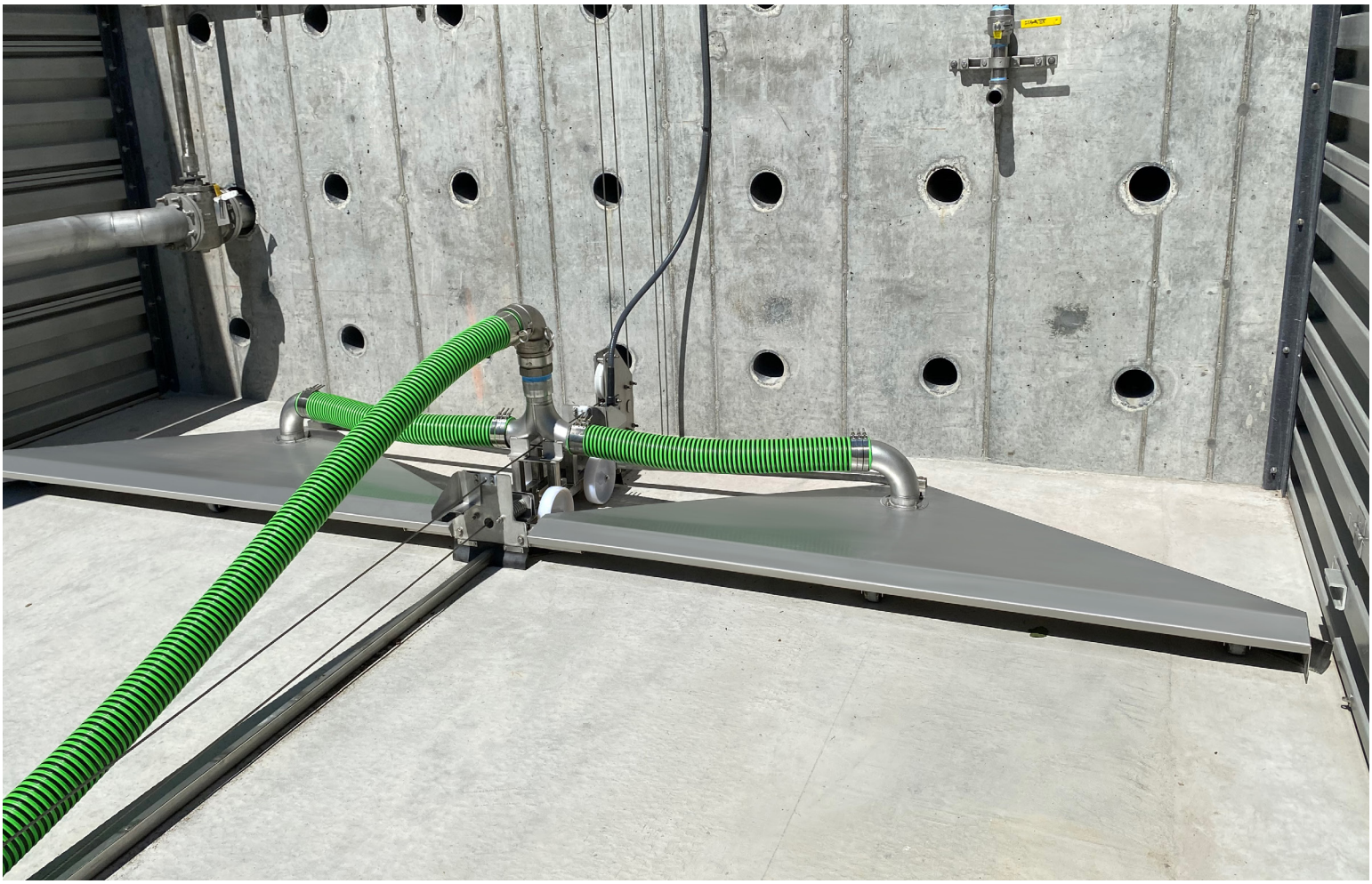
DESIGN GUIDE



SedVac®

SEDIMENT REMOVAL SYSTEM

BRENTWOOD®

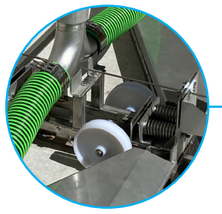
SedVac® Sediment Removal System

The process of removing settled solids from clarifiers in drinking water, wastewater, and industrial water treatment plants is continuous. Brentwood's SedVac system can handle high concentrations of sludge and grit and is capable of consistently removing solids of 3% concentration across a wide range of influent quality. SedVac truly cleans the basin floor by removing the bottommost layer of sludge.

HOSE

Neutrally buoyant hose assembly with low friction coefficient minimizes headloss.

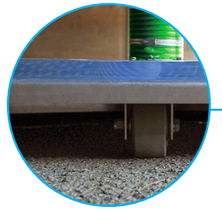
- Material: Flexible PVC
- Inner Diameter: 3 in (75 mm) or 4 in (100 mm)



CHASSIS

Pre-tensioned, spring-loaded chassis maintains cable tension. Patented central discharge tee evenly distributes flow.

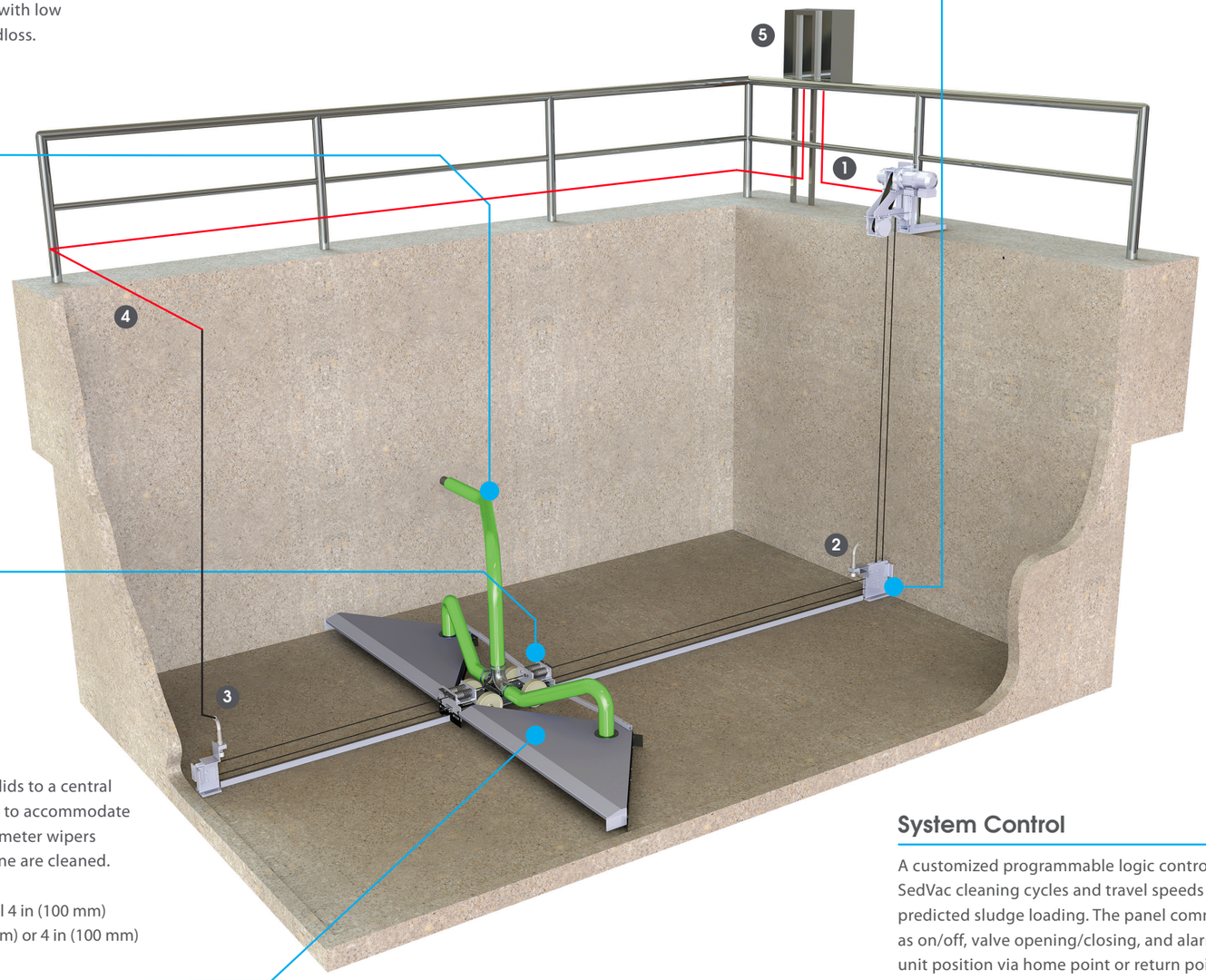
- Material: AISI 302/304/316, UHMW-PE, Nylon, Neoprene



HEADER WINGS

Triangular wings funnel settled solids to a central discharge point. Wings are hinged to accommodate up to a 3° slope in basin floor. Perimeter wipers ensure all surfaces in the travel zone are cleaned.

- Material: AISI 304
- Wing Opening Height: Nominal 4 in (100 mm)
- Discharge Diameter: 3 in (75 mm) or 4 in (100 mm)



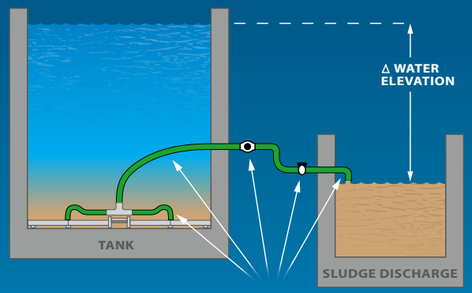
CABLE DRIVE ASSEMBLY

Powered by a traction winch, the system is pulled along a central guide track between two sheaves with sensors indicating unit position.

- Material: AISI 304, Nylon, Brass

Pump or Vacuum?

SedVac is designed to remove settled solids from rectangular clarifiers using a pump or vacuum. As the most economical option, the vacuum configuration can be used if enough differential head is available. The summation of water elevation change, pipe head loss, and component head loss determines available differential head. If there is not enough differential head, SedVac can be configured with a pump. Pumps are specified according to flow rate needs, head loss, service life expectancy, and water quality parameters.



Pump Selection

Fully submersible pumps are mounted to the header wings to maximize sludge removal. Pumps are available in a variety of sizes and are either cast iron or stainless steel construction.

Hp	Max Flow Rate per Pump	Max Head
1	95 gpm (21.6 m^3/hr)	48 ft (14.6 m)
2	185 gpm (42.0 m^3/hr)	46 ft (14.0 m)
3	240 gpm (54.5 m^3/hr)	59 ft (18.0 m)
4	330 gpm (74.9 m^3/hr)	69 ft (21.0 m)

System Control

A customized programmable logic control (PLC) optimizes SedVac cleaning cycles and travel speeds to remove the predicted sludge loading. The panel commands functions such as on/off, valve opening/closing, and alarms and coordinates unit position via home point or return point sensors. The control system can either be stand-alone or connected to the treatment plant's SCADA system.

1. HOME POINT SENSOR CABLE
2. HOME POINT SHEAVE
3. RETURN SHEAVE
4. END POINT SENSOR CABLE
5. CONTROL PANEL
   460V or 230V Per Customer Site

Pilot Studies

A pilot study was conducted to compare discharge flow rates of SedVac and conventional pipe systems. As shown in Figure 1, despite the increase in solids loading, both the pump and vacuum configurations of the SedVac unit had low variation in discharge flow rate. The study demonstrates that SedVac maintains consistent discharge flow rates through a wide range of solids loadings, a key factor in preventing system clogging.

Figure 1: Discharge Flow Rate vs. Solids Concentration

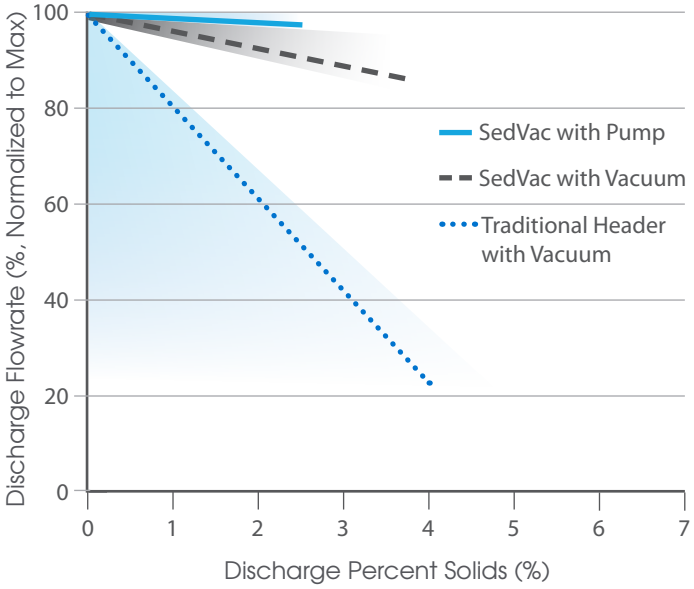
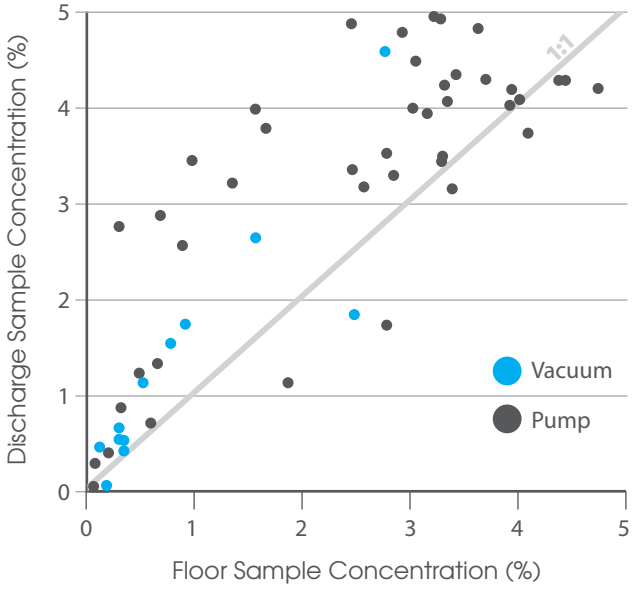


Figure 2: SedVac Sludge Concentrating Effect



Two full-scale SedVac pilot tests were performed comparing settled solids collected at point locations on the tank floor to corresponding discharge composite samples. In both vacuum and pump configurations, Figure 2 shows that SedVac removed settled solids at concentrations greater than the intake on the basin floor. The study suggests that the shape of the header wing funnels solids toward the pump or vacuum intake, concentrating the sludge and thus increasing the discharge concentration.

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