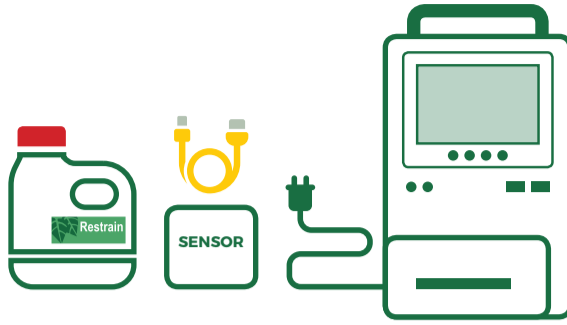


QUICK START GUIDE

1. HAVE YOU GOT EVERYTHING?



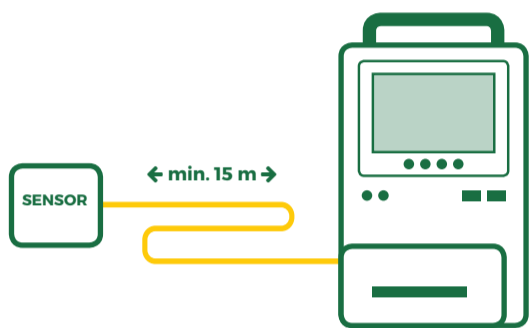
- The Restrain ethylene generator
- The Restrain sensor
- The yellow sensor cable
- Jerry cans of ethanol, only required after step 16 (after pre-start phase)
- Save packaging for future use

2. PLACEMENT OF GENERATOR



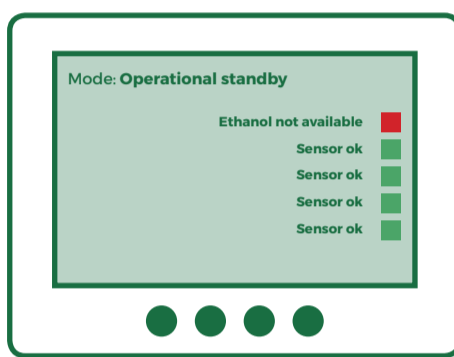
- Place the generator:
 - in the storage area
 - in a dry place
 - with 0.5-meter free space all around
 - **not** in the airflow from the ventilation system, or near a door
- Plug the generator into a 220V 3 pin socket (UK customers: UK Plug adapter supplied)

3. PLACEMENT OF SENSOR



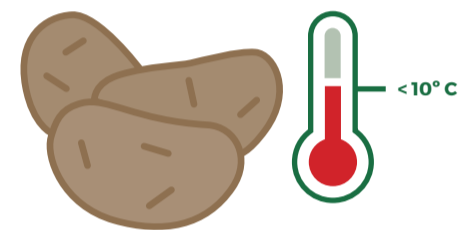
- Connect sensor cable to generator
- Connect sensor to cable
- Place sensor:
 - at least 15 m from generator
 - **not** in the airflow from the ventilation system, or near the door
 - in a dry place

4. EQUIPMENT ON



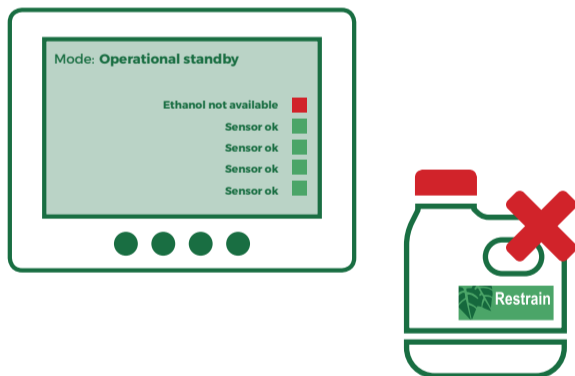
- Generator starts automatically (30 sec.)
- On screen:
 - 1 red light
 - 4 green lights
- Do not connect ethanol yet

5. STORAGE CRITERIA



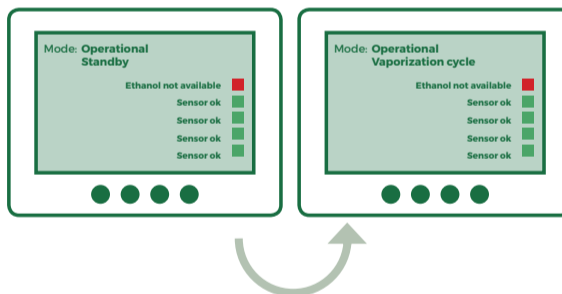
- Potatoes dry
- Potato wounds healed
- Temperature of potatoes constant < 10°C

6. THE PRE-START PROGRAM



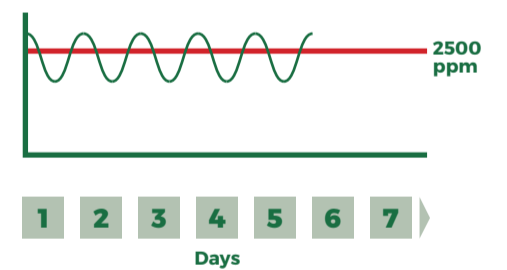
- Goal: to take readings in the store and analyse whether potatoes are dormant
- NB: **DO NOT** connect the ethanol
- Every half hour, the generator measures CO₂, air humidity and temperature in store

7. START GENERATOR PRE-START PROGRAM



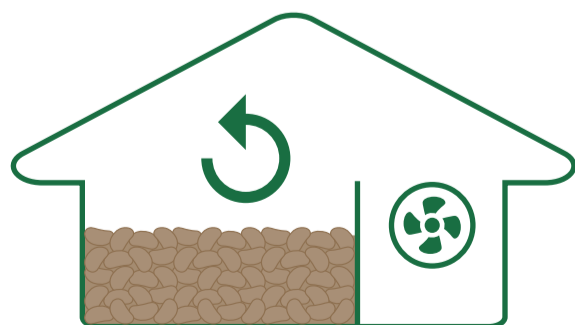
- At top of screen: **Mode: Operational Standby**
- Start pre-start program
 - Select **Select Vaporization cycle**
 - Select **0104 - potato 4 %**
 - Select **Start - Setup menu**
 - Then select **Start** again.
- All OK? At top of screen: **Mode: Operational Vaporization Cycle**

8. MONITORING CO₂



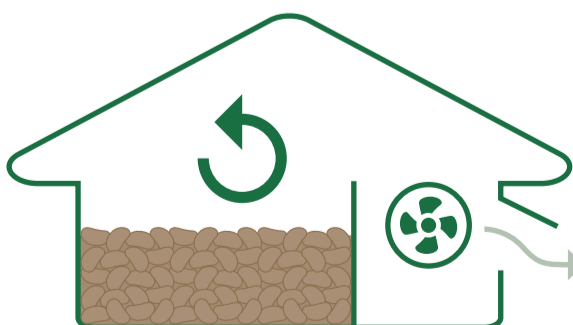
- Allow program to run **7 days** for correct readings to be obtained
- Generator measures CO₂ level in store
- Goal: CO₂ constantly less than 2500 ppm for last 3 days

9. INTERNAL VENTILATION



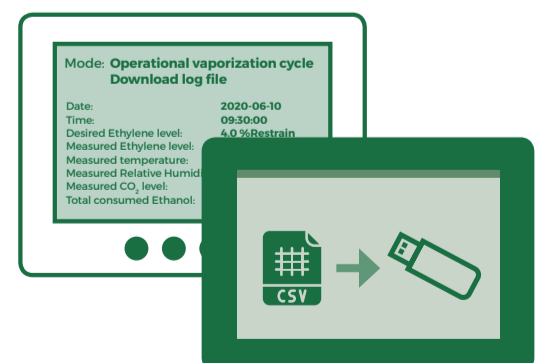
- For correct readings during 7-day pre-start:
 - Activate internal ventilation for 1 hour per day
- CO₂ spreads evenly throughout storage facility

10. EXTERNAL VENTILATION



- Open hatches 1 hour per day for external ventilation (immediately after internal ventilation)
- Fresh air in storage facility, and CO₂ level drops

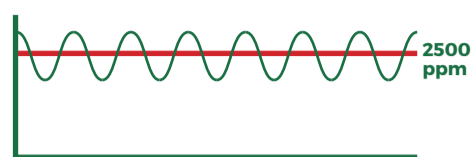
11. MEASURING IS KEY



- Check CO₂ readings during and after pre-start:
 - View **'Log File'** on generator screen
 - Or download **'Log File'** to USB stick
- See manual for instructions

SEE OVER FOR NEXT STEPS.

12. MONITORING CO₂ - PRE-START NOT SUCCESSFUL

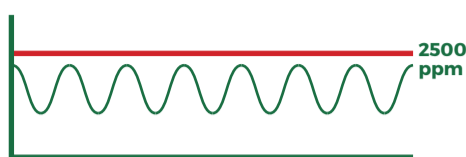


1 2 3 4 5 6 7 X

Days

- CO₂ reading rises rapidly after external ventilation
- Readings more than 2500 ppm
- **DO NOT start ethylene treatment. Continue with CO₂ MONITORING - PRE-START**
- Evaluate internal & external ventilation

13. MONITORING CO₂ - PRE-START SUCCESSFUL

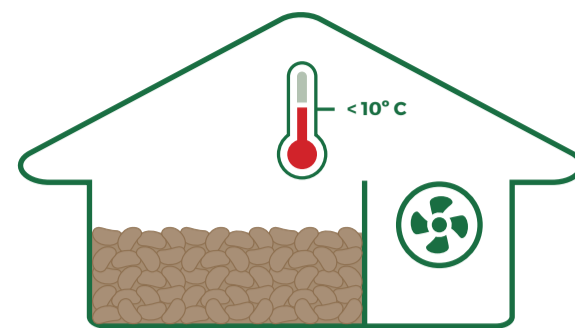


1 2 3 4 5 6 7 ✓

Days

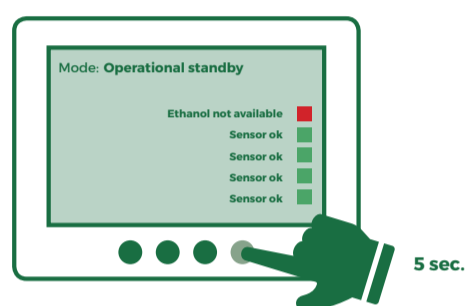
- CO₂ rises slowly after external ventilation and remains less than 2500 ppm
- Pattern repeats itself for at least the last 3 days of 7-day pre-start phase

14. POTATOES DORMANT?



- Check potatoes:
 - Dry?
 - Wounds healed?
 - Constant <10°C?
 - CO₂ stable at less than 2500 ppm?
- If not: Continue with CO₂ MONITORING - PRE-START

15. TERMINATE PRE-START PROGRAM



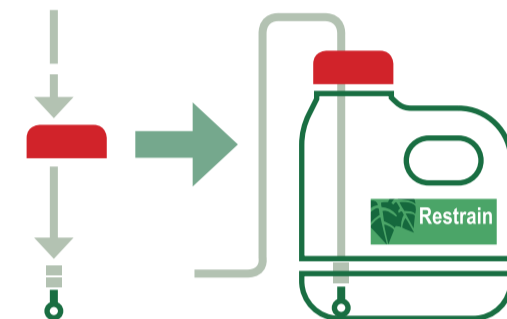
- Pre-start successful and criteria for previous step fulfilled?
- Terminate pre-start program on generator
- Press **TERMINATE** button for 5 sec.
- ➔ On the screen you will see: **'Mode: Operational Standby'**

16. PREPARE JERRY CAN OF ETHANOL



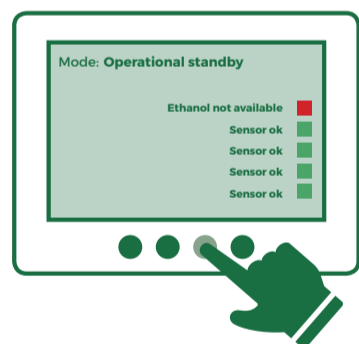
- Wear protective clothing and read safety guidelines
- Place jerry can of ethanol 0.5 meter from your generator
- Unscrew cap of jerry can
- Pierce 2 ø8mm holes in cap (1 for supply hose, 1 air hole)

17. CONNECT ETHANOL



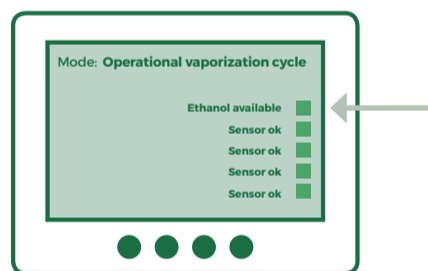
- Remove hose, weights and filter from holder on front of generator
- Insert hose into 1 hole in cap
- Attach weights to end of hose projecting from underside of cap
- Insert filter into hose end
- Insert hose into jerry can, ensuring that filter touches the bottom, and screw cap on again

18. START ETHYLENE TREATMENT



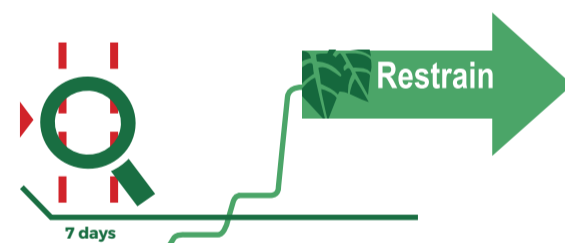
- At top of screen: **Mode: Operational Standby**
- Select **Select Vaporization cycle**
- Select **0104 - potato 4 %**
- Select **Start - Setup menu**
- Select **Start**

19. CHECK START OF TREATMENT



- At top of screen: **Mode: Operational Vaporization Cycle**
- Generator warms up for 40 min.
- ➔ Light next to **'Ethanol available'** on screen turns green when the ethanol in supply hose reaches the pump
- Ethylene treatment has started

20. RESTRAIN IS ACTIVE



- Generator increases ethylene concentration in stages to 4% Restrain
- This takes 3 weeks
- After that, the generator keeps the concentration stable
- Ethylene keeps potatoes dormant and counteracts germination
- Check status of equipment and potatoes daily

STORAGE MANAGEMENT CHECKLIST

DAILY CHECKS	SAFETY GUIDELINES
Generator ✓ All signals green? ✓ No error messages? ✓ CO ₂ readings less than 2500 ppm? ✓ Temperature < 10°C ✓ Ethylene level at correct percentage?	Always read instructions for use Minimum storage space for use: 200m ³ Keep 0.5 meter free around generator
Potatoes dormant?	Ethanol is highly inflammable. ✓ Wear protective clothing ✓ No fire or smoking products ✓ No mobile telephone
Germination blocked and/or brittle?	Ethanol on skin or in eyes? Rinse with water!
Sufficient ethanol in stock? ✓ At least 2 jerry cans	Use only official Restrain ethanol Store reserve jerry cans in locked, fireproof cabinet Rinse out empty jerry cans and dispose as industrial waste No exhaust fumes near sensor Keep generator upright and dry
	Back of generator (outlet) gets hot! ✓ Never open it yourself ✓ After switching off, wait 6 hours before moving

Contact

www.restrain.eu.com/contact

