

# GLENCAL TECHNOLOGY

*Japan Agriculture in Aomori Prefecture in partnership with Glencal Technology, Hirosaki City and Japan Kumiai feed has successfully implemented an initiative project to produce high-quality Wagyu beef by using dried apple pomace and dried coffee bean dregs as a premium animal feed supplement.*

*Aomori Federation of Rural Industrial Agricultural Cooperatives (JA Aoren) in Hirosaki City, Aomori Prefecture, stands as one of Japan's leading apple juice producers. JA Aoren's high-tech processing plant uses Aomori apples to produce antioxidant-free apple juice. This high-end product that sells 4 million + bottles annually, and as a result generates approximately 5,000 tonnes of apple pomace by-products per year. As part of JA Aoren commitment to integrate ESG principals into all areas of their business practices, including waste management and recycling, in 2019, they installed Glencal Technology's RedoxMaster® to manage and process the apple pomace into a highly valuable sustainable commodity, closing the food loop to create the circular economy.*



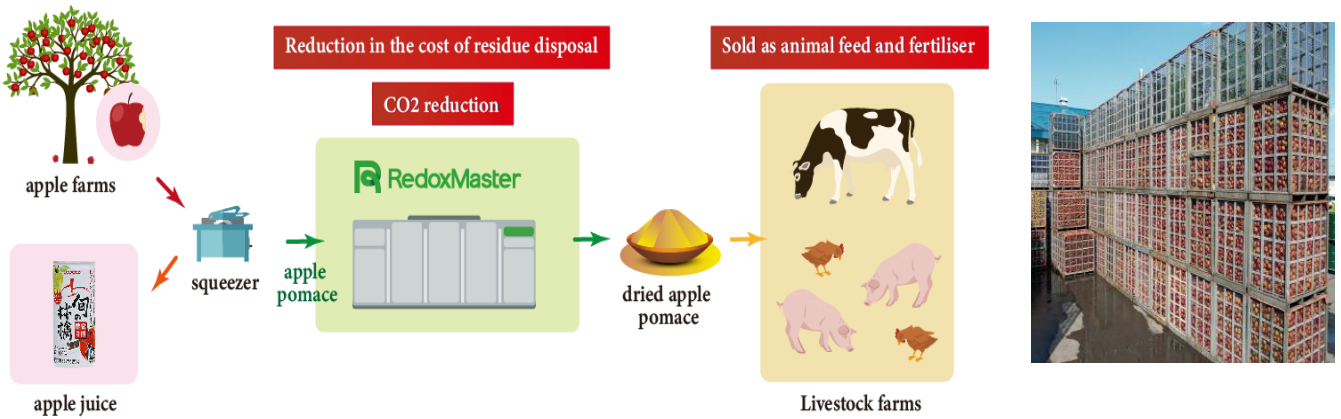
FSC 2200 certified in 2015.



Halal certified in 2021

*The RedoxMaster® innovative and patented design uses the Mixed Ion Reactive Approach (MIRA.) The MIRA engine incorporates advanced ionization technology to generate reactive oxygen species and ultra-low energy plasma ions. This scientific approach facilitates the unprecedented rapid drying of wet materials by disrupting the hydrogen bonds in the water molecule to form smaller clusters, enabling swift drying at remarkably low temperatures, thereby delivering significant energy cost savings, reduced CO2 emissions and most importantly, RedoxMaster dries without carbonization or oxidization, therefore preserving the original properties of organic materials.*

Using RedoxMaster® to dry the apple pomace, which was previously disposed of at high treatment costs, it is now generating significant revenue, as the dried material is rich in carbohydrates, pectin, polyphenols, and other essential nutrients, making it an ideal and highly valuable animal feed supplement. The dried material has a moisture content of less than 12.5%, allowing for easy transportation and long-term storage without risk of spoilage, and further promoting sustainability in Japan's agricultural and food processing industry.



The dried material can be used as Apple Leather, Agricultural Material, Bioplastic, Aquafeed and Animal Feed. Since 2021, the company has been supplying a mix of dried apple pomace and dried coffee bean dregs to the JA Zen-Nohoku-Nippon Kumiai Feed Hachinohe Plant. This mix is used to feed Aomori Kuraishi beef, a premium Wagyu beef produced in Aomori Prefecture. The company claims that the apple pomace enhances the cattle's appetite with its taste and aroma, while the diuretic effect of the coffee bean pomace helps prevent kidney disease in cattle by expelling waste products and toxins. This leads to improved quality of Wagyu beef meat. This new formula feed was added to Wagyu production regulations last year.



apple pomace      coffee bean pomace      Aomori Kuraishi feed

## Project Benefits and key outcomes

This project is aligned with Hirosaki City's SDGs Future City Plan and was implemented in collaboration with JA North Japan Kumiai Feed (headquartered in Sendai City). The project reduced the environmental burden, completed the food recycling loop within the region, and added high value by recycling local resources that can be preserved and utilized throughout Japan's Agricultural Industry.

Before Introduction (APPLES)	After RedoxMaster® (APPLES)
5,000 - tonnes per year	500 - tonnes per year

## JA Aoren

- Reduced their carbon footprint in accordance with the organisations ESG's
- Reduced the OPEX in relation to waste management and disposal fees
- Generated a substantial revenue model from the sale of **500 tonnes annually** of dried materials
- Achieved an outstanding **Project ROI of less than 2.84 years**, with the major contributing factor from achieving an average of **USD 0.75 / 1.00 per kg sales price** of the dried material.
- The Pioneer and first to implement a sustainable organic waste recycling project of this type in Japan, that can be admired and replicated throughout the world's agriculture industries.

## Glencal Technology

The entire team at Glencal Technology is delighted and proud to have initiated the research and development leading to the installation of RedoxMaster solution, and President Masahito Nakaishi and founding director Masumi Maeno want to sincerely thank Hirosaki City Mayor, Hiroshi Sakurada, Director Chairman Yasuhiko Ogasawara, for their vision and continued support to achieve such a fantastic result.

Please scan the QR code  
to watch the video

