

Draft Operation and maintenance manual for SmartAsh cyclonic barrel burner

Compiled for the MUST2 project
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Warning !!!

The following waste should **NEVER** be burned in the SmartAsh burner

- **Glass vials** (danger of explosion)
- **Sharps** (danger of injury even after burning)
- **Flush foil from Pacto toilets** (very wet human waste-hindering combustion)
- **Organic waste** (hindering of combustion)
- **Amputated body parts** (culturally not appropriate)

Preparation

- Acquire a standard 200 L **metal** drum originally intended for diesel or other petroleum products. Never use a plastic drum
- Make sure the drum is in a good condition:
 - Make sure that the top of the drum is perfectly round
 - Make sure that the 'lip' around the top of the drum is in place
 - Do not make any holes on the walls of the drum
- If the cover of the drum is intact, cut out the top of the cover. Make sure you don't damage the barrel's lip when doing so



Setting up the burner (1/ 2)

- Assemble the cart as per the manufacturer's instructions **(picture a)**
- Attach air hose to blower outlet at the back of the trolley secure the connection by making sure the pin located at the fan adaptor is aligned with the hole on the hose connector **(picture b)**

a)



b)



Setting up the Burner (2/ 2)

- Choose a spot that is at least 5 meters away from buildings and down- wind from the health facility and other facilities. Place the SmartAsh on flat, bare ground (ideally gravel or concrete). Do not burn on lawn or ground with dry vegetation.
- Place drum on the cart, secure with provided chain



Filling the barrel

- Start filling the barrel with the medical waste to be disposed and with some dry material to start the burn. Place the medical waste bags in the bottom of the barrel one by one. Place some drier, flammable material between them.
- Fill the barrel with waste up to max 2/3 of its volume, to allow for air circulation. Make sure the medical waste is not too wet. If the med waste is too wet, increase the proportion of dry waste OR make sure you allow the waste to dry prior to burning by using the Osmofilm waste bag
- Place some more dry and flammable material (cardboard, office waste, dry wood, woodchips) on top of the waste

Preparing burn process

- Connect the SmartAsh to a power outlet using the 10m extension cord. Install the cord lock to avoid accidental disconnections
- Press the red reset button on the yellow “Saf Start” device located on the power cord (**picture a**)
- Make sure you are wearing the appropriate PPE (Heat- resistant gloves, leather apron, goggles)
- Place lid on the drum as shown in **picture b**. Attach air hose to lid.



a)



b)

Starting the burn process

- Light the dry material on top of the waste load
- Allow fire to catch. Turn on the Smart Ash by flipping the switch on its back side to the 'On' position (**picture a**)
- When fire is established, place lid properly on barrel and close clamps (**picture b**)
- Slowly adjust the throttle lever at the back of the burner (**picture c**) from 'Start' to 'Run'. Advance the throttle as much as possible without causing gusting or turbulence. If these conditions arise, turn control latch back slowly towards the start position

a)



b)



c)



Burn process

- Periodically stir the burning waste as follows:
 - Open the stirring hole (**picture a**) using the supplied stirring rod
 - Insert the rod into the hole and stir the burning waste (**picture b**)
- If drum interior is completely dark, or if the stirring rod reaches the bottom of the drum without obstruction, the burn usually is complete. The unit should normally start producing a bit of smoke or dust once the burn is complete
- When the burn is complete, the unit should be allowed to cool down before removing the lid
- Once unit has cooled down, remove ashes. Make sure they are cold and dispose accordingly

a)

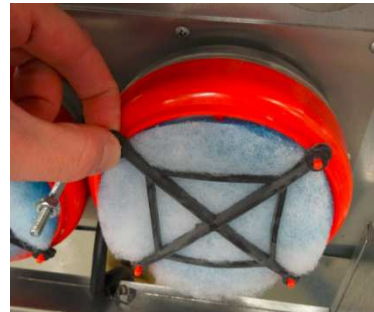
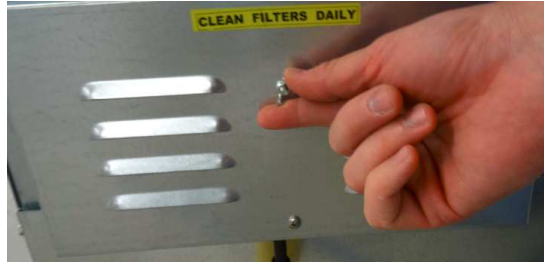


b)



Maintenance

- Cleaning/ replacing of air filters (daily)
 - remove motor cover on back of air supply by removing wing nut holding it in place.
 - To remove filter, pry retaining harness off pegs and lift out filter.
 - To clean filter, hold clean side against turned on air hose and blow dirt away.
 - Replace if clogged or damaged.



- Cleaning/ replacing of external Spark Screen:
 - Remove three screws holding screen housing to top of lid and remove Inner parts.
 - Replace spark screen and screw back

Troubleshooting

- In case of power interruption
 - Turn Smart Ash toggle switch to OFF position.
 - Move throttle lever to start position.
 - Allow the unit to cool down for 10 minutes.
 - Reset Saf-Start.
 - Remove lid and repeat Ignition procedure as normal
- In case of excess Smoke.
 - Possible reason a- Poor start: remove lid. If fire is smouldering or burning weakly, restart with dry material
 - Possible reason b- Material in drum is too wet: Keep feeding dry material into the fire until burn is established