Pumping of pig manure slurry – anything but clean

The ABEL EM-040 pump is used to pump pig slurry under very difficult conditions at a pig breeding plant in Lower Saxony. The average population of 2,000 pigs generates a considerable amount of slurry. When transporting slurry as a medium, it is important that coarser particles such as pig bristle and claws are moved by the pump without causing problems. Pumping of such complex media is a speciality of ABEL pumps.

Manure – an energy producing “tail-end” product

What can be done with slurry? The problem of slurry disposal was solved in an intelligent way. With the help of a biogas plant, the energy in the slurry is used to generate electricity. The biogas plant is directly connected to the pig breeding plant.

The ABEL EM-040 pump has been used transporting slurry reliably for three years. In a mixing container, the slurry is mixed with maize, straw and re-circulating material and is then moved into the fermenter, where methane gas is generated in the course of the fermenting process. This biogas is then supplied to a combustion motor, which in turn drives a generator that generates electricity.

Proven technology for difficult media

The ABEL Electromechanical Diaphragm Pump type EM-040 is equipped with flap valves. These are useful as larger particles can also pass through the pump without problem. In batch operation, it pumps a quantity of 10m³/h (44 GPM) from an agitator vessel into an intermediate container. Here, a counter-pressure of max. 2 bar (29 PSI) is reached.
Further measures to reduce service to a minimum

To prevent pump blockages completely, the operating company Hauel Heizungsbau GmbH installed a 10-mm perforated metal plate filter upstream on the suction side and attached flushing connections on the suction and pressure side.

The pump is positioned in a roofed pump shaft next to the receiver tank and is more or less maintenance-free. Up to now, it has had absolute minimal use of consumables in spite of the difficult medium.

Diaphragm pumps by ABEL – a system with many advantages

Compared with other pump systems such as eccentric screw pumps or rotary lobe pumps, the major advantage of the EM diaphragm pump is that there are no expensive dynamic seals, rotors or stators to replace. The diaphragms hermetically seal slurry from reaching the internal components of the EM, limiting abrasive wear to the relatively inexpensive elastomer components only.

Keeping the flow constant – using compressed air for smooth running

To minimize pulsation in the pressure line, the pump is equipped with a pulsation dampener. By use of a compressed air connection on the dampener, a sufficient dampening effect is built up in the form of an air cushion.

Installed emergency stop

The membranes are secured additionally with an electrical break monitoring system. In the rare event that a membrane breaks, it is immediately detected by the system and stops the pump. This reliably prevents any consequential damage caused by medium penetrating into the drive area.