

Emissions Reduction Alberta (“ERA”) Expanded Technology Pilot (ETP) Final Project Report | January 15, 2024

Project Information	
ETP Project ID:	ETP-0162468
Project Title:	Automated Manure Cleaner
Recipient Organization:	Poly-C Farms Ltd
ERA Project Start Date:	March 15, 2023
ERA Project Completion Date:	October 31, 2023
Total Eligible Project Budget:	\$98,852 (actual)
Total ERA Funding:	\$49,426 (actual)

ABOUT ETP

The Expanded Technology Pilot (ETP) offered a new pathway for Alberta businesses to propose effective, commercially viable technologies that could offer high return on investment but were not supported through the Energy Savings for Business (ESB) program. Successful proposals received funding to support project implementation and will help expand ERA’s understanding of the technology’s performance, market potential, and how it could be best supported in future initiatives.

ETP was open to applications between December 2021 to May 2023.

PROJECT SCOPE

Poly-C Farms Ltd is a family-owned and operated dairy farm that has been producing milk in Alberta for over 25 years and is seeking to become more sustainable and efficient in their practices. Their innovative project is the replacement of a diesel-driven skid steer used to clean dairy cattle manure with an electric, automatic Lely Discovery 120 cleaner, which will reduce required labour, increase cattle productivity, and save carbon emissions.

Below, Poly-C Farms Ltd has provided additional detail on the outcomes of their project.

PART 1: Commercialization & Technology Benefits:

1. List and briefly describe any knowledge-sharing activities since the completion of your ERA funded project. E.g., attendance and presentations at conferences or workshops, news articles, social media promotions, etc.

Poly-C Farms Ltd has an open-door policy for individuals or groups to learn more about dairy production. On a regular basis we host tours on our farm for the general public or industry related parties. These groups are either directed to our farm by a supplying industry partner, like Penner Farm

Services, or the Central Alberta Holstein Club. Poly-C Farms Ltd. is a member of the Central Alberta Holstein Club, which organises on farm tours on regular basis for their members.

2. What is the plan for further commercialization of the technology? i.e. what does the next 3-5 years look like, will the technology be used/exported outside of Alberta/Canada etc.

Penner Farm Services promotes the product by means of advertising, Poly-C Farms promotes the product by taking part in discussion groups and explaining the technology during farm tours.

Due to shortage of labour, many dairy farms are investing in technology to become more efficient per full time employee (FTE). This trend is expected to continue in the next 3-5 years.

3. List any additional benefits from the technology system (e.g. water use, land use, social benefits, etc.). Were there any other learnings from installing the technology? (e.g. any new insights into technology capability, difficulties or setbacks, what other markets the technology could be utilized in etc.)

The technology has resulted in a decrease in the usage of a diesel skid steer, thereby improving the air quality within the farm. Additionally, the automated cleaner has reduced the manual labor requirement at Poly-C Farms Ltd.

PART 2: Economic and GHG Impact

4. Provide your best estimate of the number of FTE's supported because of the ERA funded project since project completion:

The installation of the Lely Discovery 120 cleaner has resulted in a decrease of labour required of two hours daily for every day of the year. This translated to a decrease of 0.35 full time employee (FTE). As noted above, due to shortage of labour, many dairy farms are investing in technology to become more efficient per FTE.

5. Provide updated estimated direct lifetime GHG emissions reductions in tCO₂e. Please provide any available evidence, calculations, or data to support this claim, e.g. relevant activity date, verification report, assumptions or project plan.

	Total GHG reductions (tCO ₂ e)
Lifetime Savings	249.6*

*Values calculated by ERA prior to project completion.

Please specify the number of years the equipment is expected to remain operational: 16

6. Provide any operational data required in the Contribution Agreement (indicate if there is an additional attachment(s)). E.g., how much time the technology is operational, how much fuel it uses, etc.

The technology has been operational since October 31, 2023. The power consumption has been monitored by installing a Suraielec Energy Watt Meter. Based on the readings of this meter the power consumption per running hours is 0.000236 MWh, which is actually slightly lower than projected in the application. As a result, the total GHG reductions achieved by this project are slightly higher than originally anticipated.

7. Provide an update on the Technology Success Metrics identified in the Contribution Agreement:

Success Metric	Project Target	Target Achieved?
Reduced usage of diesel-powered skid steer and consequently lower diesel fuel consumption.	Reduce skid steer operation by 2 hours a day, consequently reducing diesel fuel consumption by 17 liters per day	Yes
Reduced labor requirement	2 hours per day	Yes

PART 3: Technology Transfer Plan

8. Provide a brief overview of what the problem the technology solves.

The installation of the Lely Discovery 120 cleaner displaces a diesel-powered skid steer and reduces the production of GHG for the process of cleaning manure. The installation also reduces the need of labour.

9. Describe where people can access the technology. Who is responsible for manufacturing, selling and servicing the technology?

The Lely Discovery 120 cleaner was provided by [Penner Farm Services](#).

10. Describe who will use the technology and what the target market is. i.e., industry, geography, size, quantity of customers etc.

Currently, there are 478 active dairy farms in Alberta which are always looking to make their operation more efficient. Not only will the Lely Discovery 120 cleaner promote the reduction of GHG emissions, but it will also save on labour requirements.

11. Identify specific competitors for similar technologies and substitutes. Include a brief comparison of the technologies and strengths/weaknesses of each. Identify any advantages that might exist with this technology system or that of your competitors.

There are several products on the market that compare to the Lely Discovery 120 cleaner, like the JOZ Barn-E Manure Robot and DeLaval robot collector RC 550 and RC 700. While the technology is

fairly similar to the Lely Discovery 120 Collector, we selected the Lely based on experience with Penner Farm Services and availability of parts.

12. Describe the primary marketing mediums that either your company uses to market the technology or how you found out about the technology. i.e., advertising, industry contacts, word-of-mouth, public demonstrations etc.

Poly-C Farms have a long-standing relationship with Penner Farm Services.

13. Describe what you are doing to promote the technology to others.

While Penner Farm Services promotes the product by means of advertising, Poly-C Farms promote the product by taking part in discussion groups and explaining the technology during farm tours.