CUTTER PUMPS

ADDRESSING AN URGENT NEED

Ragging and fouling of impellers has plagued wastewater applications for years. With the increased use of ‘flushable’ materials and extraneous cleaning products, the issue of clogging, downtime, and pump damage have increased dramatically.

A CUTTER SOLUTION. Cornell created an innovative cutter design, using a stationary and rotating element to reduce masses of solids to a size that will pass through the pump. Most cutter models have efficiencies that are reduced less than 4% from standard Cornell efficiencies for enclosed, solids handling impellers. This minor reduction is offset by a dramatic increase in “up times”. The resulting increase in pump station efficiency can save tens of thousands of dollars per year.

- Minimal Energy Consumption
- Designed to break up clogs/ Prevent Ragging
- Hardened cutter material
- Adjustable

RETROFIT AND NEW PUMPS

The cutter rings can be installed in the majority of Cornell solids handling pumps, and in most cases a motor change is not required. New Cornell pumps from 3” to 16” can be furnished with cutters. Cutter additions to new and existing Cornell Pumps do not result in external dimensional changes to the pump, avoiding costly piping changes in the station.

NEW PRODUCT ADDITION OR RETROFIT DOES NOT CHANGE EXTERNAL PUMP DIMENSIONS.

FEATURES

- Cutters are hardened for long life
- Cutters are shaped to minimize flow restrictions
- Cutters in new pumps are covered by our Industry leading, Two Year Warranty

BENEFITS

- Minimal increase to cost of operation
- Labor savings by reducing clean out events
- Pump Station efficiency improvement by reducing down time and periods of low flow
TESTIMONIAL—CUTTER IN ACTION SAVES THOUSANDS OF DOLLARS

Since Introduction in July 2011, Cornell has numerous customers excited about how the cutter pumps have changed their maintenance schedules and increased their ability to do standard/regular repairs rather than emergency pulls for ragging, thus saving them tens of thousands of dollars.

Following is a testimonial from a Southern California water district and their experience with Cornell’s Cutter pumps.

“The water district replaced another manufacturer’s pump with a Cornell 8NHTA cutter pump in February 2012. After the installation of this new pump, the Maintenance Superintendent went to the station to give it a real test by cleaning the wet well. He indicated that this wet well was very dirty, with a large blanket of rags and trash in which he intends to run through this pump for this test, and to confirm that the pump can be used to clean the wet well on a routine basis. He had the Collections Crew stand by with wash water to wash down the wet well as he pumped this debris through the pump. According to his staff, there were even items such as large plastic sports drink bottles that were running through the pump. According to the superintendent, the pump never choked, or made any indication of exertion. After the wet well was fully cleaned, his staff opened a volute inspection port to inspect the pump. It was clean and had no debris whatsoever in the impeller or volute. Needless to say, he was very happy with this progress. So happy they are considering installing new or modifying existing pumps to have at least one cutter pump per station.”

~Cornell SoCal Distributor
CHARACTERISTICS & OPTIONS WITH MOST CORNELL CUTTER PUMPS

- Replaceable case wear rings
- Double volute (many models)
- Heavy-walled castings
- Replaceable shaft sleeves
- Various mounting configurations
- High efficiency
- High Suction Lift (Redi-Prime® versions)

- Two-year warranty
- Oversized bearings
- Minimum 20,000 hours bearing life
- Patented Cycloseal® design
- Low cost of repair
- Lower operating cost

THICKER, SLEEVED SHAFTS

Cornell’s alloy steel shaft is more than 25 percent larger in diameter than most other competitors. Cornell’s shafts withstand higher loads without excessive deflection, prolonging both shaft and seal life. Cornell builds pumps with shaft sleeves standard—providing a wear surface that is more easily replaceable for less cost than a shaft. If sleeves are available from a competitor, they are often an expensive option. Cornell has 420HT sleeve shafts available for abrasive environments.

Economical solution to repeated clean out expenses

Most installations save thousands of dollars a year in staff time. Below are some examples of cost savings users have seen with Cornell cutter pumps.

- Average time per event: 6 hours (two workers for three hours)
- Cost per man hour: $50
- Total direct cost per event: $300
- Events per week: 2
- Total annual direct expense $31,200
- Total lost man hours that could be used maintaining other items: 624 annually
CUTTER PUMPS

OTHER PUMP MODELS AVAILABLE

CUTTER PUMPS

FAMILY MAP - NON-CLOG PUMPS
ENCLOSED IMPELLER

*OTHER PUMP MODELS AVAILABLE
On average, installations have dropped from an average of clogging three times a week, to less than once a month.

**IMPROVES PUMP STATION UP TIME AND EFFICIENCY**

Many installations have dramatically reduced clogging downstream. This allows more maintenance time to address standard and routine issues rather than emergency repairs.

**MAY REDUCE FORCE MAIN CLOGS**

- MINIMAL ENERGY CONSUMPTION
- DESIGNED TO BREAK UP CLOGS/ PREVENT RAGGING
- HARDENED CUTTER MATERIAL
- ADJUSTABLE

**ADDITIONAL PUMPS AND PRODUCTS AVAILABLE**

**CLEAR LIQUID PUMPS**

Cornell Clear Liquid pumps are used for commercial and residential irrigation, golf course and lawn maintenance, aqua culture, fountains, breweries, laundries, cooling towers, fire fighting, reverse osmosis feed, and water boosters.

The W, Y, R and H series pumps are available in a wide range of materials with discharge sizes ranging from 1 to 10 inches, heads to 450 feet TDH, and flow rates up to 7,000 GPM.

**REDI-PRIME®**

Cornell Redi-Prime® pumps are designed with oversized suctions to provide more flow, reduced friction losses, and higher suction lift. The priming system was designed with the environment in mind. By using a positive sealing float box and a diaphragm vacuum pump, there is no water carry-over to contaminate the environment. With suction lifts of up to 28 feet, heads to 470 feet and flow rates exceeding 20,000 GPM, most Cornell pumps can be readily fitted with the Redi-Prime® system.
HYDRAULIC SUBMERSIBLE PUMPS

Cornell's DuraSub™ uses a heavy duty pump end and bearing frame for direct coupling to a hydraulic motor. The DuraSub™ has a modular design which allows standard Cornell pump ends to be used as a Hydraulic submersible pump.

- Available for most Cornell pump models
- Hydraulic motor driven
- Various adapter plates available for hydraulic motor fit
- Heavy duty shaft / bearing frame assembly and wet end construction
- Premium wet end efficiencies reduce horsepower requirements
- Heavy duty pumps ends for long service life and reliability

MX SERIES HIGH PRESSURE PUMPS

Pressures to 800 feet TDH and flows to 4000 GPM. Designed to handle high head applications while providing a long service life. The new high head MX SERIES pumps have multi-vane, enclosed impellers designed for INDUSTRY LEADING EFFICIENCY. The MX SERIES pumps have extra heavy wall thickness, high quality construction, CA6NM impellers and are available in a horizontal frame & SAE mounted configurations.

DELTA™ STYLE PUMPS

The trailing edges of Cornell's Delta™ impeller vanes extend continuously across the pump's suction entrance to reduce low pressure areas. Two distinct vortices are created which pass solids through the impeller. The absence of sharp impeller edges prevents hang-up of stringy materials. Many of our enclosed impeller type pumps can be retrofitted with Delta™ style impellers. Delta™ pumps are available in 3 x 3”, 4 x 4”, 6 x 6”, 8 x 8” and 10 x 10” sizes. Capacities range from 50 to 5,000 GPM and heads range from 10 to 450 feet.

CHOPPER PUMPS

Cornell Chopper pumps, constructed of ductile iron with replaceable cutter bars of heat treated T1 tool steel are ideally suited for chopping solids. Back to back angular contact ball thrust bearings and single ball radial bearings make for smooth operation. TDH ranges from 30-200 feet with flows to 1,500 GPM.

IMMERSIBLE

The basic design of the immersible pump/motor is a premium efficient, inverter duty, P-Base or C-Face, totally enclosed, blower cooled motor. The design prevents water infiltration along the shaft into the motor by utilizing a triple redundant sealing system, including a patented Hydroseal design. The immersible motor can withstand up to 30 feet of submergence depth for a 2 week period.
Cycloseal®, and Redi-Prime® are Registered Trademarks of Cornell Pump Company.

Cornell pumps and products are the subject of one or more of the following U.S. and Foreign patents: 3,207,485; 3,282,226; 3,295,456; 3,301,191; 3,630,637; 3,663,117; 3,743,437; 4,335,886; 4,523,900; 5,489,187; 5,591,001; 6,074,554; 6,036,434; 6,079,958; 6,309,169; 2,320,742; 96/8140; 319,837; 918,534; 1,224,969; 2,232,735; 701,979 and are the subject of pending U.S. and Foreign Patent Applications.