

COMPARISON OF TRADITIONAL PUMP VERSUS MODERN LOW RISE CONCRETE VOLUTE PUMP

TRADITIONAL PUMP	MODERN LOW RISE PUMP
Environmental Impact:	
Greater environmental impact, large footprint. Can require 6-8 story building, 150-250 ft long. Heavy components including a lengthy steel shaft, large cast impeller, etc.	Lighter, smaller footprint, Requires building to rise 1-4 feet above levees. Don't impact green spaces Visit http://www.costain2200028.co.uk/ for actual photos and information on a current Bevron installation at the St. Germans Pumping Station.
Five (5) pounds of oil or grease emitted per hour collectively from running pumps.	No grease or oil lubrication necessary, no emission of oil into natural waters.
Cost:	
Steel costs more than 30 times the cost of concrete. Extra costs for heavy ancillary equipment, water wells, tall buildings requiring thick walls able to withstand 152 mph winds due to height	Concrete per ton cost is a fraction of the cost of steel. Built on site, don't need to transport large pumps to canals on trucks. Very little ancillary equipment to purchase. Compliance with Buy American Materials and labor can be bought in the United States.
Function and Safety:	
Less efficient hydraulically, requiring more power to move a given amount of water than modern pumps.	More efficient hydraulically, requiring less power to move a given amount of water than the traditional pumps.
Metal volute pumps with many moving parts are susceptible to vibration, corrosion, and fouling.	Less moving parts. Not susceptible to vibration, corrosion, erosion or fouling.
Suction pit design susceptible to vortices, non-laminar flow pattern or solids (sand) build up.	Concrete intake design ensures smooth laminar flow with no vortices and or solids build-up.
Require vacuum prime system which is costly, unreliable, and high maintenance	No external vacuum prime system is required due to revolutionary and proven concrete intake design.
Require an independent water source, a well drilled at each site from which water is filtered and pumped to bearings.	No independent water source or cooling system needed, pumps cooled and lubricated by immersion in canal water.

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Reliability, Repairs and In-Use Time:	
Require grease lubrication and a grease line. A 2X4 could damage grease line in a storm and seize up pumps within a few hours.	No grease or oil lubrication necessary, No emission of oil into natural waters.
If water source is interrupted (i.e., compromised in a hurricane) bearings can't be cooled and pumps seize up.	No concern about interruption of water to pumps for cooling; cooled naturally by immersion in canal water.
Ball bearings rely on a clean environment to operate. Can be chewed up by sand and other aquatic matter.	Bearings are made of carbon ceramic fiber (stronger than steel). They actually grind sand. Teflon quality requires no lubrication or vulnerable grease line.
Safe room located at the top of the 6-8 story tall structure where it is vulnerable to high winds.	Entire structure is built to be flood resistant, easy to build a concrete flood-proof safe room on site extending just a few feet above levees not vulnerable to high winds.
Repair time on a pump about 2-3 months. Massive, heavy components which are difficult to handle and transport. Typically require large stationary cranes and special lifting and transport equipment to move and repair. Requires extensive dismantling of pump and ancillary components. <i>Note: At present, (July 08) a traditional pump is still being repaired after being pulled in early April.</i>	Repair time on a pump is approximately 2 days. Back "pull out" design allows for ease of maintenance. Rotating assembly can easily be pull out with mobile crane for and repair on site. Less weight, smaller components, easier to handle and transport.
Large specialty units non-modular design make interchangeability impossible.	If pumps are consistent in size for all canals, modular components /parts can be borrowed for speedy repair. Spare rotating assemblies can be purchased instead of complete spare pumps as the concrete volute will not wear out like a conventional metallic casing pump.
More components, more can go wrong	Very low maintenance, so much less to go wrong NO obstructions in flow path to obstruct impeller, less friction than within a steel shaft.
Inspection of pump is very difficult. Requires disassembly of pump to inspect. Also, current design requires use of divers to inspect.	Pump can be inspected without disassembly. Suction intake design will allow means of inspection without use of divers by simply isolating the pumps by use of valves.
Zinc anodes are required to protect against corrosion from the brackish water.	Pumps can be manufactured in corrosion resistant materials. This eliminates the maintenance of the zinc anodes and increases the system reliability.