Anaerobic wastewater treatment is a biological system that relies on the microbial activity in order to get rid of the organic substances. To control the performance of the system, the optimum operating conditions need to be maintained for sustainable growth of microbial inside the system. In this case, the studied factory uses upflow anaerobic sludge blanket (UASB) to treat tapioca starch wastewater. pH is one of the main parameter was used to monitor and control UASB system's stability. Caustic soda (NaOH) was used to adjust pH value of influent from ~ 4.5 and maintained to 7.0-7.1 prior to UASB. From closely monitored the data and truly stability of system, the excessively stability adjustment was found. It consumed high amount of NaOH and caused a high expense. In order to reduce this operating cost the project of improving anaerobic treatment plant had been done.

To reduce NaOH consumption, other parameters such as alkalinity (ALK), volatile fatty acid (VFA) and VFA/ALK ratio were used concurrently with pH to monitor and control the performance of UASB system. The results showed the successfully reduction of the excessive stability adjustment in this process. Caustic soda consumption for pH adjustment was dramatically decreased from 1.7-2.5 kg/m$^3$ wastewater to only 0.4-0.5 kg/m$^3$ wastewater while the system's performance was not been affected or even slightly better. From applied this project, the factory could save the operation cost about 15,000 baht per day.