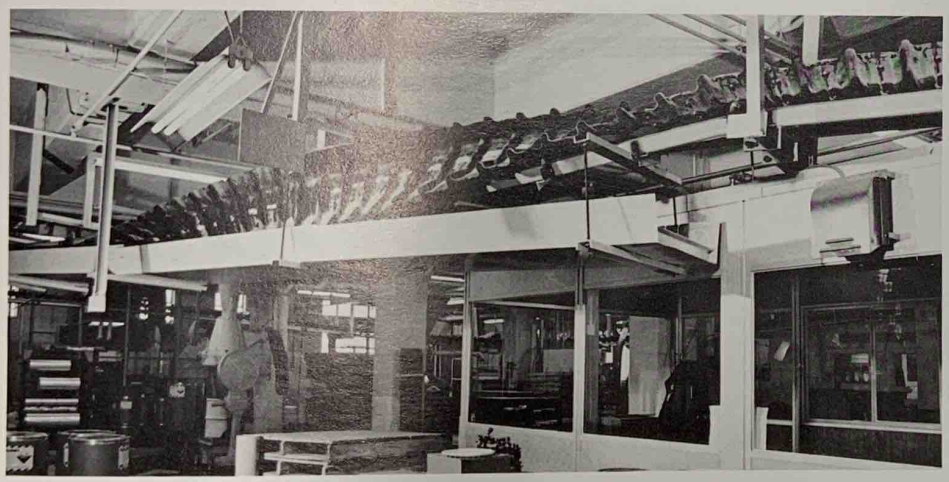
Serpentix Conveyor Corporation specializes in the design and manufacture of Serpentix conveyors. However, inquiries dealing with total systems responsibility are invited. Turnkey capability of Serpentix includes design and manufacture of specific systems, procurement of related items, installation and startup, and an ongoing inspection and maintenance-assistance program by Serpentix representatives.

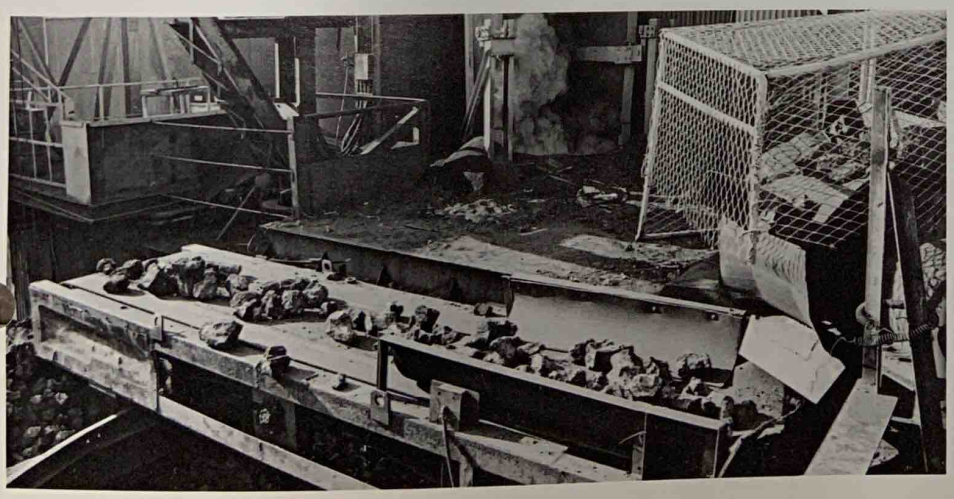


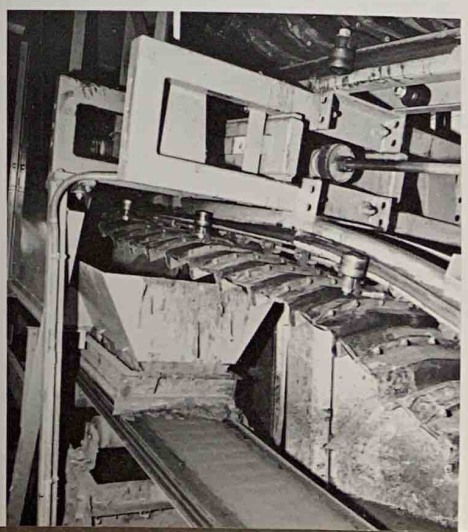
Optional Equipment

Below are a few of the items that can be added to any Serpentix conveying system. Our engineers will work with you in order to arrive at the best combination of components to meet the requirements of your plant's environment.

- Skirting
- Covers
- Drip Pans
- Supports
- Portable Frame
- Variable Speed Drive
- Stainless Steel Hardware
- Various Types of Rubber for Belt Pans
- Belt Pockets
- Flite Plates



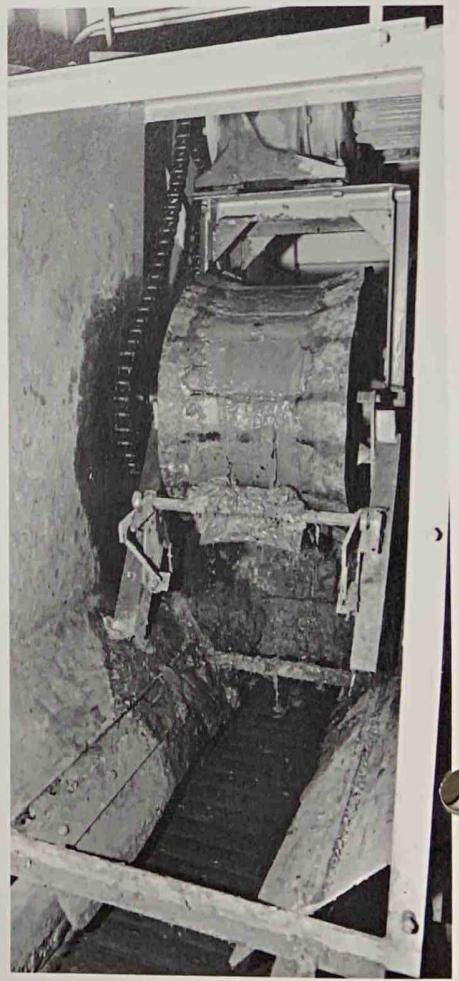


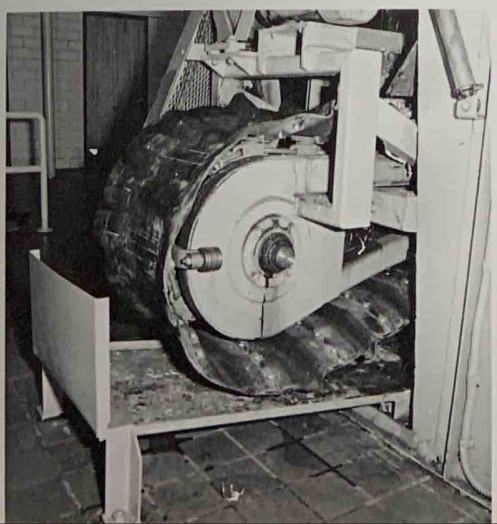


Ancillary Equipment

In addition, Serpentix engineers offer design services in procurement of related equipment to complete a materials handling system. A few of these items are:

- Hoppers and Chutes
- Feeders
- Special Safety Equipment
- Enclosures
- Cake Breaker

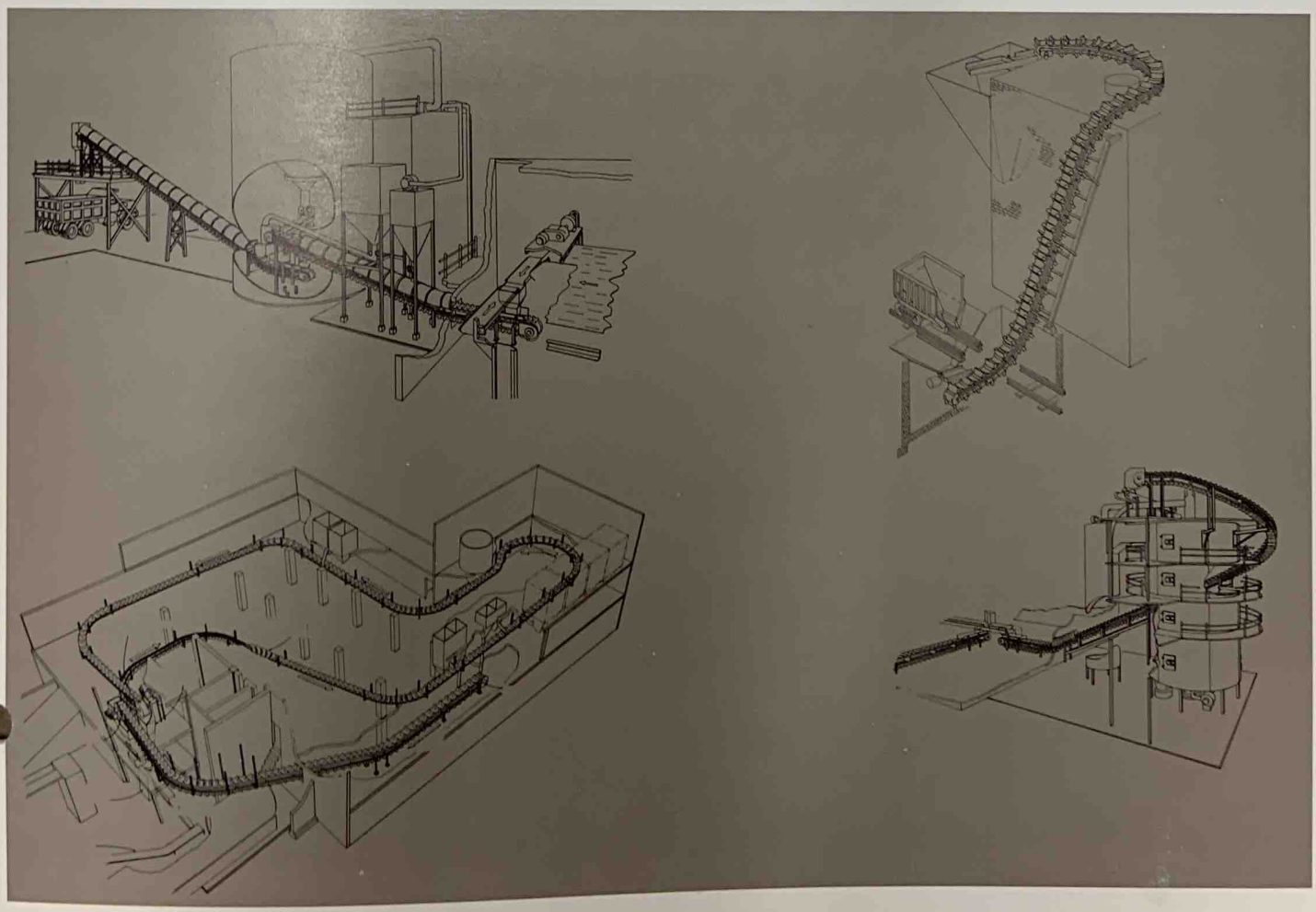




Typical Installations

The list of special problems solved by Serpentix conveyors installed throughout the United States grows steadily.

Typical installations and industries served range from a 50-foot Serpentix handling activated sludge in a small municipal wastewater treatment plant, to a dual conveyor system, totaling almost 600 feet in length, in a large eastern chemical plant.

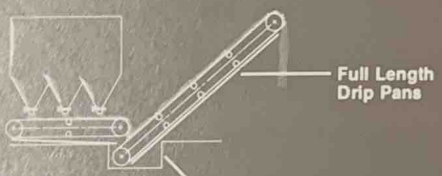


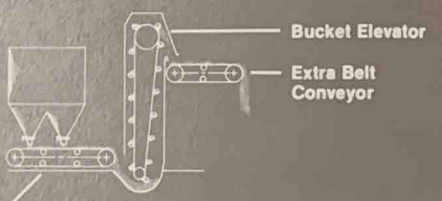
Serpentix Versus Conventional

The variety of problems which can be solved by Serpentix conveyors is evident in the various situations shown.

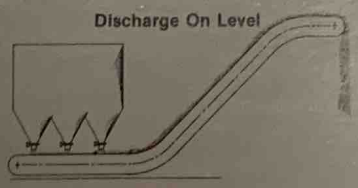
The ability of Serpentix systems to incline and decline sharply, make vertical, horizontal and helical turns, and to perform many other functions makes Serpentix the logical choice for use in both plant remodeling as well as construction of new facilities.

Conventional

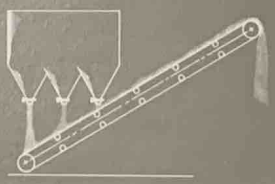




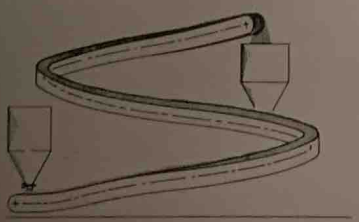
Pocket Attachments
Permit Very Steep Inclining



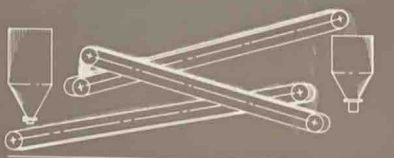
Receive On Level



Belt On Constant Incline

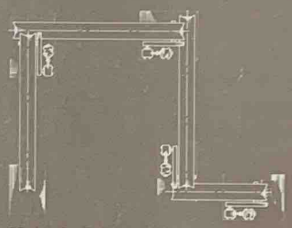
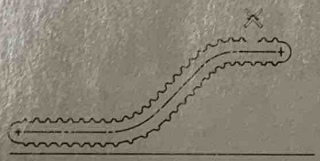
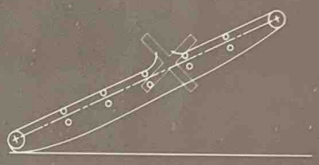
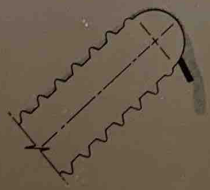
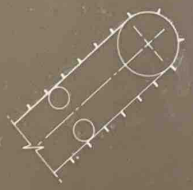
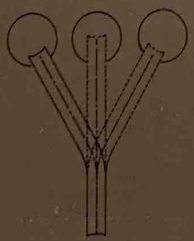
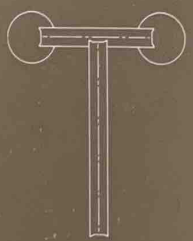


Curves Around Obstructions



Requires Support Towers

Serpentix Versus Conventional

Serpentix	Conventional
	 Multiple Belts Multiple Drives Multiple Transfer Points
 Individual Belt Plan Replacement	 Total Belt Replacement
 Folds Flatten For Belt Scraping	 Cleated Belt Cannot Be Scraped
 Flex Track Permits Multiple End Discharges	 Belts Limit Number Of Discharges

Features and Benefits

Continuous Conveying Surface
No intermediate transfer points—No dust hoods along conveying path—Handles friable materials gently.

Avoids Obstructions
By continuous, horizontal, vertical and helical turns—Minimum radii less than 6'—Conveying surface remains level on helical turns—Serpentix receives and discharges on the level, regardless of intermediate changes of direction.

Elevates Product At Steep Inclines
Folded belt elevates most material at angles twice as steep as on conventional troughed belt—Serpentix can function as combination bucket elevator by attaching plates or pockets Free-flowing materials elevate at up to 75° — Shorten building dimensions through more efficient use of space.

Belt Can Be Cleaned
Folds flatten as belt goes over terminals, permitting scraping or brushing—Return side never in contact with stationary idlers, which minimizes transfer of dirt.

Single Drive Per Serpentix
Uses less power than conventional system with multiple drives—Inherently reduces need for electrical interlocking.

Power Transmitted By Chain
No pull on conveying surface—Chain not exposed to material conveyed—Special case hardened chain for maximum life.

Bolted Belt Pans Make Up Surface
Conveying surface is watertight, no leakage—20° troughed cross section imparted by steel stiffeners in each pan Troughing idlers not required—Possible damage to conveying surface limited to individually replaceable pans, preventing possible loss of entire belt.

Belt Crossfolds Are At 8" Intervals
Folds permit conveying surface to turn Folds act like flites, so that products can elevate at steep inclines—Permanently molded folds flatten out over end terminals, permitting belt cleaning—Folds absorb impact of falling products—Folds tend to pull conveying material such as filtercake for better distribution on conveying surface.

Accessible For Maintenance
All moving parts come to one point per cycle. There are no stationary parts along the length of the Serpentix that require maintenance. No catwalks required along the conveyor for servicing—Average yearly maintenance cost between 2-3% of first cost.

Serpentix Always In Alignment
Roller Carriages - guided in a steel track - cannot drift—Perfect tracking even at the slowest speeds.

Oversized Structural Shapes
Conveyor is self-supporting on 20' straight spans—Less clutter on operating floor because Serpentix uses fewer supports.

Simple Chain Take-Up
Only 4" of tension station movement is required for even the longest conveyor Minimum space required between tail station and obstruction.

Safe For Personnel
Moving support rollers are recessed beneath conveying surface edge—All-flexible conveying surface has no sharp edges—Drive guards to meet OSHA requirements.

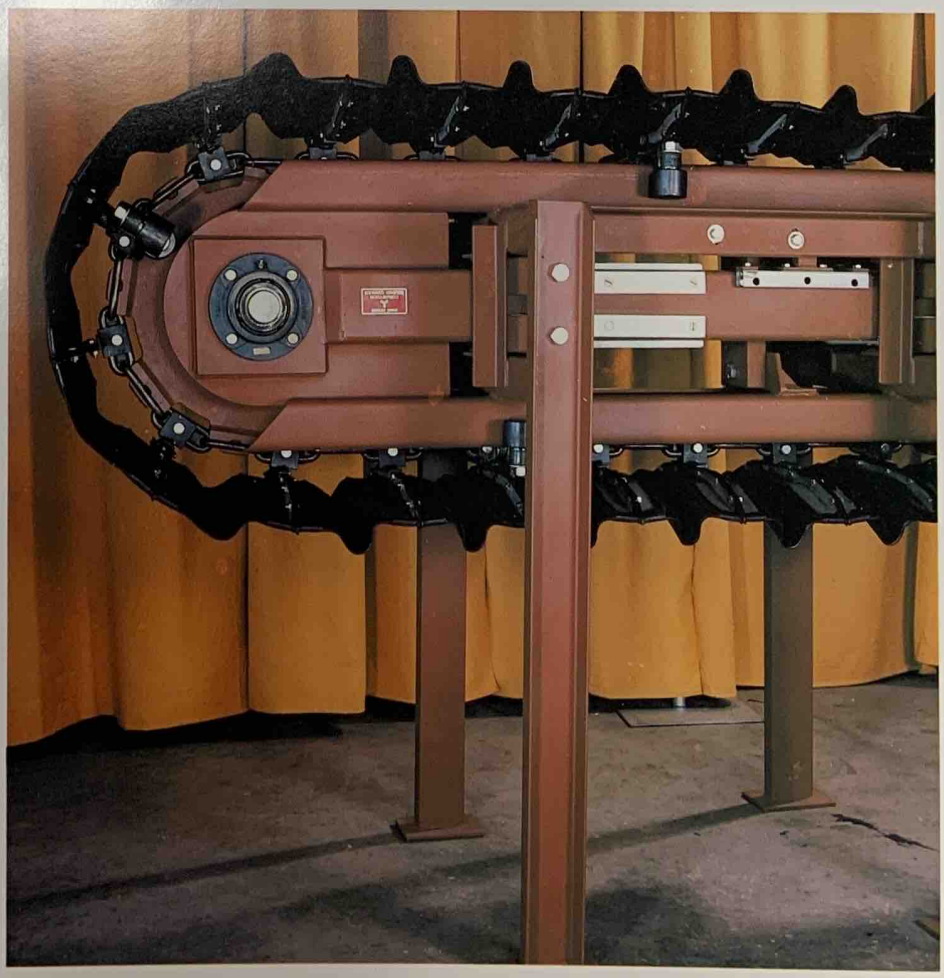
Multiple Uses Possible
Serpentix can jog to accumulate—Move slowly to cool material—Most Serpentix units can reverse—Conveying surface can tilt to side to make intermediate discharge without requiring termination of conveyor.

Reuse Of Serpentix
Modular construction permits relocation of sections and rerouting of path—Additions or subtractions to conveyor can be made at any time.

Features For Wastewater Industry
Elevates the most moist sludge at steeper angles than any other belt conveyor—Return run can be rolled over to eliminate need for drip pan under conveyor except near terminal.

Technical data regarding layout dimensions and application information is contained in a separate brochure.

The simple conveying circuits, and the consequent space and cost savings, make Serpentix the logical choice for new or old facilities. Savings come from reduced equipment, construction, installation and operating costs.



Serpentix Conveyor Corporation
1550 South Pearl Street
Denver, Colorado 80210 U.S.A.
Telephone: (303) 744-3507
Telex: 45-4411

Represented by: