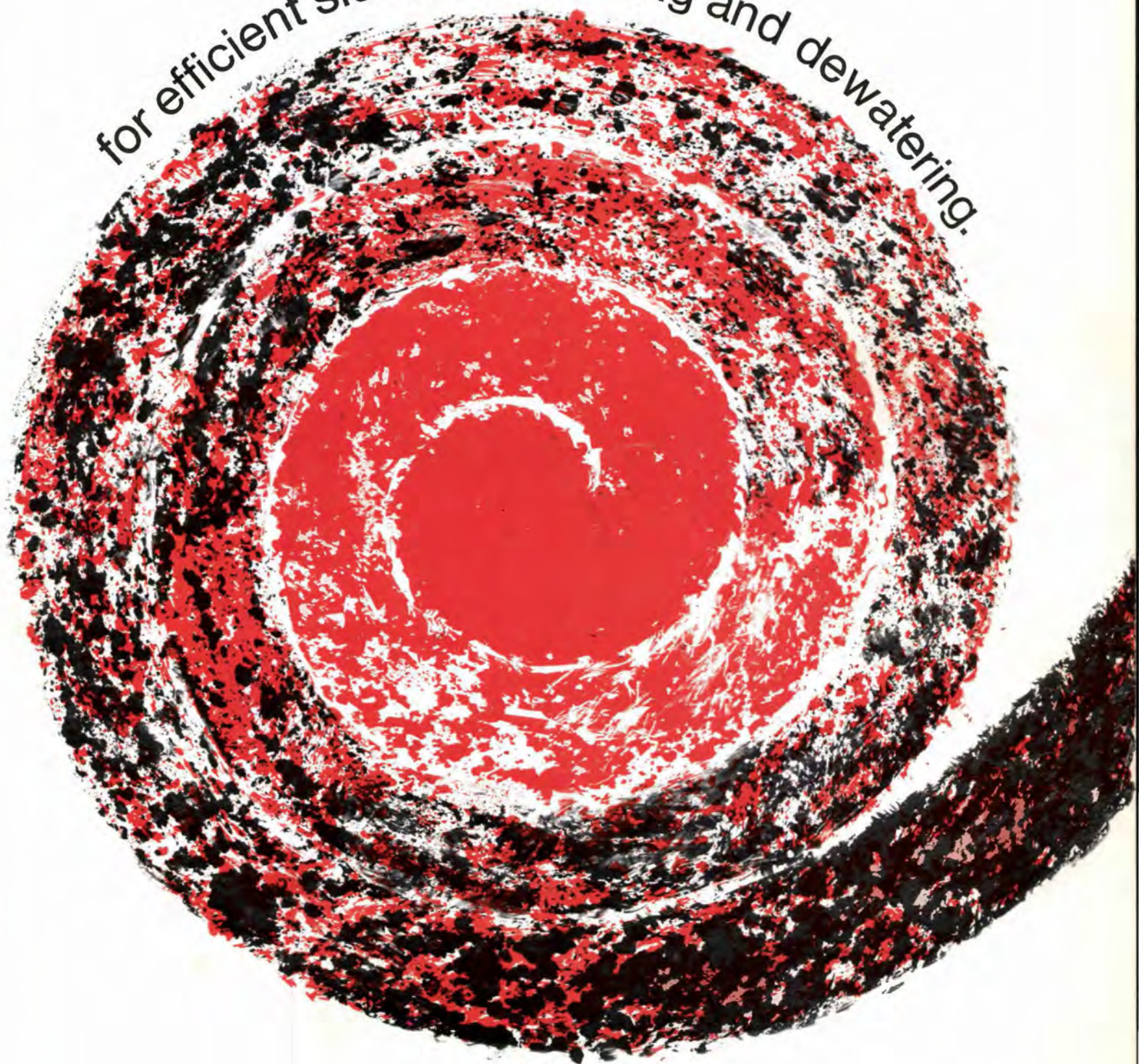




SHARPLES® CENTRIFUGES

for efficient sludge thickening and dewatering.

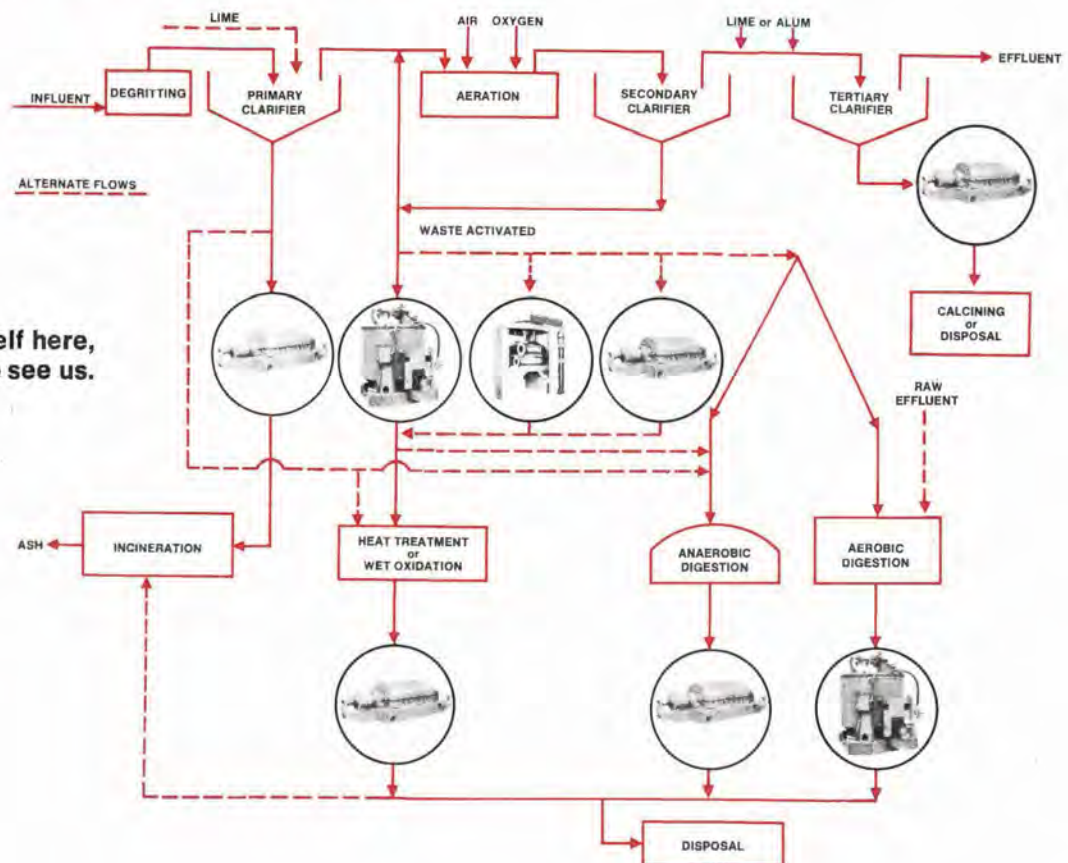


Why centrifuges are used in wastewater treatment plants.

Centrifuges offer many advantages over other methods of thickening, classifying, and dewatering wastewater sludges. For example:

- 1) Lower installed cost. Centrifuges require less space and lower investment in auxiliaries.
- 2) Lower operating cost. Centrifuges require a minimum of attention.
- 3) Adaptability. Regardless of plant design, centrifuges fit in to get solids out of the system.
- 4) Housekeeping is simplified. Centrifuges are completely enclosed.

If you see yourself here,
it's time to see us.



SLUDGES HANDLED

Super-D-Canter Centrifuge	SludgePak Centrifuge	Nozjector Centrifuge
Ground screenings Raw primary Primary digested Mixed digested Combined raw primary/WAS Heat treated Lime treated Alum treated Pure oxygen Classification Thickening of WAS Industrial wastes	WAS dewatering Aerobic digested Alum treated Industrial wastes Thickening of WAS	Thickening of waste activated

**No single type of
wastewater centrifuge
can handle all sludges.**

That's why Sharples makes all types — several solid-bowl designs, disc-type, and basket-type with skimmer and knife mechanisms. And since we make all types — we can match your sludge and performance requirements to the proper centrifuge.

Sharples Super-D-Canter solid-bowl continuous-discharge centrifuge. This is the workhorse of the Sharples line. In its various configurations, it can handle just about any sludge produced in a waste treatment plant . . . from raw primary to tertiary filter backwash.

Sharples SludgePak solid-bowl centrifuge with skimmer and knife. This centrifuge is particularly effective in dewatering soft sludges . . . aerobic digested, alum, waste activated, and many industrial wastes . . . without the addition of chemicals.

The Sharples Nozjector — disc-type centrifuge — is excellent as a waste-activated-sludge concentrator prior to digestion or heat treatment.

Which centrifuge where?

No hit-or-miss project this. We know by long experience that one particular type of centrifuge should do the best job. But past experience is not enough. Each waste thickening or sludge dewatering application is a problem in itself. The selection and final recommendation is founded on facts derived during discussions with our sales engineer or from on-site tests using actual sludge samples from your treatment system.

File
only



Sharples Super-D-Canter® solid-bowl, continuous-discharge centrifuge.



Sharples SludgePak® solid-bowl centrifuge with skimmer and knife.



Sharples Nozjector® disc-type, continuous centrifuge with internal recycle concentrator.

Super-D-Canter®

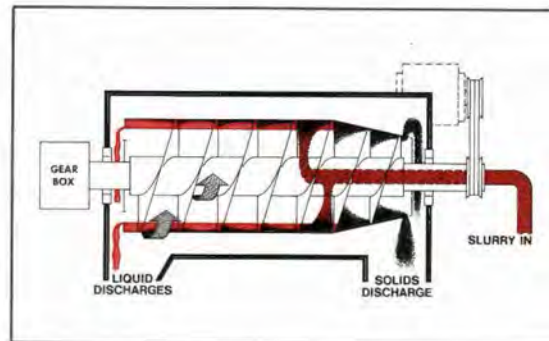
Study the basic features of a solid-bowl, continuous-discharge Sharples Super-D-Canter® centrifuge.

- 1 Internal design and operating G level selected for optimum performance on sludge to be handled. Wide range of sizes.
- 2 Torque overload release is simple and can be reset without tools.
- 3 Provision for coagulant additions (internal or external) where optimum use can be made of them.
- 4 Selected hard surfacing provided where needed most — feed ports of conveyor, feed zone, discharge ports, housing, flight edges and faces of conveyor.
- 5 All components designed to highest standards for operation over a wide range (up to 3100 x G) of G forces. G level selected according to type of sludge.
- 6 Replaceable liners protect casing in solids-discharge area, and in the bowl opposite feed ports.
- 7 One-piece, heavy, cast-iron base reduces vibration.
- 8 Conveyor and bowl-speed differential infinitely controlled to optimize process performance.
- 9 Forced-feed oil circulating system is floor mounted and connected to the centrifuge by flexible connections.
- 10 Heavy-duty bearings, designed for long life, support rotating assembly.
- 11 High throughput and cost/performance because of many internal designs and G levels available. Highest Sigma (pool surface area x G) available.
- 12 Tungsten-carbide feed-port inserts for long wear.
- 13 Heavy duty planetary gear boxes.
- 14 Automatic operational monitoring systems.
- 15 Tungsten-carbide tiles in beach area, if required, for particularly abrasive sludges.

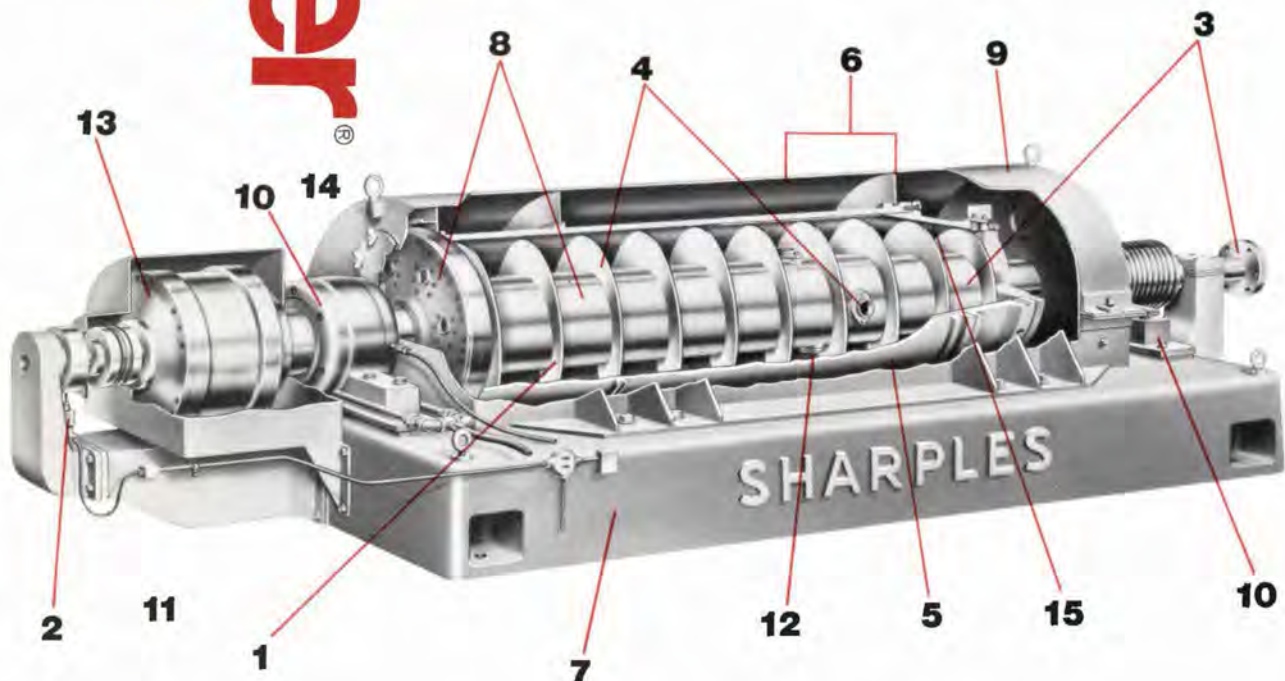
- 12 Tungsten-carbide feed-port inserts for long wear.
- 13 Heavy duty planetary gear boxes.
- 14 Automatic operational monitoring systems.
- 15 Tungsten-carbide tiles in beach area, if required, for particularly abrasive sludges.

The Sharples Super-D-Canter centrifuge is built to the highest standards with no-compromise design. Our philosophy is to give water and wastewater treatment plants a cost-effective, rugged, and adaptable thickening and dewatering centrifuge.

As a result the Super-D-Canter centrifuge is not limited by de-



Operation of a horizontal Super-D-Canter centrifuge.



sign, materials of construction, or abrasion protection to operate only at low G forces. Optimum G force can be selected for lowest polyelectrolyte cost, driest cake, most effective power, and least wear and tear. Stainless steel construction reduces maintenance and provides long life. And hard surfacing technology includes the new replaceable sintered Stellite and tungsten carbide conveyor hard surfacing with up to 20 times the abrasion resistance of conventional materials.

Super-D-Canter® centrifuge performance centers.

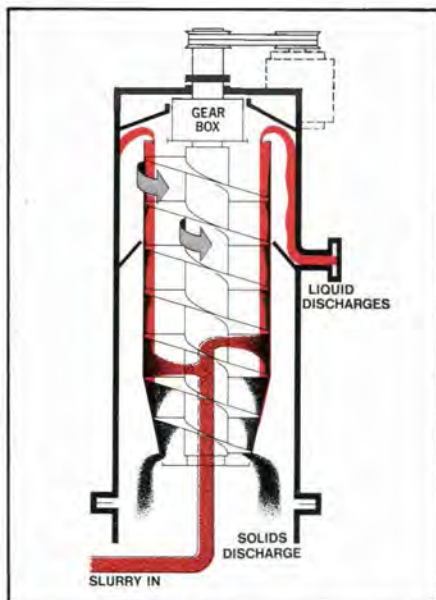
Some typical installations where Super-D-Canter centrifuges are operating.



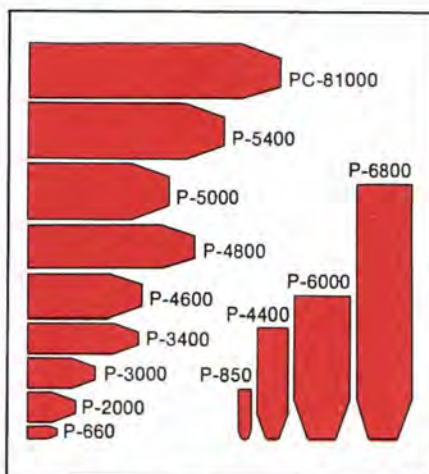
COLUMBIA, S.C. — four P-5400 Super-D-Canter centrifuges used to dewater anaerobically digested sludge prior to incineration.



MINNEAPOLIS, MINN. — four P-5400 Super-D-Canter centrifuges used to dewater softening plant sludge.



Operation of vertical Super-D-Canter centrifuges.



Relative bowl sizes of Super-D-Canter centrifuges.



DOWNINGTOWN, PA. — two P-5000 Super-D-Canter centrifuges dewatering co-mixed primary and secondary sludges prior to incineration.



INTRENCHMENT CREEK, ATLANTA, GA. — one P-5400 Super-D-Canter centrifuge used to dewater anaerobically digested sludge for landfill.



Vertical Super-D-Canter centrifuge often used where space is limited.

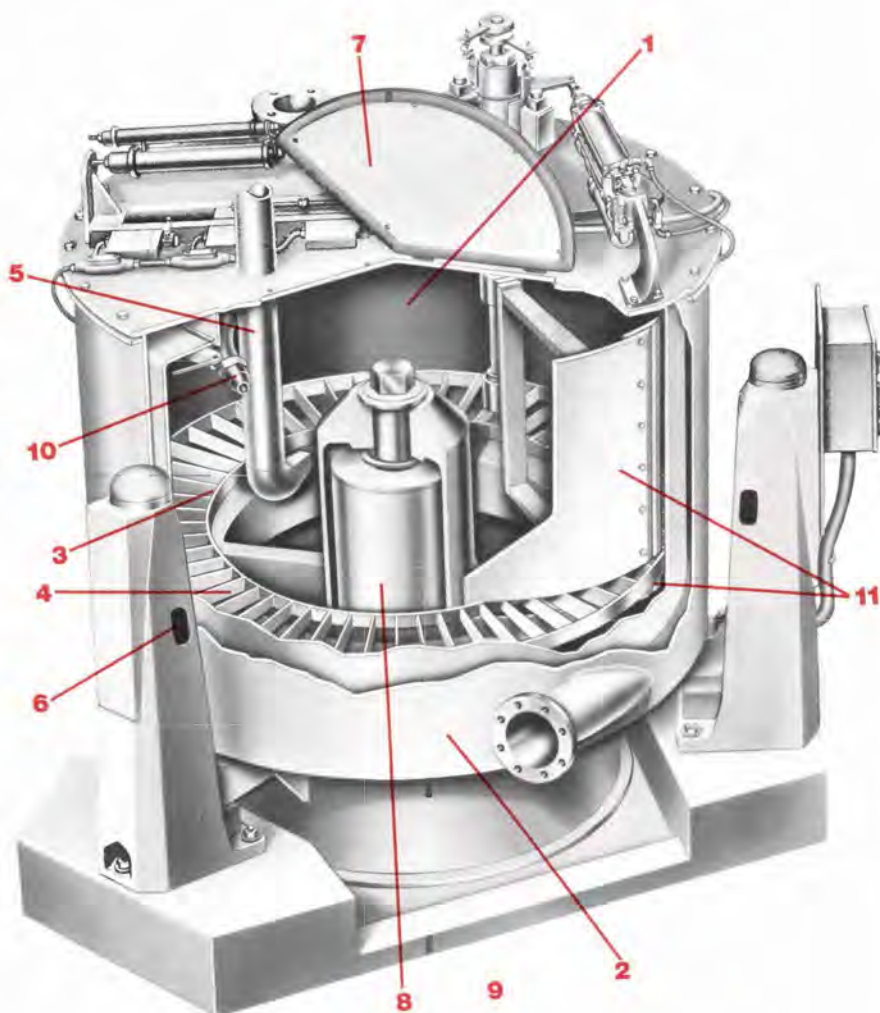
SludgePak®

Take a look at the basic features of a Sharples SludgePak centrifuge.

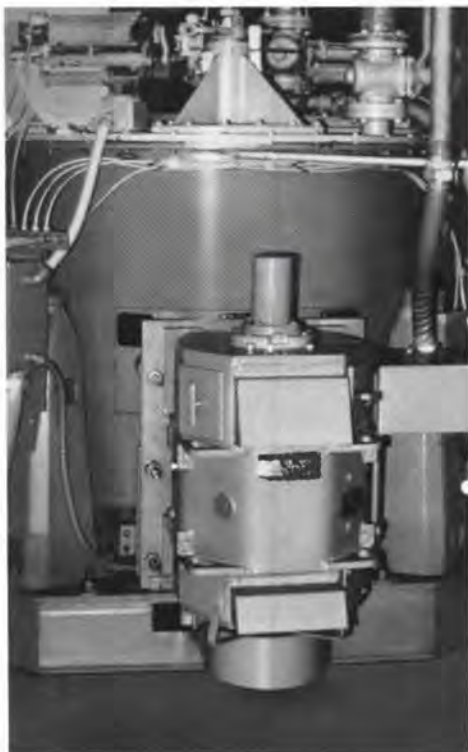
This centrifuge has outperformed others time and again. Its exclusive feed-acceleration system serves as (1) a stabilizer against out-of-balance, (2) as a means of minimizing slippage by accelerating feed to maximum G-force, (3) self-cleaning, anti-plugging feed method.

- 1 All wetted parts of SludgePak centrifuge are solid stainless steel (no stainless steel clad).
- 2 Entire construction designed for long-life operation at 1300 x G.
- 3 Patented* feed accelerator-stabilizer — prevents liquid slippage and brings feed up to maximum bowl speed.
- 4 Openings in accelerator wheel allow passage of large particles — each is 13 square inches — anti-plugging.
- 5 Smooth wall feed pipe is large and anti-plugging — ideal for whole waste.
- 6 Centrifuge curb and entire assembly supported on heavy-duty springs and ball joints — during imbalance all rotating parts have zero relative motion.
- 7 Large access door to bowl and all replaceable bowl components is hinged and has interlock "off" switch.
- 8 Drive assemblies are below center of gravity of rotating mass. Bearing housing welded to curb bottom.
- 9 Drive can be hydraulic or electrical with variable speeds for stability and safety. Under-driven design allows ease of maintenance.

- 10 Liquids skimmer is heavy-duty pipe with replaceable nozzle designed to travel to within $\frac{1}{4}$ " of bowl wall. Infinitely variable depth adjustment. Skims at full bowl speed.
- 11 Unloader (knife, plow) extends the full height of the bowl and has replaceable cutting blade. Removes solids above and below self-cleaning accelerator wheel each cycle.



*U.S. Patent #3,734,398.



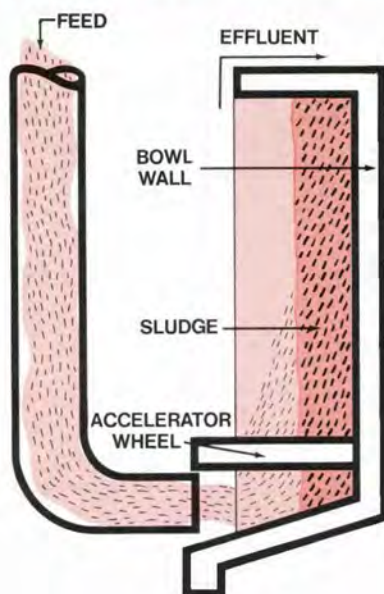
DIRECT CURRENT DRIVE

Speed regulated • up to 50% power savings • no interface drive equipment required • compact power and control modules • severe duty motor • quiet operation • low maintenance.

Sharples SludgePak centrifuges are also available with hydraulic drives.

SludgePak®
centrifuge performance
centers . . . just four
of the more than 150
installed or under
contract.

TYPICAL FLOW DIAGRAM



BROWARD COUNTY, FLA. — six SludgePak centrifuges thickening waste activated sludge prior to heat treatment.



DALTON, GA. — five SludgePak centrifuges dewatering aerobically digested sludge prior to landfill.



BAYTOWN, TX. — one SludgePak centrifuge dewatering aerobically digested sludge.



WASHINGTON STEEL, WASHINGTON, PA. — two SludgePak centrifuges dewatering neutralized pickle liquor.

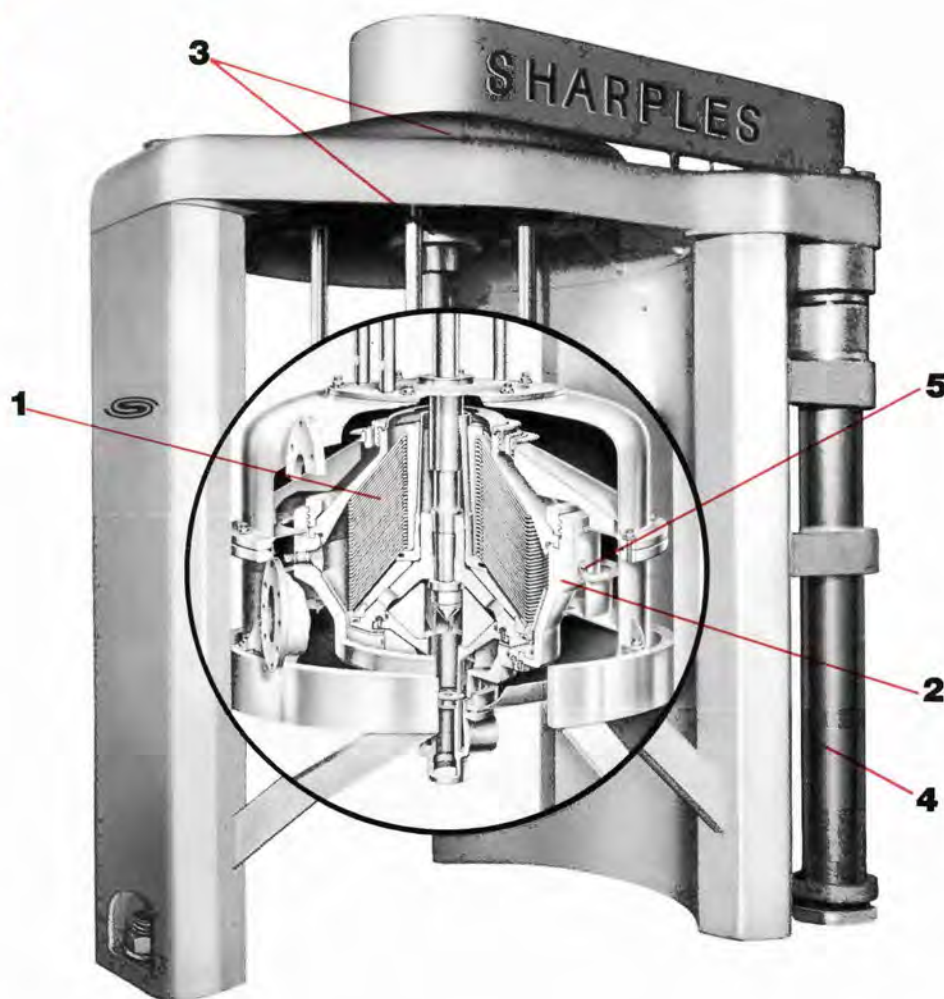
Nozjector®

Check the basic features of a Sharples Nozjector® centrifuge.

- 1 Bowl configuration matched to requirement for optimum performance.
- 2 Components designed for heavy-duty operation. Capable of developing forces up to 6500 x G.
- 3 Exclusive "Plumb Bob" bowl suspension enables Nozjector centrifuge to adjust its axis of rotation for smoothest operation.

- 4 Integral hydraulic lift permits cover to be raised to provide ready access to bowl and nozzles.
- 5 Externally removable nozzles simplify removal for easy cleaning of bowl by back-flushing.

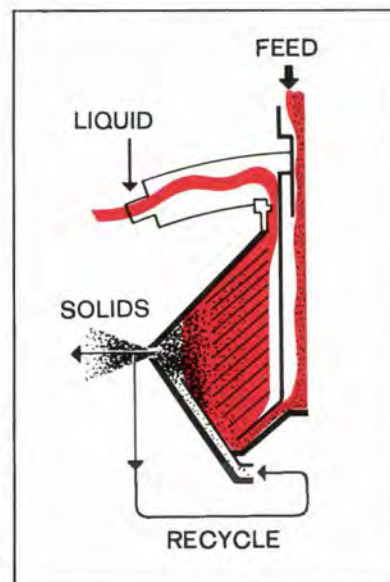
Available in several designs: solid-liquid separator, liquid-liquid separator, and also for high-temperature, high-pressure.



Where to use a Sharples Nozjector centrifuge.

The clarification capability and throughput range of these wastewater centrifuges are high, but sludge concentration is limited by the necessity of exhibiting reasonable fluidity.

A typical and suitable application for this centrifuge is the concentration of waste activated sludge where flows may easily reach several thousand gallons per minute with a suspended solids concentration in the range of $\frac{1}{2}$ to 1%. The larger disc centrifuges readily accept up to 300 gal./min. of such feed with underflow at 5 to 6% concentration and 85 to 95% solids recovery without polyelectrolytes. Of utmost importance is the total system design of a Sharples Nozjector installation. No-compromise design is the key to a cost-effective performance center.



Sharples Nozjector Recycle Concentrator bowl configuration (clarifier type shown) offers a convenient, efficient, and flexible method of controlling solids concentration.

Nozjector centrifuge performance centers

FT. WORTH, TX. — Two Sharples Nozjector centrifuges concentrating waste activated sludge prior to anaerobic digestion.



RENSSELAER, NY — Three Sharples Nozjector centrifuges concentrating waste activated sludge prior to heat treatment.



Consider centrifuges early in your plans.

For a wide variety of sludge-handling situations.
For lime treatment. For biological sludges.
For high solids recovery. For classification.
For concentration.

Sharples centrifuge performance centers.

Sharples centrifuges lead the field in flexibility and cost-effectiveness in thickening and dewatering wastewater sludges. We maintain this leadership because we keep them performing: 1) by providing data and process engineering assistance before specification; 2) by giving process and mechanical startup assistance; 3) by training your operating personnel; 4) by continuing followup after installation.

Contact one of our experienced engineering and sales representatives.

Sharples-Stokes Division
Pennwalt Corporation
955 Mearns Road, Warminster, Pa. 18974
215-672-7700

BRANCH OFFICES

In the United States and Canada

CALIFORNIA: (San Francisco area)
1415 Rollins Rd., Burlingame, CA
94010 • 415-348-3813

GEORGIA: 30 Perimeter Center, East
(Suite 119) Atlanta, GA 30346
404-393-2087

ILLINOIS: (Chicago area)
111 Windsor Drive, Oak Brook, IL
60521 • 312-325-6120

NEW YORK: (New York City area)
690 North Broadway, North White
Plains, NY 10603 • 914-428-0900

OHIO: (Cleveland area)
Westgate Tower Bldg. (Suite 518)
20525 Center Ridge Rd., Rocky River,
OH 44116 • 216-333-4282

PENNSYLVANIA: (Philadelphia area)
300 E. Lancaster Ave.,
Wynnewood, PA 19096 • 215-649-6700

TEXAS: 5906 Star Lane,
Houston, TX 77027 • 713-781-5416

CANADA: 365 Evans Ave. (Suite 302),
Toronto, Ontario M8Z 1K2
416-252-5441

Around the World

ARGENTINA: Buenos Aires • 32-5360,
32-5367, 32-5368, and 32-5369

AUSTRALIA: P.O. Box 731,
Crows Nest NW • 2065

BRAZIL: Sao Paulo • 269-6374,
269-5309, and 269-5527

COLOMBIA: Bogota • 477226 and
473497

ENGLAND: Camberley • 63383

FRANCE: Rueil Malmaison
977-34-09

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371267

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79-15-93

MEXICO: Mexico City • 525-87-52
and 525-02-90

PERU: Lima • 32-80-05

JAPAN: Tomoe Engineering Ltd.
Tokyo • 271-4051

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