



Sustainability action · Project Renewable Energy and Energy Efficiency

Biogas energy, Thailand

This project uses biogas from wastewater to generate heat and power at a tapioca starch drying factory in Cholburi.

Project

Thailand is the world's largest exporter of tapioca starch which is manufactured from treated and dried cassava root and used by the food and toothpaste industries. Drying tapioca starch uses large volumes of water which in turn creates vast quantities of wastewater with high organic content. Before the implementation of this project, the 2400m³ of wastewater produced each day at this factory was discharged into 13 open lagoons. Cholburi has a tropical climate, with an average temperature of 30° Celsius. In this environment the organic matter in the lagoons was breaking down, creating methane which was being released directly into the atmosphere.

This project introduces Anaerobic Fixed Film Reactor (AFFR) technology to the factory; a closed loop system co-developed by the King Mongkut's University of Technology in Thonburi and the National Center for Genetic Engineering and Biotechnology. The AFFR technology collects and supplies biogas to a boiler where it is combusted to generate heat and electricity. This energy is used onsite to power the factory, replacing energy that was previously supplied by fossil fuel fired power stations. Any excess power generated at the plant is delivered to the regional grid. Alongside the emissions reductions, the project reduces air pollution as the odors from decomposing organic matter are now contained. The factory has adopted sustainable water management practices by reusing the treated wastewater in the manufacturing process, reducing the volume of freshwater required. Additionally, thirty new jobs have been created in planning, construction and operation of the plant.

Checklist	Additionality and permanence	3 rd party verified	Transparency	Annual CO ₂ -reduction	Social and environmental benefits	Marketing material
Project 300 283	According to the rules of the VCS	By TÜV Nord	Provided by Markit Environmental Registry	28,000 tCO ₂ e	As documented in our database	Pictures and video available



Location

The wastewater cycle was installed in a starch plant 100 km West of Bangkok, in a rural region with mostly agricultural background. The starch is produced from the region's main product cassava (or tapioca) roots, grown mostly by small scale farmers.

Project achievements

Socio-economic impact

- About 30 jobs have been created both during construction and operation of the project.
- New qualified jobs for locals have increased the general income level which benefits all the community.
- The cleaned water from the new wastewater cycle allows for irrigation of nearby fields (mostly corn), thus enabling locals to increase their income.
- The plant workers receive training on modern technologies and can increase their knowledge and skills.
- Technology transfer supports the workers' understanding of modern and sustainable applications.

Environmental impact

- With the now covered lagoons and the UASB reactor in operation, air pollution and strong odour from the wastewater have been reduced significantly.
- Eucalyptus trees have been planted to help treat the wastewater in a natural way.
- Water from the wastewater cycle can be re-used in the plant which saves freshwater resources.
- No solid waste is generated but sludge that is given to local farmers as fertilizer.

