Nicholas Meat Installs New Technologies to Reduce the Environmental Impact of its Processing Facility

As part of a drive to upgrade their management of both liquid and solid wastes generated in their facility and greatly improve their overall environmental and energy footprint of their operations, Nicholas Meat LLC is installing an environmentally harmonious wastewater treatment system and award-winning waste-to-energy technology.

The new facilities will be designed to recover both energy and water from waste products generated on site and significantly reduce the impact of the processing plant on the local community.

The beef processing and packing company has been a significant contributor to the economy of the Loganton, Pennsylvania area for over 30 years.

Their goal now is to vastly reduce their impact on their neighbors, set world-class environmental standards, and reduce their dependence on fossil fuels, says Global Water & Energy Vice President, Mr. Ian Page.

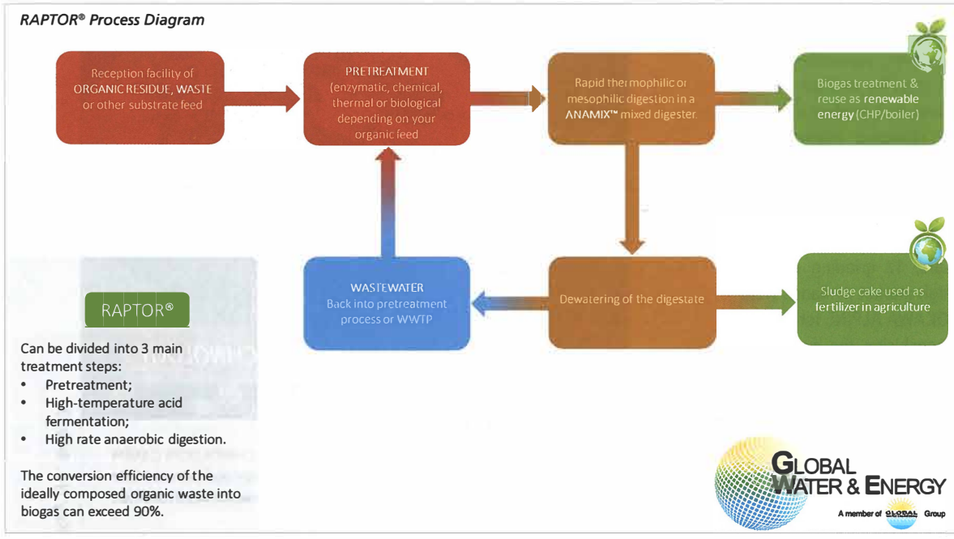
The new facilities, soon to be under construction, are engineered to better manage the factory wastewater on-site and recover energy from by-products generated within both the production process and within the wastewater treatment operations themselves. They are aiming to significantly reduce the impact of the processing plant on the local community, including a major reduction of odors and truck traffic currently present.

GWE will provide both an industrial wastewater treatment facility utilizing its cutting-edge MEMBROX™ aerobic membrane bioreactor technology, as well as a complete organic waste-to-energy facility to manage solid and concentrated wastes generated at the factory and wastewater treatment plant, using its award-winning RAPTOR® system. RAPTOR® stands for RAPid Transformation of Organic Residues, and is a pretreatment-enhanced form of anaerobic digestion, designed to turn nearly any organic substance into valuable green energy in the form of biogas.

The MEMBROX™ wastewater treatment plant will allow Nicholas Meat to completely eliminate odors from the existing storage of wastewater and nearly eliminate the trucking of wastewater from the site, greatly improving noise, dust, and traffic at the facility. It will generate an effluent of sufficient quality for stream discharge, as well as for a variety of potential reuse functions, such as irrigation, and multiple forms of recycled water use within the actual factory footprint. This will reduce their impact on the local aquifier.

The RAPTOR® portion of the plant involves an innovative twist on traditional anaerobic digestion, designed to maximize the energy generation from specific wastes. "This world-class technology – which can be applied globally by all community-minded companies with organic waste and wastewater streams – produces both green energy to supplant fossil fuel needs, as well as delivering high quality treated wastewater to safeguard community water standards. The standards of environmental protection – and reduction of environmental footprint specified by Nicholas Meat – are a credit to the company as an efficient, sustainable and overall good corporate citizen," said Ian Page.

RAPTOR® Process Diagram



The RAPTOR® technology won the Energy Award from the Institute of Chemical Engineers (IChemE), which represents more than 40,000 chemical, biochemical, and process engineers from around 100 countries. The IChemE Global Awards are known for their celebration of the excellence, innovation and achievement in the chemical, process and biochemical industries, making this recognition so significant and gratifying for GWE [Global Water Engineering won IChemE Energy award in 2014, it rebranded to Global Water & Energy in 2018].

Nicholas Meat will utilize its biogas to replace propane fueling its boilers, providing both a cost savings and a reduction in carbon footprint for the factory. However, future generation of renewable natural gas, or RNG, from the biogas, for use as vehicle fuel, is a long-term consideration. Nutrient-rich liquid fertilizer will be generated at several stages within the waste-to-energy plant and will be utilized on local croplands. Any remaining liquid wastewater from the RAPTOR® facility will be sent to the wastewater treatment plant, for final treatment and disposal. The two facilities are truly integrated, with residuals from one being managed in the other.

"GWE is extremely pleased to be able to assist Nicholas Meat with such a forward-thinking, environmentally-sound upgrade to the management of organic wastes and wastewaters generated within their operation. This installation presents a model for meat production and packaging plants globally."

"Utilizing the residuals from production as a resource, rather than treating them as wastes, will generate significant value for the Nicholas Meat plant as well as the surrounding community, and will help to transform Nicholas Meat into a truly 'green' company" said Page.

New Counting App Helps Improve Fruit Harvests

Handy tool for improving yields and picking performance

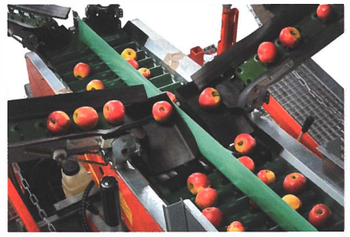
Munckhof Fruit Tech Innovators presents an automatic counting function for its Pluk-O-Trak. This innovation for Munckhof's advanced harvesting system automatically counts the quantity of harvested fruit per picker and per row. The new app will help fruit growers achieve further improvements in picking performance and yield. The new counting function is available for the high-capacity and compact Pluk-O-Trak M-Topline.

50% saving on labor costs and 50% less damage with Pluk-O-Trak

Munckhof's Pluk-O-Trak is a versatile harvesting solution that is used to harvest a wide range of fruits such as apples, pears, citrus fruits and cherries rapidly, efficiently and ergonomically. Pickers can work with the harvesting system at ground level or stand on the horizontally and vertically adjustable harvesting platforms to extend their reach to up to 4 meters above the ground. The pickers place the fruit on narrow moving conveyors, which convey the fruit gently and automatically to the crates. With the Pluk-O-Trak, fruit growers save 50% on picking labor and also reduce fruit damage by 50%. The Pluk-O-Trak can additionally be used as an effective, labor-saving and ergonomic solution for pruning, thinning and working on hail protection nets. When used for these activities, Munckhof's harvesting system can achieve a 35% saving in labor costs. The Pluk-O-Trak is user-friendly so new picking teams quickly learn how to use it. The system's long service life, low maintenance costs and low energy consumption mean that the total cost of ownership is modest.

Optimize fruit yields and picking performance, minimize quality variances

An innovative counting app that automatically counts the quantity of picked fruit is now available for the Pluk-O-Trak. The app is very easy to use and allows fruit growers to analyse the quantity of picked fruit in real time, per hour, per day or per week. The apple counting application shows the exact location of the Pluk-O-Trak and displays harvesting



performance per row or picker. All the data can be displayed via clear screens on a mobile phone, tablet or PC. The purpose of the new application is to help fruit growers optimise their fruit yields and picking performance while minimizing quality variances.

Higher returns

The Pluk-O-Trak is suitable for hilly, marshy and rocky terrain and available in models for 4 to 6 pickers. When coupled to the crate carrier, up to 16 crates can be transported with the machine. The LED lighting fitted to the Pluk-O-Trak means that it can also operate at night. The Pluk-O-Trak is now also available with far fewer V-belts and a variable speed drive for the discharge belt motors.