

Automatic Needle-free Injector

### **ATOM GUN**

Intradermal







**Vaccinate** 

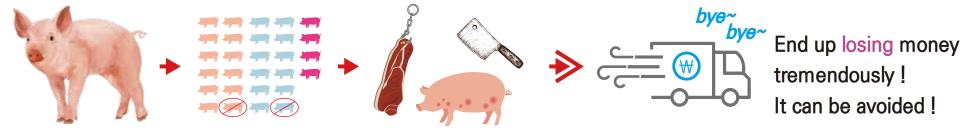
**Beginning of New Revolution** 

information



## Still injecting needles? We're losing so much!

#### Example of annual loss of ideal meat



49.9% Slaughter and abnormal meat detection

MSY 20 X Abnormal meat occurrence frequency X Penalty amount per head =

About \$15,000 Farmhouse loss

2020 Atom Gun product demonstration: Namsan

It can be avoided !



100 sow farm









Pigs, as livestock for consumption, are legally required to be vaccinated for disease prevention and food safety purposes. Among these, the 'swine fever vaccine' has been typically causing numerous instances of abnormal muscle (muscle abscesses), due to its unique side effects, resulting in significant economic losses for farms every year. After years of searching for a solution, recent overseas research cases and domestic clinical trials have shown a 'remarkable decrease in abnormal muscle occurrences when the vaccine is administered by intradermal injection. To align with the characteristics of mobile livestock, where needle injections are difficult to implement, a vaccination device for 'intradermal administration' has been developed. Of course, this product is not only suitable for the classical swine fever vaccine but also for noumerous other vaccines that are designed for 'intradermal administration'.

#### **HISTORY**



Development review and pre-clinical



Started research project



Completion of various clinical and prototype development



2019.01 ~ 09

Enhanced durability for commercialization



2019.09 ~ 12

Acquired various certification reports



2020.02.06 ~

Completed item approval and conducted numerous on-site clinical trials



2021. 04 ~ ATOM GUN Ver. 1

released

Vaccinate -

#### Economic loss from suppuration

In a case study on side effects conducted by the Korea Pork Producers Association in December 2019, involving 157 farms in Korea, the incidence of abnormal meat reached 49.9%. Consequently, the economic loss was estimated to be at least \$80 million to \$295 million based on 17 million animals slaughtered per year.

Parameter	1 <sup>st</sup> vaccination	2 <sup>nd</sup> vaccination							
Suppuration incidence									
Konkuk University (2012)	17.3%								
Kangwon National University (2015)	46.1%	73.2%							
Korea Pork Producers Association (2019)	49.9%								
Deduction per one released pig									
Kangwon National University (2015)	\$6.4	\$13.5							
Korea Pork Producers Association (2019)	\$3.7								
Estimated annual loss	\$80 million ~ \$140 million	per year \$295 million							

Assumption: annual no. of pigs released: 17 million









X File\_TV program 2016.05

KBS NEWS 2015.12

"Atom Gun" significantly reduces abnormal meat and significantly increases farm income.

#### ATOM GUN IS...

The 'Animal Technology Osmotic Machine,' abbreviated as GUN, is a "JET INJECTOR" that enables needle-free vaccination. Developed through numerous experiments and clinical trials considering the skin elasticity of animals such as pigs and cows, it is an automatic injector optimized for intradermal medication penetration.



The 'ATOM GUN' applies optimal pressure

to achieve the desired depth for drug penetration. Our goal is to alleviate pain in livestock and establish a more standardized vaccination process, thereby enhancing antibody production.

Commonly used 23G needles in general medicine have a diameter of 0.635mm, whereas the nozzle hole size of our injector, ranging from 0.23 to 0.25mm, is significantly finer (compared to venipuncture needles at 18G = 1.27mm).

Traditional needle injectors use the needle to create a drug penetration route in the skin and slowly administer the drug through finger pressure. In contrast, our 'spray-type injector' relies on the robust ejection pressure of the device, utilizing an extremely fine nozzle hole to achieve instant drug delivery. This approach harnesses the drug itself to mimic an 'instantaneous needle-like function' (a needleless injection technique).

Initially, it penetrates skin layers in a direct line to a specific depth. Upon encountering the resistance layer, the drug rapidly spreads horizontally along the tissue's structure. This delivery method enables the drug to reach the target penetration layer 'evenly and swiftly,' eliminating the pain associated with needles. Injectors using this mechanism are well–recognized academically abroad, labeled as 'Jet–injectors'.

#### "ATOM GUN" Ver 1.0 is

designed to administer approximately 0.55cc of medication automatically per operation.

The target penetration layer of the drug is optimized for intradermal delivery. We have completed multiple clinical trials on the antibody production rate when vaccinating pigs against foot—and—mouth disease. These trials have been conducted in numerous farms, including those in Pocheon, Jincheon, Nonsan, Hongseong, and Deoksan. The results of these trials will be announced on our website in the future. Additionally, apart from the foot—and—mouth disease vaccine, we are conducting clinical trials for various other vaccines.

We plan to supply accessories to accommodate the administration of medications in various volumes as per consumer requests.

At 'Reborn Agency,' we strive for diverse clinical trials. Inquiries are welcome!





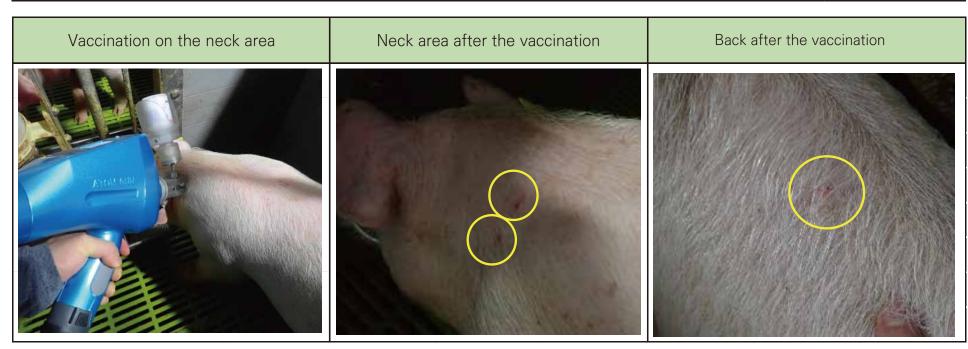
Vaccinate -

#### Intradermal Vaccination using ATOM GUN\_Sunjin Bridge Lab

#### Vaccination method

- Vaccine injection in two groups of neck and back

Vaccination method	Vaccine type	Period	Amount	No. of pigs	Period of blood collection
Intradermal	C vaccine Bivalent	9 <sup>th</sup> week, 13 <sup>th</sup> week	1ml per injection (0.5ml*2 times)	30	9 <sup>th</sup> week, 13 <sup>th</sup> week, 17 <sup>th</sup> week, 22 <sup>nd</sup> week



- ▶ The vaccinated part of the body shows a bit of swelling after the vaccination. (Smaller wounds compared to other needle-free syringes)
- ▶ After a few minutes, traces of inoculation disappear.

#### Intradermal Vaccination using ATOM GUN\_Sunjin Bridge Lab

#### ■ Test results

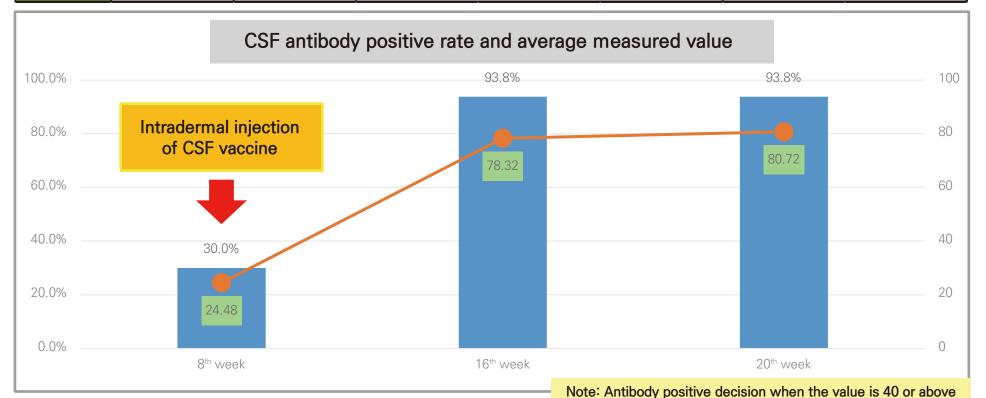


- ▶ The antibody was maintained until the late fattening period (total 83%)
- ▶ The group vaccinated in the neck showed a higher rate of antibody generation than those vaccinated in the back.

#### Intradermal Vaccination using ATOM GUN\_Sunjin Bridge Lab

#### Classical swine fever (CSF) vaccination test

Category	Vaccination device	Vaccine	Vaccination period	Amount	No. of pigs	Blood collection period
wine fever test green mark)	ATOM (jet injector)	Combined CSF vaccine	8 <sup>th</sup> week	0.5ml	20	8 <sup>th</sup> week, 16 <sup>th</sup> week, 20 <sup>th</sup> week

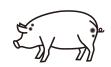


- ► The group received intradermal injection using the electronic injector generated antibody.
- ▶ Based on the measured antibody value, the antibody positive rate seem to be maintained until the time of release.

It really doesn't hurt

#### **REBORN ATOM FMD**

# **Abatement**



Reduces infections



Prevents broken needles from damaging the meat

Uniform dose

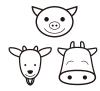
uniform results



Reduces the farm labor & boosts competitiveness

Excellent immune

response to the vaccines



Improve animal welfare by reducing inoculation pain







of vaccines











**Obviate** 



Fast drug delivery effect



No more medical waste



Prevents needleinduced disease spread



Prevents stress-induced acute death, fever, miscarriage and stillbirth







Provides safety

to the operators

Professional device management



Hygienic device management by heat steralization



SUS316 material resistant to corrosion



Easy to understand the pictorical illustration



Merit

STEP. 3 Automatic injection

#### **HOW TO USE**

#### STEP, 1 Preliminaries

#### STEP. 2 Drug loading

Equipped with a 'pill bottle' and a 'battery' in the device



Activate the device by holding down the power button for 3 seconds after inserting the 'pill bottle' and 'battery' into the device



#### After confirming on the (Prepare drugs in the cylinder-automatic)

# REBORN

'Drug Preparation Screen'. click on the 'start' button



- Once all the preparations for vaccination are complete, the screen will switch to the "operation count screen".
- \* This screen enables the management of vaccination records for each livestock farm
- \* Options include the ability to choose between cumulative records or new record entries."

Check the red lamp

#### Pressing the operation detection sensor continuously

Adheres the launch port to the inoculation site (Automatic injection)

Syringe leveling (Drug loading)

·Piglet: Whole body

·Sows: soft parts such as neck, behind ears, flanks, perineum

·Cow: Whole body ·Goat: Whole body



During inoculation, keep pressing the operation detection Operation sensor". detection sensor

When the cylinder is loaded with drugs The lamp at the top of the screen lights up in red. Check the 'red lamp' (drug loading is complete)

The launch port is tightly attached to the inoculation site

#### Automatic injection

Leveling the syringe (loading the next drug)

If you wait, the red light on the lamp will turn back on. Repeat the above operation to proceed with inoculation.

\* To end the vaccination process, remove your finger from the 'job detection button' after the last injection.



#### **AFTER USE MANAGEMENT**

#### Tip. 1 Automatic cleaning



"After inoculation, remove the vials." Select the 'Cleaning Mode' screen by pressing the 'Go' button located at the bottom of the screen. Then, press the 'Run' button to initiate the 'auto cleaning' process."

After finishing the cleaning mode

or

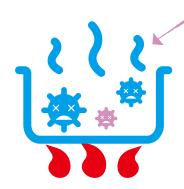


To administer additional doses using a different vial, replace it and proceed with the operation



turn off the power to shut down completely

#### Tip. 2 Hot water disinfection



All disassembled components have been made using 'advanced special materials', enabling 'heat sterilization'.



"For those seeking a more thorough sterilization, our AtomGun is designed for easy disassembly of the 'entire area' that came in contact with the medication by simply loosen ing a few nuts.

#### **ADVANTAGES OF THE DEVICE**

#### Atom Gun is

Easy to use and manage! The function is more precise and uniform!

We will always be attentive and strive to be by your side as the 'cutting-edge top worker equipment' beloved in the field.



Constant penetration depth





Easy operation Easey to use



Picture menu 2 buttons



Hot water disinfection



1.000 or more per hour



All vaccines for intradermal vaccination



0.55cc automatic vaccination



**Uniform** inoculation result

#### **Expendables**



Silicon O-Rina



Vial spike



2 types of management tools

Vaccinate -

#### **FIELD TEST**



#### Born through various clinical trials with "Livestock Association" for many years Korean needleless syringe Atom Gun!



2020.07.07. Anseong\_correction



2020.07.03. Field Test\_No correction



2020.04.23. Hongseong\_correction



2020.03.25. Pocheon\_No correction



2020.02.26. Sunjin\_No correction



2020.03.05. Pocheon Anatomical



2020.07.01. Cow Uiseong\_No correction

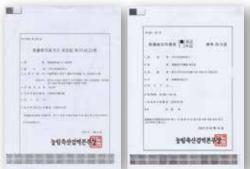


2020.07.01. Cow Uiseong No correction

Even after popularization, we will do our best to contribute to safer quarantine and better vaccination results through 'equipment response' through 'continuous national monitoring'.

#### REFERENCES OF CERTIFICATION

















ATOM GUN

#### Vaccinate -**Beginning of New** Revolution



1 year or 20,000 times warrenty

All of our products are operated on a 100% "pre-order" shipping method.

Orders will be shipped in sequence based on the completion of payment.

We are always open for you!!

Needle Free Injector

ATOM GUN Intradermal

We, all the employees of the "REBORN AGENCY",

will sincerely respond to your inquiries so that you can get all the information you need to make the best choice.

Please feel free to contact us if you need any further information.