

2023 Pakman Awards

Entry / Submission

Section 1: Background/Overview of Entry



Harp Renewables designs, develops and manufactures thermophilic aerobic digestion equipment to provide customers with a better, cleaner and more sustainable alternative to traditional food waste disposal.

At its grassroots, Harp began in 2002 as an electrical engineering company, specialising in the control and automation system design and installation of large waste management facilities and equipment. Seeing the inefficiencies in the current waste management technology and supply cycle, the founder and company director Shane Finnegan established Harp Renewables Ltd in 2014 to provide a renewable and sustainable solutions for the treatment of organic waste.

Our flagship product line, the Harp Bio-Digester, utilises our proprietary biotechnology that converts food and other organic waste into a highly-valued, dry, safe and nutrient-rich soil product / biofertiliser. Using a combination of biological and mechanical processes, organic waste volume and weight are reduced by an average of 80% in less than twenty-four hours.

Harp Bio-Digesters not only mitigate any transport emissions associated with the diesel powered heavy good refuse vehicles but also eliminates food waste directed to landfill, where it releases extremely harmful greenhouse gases, reducing overall costs and improving your environmental footprint.

For this reason, Harp Renewables has emerged as a global leader in thermophilic aerobic digestion, and waste treatment solutions with operations in the US, Canada, Australia, the UK and Europe and over 250 units installed and monitored worldwide.

Our chosen category is '**Innovation in Waste Resource Products or Services**' and the reason for that is due to our Industry leading technology and the significant changes we are making to close the circular economy loop, thereby converting waste into a valuable resource again.

Section 2: Description of Initiative/Project

The "Horses of Hope" Equine Centre at Castlerea Prison introduced an innovative prisoner rehabilitation program aimed at providing practical skills in animal welfare and facilitating post-release employment opportunities in the industry. However, the waste generated from horse stables posed significant challenges for the Prison Service. As a recognized waste solution provider, we were approached to develop an effective strategy to manage this waste stream.

Horse Stable Waste to a Valuable Resource:



The initial focus of the project was to address the accumulation of horse stable waste. Drawing upon our expertise, we introduced our innovative aerobic treatment machine. The concept of the project was to install a trial machine at Castlerea to minimize the waste, converting it into a valuable resource to be used in the Equine Centre facility. The technology was rigorously tested and adapted to transform horse stable waste into a high-value biofertilizer.

The pilot project at Castlerea was remarkably successful. The process not only achieved a significant reduction in waste volume but also harnessed the nutrient-rich properties of the waste to produce a high-quality end material, rich in organic matter and essential nutrients, to be reused as a potent soil conditioner in the gardens at Castlerea prison.

Food Waste Reduction and Circular Loop Closure:

Building on the success of the horse stable waste management pilot, the project expanded its scope to address another pressing issue within the prison environment: Food waste. Through rigorous testing and optimization, our waste reduction solution has achieved a remarkable 75% reduction in waste weight and volume. This process transformed the food waste into a valuable compost-like material, completing the circular loop by becoming the nourishing source for the gardens and landscapes within the correctional facility.

Positive Outcomes and Future Expansion:

The demonstrated success of both the horse stable waste and food waste management trials gained enthusiastic support from the prison management board. Recognizing the broader benefits of our innovative technology, a decision was made to extend the implementation of the machines to all prisons across Ireland. This strategic rollout aligns with multiple objectives of their project, including:

- **Environmental Impact:** The reduction of greenhouse gas emissions associated with food waste reduction contributes to global efforts in mitigating climate change.
- **Security Enhancement:** Decreasing waste volumes minimizes security risks within correctional facilities.
- **Training and Education:** The machines serve as educational tools, raising awareness about waste reduction, sustainability, and environmental responsibility.
- **Corporate Social Responsibility (CSR):** The project fosters a positive CSR message by promoting waste reduction, environmental stewardship, and community engagement.



Section 3: Achievements to Date

One of the most significant accomplishments is the successful rollout of sustainable waste management implementation to all prisons across Ireland. This achievement marks a profound shift in how waste is managed within the correctional system.

What began as a search for a waste management solution for horse stable waste has evolved into a remarkable endeavour that not only benefits the prison system but also exemplifies the potential for positive change through innovative waste management practices.

Beyond waste reduction, the project's impact extends to broader environmental and societal dimensions. By significantly curbing waste accumulation through the use of innovative aerobic treatment machines, the project contributes to reducing the carbon footprint associated with waste decomposition. This aligns with Ireland's commitment to mitigating climate change and demonstrates the potential of sustainable waste management as a vital element in achieving environmental goals.

Furthermore, the project's success isn't confined to waste reduction; it has become an incentive for rehabilitation, education, and empowerment. Prisoners engaged in operating the waste management machines gain valuable vocational skills and hands-on experience in sustainable practices. This fosters their personal growth, increases their employability upon release, and empowers them with a sense of contribution to society. The project's educational impact is equally profound, raising awareness about waste reduction, circular economy principles, and environmental responsibility. This multi-faceted approach demonstrates how sustainable practices can drive positive change not only in waste management but also in rehabilitation, education, and community engagement.

As of now, the project's impact is vividly represented by the installation of a total of 9 Harp Biodigesters within the Irish Prison Service across the country. Among these installations, the breakdown comprises 2 units of CX2, 5 units of CX5, and 2 units of CX10 biodigesters, each contributing uniquely to the project's overarching goals.

Collectively, these biodigesters have a substantial capacity to process up to 1,254 tonnes of organic waste annually, diverting a significant amount of waste away from landfills. In addition, through the effective digestion of organic waste, the project contributes to estimated CO₂ savings of approximately 573.30 tonnes CO₂eq compared to landfill and 261.96 tonnes CO₂eq compared to composting. This impressive reduction in greenhouse gas emissions highlights the project's significance in broader sustainability efforts.

The journey, however, is far from over. With 7 additional installations still on the horizon, the project is poised to expand its impact even further. As these biodigesters are integrated into additional prisons, the potential to divert more waste from landfills, reduce carbon emissions, and empower prisoners through skill development and education continues to grow.

Section 4: Future Focus

Looking forward, the project has set ambitious future goals that demonstrate a comprehensive commitment to sustainability, waste management, and community engagement. Building on the success achieved thus far, we are now envisioning an expansion plan worldwide. The upcoming

phase is aimed at sharing our innovative waste management solution with other prison services in the UK and the US.

An equally significant aspect of the future goals is the emphasis on closing the loop. This involves implementing programs that ensure the end product generated from Harp Biodigesters is returned to where it belongs, providing a complete and sustainable waste management cycle.

Our goals also go beyond corporate and institutional environments. In order to create a more sustainable future, we are also developing sustainable and renewable solutions to households.

By introducing products like Harp Infusion, a 100% recycled, organic, natural soil enhancer that contains the highest organic carbon content of any other similar product, displacing the demand for imported chemical fertilisers and creating a circular economy.



Also our new Harp Home Composter, a compact, efficient and easy-to-use home composting solution that uses the same advanced technology as the Biodigesters to compost a variety of kitchen waste in less than 24 hours.



Overall, our business has seen impressive growth, reflecting the growing demand for innovative and sustainable waste management solutions. This has had a substantial positive impact on expanding the business to key regions as well as on the partnership with companies, institutions and organizations from different sectors. Therefore, our commitment to providing cutting-edge technologies to advance sustainable waste management will always be our main goal.