

Polychem[®]

CHAIN & FLIGHT SCRAPER SYSTEMS

 **BRENTWOOD**[®]

Polychem[®] Chain & Flight Scraper Systems

Brentwood has vast experience with sludge collector systems with over 20,000 installations and more than 11 million feet of collector chain in operation worldwide. Polychem chain and flight collectors are comprised of the finest quality components available in today's market and, with the exception of hardware, all submerged equipment is non-metallic. Reliably constructed and economically designed, these products are the premier parts of Polychem rectangular clarifier system.



Strong Yet Lightweight

NCS-720-S COLLECTOR CHAIN

Precision molded from glass-reinforced polyester, this non-metallic collector chain is designed to withstand high sludge loadings in corrosive environments.

Simple to Install

STUB SHAFTS

Our cast nylon stub shafts do not corrode or rust like metal shafting. Intended for use with Polychem idler sprockets, the side-on design makes installation quick and easy.



Long-Lasting Solution

FRP FLIGHTS

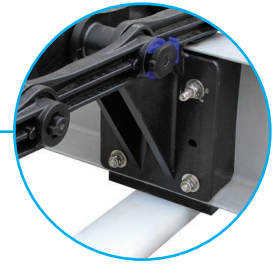
Available in a range of profiles, fiberglass flights are a cost-efficient, non-buoyant scraping solution.



Durable Supports & Guides

WEAR STRIPS & RETURN TRACK

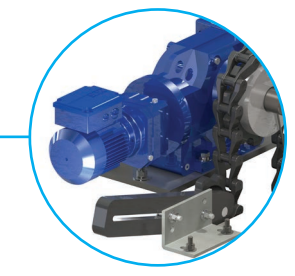
Nylon wall brackets, fiberglass return rails, and self-lubricating UHMW-PE wear strips provide low-friction guides and supports for flights.



Robust Power

DRIVE UNITS

Drive unit assemblies are custom configured with features to meet the demands of each application.



Ultimate Protection

SMARTGUARD[®] MONITORING

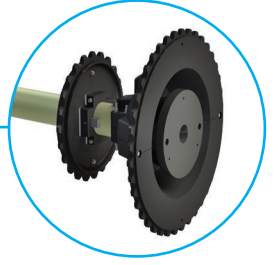
The SmartGuard Collector Monitoring System identifies flight misalignment and sprocket motion loss to prevent system damage.



Telescoping Innovation

NON-METALLIC HEAD SHAFT

The unique, lightweight assembly can be installed without a crane and does not require any painting, making it virtually maintenance free.



Collector Chain

Polychem non-metallic chain was introduced in the late 1970s as an alternative to heavy, corrosion-prone chains traditionally used in chain and flight systems. Durably designed to withstand harsh, corrosive environments, Brentwood's non-metallic components provide a strong, lightweight alternative to cast iron and steel systems. Our chains are regularly tested for ultimate strength, proof loading, elongation, and estimated wear life to uphold Brentwood's high quality standards.



NCS-720-S COLLECTOR CHAIN

Precision molded from durable, glass-reinforced polyester, this robust collector chain is designed to withstand high sludge loadings in severe applications. The specially formulated material and reinforcing ribs prevent elongation to optimize system performance and extend the lifetime of the installation. No special tools are required for installation.

Components

CONNECTING PIN & RETAINING CLIP

- "Twist-snap" pin and clip design is easy to install.
- Locking T-heads prevent pin rotation.
- Contrasting color clips minimize field inspection.



Options

BARREL WRAP

- Increases chain life by reducing barrel wear.
- Made of durable, 301 SS for high grit conditions.
- Available in 316 SS for highly caustic conditions.

Accessories



ATTACHMENT LINKS

Attachment links connect flights to NCS-720-S strands and are integrally molded from the same chain material.



WEAR SHOES

Carrying wear shoes run on the collector floor wear strips and return shoes run on return rail wear strips.



FILLER BLOCKS

Filler blocks are rigid spacers between the back of the flight and the attachment link.

Fiberglass Flights

Brentwood offers more flight scraper options than any other chain and flight manufacturer, enabling us to provide sludge collection solutions for any water or wastewater application. Flights are chosen for each project based on a calculation of tank dimensions, sludge loadings, and budget considerations. All flights integrate with chain-to-flight attachment links and can be equipped with squeegees and wipers for thorough tank cleaning.



C-CHANNEL

The preferred choice for normal tank spans and loadings, Brentwood's C-Channel Series has the highest stiffness factor of all standard c-channel designs. These flights can also be used as return rail for added strength and system flexibility.



ULTRA & ULTRA PLUS

The Ultra Series is designed to handle wider tank spans than C-Channel Flights. With deep legs and vertical ribs parallel to the front face, the profile is stiffer, stronger, and capable of handling higher sludge loadings.



BOX

The robust profile of the Box Series produces an exceptional stiffness factor, making it one of the sturdiest flights on the market today. Ideal for bays that span over 30 feet (9.1 M) wide.



E-FLIGHT

The E-Flight Series was designed as an option for processes that require a taller scraper flight within a typical collector width. This flight option reduces cost and installation time by accommodating deeper sludge blankets.

RETURN TRACK & WEAR STRIPS

Brentwood's return track and wear strips are integral parts of our non-metallic chain and flight systems and can be used in both new and existing rectangular sludge collectors. These lightweight components provide a cost-efficient alternative to steel systems and have the strength and durability to support all combinations of chain and flight materials.

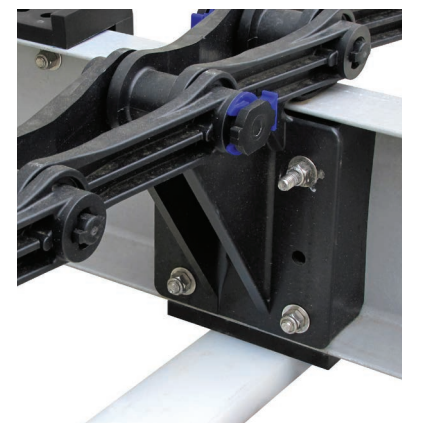


RETURN TRACK

Polychem return track is manufactured from corrosion-resistant FRP, making it easy to install and field-modify. Return track is supported at 10-foot (3 m) spans with glass-reinforced Nylon 6-6 wall brackets.

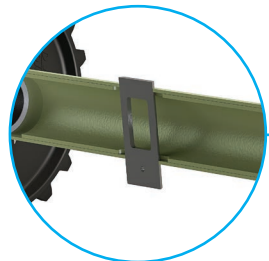
WEAR STRIP

Polychem wear strips are the ideal low-friction riding surface for wear shoes. Wear strips are available in both standard and slide-on models.



Head Shaft

The greatest innovation of the first 100 percent non-metallic Polychem chain and flight collector system was the fiberglass, telescoping head shaft assembly. The unique assembly does not require crane installation and is virtually maintenance free, eliminating the issues typically found with heavy, corrosion-prone steel shafts and bearings. Since its introduction in the 1980s, over 14,000 systems have been successfully supplied using the non-metallic head shaft design.



FRP TELESCOPING SHAFT

Two fiberglass end tubes with internal bearings and keyways overlap a center tube and are joined together with torque interlocks and set collars to form one robust, easy-to-lift shaft.



HEAD SHAFT SPINDLES

Mounted to the tank walls, these supports allow the FRP shaft to rotate on the spindle journals and provide a larger bearing surface than traditional metal shafting.

Stub Shaft

Polychem idler stub shafts are the lightweight alternative to traditional full-width steel shafting and cast iron wall bearings. The non-metallic solid sprockets provide a slide-on alternative that eliminates the need for static sleeve bearings and split sprockets requiring assembly. Available in two base diameters and lengths to accommodate a range of sprocket centerlines, stub shafts can be customized for various tank sizes, system loadings, and existing structural conditions.



Features

- Engineered to maintain strength and minimize deflection.
- Laterally adjustable up to 2 inches (5 cm) in-field to accommodate structural irregularities.
- Intended for use with Brentwood's solid idler sprocket for simple, slide-on installation.
- Includes thermally integrated UHMW-PE bearings, replaceable to extend service life.

Sprockets

Polychem sprockets are molded from a specially selected, high-strength nylon material, allowing them to outwear and outlast UHMW-PE and polyurethane alternatives. All sprockets are equipped with standard integral teeth to maintain tooth alignment.

COLLECTOR HEAD SHAFT SPROCKET

The hunting-tooth profile of the NCS-720-S collector sprocket features an odd number of teeth at half the chain pitch, offering twice the life of full-tooth sprockets. The split design allows for use with full-width-span shafting and simplifies installation. The integrally molded chain-saver rim decreases chain and sprocket wear. Machined keyways and setscrews are provided as standard to prevent slippage and to ensure proper torque transmission.



IDLER COLLECTOR SPROCKET

Solid idler sprockets slide onto stub shafts for quick and easy installation and are held in place with retainer plates. No sprocket hardware or static sleeve bearings are required. The integrally molded chain-saver rim decreases chain and sprocket wear. Available with magnets to integrate with SmartGuard sprocket motion sensors.



DRIVEN SPROCKET

The NH-78 Bull Gear driven sprocket is standardly furnished with 40 integral teeth and designed for use with NH-78 drive chain. Polychem driven sprockets are one third the weight of bull gears with cast iron hubs. Available in a variety of offsets to accommodate the head shaft spindle base and different tank requirements.



Drive Units

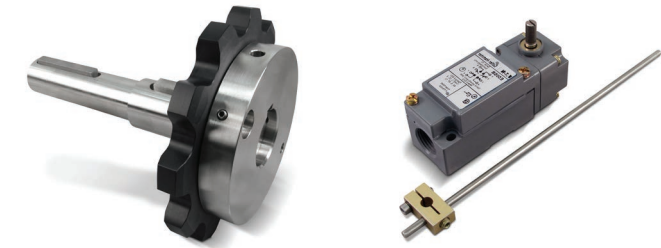
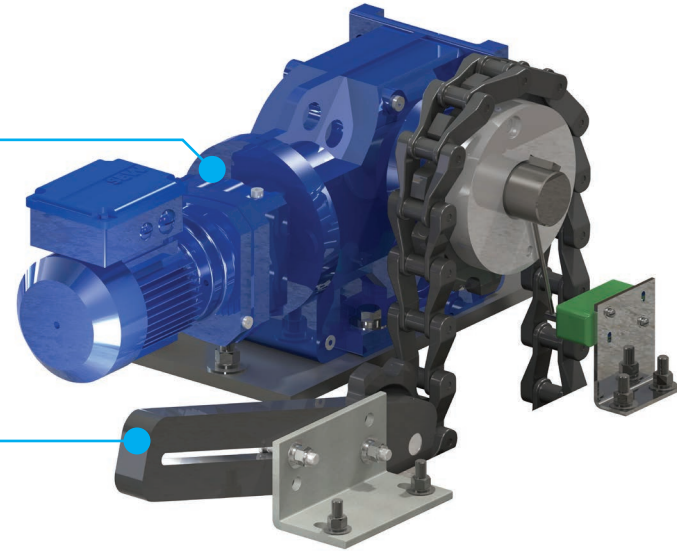
Brentwood supplies drive units that are custom configured for each collector based on system requirements and regional and environmental conditions. Each system may require any or all of the following components, available in a variety of sizes and features depending upon the demands of the application.

MOTOR & REDUCER

Motors are typically furnished preassembled with the gear reducer. Available with chain guard for operator safety.

CHAIN TIGHTENER

Tightener systems remove drive chain slack by maintaining proper tension and smooth power transitions. The adjustable, deck-mounted chain tightener assembly consists of a non-metallic bracket, tension arm, and 7-tooth nylon sprocket.



OVERLOAD PROTECTION

Drive units are often furnished with a cast nylon drive sprocket and stainless steel shear pin hub assembly for overload protection. The aluminum necked-down shear pins are kept in place with setscrews to maintain correct alignment. Upon overload, the stainless steel trip pin actuates a limit switch to prevent system damage. Ball detent torque limiters available in place of shear pin design.

DRIVE CHAIN

Brentwood's Polychem NH-78 Drive Chain is used to drive chain and flight collectors, screw conveyors, flocculators, and a range of other low-speed applications. Injection molded from glass-reinforced nylon, NH-78 is strong, lightweight, and resistant to corrosion and chemical damage. This non-metallic replacement for heavy metal chains is simple to install and maintain.



Options

BARREL WRAP

- Increases chain life by reducing barrel wear.
- Made of durable, 301 SS for high grit conditions.



Components

CONNECTING PIN

- Knurled end pin allows for easy hand installation and disassembly.
- Machined from corrosion-resistant 303 SS.
- Pin sleeve reduces wear and keeps out grit.

SmartGuard® Collector Monitoring System

The SmartGuard Collector Monitoring System for rectangular clarifiers identifies collector system overloads that cannot be detected by traditional shear-pin or torque monitoring devices. SmartGuard's strategic placement allows it to monitor regular motion, warn of potential danger, and shut down the system before damage can occur. This cost-effective, early detection approach helps water and wastewater plants to avoid costly system failures by controlling up to four mechanisms, including longitudinal collectors, cross collectors, scum pipes, and screw conveyors.

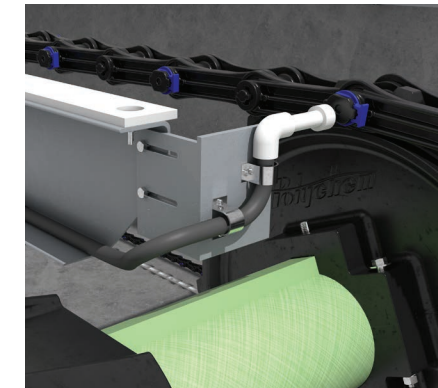
Features

- Offers peace of mind by preventing damage to chains, flights, and attachment links.
- Protects against costly system failures that can be caused by irregular sludge loadings, concrete movement, and foreign objects.
- Simple to use and install.
- Provides reliable system intelligence.
- Monitoring systems available for sprocket motion monitoring, flight misalignment, or both.



SPROCKET MOTION MONITORING

Sensors placed at the lower-rear idlers monitor sprocket motion and automatically shut down the system if motion loss occurs.



FLIGHT MONITORING

Flight alignment information is gathered by Magnetic Sensors and embedded magnets in the heads of the pins at the flight attachment.



CONTROL PANEL

Available with adaptable control panel that either complements existing control systems or functions as a total control solution.

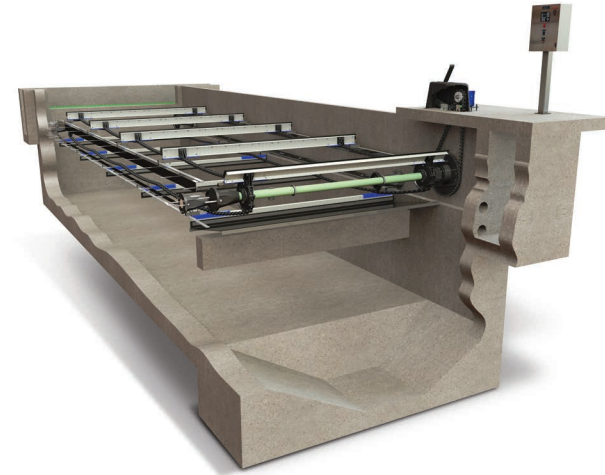
Collector Systems

Brentwood's team of engineers and sales personnel have the knowledge and experience to help customers with projects of any size and scope. Operating in clarifiers up to 300 feet (91 m) long and 40 feet (12 m) wide, as well as in heavy-duty stacked clarifiers, Brentwood's top-quality Polychem products and components continue to produce field-proven results by handling the most severe sludge loadings and complex tank geometries. Typical tank configurations include:

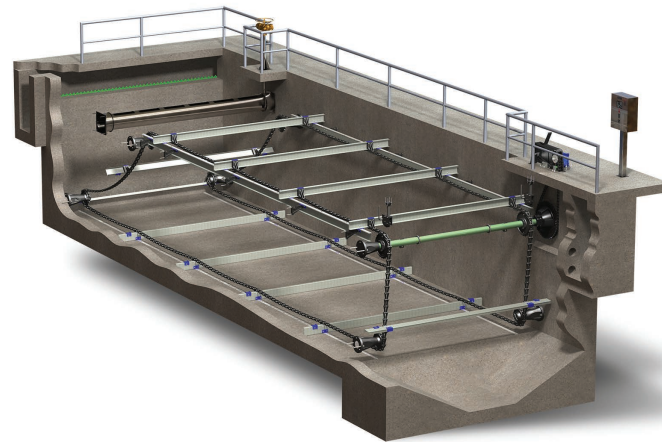
3-SHAFT COLLECTOR



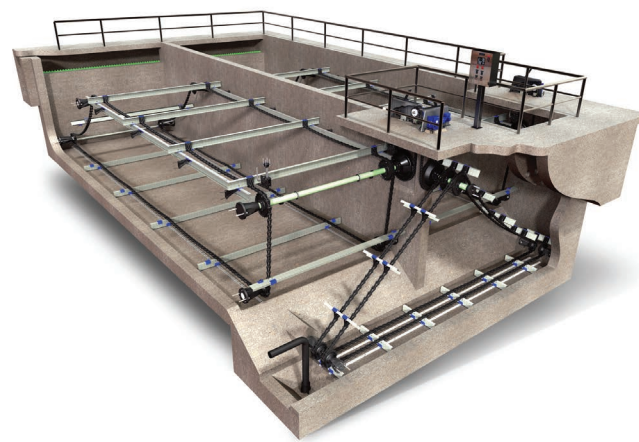
DISSOLVED AIR FLOTATION TANK



4-SHAFT COLLECTOR



CROSS COLLECTOR



Skimmers & Conveyors

In addition to the various configurations of Polychem chain and flight systems, Brentwood can also provide helical skimmers, rotating scum troughs, and cross collector screw conveyors. Complimentary products such as helical skimmers and slotted scum pipes aid in scum removal while screw conveyor augers can be used in lieu of traditional chain and flight cross collector systems.

ROTATING SCUM TROUGHS



Rotary scum skimming troughs are the most economical method for removing surface scum in rectangular clarifiers, and for over 30 years Polychem has provided top quality scum pipes in conjunction with our chain and flight scraper systems. Our heavy duty troughs come in a range of pipe diameters from 8 inches to 20 inches, and can span tank widths up to 40 feet. These tilting skimmers can be furnished in a variety of materials, including painted carbon steel, stainless steel, and FRP. In addition, Polychem offers a number of different methods of actuation including lever, worm gear with hand wheel, and electric motor actuated.

HELICAL SKIMMERS



Our chain and motorized driven spiral skimmers provide for highly efficient scum removal of light, frothy, slow moving scum. Since stagnant scum such as soap detergent and starch waste will not readily float to traditional rotating scum troughs, operators and consulting engineers turn to helical skimmers to remove these debris types in rectangular clarifiers. As the helical skimmer automatically revolves 360 degrees, its rubber wiper blades lift the surface scum up a curved stainless steel or concrete beach and deposit the waste into a stationary U-shaped trough. The Polychem helical skimmer reels are available in carbon steel, 304 and 316 stainless steel, and fiberglass depending on strength and corrosion requirements.

SCREW CONVEYOR CROSS COLLECTORS



In lieu of standard chain and flight cross collectors, Brentwood can also provide our motorized chain driven screw conveyor assembly. Available in carbon steel and stainless steel in a variety of diameters, these augers consist of a rotating helical screw blade, or "flighting", that convey sludge collected from the longitudinal collector to a pit to be removed.



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