

Analysis of Life-Cycle Costs of Hydraulic-Driven Piston Pumps

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It is common practice on machine tools (and other large capital equipment purchases) to assess the value of a machine beyond its purchase price. The key term here is life-cycle costs (LCC). This analysis is less commonly used when planning for plant and equipment purchasing and design, but the idea has great benefits in over-all long term cost savings.

In the past, biogas facilities were built with the simplest means. Discarded steel tanks were used for the fermentation of biomass. The produced methane gas was then processed in diesel car engines, which convert it into electricity. Since then, the technology has tremendously improved. Nowadays, biogas facilities are built to cope with the latest industrial standards, and with greater efficiency.



Since the legislator demands sustainability in the field of biogas, the produced machines have thus to comply as well. A long service life with low life-cycle cost should be ensured. Therefore, the high purchase price of some machines that are installed in a biogas plant should not be the sole method of evaluating the equipment. Long term operation costs, up-time in operation, service labor, and ease of serviceability, must be considered as well, and

the best choice will be the one which has the lowest long term costs when all factors are considered!

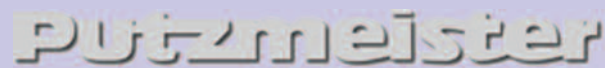
Putzmeister, in cooperation with the Stuttgart University, came up with this analysis. Biogas facilities processing different types of biomass were inspected, e.g. plants that process waste coming from "brown compost bins", leftovers or NaWaRo (energy Crops) mixed with chicken excrements. Various forms of feeding of the biomass were chosen in order to clearly identify a trend or differences.

One of the studied plants, located in Austria, is processing wrapped and expired food products. With an output of app. 1-2 m³/h and a delivery pressure of app. 5 bar, a hydraulically-driven piston pump pumps unpacked biomass into a fermentation tank. This pump has been in service for 2 years without the need to change any spare or wear parts.

At another facility, where waste from the "brown bin" is being processed, a hydraulic-driven piston pump is in use and pumps with an output of 100 m³/h and a delivery pressure of 10-20 bar. This pump has been installed at the facility in 1992 and has since then a total operation time of 60 000 hours. The operator is to be very satisfied with the machine's performance and long service.

Summing up, it is absolutely necessary to take the life cycle costs into consideration when it comes to the use of machinery in biogas facilities. This is an essential step in order to assess the intrinsic value of the whole facility. Especially in a business field where the intrinsic value, the economical and ecological assessment of the whole system is of utmost importance.

Putzmeister Solid Pumps zur IFAT 2010 (Hall A6 Stand 237/334)



General information on Putzmeister Solid Pumps GmbH (PSP)

Putzmeister-Industrietechnik (industrial engineering) has decades of practical experience in the field of biomass processing. This company, which specialised itself in engineering solutions and demanding pump applications, has for a year now been operating as an independent company under the name of Putzmeister Solid Pumps GmbH.

Through the consistent expansion of the industrial engineering sector and taking into consideration the particularities that come with constructing such plants, PSP has the best qualifications in order to fulfill customer wishes and propose special solutions.

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